

THE ECONOMY IN THE 21ST CENTURY

HEARINGS

BEFORE THE

JOINT ECONOMIC COMMITTEE CONGRESS OF THE UNITED STATES

ONE HUNDRED FOURTH CONGRESS

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CONTENTS

OPENING STATEMENT OF MEMBERS

Senator Connie Mack, Chairman	1
Senator Jeff Bingaman	22
Senator Rod Grams	27
Senator Robert Bennett	31

WITNESSES

Panel I

Statement of Alvin Toffler, Author	3
Statement of Joel Kotkin, Senior Fellow, Pepperdine University, School of Business	10
Statement of Paul Johnson, Historian and Author	16

Panel II

Statement of Steve Forbes, President and CEO, Forbes, Inc.	37
Statement of The Honorable Robert Walker, Representative from Pennsylvania	41

Panel III

Statement of Jerry Jasinowski, President, National Association of Manufacturers	51
Statement of Brenda French, Owner, French Rags	54
Statement of Frederic Pryor, Professor, Swarthmore College	58
Statement of Robert Genetski, President, Robert J. Genetski & Associates	61
Statement of Marc Holtzman, President, Mees Pierson EurAmerica	65

SUBMISSIONS FOR THE RECORD

Prepared Statement of Senator Connie Mack, Chairman	79
Prepared Statement of Alvin and Heidi Toffler	81
Prepared Statement of Joel Kotkin	85
Charts for Senator Jeff Bingaman	90
Prepared Statement of Senator Rod Grams	93
Prepared Statement of Representative Robert Walker	95
Prepared Statement of Jerry Jasinowski	98
Prepared Statement of Brenda French	105
Prepared Statement of Frederic Pryor	113
Prepared Statement of Robert Genetski	131
Prepared Statement of Marc Holtzman	137

THE ECONOMY IN THE 21ST CENTURY

Monday, June 12, 1995

CONGRESS OF THE UNITED STATES
JOINT ECONOMIC COMMITTEE
WASHINGTON, D. C.

The Committee met at 9:30 a.m. in Room 106 of the Dirksen Senate Office Building, the Honorable Connie Mack, Chairman of the Joint Economic Committee, presiding.

Present: Senators Mack, Bingaman, Bennett, Grams and Representative Sanford (members of the Committee).

Staff Present: Robert Mottice, Greg Williams, Shelley Hymes, Missy Shorey, Chad Stone, Caleb Marshall and Juanita Morgan.

OPENING STATEMENT OF SENATOR CONNIE MACK, CHAIRMAN

Senator Mack. Good morning and welcome to the first-of-its-kind hearing on the 21st Century Economy.

America and the world are embarking on a journey to a new era of human endeavor and achievement.

This era will bring tremendous change to every aspect of our lives. We have already witnessed unparalleled change in the global economy, in technology and communications, in business and industry, and in communities and families.

These changes mean that today's Industrial Age government is obsolete. Government in the Information Age must become dramatically smarter, smaller, and simpler. Information Age government shouldn't just be more efficient in meeting Industrial Age objectives, as some propose.

Instead, government must be redesigned, and its policies reformed to maximize freedom for innovators and entrepreneurs and to build new avenues for individual creativity and prosperity.

If we successfully redesign our government, especially economic policy, then the new technologies of today and tomorrow will help create a world of unprecedented economic opportunity and prosperity for future generations.

Today we will explore society's transition into this new era, and focus on the role of government in the Information Age economy. One profound example of the technological change we are witnessing is that power of the computer chip now doubles every year-and-a-half. That pace will get even faster.

In the next 10 years, microchip power will increase by a million times, and the power of global computer networks increases geometrically as millions of new users are linked together every month.

What does that mean for government? It means that bureaucratic, heavy-handed, Industrial Age government can't hope to keep up. Today's government is trying to manage yesterday's economy. That is not only a waste of increasingly scarce resources; it creates barriers to future growth and prosperity.

Clearly a government built on old notions of regulation and control cannot hope to survive, much less succeed, in the Information Age's environment of ever-expanding individual freedom.

Today's hearing is a modest example of how the technologies of the Information Revolution are changing American government.

This is the first congressional hearing to make full use of interactive video teleconference technology. Six out of our 10 witnesses will testify from remote locations around the country and abroad over an interactive audio/video network.

We're being transcribed onto the Internet, and invite the C-SPAN and online audience to submit questions to the Committee. Our e-mail address is JEC @ TOWN.HALL.ORG.

I'd especially like to note the location of two of our witnesses. Paul Johnson is testifying from London, England, and Congressman Bob Walker from Ephrata, Pennsylvania. I point these out to emphasize that the Information Revolution is already reaching every corner of the globe, from the biggest cities to the smallest towns.

As long as we avoid creating artificial barriers to the information transformation, no one will be left behind as we embark on this exciting journey into the Information Age.

I can foresee future hearings in which all the witnesses testify from their homes, and all Americans will be able to participate. And we'll cut the cost of these hearings by half or more compared to traditional methods.

For example, we've cut the cost of today's hearing in half by using interactive technology, rather than bringing everyone to Washington.

I'd now like to welcome the witnesses on our first panel. At this point I will introduce the witness here in Washington, D.C., Alvin Toffler.

I'm delighted that you're here, Alvin, and would like to say that you and your wife, Heidi, are among the world's most influential scholars and social thinkers.

Your studies of the future which have been read by presidents, prime ministers, the Speaker of the House, CEOs and students, are contemporary classics which include *Future Shock*, *Power Shift*, *The Third Wave*, *War and Anti-War*, and *Creating New Civilizations*.

Again, we're delighted that you're here, Alvin. If you will, go ahead with your testimony. We look forward to hearing what you have to say.

[The prepared statement of Senator Mack appears in the Submissions for the Record.]

PANEL I

STATEMENT OF ALVIN TOFFLER, AUTHOR

Mr. Toffler. Thank you, Senator. I'm honored to be here as part of this landmark hearing. I think that it is symbolic, as you say, of many of the things that we're going to be doing and experiencing in the years ahead. And it means a broadening of public access to and participation in the deliberations of Congress.

Symbolically, as I say, the change is reshaping America in the years ahead. I will in the interests of brevity get down to some of the key points.

The United States, ever since the mid-1950s, has been going through a fundamental transformation economically -- but not just economically. Technologically -- but not just technologically.

We have been hit by an enormous series of changes since roughly speaking the mid-1950s. The period between 1955 and 1960, for example, was a period when we first saw the universalization of

television, the first commercial jet aviation, Sputnik's first probe into space. The birth control pill was introduced during that period.

And, of course, the computer began to move out of governmental and military applications into the business community proper. A wave of change struck America during that period, and has since then simply continued and multiplied.

The consequences of this and a series of concomitant social and cultural changes have led to the emergence of a new kind of society. We are no longer the industrial society that our parents grew up in.

Many people now of course know the term "Third Wave." But to those who don't, it will simplify my further comments if I take 10 seconds to clearly define it.

Ten thousand years ago, we saw the beginnings of a transition from hunting and gathering to agricultural societies. That was the First Wave of social transformation in human history.

Roughly 300 years ago, the Industrial Revolution came and brought with it a fundamental change in the nature of society, and of course, of economics, based in large measure on the application of technology to the amplification of human muscle power. That was the Second Wave of historic change.

And starting roughly in the mid-50s and accelerating on down to now has been a Third Wave of change based largely on technologies that amplify human mental or brain power, rather than simply muscle power.

The consequence of these changes runs through every institution of the society. In 1970, when *Future Shock* was published, we first talked about what we called the "general crisis of industrial society." And then in 1980, in the *Third Wave*, we talked about the coming decline of our basic industries, and the rise of a whole set of new industries based on electronics, information, computing, space, and so on.

It's now become a cliché to say that knowledge is the key to the economy. Unfortunately, it has taken America about 20 or 30 years to recognize, that idea. Yet even today most people do not appreciate the full meaning of that phrase.

Why is knowledge so central to the economy, and why is it truly revolutionary?

I'd like to begin with the factors of production. Most conventional economics textbooks begin with the idea that the factors of production are land, labor, and capital. Today any textbook which still says land, labor, and capital are the factors of production ought to be thrown into the dust

bin, because it omits the most fundamental of all time factors of production: knowledge.

With the appropriate knowledge in the right heads at the right time and in the right place, it is possible to substitute knowledge or information (and I'm using the terms loosely and interchangeably today) for land, for capital, for labor, for the amount of raw materials needed, for the amount of energy, and for the amount of time required to produce anything.

In fact, knowledge becomes the ultimate substitute for all the other factors of production. That is why it is the most important of the factors of production today.

The very definition of economics is thus made obsolete. Economics has been defined as "the science of the allocation of scarce resources." But knowledge is not a scarce resource.

This fact alone should force us to change or redefine the entire vocabulary of Second Wave economics, words like "productivity" or "consumer," concepts like "gross domestic product" or "growth" all have to be reexamined or redefined, or indeed scrapped.

The vast majority of U.S. employees today are, as we know, knowledge workers. And yet we do not know how to adequately measure information and knowledge productivity.

We often are told that the services, in which most Americans are employed, are "unproductive." Very often that's because we're measuring the productivity using the tools of the Second Wave to assess an industry that is increasingly Third Wave.

Take the word "production." What in fact is production? Imagine that General Motors made just one single car every year, at a cost of billions of dollars -- but that its customers could replicate that car at home at near zero cost and make their own cars.

In that case, who's producing what? Is it General Motors, or is it the customers as well? If so, how do you measure the productivity of the customer? As Alice in Wonderland might have said, "It's curiouser and curiouser." Yet this is exactly what is now happening in one of America's most important industries, the software industry.

When users copy software, is that copying part of production or consumption? And when replication of the tools we work with can be done at near zero cost, certainly some new rules need to apply.

Information or knowledge is now as central to the U.S. economy as oil is to the Saudi Arabians, or the Iranians or the Iraqis. Yet unlike oil, it is very hard to contain. How should intellectual property be protected? Can

it be, if we rely on traditional economic and legal definitions? These are only a few of the most obvious questions raised by the emergence of the Third Wave economy.

In law, accounting, and above all, economics, we need to develop a whole new set of Third Wave tools. If we look at fundamental aspects of the economy, we can see why.

Take the nature of capital itself. We're a capitalist society. We talk about capital. In First Wave, or agrarian society, the only capital that really meant anything was land. If you had land, you ate and you had power. If you had no land, chances are your family went hungry for long periods of time, and you were essentially powerless.

Roughly speaking, that characterizes approximately 8,000 or 10,000 years of human social development. And the thing about land-capital is that you could run it through your fingers. You could touch it. And if I grew a crop on my rice paddy or my acre, you could not grow a crop on that rice paddy or acre.

Then we came to Second Wave, or industrial economics. Here we have a society based on smokestack production, assembly line production, and so on. And the dominant form of capital in that society is, say, shares of stock in a major American corporation -- let's say General Motors or Bethlehem Steel.

Notice that now what you have is a piece of paper. It is no longer the land directly. It's a symbol. But that symbol, your share certificate, represents your fractional ownership of buildings, assembly lines, trucks, raw material, inventory; i.e., largely physical, tangible assets.

Moreover, if I use the assembly line, you cannot use the assembly line at the same time. And in those ways, the fundamental nature of capital didn't change all that much when we shifted from land-capital to industrial-capital.

Now, however, let's take a look at Microsoft. If I own a share of Microsoft, my share certificate is a symbol. But what is it a symbol of? Do I care if Microsoft has an assembly line, trucks, buildings, raw material, or any other physical assets for that matter?

The answer is, no, I don't. What I care about is what's inside the heads of Microsoft's people. And what is inside the heads of Microsoft's people are symbols, which means that my symbol, my share of stock, is now a symbol of other symbols.

Right now, we see IBM prepared to pay \$3 billion plus to Lotus for the symbols inside the heads of Lotus' people.

But it isn't only capital that changes its character and becomes increasingly intangible. Money changes as we move to a Third Wave society.

In most First Wave societies, historically, money was something that had a utility other than its exchange value. For 10,000 years or so in Asia, the basic form of money was rice. If you couldn't exchange it, you could at least eat it.

In the West, salt or calico, textiles and other things that had a utility other than the exchange value itself served as money.

In roughly the mid-1600s, at just about the time Newton was writing, just when the Industrial Revolution was gearing up in Western Europe, a writer named William Potter wrote an essay in which he said, "Someday money will be symbolic."

My guess is, nobody much understood what he meant until the American Revolution. The British had managed to extract virtually all the gold and silver from the American Colonies, and the American Congress began printing paper money which became the origin -- one of the origins, at least -- of the widespread use of paper money.

Whereas before that, the value of money was based on how much you had, how much rice you had, or how big or how much it weighed. And it still had a utility. Now the money had no utility other than exchange. The piece of paper was essentially useless. And what gave you value were the numbers and letters printed on the paper. Note that this presupposed a society in which at least some substantial number of people knew how to read, write, and count. What you had now was money of the age of print. Today, as we know, the real money is not the dollar bills and the currency jingling in our pockets. It's plastic, and it's electronic. It's digital and video money.

In fact, we might say that there is a new economic law, a Third Wave law, about money. And that is: Money is increasingly informationalized, as information is increasingly monetized.

A revolutionary upheaval in thinking about the nature of money in the Third Wave economy is now underway. But we can learn more about it from the pages of magazines like Wired or ASAP than from the economics journals.

We're looking at new payment systems, digitalization, and a revolution in the nature of exchange. And yet, much of this, it seems to me, escapes the conventional economic literature.

Another fundamental change that comes with the Third Wave economy (and has a lot to do with its appearance in the first place) is what

we in our book *The Third Wave in 1980* defined as “demassification.” It’s a big, ugly word. But there was no word in the English language that otherwise conveyed the same meaning.

The new economy is in part a direct result of the demassification of American society. What do we mean by that?

A Second Wave or industrial society, is a mass society. It’s based on mass production, mass consumption, mass media, mass education, mass entertainment and, in some cases, the weapons of mass destruction.

A Third Wave society, the society that’s now emerging, is a demassified society. Let me give you some examples of what I mean by that.

The purpose of mass production was always to turn out the largest possible run of identical objects. But today, if we go to the most advanced manufacturing facilities in the world, we find that they’re no longer engaged in traditional mass production. They are now capable of turning out 162 of this, 3,000 of that, two items of this, shift to 10,000 of that, 168 of something else, continually altering the output.

Now, the reason for that is the introduction of computerized information-based technology, reducing the cost of variation. The cost of diversity is going down towards zero. That means that, instead of mass production, we’re increasingly customizing production, turning out highly diverse, multiple products.

That is why, a typical Wal-Mart store can carry 110,000 different items. Siemens, the German electronics company, at one point a few years ago introduced a product called “Lot Size One,” implying that it could produce one unit as cheaply, on a cost-per-unit basis, 10,000 or one million.

Variety and customization made possible by applications of sophisticated knowledge to the production process are not limited to manufacturing. Look at the services. In 1900, every town in America had its own coffee roaster. Coffee tasted differently in every town. Then came General Foods and the other industrialized food processing industries. And coffee began to taste the same all over the country. And there were relatively few choices.

Now go to a Starbuck’s, and see how many different kinds of coffee you can choose from. Diversity is replacing uniformity.

Insurance policies -- more different kinds. Financial instruments -- more different kinds. Across the board, increasing customization both in production of goods and of services.

Again, much of this is made possible by applications of information technology and computerization demassification, in fact is the hallmark of a knowledge economy.

This is paralleled in communication, where we have demassified the media. It's paralleled in family structure, it's paralleled in culture.

What is happening is that we're moving from a mass society to an increasingly internally differentiated economy in society. This explains in part why centralized economic management by central banks, governments, or planners is increasingly counterproductive.

In a Third Wave economy, states, regions and sectors will become more different from one another in terms of everything from available skills to environmental requirements. When interest rates, tax measures, and other centralized tools are employed to manage the macro economy, they produce increasingly different effects in different regions, different sectors of the economy.

Central management is like a doctor who prescribes the same medicine for all his patients -- adrenaline for everyone today! or Everyone gets Valium tomorrow!

These are just the initial and the most obvious changes that come as we shift toward a knowledge-based economy. We change the nature of work, we change the scale of organization, we change the nature of organizations, we change the speed of innovation. We change every element of the economy.

And it is no exaggeration to describe this, in fact, as a revolution in economics, which has by and large not yet been adequately recognized by the economics profession.

I would urge therefore that this Committee, given its mandate and its importance, play a role, a critical role, in accelerating development of totally new Third Wave intellectual tools for understanding the emerging economy.

I believe this Committee has a unique opportunity to do that.

Mr. Chairman, members of the Committee, this completes my testimony. I look forward to any questions you may have.

[The prepared statement of Mr. and Mrs. Toffler appear in the Submissions for the Record.]

Senator Mack. Thank you very much for your testimony.

At this time, we turn to Mr. Joel Kotkin. A Senior Fellow at the Center for the New West, and a Senior Fellow at the Progressive Policy

Institute, Mr. Kotkin is the co-author of *The Third Century Tribes: How Race, Religion, and Identity Determine Success in the Global Economy*.

He is a contributor to *The Los Angeles Times*, *The Washington Post*, and *The Wall Street Journal*.

Mr. Kotkin joins us today from Los Angeles. We're delighted to have you, and look forward to your testimony. Please proceed, Mr. Kotkin.

**STATEMENT OF JOEL KOTKIN, SENIOR FELLOW,
PEPPERDINE UNIVERSITY, SCHOOL OF BUSINESS**

Mr. Kotkin. Thank you very much, Senator. I greatly appreciate this opportunity.

I'm also honored to share in an electronics sense a platform with my friend Alvin Toffler, who is also a fellow Angelino. It shows how spread out L.A. is for two of us to get together.

What I'd basically like to start with is maybe some of the implications of what Alvin has been talking about, and was sort of drifting to at the end, and try to carry it in that direction.

It's probably bad manners for me to say this, but I think that essentially Washington will become much less important. The question is whether or not it will be relevant at all. It will depend on whether or not we're going to live up to the challenges that are going to be coming as we begin to make some of the changes that Alvin's been talking about.

I just want to go through three things quickly. One is on the political side. We've had a tendency in the United States, I would think, since at least the 1820s, 1830s, to look more and more to the central government as the place where we can solve most of our problems.

I'm not a religionist who says that everything that we've done since 1840 was a bad idea. I think we've done some very good things. We needed a national road system. Obviously, the Civil War created a need for centralized government.

The challenges of Reconstruction, the challenges brought on by industrialization, the challenges of the First World War, the great challenge of the Depression, the challenge of the Second World War, and finally the challenges of the Cold War, and the struggle for civil rights -- each one of these things required a national solution.

And it would be very hard to say how we could have, for instance, completed or moved forward the liberation of African Americans, for instance, had we not had the national government involved.

So as a Democrat, I know that may be an increasingly dirty word, but as a Democrat, I honor the efforts of Roosevelt, Truman, Johnson, Humphrey, the Kennedys, and of course, most of all, Dr. Martin Luther King, in beginning to move forward on some of these things on a national level. I also honor those Republicans, such as Eisenhower, Nixon, and Reagan, in winning the Cold War. All these forces, both for social changes and international challenges, forced us to look to Washington for more and more solutions. That's changing.

Alvin was mentioning, I think very accurately, the fact that different regions of this country are almost like separate countries, even within the same state. And essentially what we're dealing with more and more are regions in many ways almost as if they were city-states in the Italian sense in the 13th and 14th Centuries.

Basically, regions in this country are now essentially fighting each other over capital, over where they can get an investment from, over jobs, over intellectual property, over who can get the most out of their people.

And I think that what you find, as you speak around the country -- and I do quite a bit of this with various groups -- if you're here in California, or you're in Texas or you're in Omaha, you find that people don't care about so-called American competitiveness, the big buzzword in Washington.

Basically what people are really thinking about is, how does Omaha fit into the world economy? They're not being parochial; they're being very outward. But on the other hand, they're interested in how Omaha fits in.

And if California has a 15 percent unemployment rate, or New York has a 20 percent unemployment rate, that's really not their main concern, except maybe if it affects one of their many markets, which may be also in another country.

So what you really have is a regional focus that is now more and more of an important thing. People in the business world, particularly small business, really deal with it. And these people are very, very sophisticated.

You find, even in small towns, you have people who have contacts in London or in Tokyo or in other parts of the world. They don't need to go through New York or Washington to go and do what they want. They have their contacts on Wall Street. They have their contacts in the city of London. They have their contacts in the financial district of Tokyo. And they can deal with those without the intervention of the Federal Government.

The other thing is what's happening on the governmental level itself because of the kind of information that we now have available, because I can plug in in many ways, into the same thing at least, as somebody in Washington.

A city manager in a small town in central California or Colorado has access to much of the same data. We no longer need to look at Washington for expertise. And frankly, people do not think they have to go to Washington for expertise.

In the previous era, where information was very difficult to get at and it took a tremendous concentration of people to process the information, then you had more of a need for centralized organizations. Today I think we don't. Therefore, one of the things that makes people feel very uncomfortable, is the Federal Government setting policies that affect local government.

So I think that we have to begin to understand, what is the Federal Government's role in this? What are the rules that need to be set so that we have a civilized society? What are the over-arching tax policies that might allow these regions to flourish?

We have to come in with the understanding that each one of the regions is essentially a semi-autonomous state. That's why we have today, periods, for instance, in the 1980s where the Northeast and California did very, very well, and parts of, let's say, the energy-producing regions were in trouble.

Now we have a period where California is just coming out of a recession, and the rest of the country is just starting maybe to go back into one.

So we have economies that respond very differently, and have very different affiliations. Again, if you take a look at the Puget Sound region, they are very Pacific Rim oriented. You go to Miami, the Pacific Rim is not so important to them. It's more the Caribbean and South America. In New York, it's a very European focus.

And these changes are going to become more and more profound.

This is matched with what I think is, to me, maybe the most interesting of all the changes, which are the cultural changes that are taking place, as different regions are becoming, not more similar as they had been doing for a long time, but they're becoming in many ways increasingly different.

The biggest factor here, I think, is the change in the ethnic composition of the country. About one out of every three schoolchildren in the United States today is either an African American or an Asian. Only one out of

every four has even partially British descent. So we're really looking at a very different country than the country that we had, let's say 30, 40, 50 years ago, and certainly the country we had 100 years ago.

I think that we basically, as I see it, have three different cultures, in a very broad sense, that are very different. The issues that we're dealing with are very different.

For instance, much of the country, particularly in the southern part of the United States, is still working on the black-white paradigm, still playing out the tragedy of slavery and its aftermath. And you have some of the other major cities in the Midwest where Southern people migrated during the early parts of the 1900s.

There's a whole series of issues, focusing more on racial differences, less on issues such as different cultures.

The second major cultural zone, if you will, is what I call the Valhalla zone, which is more or less that part of the country which has remained more or less predominantly white, predominantly Anglo, as we say in California, in its culture. And that is an area where many people from other regions are coming to feel that these biracial or multiracial societies aren't working.

The third area that I study the most is called the cosmopolitan region. Those are concentrated in the cities of the Northeast, the Gulf Region, the Atlantic Coast of Florida, and here on the West Coast.

There's a profound emphasis on recent immigration. Roughly 70 percent of all the 1980s immigrants landed in seven metropolitan areas: Los Angeles, New York, Miami, San Francisco, Houston, Washington, and Chicago. That has created radically different compositions in the various parts of the United States, and very different issues in those parts of the United States.

About one-third of all the people in Los Angeles are foreign born; about 25 percent of the San Francisco Bay area. The national average is about 9 percent. And there are across this country areas where it's 2, 3, and 4 percent.

Now, this is going to be a very, very different kind of society than that of the other two types of societies. I mean, you include lots of different people.

Recently we had people saying, "Well, we don't like the cultural standards of Hollywood." As somebody who works in Hollywood, I can understand why people feel that way. But out here, it's a very different kind of community and different kinds of people, different kinds of

issues. And either the black-white paradigm or the paradigm of the basically old Anglo-Americans exist.

And we have very different cultures of out-groups, including gays and lesbians who are people in certain parts of this country who are pretty much anathema, but who are a major functioning part of the New York economy, of the Los Angeles economy, of the San Francisco economy, parts of our society, parts of our family. Even for those of us who are not parts of that group, the same thing is true with a very close connection among the various ethnic groups.

As American society begins to fragment in a way -- I'm not saying it's necessarily good. But I think it's very clear those ethnic and cultural groups are going to become more and more important to the people who are in them. And that is also going to be quite effective with the new communications technology.

Chinese kids growing up in Los Angeles, for instance, can now go to Taiwan -- that would have been impossible 20 or 30 years ago -- and also can watch Chinese language TV and read a Chinese newspaper every single day.

It's going to be a very different kind of society. The challenge for the Congress is to understand how to deal with this kind of cultural diversity. They have very different standards than people in Los Angeles or New York.

We have to figure out a way to allow for this diversity to express itself culturally, and understand that diversity. That also means that those of us who live in the cosmopolitan areas have to have more respect and more willingness to allow those people who come from the other areas of the country to be able to respond to the paradigms that are important to them.

Finally, this all ties into the economy because again diversity, as Alvin suggested, is going to be a thing that's going to drive the economy.

Traditionally, what we see from Washington is a focus on large institutions that have a strong presence in Washington, or organizations that might independently get involved in organizations.

The part of the economy that's growing the fastest in many ways is almost ignored. In the world of Washington, first of all, these are not necessarily Mom and Pop businesses. These are small but growing businesses.

These are people who work in the information economy, in the fashion economy, the international economy. And many of them are just simply

too busy to interface with Washington, D.C. Their lines of business are very sophisticated, in-depth, very hard to identify by SIC.

What we see, for instance, in California is that we grew from a militarily and industrially dominated economy in many ways, which was very Washington-focused. We now have a very variegated economy where most of the growth is coming from textiles, medical equipment, computer software, and of course entertainment.

And in those areas you find in many cases there aren't a lot of very large companies that dominate the industry, but lots of very small companies, and large complexes of sophisticated suppliers. In the entertainment industry -- 300,000 people make their living in the entertainment industry in Southern California. At least 100,000 of those people are freelancers. Yet they're an intrinsic part of that industry.

So one more thing that's very, very important to understand is that this new economy requires a different approach from the Federal Government and local governments than has been the case before. We find that in many ways, that Washington doesn't understand this economy. In many ways it feels hostile to it.

And that's true, I think particularly among some people who are connected to the old structures.

We also understand why issues such as the Defense Conversion Board are basically a big waste of money. We would have been far better off thinking up ways to have people think up redeployment of themselves, which is what's now happening, rather than wasting all this money cocktailing Washington-based solutions.

This new economy which has been developing is very, very important for us to understand. And we did an in-depth study and found 53 percent of all the private sector employees in the Los Angeles area work for companies that are less than 15 years old. And these companies are also in many cases -- at least some cases maybe even the majority -- are owned by Latinos and Asians, predominantly immigrant.

This is a whole new kind of economy. Across the country, you have a new economy that has different types of structure.

But nevertheless, I don't think anyone in Washington has really been thinking about, how do you fit into this new kind of economy? Does Washington have a role?

I think it does. But I think the first thing that Washington needs, and people on the Committee need to do, that I think would be most helpful,

is to go out and listen, as you will later today, to the people who are making this new economy, and find out what it is that bothers them.

You may get some interesting answers, and there may be some answers that might be of some use.

Thank you very much.

[The prepared statement of Mr. Kotkin appears in the Submissions for the Record.]

Senator Mack. Thank you, Mr. Kotkin. We appreciate your testimony.

We have heard from Mr. Toffler here in Washington and Mr. Kotkin in Los Angeles. We now have the opportunity to listen to Paul Johnson, a historian and renowned author, who has written *A History of the Jews*, and *Modern Times* -- just two of the books he's written over the last 28 years. He's currently writing a history of the United States. He resides in London, England.

Mr. Johnson, we're delighted to have you with us this morning, and we look forward to your testimony.

STATEMENT OF PAUL JOHNSON, HISTORIAN AND AUTHOR

Mr. Johnson. Thank you, sir.

My concerns about the United States in the future are two-fold, and I'll state these two worries briefly.

The first is indebtedness. The United States national debt is now \$4.7 trillion. And the continuing deficit is still so large that the debt is increasing by \$38,000 every four seconds. So it's increased by well over \$100,000 since I've started speaking.

This I would say is "un-American." Since Alexander Hamilton took over the United States Treasury in 1789, American public finance has been unusually prudent. As private individuals, Americans borrowed money on a huge scale to bail out the country. But they did this against a background of government frugality.

Of course the debt expanded enormously during the Civil War, during the First World War, during the Depression, and during the Second World War. But these were all emergencies. The debt was quickly reduced afterwards.

Thus, between the end of World War II in 1946, and 1975, the national debt was reduced by more than half, and it could have been eliminated completely.

It is what happened since 1975 that is worrying. Without an emergency, without a world war, without even a really serious recession, the debt began to rise again, until it has reached an historic high in American history.

There is no justifying excuse for this. It is profligacy, and it is improvidence. This I see is the main topic which ought to be tackled by Americans in the early years of the 21st Century.

Secondly, while welcoming the American administration's continuing efforts to promote world free trade, I would like to draw attention to the danger of the world evolving into three mutually antagonistic trading blocks -- the European Union, the North American Free Trade Area, and the East Asian Free Trade Area.

So long as these groups are outward-looking, well and good. They may eventually negotiate with each other to lower external barriers and merge the world into one single free-trading area. That is the future I look for-ward to, to the benefit of all.

But an alternative scenario is possible. That is that each big grouping becomes inward-looking, and insists on a high external tariff. That is what many people in the European Union want. They want to turn the European Union into Fortress Europe.

My fear is that it will lead many on your side of the Atlantic to seek to build Fortress North America. And that in turn will provoke the countries on the western rim of the Pacific into building Fortress Asia.

This is precisely the division of the world into three fiercely antagonistic blocs which George Orwell foresaw in his frightening novel of the future, *1984*. High tariffs tend to promote trade wars, and trade wars provoke real wars.

What I would like to see the United States do is to explore the possibility of transforming the North American Free Trade Area into a North Atlantic Free Trade Area, bringing in such European powers which have frontage on the Atlantic as Britain, Ireland, Spain, Portugal, and Norway.

Overlapping the European union would prevent antagonism between North America and Europe, and would continue to push the one world trading area possibility.

I believe many people in Britain who fear being absorbed into a Fortress Europe wish to retain strong links with the United States and Canada, and would also welcome this idea. Thank you.

Senator Mack. Thank you very much, Mr. Johnson, for your comments.

I will pose a question or two, and then I'm going to turn to my colleagues to raise questions as well.

I was particularly struck by Alvin Toffler's comments with respect to mass everything -- mass production, mass communication, mass education -- as a reflection of a Second Wave society. A particular economic interest of mine is the Federal Reserve. It appears that through the Fed, in essence, we have a mass money policy for the country.

Mr. Kotkin talked about the regional aspects of our country, as well as the types of production that take place.

How could we change from mass money to a money system that could more truly reflect the needs of various regions of the country?

Mr. Toffler. I'm by no means an expert on finance. But it seems to me one of the things we need to prepare for is a multiplication of types of money.

In fact, we're going to see different kinds of currencies develop in the United States and elsewhere. Some of them indeed may be specific to a particular industry, some forms of scrip.

If we look closely at the changes that are being heralded or that are being developed, with the digitalization process, we're going to see a whole variety of new kinds of currencies, some for specialized purposes, some for specialized groups.

This is not a fantasy. With the commercialization of the Internet, many companies are working on it very, very intensely right now.

So I think our entire concept of money and the role it plays in the economy is going to have to be completely rethought.

I do believe that central banks in general, such as the Federal Reserve -- are much less capable of influencing the foreign exchange markets of the world as we have globalized and liberalized capital. And I think those kinds of interventions will play a less and less important role.

Senator Mack. I have a question for Paul Johnson.

Several years ago you wrote a piece that appeared in *The Washington Times* indicating that while capitalism has won there are shortcomings in the capitalist system, represented by those who haven't made it. You said

there is a need for us to either make changes in the capitalist system, or assign government a role in assisting those who have failed under capitalism.

I wonder if you have any further thoughts on that.

Mr. Johnson. I didn't hear that question perfectly, but I think I got the gist of it.

My answer is this: One of the best characteristics of capitalism is that it is self-reforming. It tends to respond to new pressures and new demands of the market without anyone having to do it, because there are millions of people within the capitalist system who are listening and watching, and anxious to make money, and therefore anxious to respond to public demand or public pressure.

So I think in general the capitalist system can be left to itself to deliver the goods in new and different ways. What is required, really, from government is to create a humane framework of legislation in which there can be an input on people's desires as to what sort of society they want, how that society should be ordered, what should be the pains and penalties of that society, and what should be the corrective forces for its weaknesses.

Once having constructed that legislative framework and amending it from time to time as occasion requires, they should let the capitalist system get on with it and deliver the goods according to the framework in which it exists.

Now, the whole art of capitalism, as I see it, in modern times is how to get that balance right, how to get the framework effective enough and humanitarian enough without destroying the essential energetic base of capitalism. That is something which congressmen have to determine, and which administrations have to determine.

And therein lies the whole art of government.

Senator Mack. I'll ask just one more question at this point, and then I'll turn to Senator Bingaman. I will direct my inquiry to Mr. Kotkin, but whoever else wants to respond to it, please feel free.

Returning to your thoughts on regionalization, number one, the Federal Reserve operates the money supply based on our entire country. And, number two, as Mr. Toffler suggested, we are measuring our economy based on the structure of an industrial society, even though less than 20 percent of our GDP now comes from manufacturing. Yet, we focus over and over again on issues like capacity plant utilization.

Yet our entire economic structure has changed. So what should we measure? How should we measure it? And then once we've measured it, how do we put it into effect?

I know that's a very broad question. Joel, why don't you go ahead and start? Then we'll see if anyone else wants to jump in.

Mr. Kotkin. I think from the experience we had in California -- and I was involved in a lot of these debates -- we recognize several things. One is government, whether it's state or Federal, is very, very poor at measuring what one might call a new economy.

First of all, what's going on in the economy? We look at a certain subset of companies. That may not represent where the jobs are being created. So we found, for instance, estimates of job losses from the recession in California that were as high as \$800,000 to \$1 million. They ended up being closer to \$500,000.

That's nothing to go dancing in the streets about. But, yes, that's missing a lot.

So I think what we have to start doing is looking at trying to find out ways of measuring self-employment more directly, following smaller companies more directly so that we have a better idea of what's actually bubbling up.

And then, you were mentioning that we measure industrial companies. One of the big problems is that it's very hard to know where manufacturing starts and where service begins, because these things are now so interlocked with each other that it's becoming very, very difficult to understand exactly what's going on.

So one of the things I think we need to do is to start to understand where the jobs are being created on the local level. And that may tell us much more about what's going on.

Unfortunately, in L.A. County -- and the AT&T did commission a very excellent study on the structure of the economy -- we found out a lot of things that nobody expected, the percentage of minority ownership, who was working in what industry.

We found out, for instance -- we said, "Well, we're losing all these good-paying jobs because of defense." Defense has a very big presence, and we knew -- but we found that most of the sectors that were -- actually paid better.

So I think we need to look at the kind of very different -- and study what we call services and really go into the various components of services, because there are producer services. There are services, if you

want to call them containment of service. Some would come up with this service.

Nevertheless, these industries have really not been studied. They have not been looked at -- the supplier networks, the way the software industry works. So one of the things I would really encourage the Committee to do is to start looking at why we often are so off in our estimates of the new components of the economy, trying to understand how they work, because they're very difficult to measure.

Maybe with the technologies in the study -- we found at least in the AT&T project that was done here in Southern California, we found very interesting things. Mayor Riordan was beginning to look at different approaches to economic development, and I think that's what we really need to do, because we've been looking at big units for so long and established industries for so long, that, at a time when we're going towards smaller units and more diverse industries, we have to start asking different kinds of questions.

And I think we're going to need to do a lot more grassroots, county by county, city by city studies that extrapolate up instead of extrapolating down, taking a look at a big national statistic, and saying, "This is what is happening in the economy."

It just doesn't matter what's happening.

Senator Mack. Mr. Toffler?

Mr. Toffler. Yes. I'd like to just throw out a few names here. It seems to me that before you start measuring, the question you raised is apropos. What are you going to measure? We need to frame the questions better before we can design the tools.

Right now I believe that in economics it's fair to say we've seen a process of greater and greater precision in the measurement of variables that are less and less important.

I would like to suggest to this Committee and other institutions concerned with the development of a Third Wave economy that we begin to look at the work of people who are working outside the framework of Second Wave economics, like Joel, for example.

But also, I'd like to just throw some names out for a minute. Peter Drucker obviously comes to mind. Kevin Kelly has written a book called *Out of Control* about the nature of complexity within the economy. Paul Rohmer of Stanford is trying to work on the question, "How do you measure ideas?"

A man named Orio GiArini works on the service economy and risk. Paul Strassman, one of the leading information experts in the country, has written several books about the measurement of knowledge and information, and, quote, "productivity" in these industries.

Kenichi Ohmae is a brilliant Japanese economist and writer. He used to head the McKinsey office in Tokyo. Jacques Attali -- you may disagree with him politically -- is an extremely imaginative man working outside the conventional economics.

Hazel Henderson, Eugene Loeb, James Brian Quinn, Edgar Cahn, Ikujiro Nohaka and Hiro taka Takeuehi -- they have a new book on the processes by which companies and economies generate new ideas. What's the rating process? What are the results in economic return? How do we value that?

So I think then, rather than the usual suspects being rounded up, we need to begin to look at the outliers, the people who have been criticizing Second Wave economics from the outside. Not all their ideas are necessarily going to be valuable. But they may give us a fresh way to frame the questions better before we start measuring.

So I'm for opening up, and as I said, bringing into mainstream discussion those who are beginning to work outside the imprisoning framework of Second Wave economics.

Senator Mack. Senator Bingaman.

OPENING STATEMENT OF SENATOR JEFF BINGAMAN

Senator Bingaman. Thank you very much, Mr. Chairman. You've got a very interesting group of panelists here. Let me just make a brief statement and point to a few charts -- and I apologize for not having smaller copies that you could see more easily -- just to indicate the points that they make, and then ask your comment on them, Mr. Toffler.

You talk about the profound technological change that we are experiencing and have experienced in recent decades, and all of the changes that that's bringing about in our society and our culture.

I agree with you. Much of that profound technological change, it appears to me, has been the result of very substantial Federal support for research and development since the Second World War, primarily.

This chart I think makes the point. It starts in the period 1961, and goes through the period 2001, and shows the level of Federal support for civil-ian research and development, not defense. We excluded defense.

This graph shows the level of support as a percentage of gross domestic product. You can see that at one point we were at 1 percent. That was at the height of the space program, back in the 60s. We are today right at .45 percent, in that range.

And under the budgets that we've adopted, both in the House and Senate, we are headed to be about .27 percent as we end the decade.

Let me show you two other charts very quickly. One of them shows a comparison of U.S. investment in research and development, both public and private. The private is this orange area, and the public is the yellow. Japanese investment, private and public, and German investment, are shown the same way. That's in 1992.

I think the case can be made that the percentage of our gross domestic product going to research and development will be dropping substantially over the next few years, the way we're presently planning.

Then the final chart is taken essentially from an article that appeared in *The Wall Street Journal* on May 22, 1995 in which it was pointed out that several of our major companies have plans to cut back very dramatically in research and development. IBM, General Electric, AT&T, Xerox, Texaco, Kodak -- they're all planning substantial cuts in research and development.

I guess what I would like you to comment on, I agree with your point about the need -- is how we need to demassify and how we need to customize solutions. But it strikes me that a driving force in the progress that has been made, and the development of this Third Wave which you're talking about has been significant Federal support for research and development which we seem in this Congress to be backing off of very dramatically in our budget projections.

I would assume that you believe the need for continued substantial levels of Federal support for research and development is there. We've not invented everything we need to invent. Is that a reasonable statement?

[The charts submitted by Senator Bingaman appear in the Submissions for the Record.]

Mr. Toffler. R&D is clearly one of the driving forces, and is extremely important. One of the questions, though that one needs to ask is, what is the relationship between input and output?

That is, is a really powerful new breakthrough idea something that is a consequence of a certain amount of fixed investment? I don't think

that's the case. I think that the process is nonlinear. It's not one to one. And I don't know what the appropriate level of R&D expenditure is.

In a general sense we want more focus in our research. And I think that descaling the economy -- the economy is getting smaller -- makes it more flexible, more quickly adaptable to market changes and so forth. But one of the negatives of that is that small companies don't have a lot of money to do R&D with, and especially basic research.

So maybe what needs to be done is to facilitate cooperation, to encourage cooperative research consortia for small firms. The old industrial style laboratory model, Bell Labs, for example, which was fantastic, and some of the Federal labs -- may be the wrong model nowadays.

I certainly am not in favor of sort of a blind blunderbuss support of the R&D budget. But we have to think about it differently, and we have to see it in relationship to certain other processes in the society.

In fact, we might talk about the knowledge strategy for the country. R&D is part of a larger set of questions that will affect the overall economy and the security of this country and of other countries. And that is, what's the relationship between R&D and all the other information or knowledge inputs to the economy?

R&D is one factor. Education is clearly another. Brain drains -- what do the folks coming to this country bring with them in the way of scientific and technological resources?

So I would like to see us begin, at least in a very, very tentative way to think about the inter-relationships of all of these, factors to R&D, and then to begin talking about the concept of "knowledge strategy." Not to do that is, as I said before, is like Saudi Arabia not knowing what to do with oil.

Senator Bingaman. Let me pick up on your point about R&D being one part of this knowledge strategy, and education being another part of it.

A concern I've had is that, as high technology becomes more and more prevalent in our society, and the access to it becomes more clearly an advantage, the danger exists that we will, instead of coming together as a society, divide and fragment.

And in our schools, those students whose parents have bought them Macs or PCs to use at home to hook up to the Internet will have great advantage over those students who have not had that. We may be moving into very unequal educational opportunities for students.

And in order to compensate for that, the government needs to -- at either Federal, state, or local levels ensure that technological literacy is taught in the schools, and that students in the schools, regardless of what they have at home, have access to new technologies and have an ability to be familiar with that technology by the time they graduate. Would you agree with that?

Mr. Toffler. I would agree with that. But it may not be only in the schools. The schools themselves are probably America's most backward, most recalcitrant Second Wave systems. The schools are designed like factories, with kids going into them, being measured going in, being subjected to routine processing while they're there, doing repetitive work, and then being measured when they come out.

So our entire education system is a Second Wave model that worked very, very well for an industrial smokestack society. But now we have to reconceptualize education as well from the ground up.

One of the most important forms of learning that took place in the United States in the last 20 years, one of the most profound and economically significant forms of education that took place in this country, between, say, 1975 and 1995, was the fact that 20, 30, or 40 million Americans learned to use PCs. That's amazing. It's really amazing.

The question is, how did they learn? Very few went to school. Mostly, the first ones learned from kids at Radio Shack stores who said, "Push this button." And then they learned from gurus, computer gurus. The guru is somebody who bought a machine a week before they did.

And what you had was a kind of people-to-people learning process within the society that diffused information and is continuing even now. We should be thinking about how to make the diffusion of this kind work in our communities, not just think in the framework of schools.

I am deeply concerned about the problem of the information-rich and the information-poor. My wife and I have been calling attention to that for at least 25 to 30 years, the danger of that kind of split within society.

But we should also be aware of the factors that work in our favor. And that is this: I believe it is in the interests of major commercial organizations, corporations and others, to diffuse the technology as widely as possible.

When the telephone was introduced, it was regarded as a super-luxury that only the super-rich could have. In Britain, if you had a telephone, you didn't answer it. You sent the butler to answer it, because it was

beneath your dignity to answer the telephone. Nobody could imagine universal access. It was impossible to imagine at that time.

But, in fact, it's in the commercial interest of companies to spread computer technology widely. They would like to send bills to everybody. They'd like to bombard everybody with their messages and so forth. There's a big built-in process which will help universalize at least some of the technology.

It will not eliminate all inequalities and the kind of changes that we're talking about. Going from a Second Wave industrial mass economy to a Third Wave demassified economy will inevitably be accompanied by massive dislocations, just as the Industrial Revolution was. And we need to think about precisely the kind of question you raised. But we need to think about it in fresh ways.

Senator Mack. Mr. Kotkin, do you want to comment here as well?

Mr. Kotkin. There are so many points here. I just wanted to deal with, first of all, on the chart the Senator gave, there are many countries that have had even larger percentages of investment than Germany, for instance, in industrial R&D.

Yet what's interesting is to try to follow closely what Alvin was just talking about, how the United States ended up becoming the cutting edge country despite relatively low public investment in R&D.

In for instance, the computer revolution, in biotechnology, there are many things that are different about how innovation takes place today than it did 20 or 30 years ago. I suggest the Federal role is important. But I think one thing that would be very useful to study would be to study, if you will, the culture of innovation that takes place, like in the Silicon Valley case.

The technology that takes place along collaborative networks -- those include other people. You keep getting names thrown at you. But I think Charles Sable, Mike Priori and David Friedman, all who have come out of MIT, have studied these clusters of industries which no one had heard of before, and yet are very, very innovative.

And the entertainment industry, which I'm very familiar with, worked on this kind of model. I think we have to begin to look at, not "Is R&D and is innovation important?" It's more important than ever. But, how do we get there? I think the way to do that may be to study that.

Many governments like France use enormous amounts of money to push innovation through government process, and it did not work. France

is not the technological leader of the world in many areas. It's usually either the United States or Japan in most cases.

So we really just have to think about it in a very, very different way. We have to look at these cooperative models. We have to look particularly at the schools and education.

What I found happening, at least in the cities that I go to, is more and more parents beginning to get together and volunteer groups get together to push this process. I was at a meeting with black data processing executives, and they had already started a series of little computer schools in mostly black churches to teach kids after school.

I think that the whole idea, as we move away from a 9 a.m. to 5 p.m. work place, we may also be moving away from a 9 a.m. to 5 p.m. school place. And I know, I've got a five-month-old daughter. I think about her education in a very different way than my parents thought about my education.

So I think that we need to look very much at the issues that are important that the Senator laid out, and think about them differently, because the solutions are going to be different. And we really need to look at how innovation now takes place on a very private stage through interaction between individuals with common interests.

Senator Mack. Thank you very much. Senator Grams?

OPENING STATEMENT OF SENATOR ROD GRAMS

Senator Grams. Thank you very much, Mr. Chairman. I want to thank our panel members for joining us today at a hearing on technology, using such technology as we have done. I want to welcome you all here first.

I just wanted to mention briefly, and I want to address my first question to Mr. Toffler, that basically this Third Wave economy is going ahead with or without the government. It is moving in that direction.

So what I think we would like to really get a handle on is, what is the government's role as we move into the next century? Should the government's role be one of trying to drive this technology, or one which would dictate this technology? Or should the government really be out there trying to provide an environment for the private sector to do what it can do best?

[The prepared statement of Senator Grams appears in the Submissions for the Record.]

Mr. Toffler. I don't believe that there is a 100 percent answer to that question, because nothing is 100 percent. But in general, this thing is happening. The Industrial Revolution didn't primarily happen because the British government said it should happen. It happened because some very strange people, located frequently in provincial towns, made it happen.

There's a wonderful, brief story. Between 1640 and 1805, approximately, a group of men met one night a month, the night of the full moon, in Birmingham. And their neighbors called them lunar-tics because of the moon.

The Royal Society in London said these were rubes and hicks; what did they know about anything? For 40 years, they met. They never took minutes. They never wrote a resolution. They never did anything formal. But who were they? They were Priestly, Dalton, Erasmus Darwin, and, when he was in Britain, Benjamin Franklin. These were the authors of the Industrial Revolution, if you can say that.

So the government didn't have a lot to do with it. This is bigger than governments. The Third Wave is bigger than governments.

That doesn't mean that the government has nothing to do. There are certain rules that need to be imposed, and there are certain limits beyond which we do not go. We do not believe in slavery. We do not permit slavery. That's a moral injunction that the government essentially supports. We have a set of values as Americans. We have a belief in human rights. Those things, we have to support.

There are other things that we can do, as Joel was saying a moment ago, to encourage the climate, encourage entrepreneurialism. But the old centralist model that you used to hear a lot about -- that the United States ought to create the equivalent of the Japanese Ministry of International Trade and Industry, MITI -- that model is no longer the appropriate model. It's not even appropriate in Japan.

Senator Grams. Mr. Kotkin, I'd like to follow up on that by asking you a question.

You had said somewhere in your testimony that this new Third Wave diverse economy is really basically hostile to Washington. Washington -- I think what you meant is, one size fits all type of policy.

I believe in many respects Washington hinders productivity. But what did you mean by the Third Wave, diversity, and moving of the economy that is more regional than national? It is hostile to Washington?

Mr. Kotkin. It's hostile in part because I think it resents the idea that there is a single solution to any problem, whether it's on an industry basis

or a regional basis. The problems in the different parts of the country are very, very different. What might work in Iowa doesn't work in Washington State but yet there is somebody sitting in the nation's Capitol determining what's happening there.

I don't mean to do this in a partisan way but you have, for instance, President Clinton's State of the Union Address indicating that Silicon Valley supports him." Well, Johnson was not part of the Silicon Valley world. And he was an outsider brought in. Yet Washington doesn't understand the complexities of this.

When you have in February in Silicon Valley, Austin, Texas, or North Carolina, or South Florida, or wherever where there is a growing industry of collaborative networks beginning to develop, the people involved are too busy to get involved with Washington.

So they almost immediately feel that any attempt by government to regulate them or even to help them is viewed with some hostility because they don't have the time to interface. But they know, like the big aerospace companies, the large unions, the major financial institutions have their lobbies and are going to be there.

These are people who just want to get it done. They are really like the people that Alvin was talking about in Birmingham. They're doers. They're people who want to do things. And they see Washington as sort of playing a game, or not understanding them.

So I think that that's what the hostility is all about. And I think that there was really a strong need on the part of Washington to understand the psychology. And I think with this new technology you have that opportunity.

You're going to listen to somebody like Brenda French later on. And she will be able to tell you how an actual business in this world actually works.

And I think there's a big problem when you have people, whether they're classic market economists on one side, or more interventionist-minded economists on the other side, both of whom are equally divorced from the reality of the new economy. And therefore they feel hostility towards the whole system. They may be friendly to free market economics only because they'll be more likely to leave them alone.

Senator Grams. So you're saying that all good information doesn't come out of Washington.

Mr. Kotkin. Yes. I think most of the good information -- occasionally there are good articles in *The Washington Post* -- but you

know, basically I think the fusion of information technology, and knowledge, which is more important, around the country, is very, very profound, and something that really we haven't begun to deal with, and that the idea that Washington is the measure of all things, that that's where somebody who is even interested in government wants to go.

We now find very, very bright, committed, intelligent policymakers in Salt Lake City, even occasionally in Sacramento. And so I think that we need to think very, very differently about information, knowing that there are now many people who don't regard getting to the apex of the government, which is Washington, or the apex of a large corporation, as what they want to do with their life. And yet, they can still be very innovative and creative people.

Senator Grams. Thank you very much.

I have just one brief question for Mr. Johnson in London, I couldn't pass up the opportunity to ask. Briefly, you mentioned your concern, your number one concern for the United States is our indebtedness. I can tell you that's a major concern of this government today because of our efforts to try to balance our budget by the year 2002.

But, Mr. Johnson, is your concern for the U.S. similar to your concerns for the rest of the world, Europe, Asia, and other countries? Or do you feel that we have been more lax in getting our house in order, and better pay more attention to it?

Mr. Johnson. I think the United States, because of its size and its history and its principles, ought to set a good example to the rest of the world. That may seem rather arbitrary, but I think it's true.

People do look to the United States for an example. If the United States would get its budget into balance and set about reducing its huge national debt, I think this would help those finance ministers throughout the world who are struggling with spendthrift congresses and parliaments and so forth, and say, "Look, the United States is doing it. It's the richest country in the world. We must follow suit."

So I think it's a question of morality. It's a question of good examples.

That leads me to another point which is relevant to the question of R&D. I don't have a great deal of sympathy with comparative R&D figures, because I can remember for years and years, we were told in Britain that our R&D spending was so low, and look at the Soviet Union. It had R&D spending that was enormously high, and that was why it was going to overtake the rest of the world, et cetera.

So I don't believe totally in those figures. What I do believe is in freedom in which men and women can exercise their capabilities.

During the 17th and 18th Centuries, Britain benefitted from a huge input of scientists, writers, and experts, and craftsmen of all kinds from the Continent of Europe, because we were a free society and their societies weren't. They brought with them their brains and their expertise and their ideas and their imaginations.

I think the United States, from its developing sections in the 17th Century, has benefitted from the same process. We saw this work in the 1930s. Germany was an unfree society. Britain and the United States were free societies. And we took perhaps the best 10 percent of their scientists and inventors and experts in other fields, because they were immigrants. They wanted to go to a free society.

It is of the essence that someone with an outstanding intellect and a creative intelligence would want to work in a free society.

So I think, insofar as the American government is concerned with R&D, it ought to have as its first priority ensuring that America remains free, and particularly free on the university campus, because that is what matters in terms of getting scientists and experts in all fields, and that they should take a hostile view to the many threats to their freedom, such as political correctness.

That is much talked about in Europe today. And I think it does deter Europeans from wanting to go to American campuses, because they fear they won't be free enough.

So I think the first concern of the American administration, the American Congress, ought to be to maintain America's traditions of academic and other freedoms at the very highest pitch. Then I think you will get the people you need, and you will get the R&D you need.

Senator Grams. Thank you very much, Mr. Johnson, thank you.

Senator Mack. Senator Bennett.

OPENING STATEMENT OF SENATOR ROBERT BENNETT

Senator Bennett. Thank you, Mr. Chairman.

I am boggled at the intellectual candle power that we have in front of us, and I would like to spend the whole day in dialogue. And that would drive everybody off the television and shut down the Committee and all the rest. But let me make a few quick comments.

Mr. Toffler, you talked about different kinds of cash. I have one in my hand. Interestingly, it says, "The value of this card" -- for those out in

television land that don't recognize it, this is a fare card for the Washington Metro. You cannot get on the Metro with cash. You have to buy a new kind of currency, which is electronic.

I paid \$20 for this card. It says that it's value is \$22. In other words, I got a 10 percent return on my money instantly.

Put that into an annual compounding, and tell you what the value of this card is in terms of my investments in municipal bonds or anything else. If I could get a 10 percent return in less than a second, this is a pretty good deal.

Now, the flip side of it, of course, is that I have to spend it on the Metro. I cannot use it with that 10 percent return to buy a house or a new pair of socks or anything else. But no bank issued this money. This is very real money.

And also, if I lose the card, I can't call somebody up and say, "I lost your check. Will you issue a new one, please?" So there's a degree of risk connected with it.

I think that summarizes what it is you're talking about, in a way. There is a very focused use. It is new cash of a new kind, and it has a different set of risks connected with it, one of which, if you get into the whole world of electronic cash, has to do with forgery and money laundering, and all of -- I come from a state Mr. Kotkin keeps referring to, and I'm grateful to him for the plug.

We are trying to rival Silicon Valley as the center of software activities, indeed in terms of number of companies -- not number of them, amount of business. But a number of companies -- there are more software companies in Utah than there are in Silicon Valley -- and of course, the two primary ones that everybody's heard about are WordPerfect and Novell, who have now merged. But around those two giant planets, a whole host of satellites have sprung up.

This whole issue of electronic currency is one of intense interest in my part of the country. Could you say for example -- and this is piggybacking on what the Chairman said -- do you have any ideas as to what the role of the central bank, for example, is going to be in a world in my wallet, instead of my carrying a bunch of pictures of dead presidents, I carry a bunch of brown magnetic strips?

Mr. Toffler. On one side, one can imagine a kind of total surveillance system in which all electronic transactions are tracked and registered. Therefore, Uncle Sam becomes Big Brother.

But on the other side, I think it's going to be extremely difficult to do that. I think every time the government tries to manage that money system, there are going to be new outbreaks, new forms, new growths, to use a more biological analogy; and that in fact the concept of money itself is going to be quite different for our kids than it is for us.

I have just thought of an amusing side-comment. I made the speech in Moscow a few years ago to a meeting of economists and social scientists. And to illustrate the point, I held up a dollar and I said, "See, this is not real money." And I took out a credit card, and I said, "Yes, this is real money. And they said, "Yes. There's a third kind, the ruble -- no money."

(Laughter.)

Mr. Toffler. It was unfortunate and poignant, but I think again that the central institutions that we have created to manage the economy, the definitions that they work on, the definition of money itself, are all up for grabs. And unless we get serious about the intellectual task of designing a whole new economics, we're just not going to know what's happening to us.

So I simply repeat my message. Any economic textbooks or any economist that ignores these phenomena is dealing with yesterday's system, not the emerging 21st Century economy.

Senator Bennett. Let me ask one quick question of Mr. Johnson.

Senator Mack. I think Mr. Johnson's connection may have been broken. We're at a point technically where I want to thank Mr. Kotkin for his participation. We're going to have to make some adjustment here for the next panel.

If I could ask Senator Bennett to direct his question to Mr. Toffler.

Senator Bennett. I'd like to, but I'm such a fan of Mr. Johnson's writings I'd like to hear what he has to say.

Mr. Toffler, you've talked about the transition from the Agricultural Age to the Industrial Age. There's no question there was tremendous wealth created that wasn't there before, tremendous benefit.

If you look at it in the aggregate, it was an enormously beneficial thing, and no one can quarrel with it. However, in the process, there were a number of casualties, as we moved from a predominantly Agricultural Age to a predominantly industrial.

I use the phrase "predominantly" because we still have agriculture. And as far as the eye can see in the future we will still have manufacturing and an industrial base. We are just changing what it is

that's predominant in our society as we move from the Industrial Age to the Information Age.

The social and, if I may, religious commentators that came along as we made that transition recorded for us the human tragedies that were paid, the human price that was paid by those who fell out of the transition. It is no accident, in my view, that Charles Dickens and Karl Marx and the religious tradition to which I adhere, Joseph Smith, founder of the Mormon Church, were contemporaries.

Each had a different view of human nature, Smith's being by far the most optimistic, and Marx's by far the most pessimistic, with Dickens and the tales of *Oliver Twist* more the reporter than the prescriber as to what should be done.

But there is no question that throughout that period there was a great deal of human misery, as people, who could previously find jobs on the farm where there was no such thing as unemployment because there's always something to do on a farm, found themselves unemployed and in poverty because they didn't have the skills.

And as we now see the point where society has begun to cope with that, we suddenly go into a new transition, and the percentage of people falling out is probably greater than it was.

To me, this is going to be the great tension that is going to occur politically, as more and more people demand that the government take care of those who fall out the bottom.

If I may borrow a phrase from Dickens -- and here, your response -- it is the best of times, and it is the worst of times. The economy is stronger than it has ever been. Our exports are the envy of the world. We are the strongest, wealthiest country in the world. We have the best technology. We have the closest thing to a classless society.

A Harvard dropout can wander around as a computer nerd for a while, and then within a dozen years become the country's richest man. Nothing illustrates to me more the classlessness of our society than that kind of ability.

We're in pretty good health. Our educational systems, at least at the graduate level, are the envy of the world. And we are the world's super-power militarily.

It is the best of times.

Our inner cities are destroyed with violence, racism, despair. We have a very high infant death ratio that comes from the fact that many babies

are born into that kind of circumstance. Our divorce rate is incredible. Our illegitimacy rate is a scandal, and is increasing.

We have health epidemics among the population that depends on drugs for their diversion, through AIDS, and it is spreading now, out of that population, from high risk behavior into the rest of the population.

We have gangs destroying the youth of many of our children. And -- I agree with you absolutely -- we have an educational system that's built on a factory model at the primary and secondary level that seems totally incapable of teaching.

It is the worst of times.

Will you be Joseph Smith or Karl Marx, optimistic or pessimistic? Or are you just Charles Dickens, recording what you see? Do you have any hope for us as policymakers as to what we ought to do to capitalize on the best of times, and avoid the demand that all government becomes, is a safety net, if you will, for the people in the worst of times, and having no other role?

Mr. Toffler. What an eloquent question!

Senator Bennett. It's too long.

Mr. Toffler. Eloquently put.

Again, at the risk of beating a dead horse -- but the horse is not, unfortunately, quite dead. Second Wave economics mislead us about how to deal with these problems. I do not have a magic solution. There is going to be enormous tension and social dislocation. But we cannot cope with it the way we used to cope.

In a Second Wave economy, most work is interchangeable. I worked for five years in American factories in the Midwest. I worked on the auto assembly line. I worked as a millwright in a steel foundry for two years. I turned out many different kinds of products with my hands.

And if I dropped dead on the job, I could be replaced on the line in about two minutes flat, because there was no skill content to that job, nor was it particularly based on teamwork.

Today, that's different. In a Third Wave economy, labor becomes less and less interchangeable. What are the consequences of that? We have large numbers of people who do not have the appropriate skills for the marketplace, and who are therefore left behind by these changes.

In the Second Wave economy, we learned from the monetarists and from Keynes that you can manipulate the macro economy. You can stimulate it. And if we had a million people unemployed, you could, by

playing those games, stimulate the economy, create a million jobs, and then these people would take those jobs.

In a Third Wave economy, however, if you have a million people unemployed, you can play all the games you want with the macro economy. You can stimulate the economy. You can use Keynesian measures, or monetarist measures, tax measures, and so forth and so on. And let's say you succeed and actually create 10 million jobs.

These million people can't *do* most of those 10 million jobs. Therefore, unemployment has gone from quantitative to qualitative. It is a matter of matching skills, and not just technical skills but even cultural skills, to the appropriate requirements.

Now, what are the solutions that have been discussed? The Clinton Administration, to its credit, talks about the need for training and re-training. And I'm in favor of that. However, the problem is, how do you do that? How do you in fact provide at least access to up-skilling for a large number of Americans?

In addition, you've got to take another feature of this new economy into account. That is, innovation and acceleration. By the time you've got somebody trained, the skill sets required may also have changed. So you're shooting at a moving target. That is why, I believe, the problem of unemployment is going to be extremely difficult.

And it isn't just poor people and ghetto people who are going to suffer. Large numbers of middle class people who have skills, but in the wrong place at the wrong time, are also going to undergo periods of unemployment.

And this means that there will be a fundamental change in the *politics* of unemployment, because unemployment is not just going to be something that happens to "them." It's also going to be something that happens to "us." Therefore, the entire politics will change.

As to how to think about the retraining process, it is very difficult. But I believe that as between two models that are being discussed, there is one that is superior. One model argues essentially for turning the problem of training over to the states. And in general, I favored turning more and more Federal functions over to the states or to the regions.

However, there is a better model, and we did it before. It's called the GI Bill of Rights. The GI Bill of Rights was, in my judgment, perhaps the best piece of social legislation passed by this country in the last half-century.

What that did was essentially voucherize individuals. "What should I study?" and "What are appropriate subjects?" and "How do we match the skills to the requirements?" -- instead of those decisions being made centrally, those decisions should and can be made by individuals in pursuit of their own individual goals, with better awareness of their own skills, talents, energy levels, brain power, et cetera.

So I strongly favor, essentially, the voucherization of training as at least a very partial step toward dealing with these dislocations.

Senator Mack. With that, we're going to have to end the first panel.

I want to express my appreciation to both Joel Kotkin and Paul Johnson, who are off the screens now, and also to you, Alvin Toffler, for your participation this morning.

Mr. Toffler you have had a tremendous impact on the direction America is taking, and made us all aware of the fundamental shift that's taking place in our society and our economy. We look forward to working with you more in the future as well. Thank you very much.

At this point, we're going to move to our second panel whom I can see on the screen. I see Steve Forbes in New York, who is the President and Chief Executive Officer of Forbes, Incorporated. He is also the Editor-in-Chief of Forbes magazine. He serves on the boards of numerous companies and foundations.

Also, welcome Congressman Bob Walker, who was elected to the House of Representatives in 1977. He currently is the Chairman of the House Committee on Science, and serves as Vice Chairman of the House Budget Committee. He is the author and co-author of several books and articles, including *The Family and the Flat Tax*, and *Space: Our Next Frontier*.

Congressman Walker is testifying this morning live via interactive video from his Congressional District in Ephrata, Pennsylvania.

We're delighted to have both of you. I believe we'll start with Steve Forbes.

Mr. Forbes, if you will make your presentation.

PANEL II
STATEMENT OF STEVE FORBES,
PRESIDENT AND CEO, FORBES, INC.

Mr. Forbes. Thank you very much, Mr. Chairman. Thank you, too, to your colleagues.

I think all of us sense that we are about to enter a new era. Whether we call it the Information Age, the High-Tech Age, or the Microchip Age, it will fundamentally alter the way we live and the way we work. It is symbolized by the microchip, which has extended the reach of the human brain the way machines extended the reach of human muscle in the last century.

Overall, it's been an extremely positive trend. It will increase our standard of living and improve the quality of life in this country. We are going to begin to see the fruits of it, just as in the Machine Age people of average strength could do super-human things. If you learned, for example, to drive a tractor, you could do what a man of herculean power couldn't do in a month; the microchip is going to do likewise for human beings and their brains.

If you want to see the proofs of this, take, for example, the calculator. Calculators are now very cheap. Anyone can learn to use one. All of us can do in a manner of nanoseconds or seconds or minutes the kind of math computations that would take math wizards hours or even days to do just a few short years ago.

Another example: When we were growing up, some of us did not learn our spelling lessons very well. Now computers even have a feature that tags words when they sound the same, so you won't make those spelling mistakes anymore.

Those are just two examples of what lies ahead. In a sense, we are at the Model-T stage of the Information Age. Those of you who know your history know that 80 years ago, we started the Model T by turning a crank. At times you broke your arm trying it. We're sort of in the same stage with the microchip. It's been doubling in power every 12 to 18 months. It won't be too many years before you'll get or be able to voice-activate a computer so that anyone can learn how to use it. And overall, that will be an enormously beneficial trend.

Other areas of technology will also do well. Obviously, in biotechnology and in other areas of high-tech, we do have the world lead; whether it's in software, digital technology, or fiber optics, the United States has a formidable lead. All of us know that in real life even though the microchip will enormously expand our standard of living, progress does not come without a price.

Hardly a day goes by, for example, when we don't read about companies, household-name companies that are engaged in layoffs or restructuring or down-sizing. This is not happening just because of global

competition. It's because companies are learning more and more that they can do with fewer people.

We see that the microchip can do the work of and replace human beings, just as machines did with traditional craftsmen in the early 19th Century Industrial Revolution.

So there will be adjustment. But all that underscores is the absolute importance of, economic growth. If we have a slow-growing economy, these changes will be felt more.

To see this, all you have to do is go back to the 1880s and 1890s. We think that back then we were optimistic people. Thoughtful people in the 1890s were very pessimistic about the future of this country. We closed our frontier. We had the rise of big cities, massive immigration, the rise of big corporations. People wondered whether America would ever be the same again.

We weren't. But as Teddy Roosevelt demonstrated in the Progressive Era, change can be an instrument of progress, not something to be feared. We must have that same attitude today.

How this will affect the economy in the 21st Century in specifics is absolutely impossible to foretell. I think the ability to foresee the future precisely is defined by the story of a noted Englishman who made this observation about the telephone 120 years ago.

The telephone was invented in 1876. The Englishman said that the telephone would work in the United States, but would fail in England. His rationale was that the U.S. was a continental nation, rather underpopulated. And therefore he said -- these were his words -- "The U.S. is suffering from a shortage of messenger boys."

By contrast, he said England was a very compact country with no shortage of messenger boys. Therefore, there was no need for this new contraption to transfer messages from one party to another.

But, there will be a transforming effect. Most notably, you'll see that education -- you think of education as a kid sitting in a classroom. More and more, education will be interactive with the computer. It won't simply be machines in a classroom. Mostly education will take place out of the classroom, in ways that won't appear to be education.

For example, when the automobile industry puts out a new model car, dealers get computers that interact each day, sharing in information about what kind of repair problems the new model might have. Mechanics get back information each day about how to cope with those problems.

That isn't people sitting in a classroom. That is simply interactivity. You'll see it, too, very dramatically in the medical area. We won't need physicians and nurses to do more and more diagnostic work. We'll be able to do it by ourselves.

But all of this underscores the need, Mr. Chairman, to remove the roadblocks to economic growth. Just as pessimists said the Machine Age would never create enough jobs, so, too, people are worried that we're not going to create enough jobs in the High-Tech Age.

It's imperative that we remove these roadblocks. Otherwise, we will have unnecessarily high unemployment. I know you and your party colleagues are addressing the whole question of the Tax Code. No human being could devise a tax code more antithetical to growth than the one we have today. No human being can understand it. We should scrap it and start over again.

And my favorite answer is Congressman Walker's flat tax plan. Others may have better solutions. But certainly we've got to start all over again. Another obstacle which is hurting the economy today and hurting our future is unnecessarily high interest rates. There's no reason for the level of interest rates we have today.

That is an example of obsolete economic thinking, the idea that prosperity causes inflation. Nothing could be more false. Prosperity does not cause price instability. Bad economic policy does. We've got to get over this notion that people in Washington and elsewhere can manipulate the economy or problems in the economy. All you do is get less prosperity and more instability.

A third area, and one which you can see growing rapidly before you, is regulation, over-regulation. Let me give you one example. Computer chips can now handle up to 100 million bits of information per second. By contrast, telephone wires can usually handle only about 9,000 bits of information per second. There is some new technology, which you pay a pretty price for, that will get you up to 40,000 or 50,000 bits, but that is still only a fraction of the computer's ability.

That's why, when you look at the telephones with a picture screen, it seems to have a jerky motion to it; there's a delay. That's because, in effect, what you have is a supersonic jet traveling along a cow path. You have 100 million bits per second in the computer, only 9,000 in the telephone wire.

The technology exists to overcome that modal bottleneck, Mr. Chairman. All you have to do is join fiber optic cable with coaxial cable, and you'll break that modal bottleneck overnight. But regulation in this

country prevents that. The people in Washington somehow think that connecting directly with coaxial cable is bad.

This is just one example of where regulation is holding us up. We ought to remove those barriers. If we don't, other countries will, and we'll unnecessarily fall behind.

In terms of future unemployment, in the High-Tech Age, people have always felt the down side of these extraordinary changes. If you have a whole new economy, people will very quickly adjust to it. If kids can learn to do those video games, they can learn to interact in the High-Tech Age, even if they don't get good, formal schooling. People can change their behavior.

Just one more example, and then I'll be quiet. One example is smoking. If you take recent surveys of how many people smoke, adolescents smoke, 26 percent of African American kids smoke; roughly 20 percent of white kids are smoking. But among young African Americans, smoking plum-meted down to about 4 or 5 percent, because the word got out that the tobacco companies were targeting these kids.

The kids reacted and said, "We're not going to play that game." So people can adjust their behavior.

If we enter an era that we talked about earlier, the 1830s, there was a religious revival. It was called the Second Great Awakening. People did substantially change their behavior. The abolition movement against slavery came into being.

We're in for another era, so we can get the best of both worlds in a rising standard of living, and also improving the quality of life in our country.

Thank you very much.

Senator Mack. Thank you, Mr. Forbes. Now we'll turn to Representative Bob Walker.

**STATEMENT OF THE HONORABLE ROBERT WALKER,
REPRESENTATIVE FROM PENNSYLVANIA**

Representative Walker. Mr. Chairman, thank you very much for the opportunity to testify on the 21st Century economy in this rather uniquely Third Wave setting. Let me also congratulate you on pronouncing correctly the name of one of the unique communities in my district, Ephrata, Pennsylvania.

From where I'm talking, Mr. Chairman, the Information Age will create opportunities in a wide range of areas. Computers, worldwide

electronics, molecular medicine, breakthroughs in material technology, exploring and manufacturing in space, microminiaturization and virtual reality -- these are technology opportunities that have economic, political and cultural implications.

As a space-based economy, as part of the economy of the future, which is the Third Wave future, we will be seeing big changes that we're on the point of making today. We will be living in manufactured space. Americans will no longer have to look at space as an alien place, but rather as the new frontier.

We will see economic development of space by using free market principles espoused by commercial providers. We will be working together to create strategies and ideas that will make us respond in ways that enhance America's lead in space and aeronautical research.

We are also looking at a knowledge-based society, a society that is actively involved in the information era. We already have living proof that America can succeed in the 21st Century. All around us, scientists and entrepreneurs are inventing a bit of future. All around us corporations are rethinking and reengineering to produce more, better, and faster with fewer resources.

All around us, the private sector and private citizens are changing, adapting to today's competitive realities.

A successful 21st Century America is a pro-entrepreneur, pro-science and technology, pro-savings and investment America that is inventing the best products at the highest values in the world. Second Wave industries accumulate more and more and get bigger and bigger. Third Wave organizations are subtracting functions instead of adding functions, and are subcontracting functions. So they remain quick, efficient, and productive.

Now what we need to do is re-engineer government to follow Third Wave principles by cutting waste, lowering costs, increasing productivity and quality, and doing those things that the government has not been willing to do thus far.

This will have the benefit allowing us to lower taxes on entrepreneurs and lower taxes on investors so we can create more economic growth. Government structure should be based on Third Wave realities. We should not only downsize government, but change what is outdated.

Many of the charters for the current cabinet agencies are based on First Wave or Second Wave principles. We need new departments enabling legislation. Or I should say, we need new departments enabling

legislation that would follow Third Wave principles in which government promotes science, trade, telecommunications, information, and education.

Some months ago, Mr. Chairman, I was in Las Vegas to attend a consumer electronics show. One of the things that they pointed out to me is, they showed me this sea of electronics equipment. All that equipment would be on the books in the next six months, and every bit of it would be obsolete within eight months, or 18 months, I should say.

What occurred to me at that point was, it takes government 18 months to do one budget cycle -- by the time, that is, you put the numbers on paper until you pass the last appropriations bill. That is incumbent to that particular budget.

We have in fact spent about 18 months. That means there's one whole generation of consumer electronics equipment that has come and gone while we're working on one budget.

Now, if we expect to lead in a society where economies are changing that fast, we have to do things much differently than we've done them in the past. I would suggest, for instance, we need to rethink departmental structures. It seems to me, based upon the testimony you've already heard today, that it's quite true that education and labor are going to be inter-related subjects.

Why then should we have separate departments for each of them, where they often work at cross purposes? Why wouldn't we put those departments together in a way that would give value added? It seems to me that's the right kind of course to take.

I've also indicated that we ought to be looking at creating a Department of Science. For me, this would be a focal point for future-oriented programs within the Federal Government. As we enter the 21st Century, it's increasingly clear that science is going to play an important role as a driver of economic growth.

As we have seen in the recent past, inventiveness will be the key to job creation. In fact, it appears virtually certain that the relative future is going to be created by cleverness, the manipulation of information in clever ways, whether it's by individuals or corporations or by nations. It's going to mean the difference between leading and following. We need to prepare our government for that kind of global economy.

In an information-based economy, economic change can open vast new horizons of growth and employment. Political change can open the doors for more hope and opportunity. Cultural change can create a foundation of values on which to build the future. Technological change will provide the means to pursue our dreams.

The challenge we face is to mold those changes in ways that lead to hope rather than hate, foresight rather than fear, virtue rather than victimization, mission rather than the trill.

That challenge is not just for politicians and policymakers. It is a challenge for all Americans in an era of revolution.

Thank you, Mr. Chairman.

[The prepared statement of Representative Walker appears in the Submissions for the Record.]

Senator Mack. I thank both of you for your comments this morning.

I want to address my first question to Steve Forbes. It follows the line of questioning that I asked of the first panel.

Does the fact that information itself is now the most important economic product change the types of activities we need to observe? In other words, I am convinced that we are measuring the wrong kinds of data, or we're not measuring enough data to give us a useful determination about what's happening in the economy.

Do you have any suggestions about the kinds of things we ought to be measuring, and how that new information may affect decisions, both in government and in the Federal Reserve?

Mr. Forbes. In terms of measuring the state of the economy, you're absolutely right. Traditional measures always fall behind. You see it in terms of job applications, how it always falls behind. It's years before they realized there was something more to the computer industry than mainframes.

In terms of productivity, as you know, the instruments are very obsolete. There has been enormous productivity in American industry. But because you can't count it the way you can in manufacturing, a lot of it gets lost.

Even though the material life has improved in this country, we don't really know how to measure it very well yet. However, I'd be very reluctant to make any recommendations in terms of the idea that, the more we know, the better we can manage the economy, the better the Federal Reserve can manage the economy.

What should become very clear -- and I know it's going to be very controversial -- but more information is not going to lead to better decision making by the Federal Reserve, or by the Treasury Department, or by anyone else in our capital. There's absolutely no way that more information would enable these people to do hard landings, soft landings, manipulate the economy, do fine tuning.

It's a mirage. No matter how much information they have, you cannot precisely anticipate the activities of 260 million people in this country with dealings around the world each and every day. What you have to look for are guideposts on the marketplace that tell you whether, for example, you're printing too much money, too little money, or just the right amount. That, I'm sure, is a subject for another hearing at another time.

All you have to do is look at something like the gold price to get far more accurate information on whether the Fed is doing it right than any of our other traditional instruments.

So in terms of the economy, more information would just lead to the illusion that they could do the job better. As a matter of fact, they should give us more humility and take a more hands-off approach to the economy. We don't need the fine hand of Washington to get this economy going. And we all know by now, or should know by now, that the less we do from Washington, usually the better the economy as a whole does.

Senator Mack. Thank you.

Congressman Walker, is there anything you want to add to that?

Representative Walker. I think Steve Forbes made a couple of excellent points. But let me break it down into something that I deal with every day, namely the science budget.

We have tended to measure what we're doing in science in this country based upon how much we're spending on government programs. That is probably not very useful.

As you look at science, it's becoming an even more dominant part of the economy. We ought to be giving a look at science in terms of its contribution and its involvement in the total gross domestic product of the nation and look at what is being done outside the scope of government, and in fact try to encourage what should go on outside of government.

The fact is that a lot of government programs, because they are behind the curve, tend to fail in the science area right now. We need to restructure how we invest in science. Not all of it should be through government spending. We ought to encourage more and more investment in science that is not based upon government spending.

For example, if we can't get the total revision of the Tax Code that many of us would like to do; if we look at, for instance, a research development tax credit, it would be useful to have that research and development tax credit be able to be used more broadly.

For example, allow businesses who are utilizing the R&D tax credit to invest in university research, basic research at universities, and write that off against their R&D tax credit. That would bring about partnerships between businesses and universities, and thereby spread the ability to do science more broadly through the society.

Those partnerships would have the advantage of moving people with knowledge out of the academic climate into the entrepreneurial climate, back and forth in a way that the present culture doesn't permit to happen.

Those are the kind of macro-economic approaches I think we have to take.

Senator Mack. Congressman Walker, let me pose another question to you that comes to us from the Internet. As you know, this hearing is being carried over Internet, and people are asking questions on-line.

You asked what the Department of Labor should be doing in the Third Wave. Here's an example of the kind of issue you might have to deal with. Here's the question:

"I am a mother who works at home and takes care of my child. I think telecommuting is a very important thing because it allows me to spend time with my family. What can the U.S. Congress do to encourage telecommuting in the economy of the 21st Century?"

Representative Walker. It seems to me that first of all, we have to recognize that it's a reality. We tend to view a lot of what goes on in the economy in terms of traditional models. And telecommuting doesn't really fit into some of those models. So we need to recognize it's for real, and that it will be a way in which families can structure their family life, as well as their business life in the future.

In fact, some people have suggested the telecommuting will become so much a part of the reality of the future that we will in fact have telecommuting centers which will allow people to have the social interaction they get at work. But you'd have places where people would go and would have all the tools available to them. But it wouldn't necessarily all be working for the same company, and that those could be centers of residential communities.

And thereby the entire cultural life would be changed.

It has to enter into some of the planning we do in our future. It seems to me we also need to recognize that telecommuting is going to give us the opportunity to create new kinds of jobs, and that's where the whole education and labor question comes in. We need to have people capable

education and labor question comes in. We need to have people capable of getting lifetime learning. So we have to change our educational structure.

I'd advocate, for instance, tax credits for education throughout your lifetime, so that you could go back and get the retraining that you need in order to upgrade your skills on a constant basis. Some of that is going to be in the telecommuting area, because you're going to have an awful lot of people who are actually going to participate in the economy right out of their own homes, or out of their own neighborhoods.

Senator Mack. Let's now turn to Senator Bingaman.

Senator Bingaman. Thank you very much, Mr. Chairman.

Let me direct my question to Representative Walker, if I may. You've been a strong champion for various programs of Federal research. Hydrogen research, I believe, is something you believe very strongly in. I commend you for that.

Reusable launch vehicles, I understand, you're strongly in support of that. And government funding in conjunction with industry and partnership with industry on that.

I've been concerned in recent weeks, after we've passed these budget resolutions, about the planned, very major cuts in Federal science and research support. We have this chart back here which shows that taking the period from where we are now in 1995, beginning in the fiscal year 1996, and on out to the year 2001, that there would be a dramatic drop-off in Federal support for science and technology under the budget plans that have been adopted both in the House and the Senate.

I don't necessarily disagree with your point that there may be other ways to accomplish research through changes in the Tax Code to provide incentives, or whatever. But I am concerned that unless -- and until -- we adopt some of those alternative methods, we should not abandon the research activities that have proven so useful for economic growth in this country, and that have been funded through the Federal Government.

Let me just add one other thing. Before hearing your comments, the National Research Council in a report that came out in February on high-performance computing and communications, pointed out that such developments as time sharing, computer networking, work stations, computer graphics, windows and mouse user interface technology, very large integrated circuits, reduced constructions at computers, parallel computing, and digital libraries, are all directly traceable to government funding for research.

They then point out that in their view, that funding needs to continue because it's a critical factor that supports the exploratory work, that is difficult for industry to afford, and allows the pursuit of ideas that may lead to success in unexpected ways, and nourishes the industries of the future, creating jobs and benefits for ourselves and our children.

I was wondering if you agree or disagree with those conclusions?

Representative Walker. I think that you raise a good point. I think that if you take a look at how we are structuring the kinds of things that we're doing in science, that we are dedicating a very, very substantial portion of the science budget of the future to basic research.

I feel very strongly that the Federal Government ought to be directly involved in doing the basic research that this country doesn't get otherwise.

So when you look at National Science Foundation budgets, we've tried to hold them harmless in terms of 1995 spending. We've done a lot of things.

But we have come to a very, very clear conclusion. And that is that where we are sponsoring corporate subsidies in the names of R&D, that that has not been particularly successful. And it's not particularly useful, that the government picking winners and losers in science and technology has not been particularly successful worldwide, and it's not been particularly successful in this country.

In fact, it's already exhibiting some of the characteristics that many of us feel will be weighted into some of those projects.

So we've made a conscious determination to reduce the expenditures in those areas where we are basically subsidizing corporate research, and where the research is based largely on the need for product development.

And so there are some very large corporate subsidy types of programs that we have in fact reduced, and in some cases eliminated, under our budget. That's where we see most of those drops.

I happen to think that that's a wise choice for us for the future. Others were arguing because they're tied to those programs. But let me tell you, when you take a look at some of the ways in which those programs have been used, you will find that they have a surprisingly large political content to them, where the monies were distributed, at least by the evidence, on a political basis. That's not the way we get good science.

And in many cases, we were not funding research that was at the leading edge. Because our decision cycles are necessarily behind the curve, we don't get the very best leading edge research.

I think those decisions can be better made other places. I will tell you this, in talking as I have over a period of years to people who are entrepreneurs trying to take technology right into the marketplace, the single most important thing they tell me that they need is to cut the capital gains tax rates so they can get risk capital involved with their businesses.

Senator Bingaman. I think the issue of whether we should cut the capital gains tax rate is somewhat separate from whether or not we should maintain government support for the various research activities that are ongoing.

But I guess my interest would be in such agencies as the National Science Foundation, the National Institutes of Health, the Department of Energy in some of their competitive research activity. There's a great deal of basic research done in each of those agencies. And the current flow of the budget is to dramatically cut that research funding -- that's the issue I wanted to address.

Representative Walker. I would disagree with that. If you look at the National Science Foundation, it's one of the places where we have in place -- relative to the 1995 budget, we kept those accounts strongly in place. And in talking to the head of the National Science Foundation, he recognizes that relative to the rest of the budget, we did a pretty good job of keeping the university research accounts in place in that department.

We also under our budget kept the education money in place at the Department of Energy, the general science monies. We kept that money relative to 1995 in place.

Where we cut in the Department of Energy, we cut very dramatically, was in a number of accounts where what you have are life support systems for research and development that was done in the past. What we have is a number of accounts where we've already learned what it is to learn scientifically and technologically, but where the particularly technologies were not particularly adaptable to the marketplace.

So we decided instead to design life support systems and keep them alive with government money, despite the fact that they can't survive in the marketplace.

We decided, if you want to do real research and development, you need to come out of some of that kind of subsidy spending. So we did reduce those budgets in those areas. But in the places where there's true basic research being done, we work very hard to protect those accounts.

Senator Bingaman. I would just comment that I think what you did, you have done better by those accounts than in many other areas of the research budget. But I think you're projecting a five-year hard freeze on

research and development, basic research and development for the National Science Foundation, which I don't consider a prescription for maintaining world leadership in science and technology.

Representative Walker. Once again, let me suggest to you that if you take a look at all the increases that we put into those accounts coming into the beginning of this decade, those are the accounts that we firmed up pretty well. We decided that in the course of balancing the budget, which we regard as not only a fiscal imperative but a moral imperative, that what we could do is that we could maintain the same kind of levels of spending throughout this decade as we had coming into the decade, that those accounts will be able to do the job and provide a very strong basic research base for the country. I think that's entirely possible, as I talk to people about the need to begin to restructure and say, "This is an industry that's restructuring. We think that you can do things faster, cheaper, and better."

It's the reason why in the NASA accounts, for example, we accepted management reforms that the Administration put forward. And we think that the other areas that, while we do not provide for inflationary increases, the fact is that they are going to be able to do very well, the kinds of accounts they were keeping. And we have kept an emphasis on basic research. That's the right way to go.

Senator Mack. Thank you. Senator Bennett.

Senator Bennett. Mr. Chairman, I'll let you get on with the next panel. I agree with what this panel said, and don't see the point in reaffirming that. I'll just let their positions stand as given, and I'll thank them both, because as I say, I agree with what both of them have said.

Senator Mack. I would thank both of the panelists for your participation this morning, and also for your patience as we ran a little bit longer with the first panel.

Again, thank you very much for your participation. We'll move on now to the third panel.

Allow me to introduce our witnesses on panel number three. Testifying this morning via interactive video from Chicago will be Mr. Robert J. Genetski who is an economist and President of Robert J. Genetski and Associates. He's the author of *Winning with Money* and *Taking Voodoo out of Economics*. He resides in Chicago, Illinois.

Here in person is Jerry Jasinowski, an economist and corporate executive. He is the President of the National Association of Manufacturers, and the author of *Making It In America*. He is a former

economic issues coordinator for the Carter-Mondale campaign. He resides in Washington, D.C.

Also with us this morning is Marc Holtzman, President of Meespierson EurAmerica. He was one of the first entrepreneurs to go over to Eastern Europe when the Berlin Wall came down. Since then, he's been instrumental in assisting the people of Hungary and other fledgling European democracies on how to do business within a free market system.

Brenda French is the owner of French Rags. She is a 32-year veteran of the fashion industry. She is the winner of the prestigious Los Angeles Chamber of Commerce Women of Achievement Award in Design and Manufacturing. She will be testifying live via interactive video from Los Angeles.

Last, but certainly not least, Frederic Pryor is Professor of Economics at Swarthmore College, a former visiting scholar at both the Hoover Institute and the Brookings Institute. Among his many scholarly works is *Economic Revolution and Structure: The Impact of Complexity on the U.S. Economic System*.

Again I welcome all five members of this panel. Let's begin with Mr. Jasinowski.

PANEL III

STATEMENT OF JERRY JASINOWSKI, PRESIDENT, NATIONAL ASSOCIATION OF MANUFACTURERS

Mr. Jasinowski. Thank you very much, Mr. Chairman. Again, congratulations to you on holding what is really a very important set of hearings.

I think the pace at which the American and global economy and the technological apparatus associated with it is moving so fast that we must constantly reassess where we stand. I'd like to first of all associate myself with something at the end of what Congressman Walker said in his statement, which is that we can do it faster, cheaper, and better.

I think that in the policy recommendations that I make, at the end of my testimony, Mr. Chairman -- and I ask that all of my testimony be included in the record -- I suggest that the real challenge for the public policy is to emulate a lot of what we've been doing in manufacturing in the private sector.

We've got to reduce our costs in government by about 20 percent, because that's how much manufacturing has reduced its cost in the last

decade. We've got to move much faster and be responsive to customers in government.

The product cycle in manufacturing has been reduced about 75 percent in the last decade. That's how much faster we are. And on the factory floor, everything now is really associated with speed.

Having done both of those things, we have made a remarkable improvement in American product quality, so that we are now regarded as competitive around the world.

Public policy ought to in all cases look to how it can be more conducive to making us competitive in this new global, highly technical information competitive age. That's the bottom line of what I have to say.

Now to go back and just walk through a couple of things in my testimony, Mr. Chairman, I identify six big trends that are already in place, and that will continue on through the rest of this decade. Those are that the United States has become highly integrated into a global economy that in the first instance forced us to become more competitive.

More importantly, it's now becoming an export generating machine that improves our opportunities for raising our standard of living, and creates jobs. I cannot overstate the extent to which successful American companies are competing in the global economy today.

Secondly, the pace of competition is now more ferocious than at any time in the American economic history. This is partly because of that global competition, and partly because of deregulation, and partly because of the extraordinary technological changes that are taking place in the information economy that allows us to do things so much more quickly.

Three, there have been revolutionary changes in manufacturing that have led to a complete transformation of that sector. As I've indicated on occasion, Mr. Chairman, my new book, *Making It In America*, documents that there has been truly a historical revolution, where everything in manufacturing, from the way we make products to the way we structure our organization, to the way we manage and pay workers, has gone through as big a change as we've had in the first Industrial Revolution.

That has made us competitive in the world economy, according to the world economic forum and many others, by measures that range from productivity to quality. And it has made the private sector a model for success for the economy.

The fourth thing I want to stress beyond those changes is that there's been a boom in capital investment, much of it in information processing.

And that has contributed to this extraordinary gain in American productivity.

Fifth, workers are taking over the control of production in an environment requiring increasing skill and knowledge. If Marx were alive today, he'd be absolutely befuddled by the extent to which the American worker is taking over the control of production in most manufacturing plants.

In order to compete in leaner organizations, we simply have to turn it over to workers. And guess what? Workers with the proper education and training can do it better than somebody three or four levels higher.

And in conjunction with that, we are now, through incentive systems and bonuses, compensating workers, not on a straight hourly basis, but in the new incentive basis.

All of these changes, Mr. Chairman, have now led to the final change, which is the most important. I believe the business cycle will be flatter. Although we won't have the spectacular growth we've had in the past, because we now manage inventories properly, and a variety of other changes that have taken place in this new economy, we're going to have less amplitude in the business cycle.

If I could turn now to the policy implications of this, Mr. Chairman, I indicate that because of all of these changes, the key for government is to do everything it can to be more competitive in the global economy. That means doing things faster, cheaper, and better.

It comes back to what I said before. In the first instance, there's a whole broad set of regulatory reform measures, including risk assessment and cost benefit analysis, which I identify in the testimony, that are absolutely important and reduces the cost on the private sector so we can produce.

Secondly, we've got to reduce the budget deficit. We need to bring it down to a balance, because that siphons off resources that can go into savings and investment, and can contribute to further productivity increases.

Third, I think it's very important that monetary policy recognize that our potential for growing is greater than what has historically been the case, and not be foolish about expending the monetary aggregates, but not be injudicious.

The problem, Mr. Chairman, as we look forward to the 21st Century, will be deflation, not inflation. I assure you with all the capacity to increase the supply in the global economy, and the productivity changes

here at home, you and I will be talking about deflation in the years ahead, not inflation.

Finally, there ought to be a positive agenda for growth that runs from reforming the alternative minimum tax, to making the R&D tax credit permanent, to maintaining promotion of exports in this global economy, and finding the right combination of activities between the government and the private sector to improve education and training.

We in the private sector regard that as very important. I think that the Federal Government is not in a position to solve most of those problems. That's something for us in the private sector and state and local government.

Mr. Chairman, that completes my testimony. Thank you very much for having me today.

[The prepared statement of Mr. Jasinowski appears in the Submissions for the Record.]

Senator Mack. Thank you.

At this point, we will go to Ms. French in Los Angeles. We're really looking forward to hearing your testimony, because you're out there actually working in this new economy. I hope you can give us some insight on the kinds of things that have affected the decisions you've made over the last two years.

**STATEMENT OF BRENDA FRENCH,
OWNER, FRENCH RAGS**

Ms. French. Thank you, Mr. Chairman, Members of the Committee. Thank you for the opportunity to join you today. I commend you for holding this hearing to address the changing role of the government as we move away from the Industrial Age into the Knowledge Age.

I am Brenda French, founder and designer of French Rags, a wholly vertical manufacturing operation offering a collection of knitwear separates for women.

French Rags' success can be primarily attributed to the ability to adjust and to adapt to the changing needs of our customer. What we are today is totally different than how we started out 17 years ago, or even what we were just six years ago. It is this very evolution of French Rags that I want to share with you today, for I see a parallel with the issue we are addressing -- changes needed as the government transitions into a new age.

I am a modern example of an old fashioned American dream. As an immigrant from England, I came to this country in 1962 at the age of 23 with \$80. After 15 years in the fashion industry in New York, I moved to Los Angeles in 1978 and started French Rags.

The business was born out of necessity. Finding myself divorced and the sole provider for my then young son, I resorted to tapping my knitting skills learned as a young child at home in wartime England.

With \$500 in hand, I started a knitting business which mushroomed rapidly from knitting scarves at home with sales of \$165,000 in the first year, to opening a factory in Los Angeles with an added sweater line the second year, with sales of \$1.5 million.

The early to mid-80s saw my business bloom into a \$10 million business, selling to retail giants such as Neiman Marcus, Bloomingdale's, Lord & Taylor, Robinson's, et cetera.

But it started to unravel almost as quickly as it rose. After 10 years of successes, sales were dropping everywhere and merchandise returns were escalating. And by 1988, as the recession was creeping in, the retail marketplace was in trouble, and so was my business. The retailer was failing to follow the customers' needs. The buyers were not listening, and continued to dictate taste.

As money got tighter, the customer wanted value for the dollar. And working women's shopping time became more and more limited, and they wanted choice, choice, choice. Change was very definitely in the air.

Having established relationships with my customers during my personal appearances in stores all over the country, I decided that I had nothing to lose by getting the input of my customers. I sought many out, and many sought me out, and I found that they were unanimous as to their needs. The product was right, they said -- wearable fashion clothes, much choice as to color and style. But they were adamant about value and service, and they all agreed that shopping in stores was about the same as going to the dentist.

I watched the growth of catalog shopping, the advent of the home shopping networks, and the opportunities new technologies were bringing. My own need of change evolved from listening, learning, and opening up communication channels.

The French Rags story is an adjunct to today's operation. New distribution channels were established for selling directly to the customer and cutting out as many middle men as I could. Regional agents and untraditional sales forces composed of community-involved women were recruited to serve nationally.

Basically, customers wanted service, incredible choices, ease of purchase, all essential elements to keep them in the fold. Technological advances in knitting machines and in communications allowed for mass customization. And although not intentional, we became manufacturers producing "one ofs."

As an example, last year we produced 20,000 garments, made 885 different styles, giving us an average run of 22 pieces per style, all customized for each customer. This resulted in \$5 million in sales. We were able to adapt to the customer's wishes individually, and yet still remain profitable. That has become the key to our success.

And herein lies the parallel that I alluded to at the beginning of this testimony. I am, like all business in a certain sense, a captive customer of the government. Not that I work for the government, but I adhere to its rules and regulations, and I am part of the whole in which government plays a leading role.

But government seems to have lost touch with its customers, just as I had. Much like change was forced on me by the business climate, so does change now force itself on government. The only way to get back in touch with its customers is to open the channels, listen, and change.

Customization seems to be a buzz word of our time, and government may do well in customizing its efforts to support business, and thus ensure new and small firms to have the opportunity to develop and enhance their value in the marketplace without interference from unfair practices and inappropriate barriers.

Most of today's government policies apply to all businesses regardless of size, a climate that regrettably seems to favor big business. From a policy perspective, it should matter whether policies optimize the capacity of the national economy to generate and assist small business as well as entrepreneurs. And we should differentiate the two.

Entrepreneurs are the visionaries, the innovators, while small businesses can be small franchises. Still, customizing policies by size is warranted, and should be a consideration.

Therefore, it matters how small businesses are categorized. For example, the SBA defines a small business as one with fewer than 500 employees, a range too large to be on target as to our needs.

Companies with 10 employees deserve different considerations than those with 20, 50, or 100, and certainly 500 employees. In approaching the knowledge age, laws that worked in the Industrial Age may no longer work, and therefore are in need of review, revision, or outright deletion.

New ones will need to be written to be more compatible with the new realities of the business climate.

For instance, laws and regulations that make working in the home either illegal, or at the very least, complicated and difficult to comply with, would be out of sync with the growing popularity of cottage industries, as well as with working mothers who need to earn that second income while caring for small children at home, or even divorced mothers who prefer not to leave their children, and prefer to work at home.

Antiquated laws that were once written to protect may now prove burdensome and unproductive in the new socio-economic climate we are in.

The entrepreneurial spirit has always been a strong American trait. Historically it was the entrepreneur of the likes of Ford that built this country. Somewhere along that track, the interests of big business overtook us. But according to a recent Inc. magazine article, "nothing is as important to the health of the U.S. economy as the rate at which entrepreneurs create new companies."

Entrepreneurs create the opportunities for new jobs, often create new markets, and venture onto new ground that has not yet been sown. Government action can be effective in promoting their growth by acting as a catalyst, finding new ways to manage their needs, reaching out with incentive programs that promote training grounds, minimize fees, and in short, listen and flex with innovative programs customized accordingly.

But the communication channels need to open and be in place in order to succeed.

Los Angeles Mayor Richard Riordan has already taken a lead in understanding this. His leadership has put a face on our city's government. His L.A.'s Business Team, in coordination with the L.A. Economic Development Corporation offers face to face conversations with local businesses as to their needs.

Basically, the city has established new pipelines straight into the business community. The Federal Government would do well to take similar action and create new distribution channels much like I did in my business turnaround.

So what do I need as an entrepreneur? I need a user-friendly government, easy access to information, a tap into appropriate government channels, a climate of compatibility and support, an opportunity for a company to move forward without bearing the burden of defending itself along the way from unforeseen government toll booths.

Government needs to have a long-term approach, recognizing that additional taxes reap from increased business would more than offset any losses from fines. As we modem ourselves and interact electronically with our customers, so should government set up channels with their customers, the entrepreneurial business communities.

There needs to be a one-stop shop for regulation. It is impossible for often overwhelmed entrepreneur to be on top of all the policies that affect their business. It creates a situation of us-versus-you -- business versus government, whereas in the best of all worlds, we should be on the same side, to build a stronger and more competitive America.

It has been the role of government to be a revenue builder. And it has been the role of business to minimize payments wherever possible. Business has not been able to keep up with all the red tape involved. And state and local government, and Federal Governments have not been able to be an effective watchdog, enforcing regulation. Therefore, there is random contrariness.

There needs to be easy access to all information. And it is time we all worked together and dropped the us-versus-you position.

But to do so, there has to be moral accountability. What is the goal here? To fight City Hall or to have City Hall on my side? Government does have to reengineer itself to accommodate the changes.

It is not an easy task, but together we can do it. The government must have an integrated, coherent approach in setting up communication channels that delve deeply into business communities nationally, in showing a successful transition into the new realities of our society.

The key is to listen and adapt to the ensuing changes. There is really nowhere else to turn.

[The prepared statement of Ms. French appears in the Submissions for the Record.]

Senator Mack. Thank you very much, Mr. Pryor.

STATEMENT OF FREDERIC PRYOR, PROFESSOR, SWARTHMORE COLLEGE

Mr. Pryor. My presentation focuses on the human resources undergirding the emerging post-industrial society, and asks whether or not our economy can cope effectively with the Information Age.

My submitted paper makes three major points. First, the gap between the skills required to enter the Information Age and the actual skills of the labor force continues to widen.

Second, one impact of this is that unskilled workers have an increasingly difficult time finding work.

Third, as a result, downward pressure has been placed on wages of low-skilled workers, and economic inequality has increased.

Let me take each in turn.

First, the gap between skill requirements and skill levels.

A good idea of the skill requirements can be gained by examining the changing occupations mix and skills of those who are employed.

Table 1 of my submitted paper shows that the cognitive and people skills reflected in our changing occupational structure are rising, and manual skill requirements of the labor force are falling. This should not be surprising.

Some notion of the actual cognitive skills possessed by the labor force can be gained from the National Adult Literacy Test, which asked a representative sample of American adults to perform tasks requiring particular skills. Table 2 of the submitted paper shows some of these results.

The cognitive skills -- in other words, the reading, information processing and quantitative abilities -- are roughly the same for the last three decade cohorts, which suggests that such knowledge has not greatly changed in the last 30 years.

Results from a National Assessment of Educational Progress, a test given to 17 year-old kids in school, yields the same result.

Further, the average scores are low. Two-fifths of all adults cannot interpret information from an appliance warranty. They cannot identify information from a bar graph. They cannot use a calculator to determine the difference between regular and sale prices.

The information revolution will pass by these people, because they will not be able to process effectively the information that they receive.

Knowledge is free, but it's still a scarce factor in production.

Second, declining employability of larger segments of the labor force.

If demand for a labor force with high cognitive skills is rising while the supply is stagnant, at some point both unemployment and the share of the population not in the labor force should begin to increase.

Between 1950 and 1990, average unemployment was about 5.7 percent. But the trend was upward. Further studies have revealed that the share of prime-age male workers participating in the labor force has

decreased since 1965. In both cases, the share of the unemployed or those not working are predominantly those with low skills.

The problem of these low-skilled workers in obtaining employment is not made easier by the increasing competition against low-skilled immigrants. And it should be noted that a rising share of legal immigrants have less than a 12th grade education. Illegal immigrants appear to have even lower average education levels.

It's possible, of course, to put these low-skilled workers in low-tech factories. But this is not a viable solution against the import competition.

Third increasing inequality of wages, total income, and wealth.

With greater competition for jobs requiring few skills, it seems reasonable to expect that real wages for these low-skilled jobs will decline relative to the jobs requiring high skills. And this, as we all know, is exactly what's happening.

Moreover, it seems reasonable to expect that this increasing wage inequality will bring about an increasingly more unequal distribution of income. And as shown on Table 3 of my submitted paper, this is also happening.

Other approaches toward income inequality show the same result. Economists have tried to take into account family structure, or to focus on consumption, or to look at average incomes of families over a decade in comparison with other decades.

And all of these studies show the same result. That is, in the last couple of decades, economic inequality has increased, and economic class lines appear to be hardening.

Let me conclude. Of course, many of the economic trends that will influence our 21st Century economy are favorable. And I did not come here to tell you that it's midnight in America.

Nevertheless, the electronic techno-utopia of this Digital Age does not seem to be sustainable in the population as a whole if the three trends I have described continue. This is because the growing economic and social inequalities, and the widening gap of the life chances of different segments of our population, are bound to lead to increased social tensions and increased social disorder.

This Committee deserves compliments on beginning hearings about the future of our economy. I am most grateful for the opportunity to discuss some of my ideas with you, and to present the paper. I strongly

hope that these hearings will lead to further hearings about our economic future, that focus on what Alvin Toffler described as our knowledge strategy.

May I suggest that you focus at least one set of these hearings on problems concerning the match between labor skills needed in the coming decades, and the current skills of our labor force in order to see what can be done.

Thank you.

[The prepared statement of Mr. Pryor appears in the Submissions for the Record.]

Senator Mack. Thank you, Mr. Pryor. We appreciate your testimony. At this point, we will go to Mr. Genetski, who will speak to us from Chicago. Welcome, Mr. Genetski.

**STATEMENT OF ROBERT GENETSKI,
PRESIDENT, ROBERT J. GENETSKI & ASSOCIATES**

Mr. Genetski. Thank you. It's good to be here.

What I'd like to do is, I'd like to focus on the economy and economic policies as they are likely to occur in the 21st Century.

Let me say at the outset, I'm extremely positive about the direction of economic policies and the economy in general. I'm encouraged because there are very powerful forces that are at work to move economic policies in the direction of classical, pro-growth economic principles.

It was over 200 years ago that classical economists told us that the key to prosperity is to shift as much power and influence as possible into the hands of individuals, not government. The role of government should basically be to make sure that the environment that these individuals have is as conducive as possible to creating prosperity.

The environment consists of essentially four things: low-tax rates, free markets, protecting the individual's property rights, and making sure that individuals have stable currency in which to transact business.

For most of the past three decades, economic policies have moved away from pro-growth classical economic principles. And they've moved away in broad wave movements. The first of these waves occurred in the Great Depression when the public was scared, and turned to the government to solve serious problems.

After World War II, there was a broad shift in policies, kind of a retrenchment of the wave, as policies were shifted back to giving power and influence back to individuals.

However, in the 1960s, once again power shifted from individuals to government. Social security was kicking in, and it started to take over the responsibility for society. And finally we had the Third Wave, and most powerful wave, shifting power and influence away from individuals to the government.

This Third Wave took place in the 1970s when government took over the primary responsibility for raising people's incomes, for making sure that there was an equitable distribution of income, and for protecting workers and other individuals from all types of potential hazards in the economy and in the work place.

The problem is, the more responsibility was placed in the hands of government, the more it cost. The more tax burdens went up. Productivity slowed. When productivity slowed, we had a decline in living standard. When the living standard declined, we had an increase in social extensions.

And finally, by the end of the decade of the 1970s, people started to question whether or not the government was really the solution, or perhaps the problem.

It was then that this broad historical wave began to change in the opposite direction, with power shifting from government back toward individuals. This First Wave occurred from 1981-89 when there was a cut in tax rates and a slower rise in the growth of government spending and government regulation.

As policies in the First Wave moved in the direction of classical principles, there was an increase in productivity, an increase in efficiency, and a significant increase in living standards. As a matter of fact, the years from '81 to '89 included the only significant increase in the typical worker's living standards of any time in the past 30 years.

So we had a First Wave shifting power back into the hands of individuals. Unfortunately, those people didn't recognize what was happening. Between 1989 to 1994 both political parties moved power and influence back toward government, with huge new increases in tax and regulatory burdens.

Once again, productivity slowed. The living standards declined, and people became concerned.

The Contract With America marks the beginning of a second wave of a broad shift in power from government back to individuals. It will result in an increased living standard. It will result in higher productivity growth. But it's only an interim move. It's going to be followed by a

third wave, a very powerful wave that massively shifts power and influence from government into the hands of individuals.

This Third Wave will characterize the 21st Century. The Third Wave will consist of term limits for Congress, so that the lawmakers who make the laws quickly have to go back to the private sector and live under the laws that they've created.

The Third Wave will lead to a simple flat tax to replace the complex tax system that we now have. And the Third Wave will mean privatization of social security, so that workers fund their own retirement, instead of sending their money to government and getting a very poor return for it.

Also, the Third Wave will be a restructuring of the health care system in this country so that individuals' primary responsibility for routine health expenditures, instead of having the government or some other third party have responsibility for those expenditures.

And finally, in the Third Wave there will be a massive shift from public toward private education. The reason I'm confident that this Wave is moving in this direction is because there are powerful forces that are at work to shift power from government to individuals. There are three of them. There's the computer chip, the Telecommunications Revolution, and the spread of democracy around the world.

The computer chip is enabling us to measure as we have never been able to measure before the efficiency and the inefficiency of a lot of the things we do, including the things that government does.

There has been an outpouring of research in recent years, giving us the results of just how efficient government is. As the evidence comes in, the results are startling.

It appears that government is even more inefficient than even the most die-hard conservative would have imagined. The research is indicating that when government gets involved in an activity, there are losses of roughly half of the money spent in that particular area.

Let me give you two quick examples. In the area of health care, the tax system taxes income very heavily, whether you earn an ordinary wage or salary income. However, for medical expenses, at least medical insurance that is provided by a company, there is virtually no tax. As a result, this flaw in the tax system has led to an incentive for third-party payments.

The Golden Rule Insurance Company in Indianapolis has experimented with getting individuals back in direct control of routine medical

expenses. What they have found is that it results in a savings of roughly 60 percent on these types of expenditures.

A second example is in the case of social security. Studies are now showing a massive difference between the returns to our social security system which is essentially controlled by government, and the privatized social security system in Chile.

Fourteen years ago, Chile privatized its social security system. They had a system very similar to ours. In fact, it was in worse shape than ours. Individuals in Chile got to start putting money into their own personal individual retirement accounts. Now 14 years later, the typical Chilean worker has \$21,000 in their retirement account. That may not sound like much, until we realize that the typical Chilean worker only makes \$5,400 a year.

Under some fairly conservative assumptions my research shows that within less than a decade, the typical Chilean worker will have more money in their individual pension account than the typical American family has in terms of total assets.

The Telecommunications Revolution is going to make sure that the results of this research are known to all. When American workers find out that workers in relatively low-income countries are saving more and becoming wealthier than they are they're going to insist that they have the same institutional structures.

And finally, the spread of democracy is going to ensure that whenever those in power fail to pay attention to the research, they will be replaced by those who will.

The outlook as far as I can see for the policies appears to be extremely encouraging. With the shift in the Third Wave, there will be a dramatic increase in living standards. Living standards and productivity won't simply reattain their historical average. They'll make up for a lot of the damage that we saw in recent decades. They'll rise faster than the historical average.

The main responsibility we all face today is to make sure that this Third Wave gets started in much sooner as opposed to much later.

Thank you.

[The prepared statement of Mr. Genetski appears in the Submissions for the Record]

Senator Mack. Thank you very much. Now we'll turn to Marc Holtzman.

**STATEMENT OF MARC HOLTZMAN,
PRESIDENT, MEES PIERSON EURAMERICA**

Mr. Holtzman. Thank you, Mr. Chairman. Thank you very much for this opportunity to share some perspectives and views from the point of view of an American living and working in Eastern Europe for the past six years.

I just returned last week from Kazakhstan, where my colleagues and I are working with the largest private commercial bank in Kazakhstan to organize the first equity investment fund to focus on small- and medium-sized business opportunities in Kazakhstan, all private sector opportunities.

Next week I leave for Eastern Siberia to the Chita region on the border with Northern Mongolia, where we're helping a gold mine to attract important capital and equity resources to further expand and enhance their production.

It's been a very exciting and tremendously uplifting opportunity, certainly not without its frustrations. We witnessed an area of the world where we virtually have one-tenth of the population of the earth that materially speaking have very little, and in a very real sense, require and need everything.

My colleagues and I specialize in raising equity capital from U.S., British, and European pension funds for private sector investment opportunities in the region. Most of the companies for whom we raise money are private sector companies. Most of them are start-up, entrepreneurial companies in Central and Eastern Europe.

We raised \$50 million in 1991 for the first company from Central or Eastern Europe to go to the International Equity Market since the Second World War. The company, among other things, specializes in developing and processing the Kodak one-hour photo labs throughout the region.

The company started in business at a time when the only opportunity or option was the state stores, which took over 10 weeks to process your film. Service was terrible. And you had a very high likelihood of the film likely to be lost through the processing.

In Hungary, we raised \$20 million for the exclusive franchisee for Pizza Hut and Kentucky Fried Chicken. The first year Pizza Hut opened their doors in Budapest in 1992, the store was an immediate success, having experienced an annual turnover of \$2.8 million in one store.

That, Mr. Chairman, is four times the U.S. national average for Pizza Hut. And most of the customers were local Hungarians very eager to have their opportunity to be part of American culture.

One of the guests in the audience today is someone for whom I have great respect and admiration, Antoine Van Achmel, who is the President of Emerging Markets Management, which is a \$2.5 billion U.S.-based fund which makes a big difference by investing in these private sector opportunities in Central and Eastern Europe.

Mr. Chairman, one of the more exciting things that I see on the horizon now, which definitely will interface with our opportunities in the 21st Century, is what's happening in Russia.

Today, one of what I call the Siber Miracles, that over 75 percent of the workforce in Russia today is employed in the private sector. It's very easy to lose sight of this, in spite of the fact that all we read and see in the media with the ups and downs of Chechnya, the political instability which seems to dominate the news.

But the good news is that things are really taking a very positive approach. In Poland, for example, which is in many ways the model for the Russian reforms, the country is experiencing 5 percent GDP growth. The private sector is absolutely booming in Russia today. The underground economy, the unreported economy accounts for a major portion of economic activity.

The market capitalization of the stock market in Russia is not even \$20 billion. That's literally less than a third of the market capitalization of Exxon alone. What you have are companies that are trading at unbelievably cheap multiples on a price earnings basis.

For example, Exxon and Shell trade at a market capitalization basis which values their stock today, based upon proven reserves, to trade at a market capitalization asset value of about \$5 a barrel.

You have many major oil companies in Russia trading at market capitalizations that value their known reserves to be at between five and 10 cents per barrel.

Maybe, Mr. Chairman, there should be a discount, considering the political risk and economic risk of investing in Russia. But certainly not that dramatic a difference.

Very briefly, as I conclude, there are six things that I think the Congress should focus on to make life easier for Americans trying to do business in Central and Eastern Europe.

First, these countries do not need more government aid and socialism exported or repackaged from the West. These countries need reduced trade barriers, both from the United States, and from the European union. The United States should press the European union to liberalize and open trade barriers from the East.

Second, a clear timetable should be spelled out for early membership in the European union. The United States should encourage the European union in this regard as well. Far too little is being done through Europe.

Immediately NATO membership should be extended to these countries in the region. This would ensure practical security to these nations, as well as psychological comfort to investors. Certainly the four Visegrad countries, Poland, the Czech Republic, Slovakia, and Hungary, already qualify.

Third, let me suggest that we expand NAFTA, the North American Free Trade Agreement, to include the Visegrad countries, clearly outline what criteria would have to be met for other nations in the region to qualify for membership.

Fourth, let Congress encourage Americans to work abroad in areas of strategic economic interest, such as the CIS and the countries of Eastern Europe, by exempting personal and investment source income derived from the region from Federal tax.

Fifth, create tax incentives and other mechanisms to encourage private sector investments. Also, the Securities and Exchange Commission should reduce red tape and ominous restrictions placed upon many United States investment institutions which effectively prohibit their participation in many Eastern European and CIS investment opportunities.

Last, I would say let the private sector move this vibrant transformation. As Mr. Genetski said, let market forces continue to do what only the private sector can do best. Government should set the conditions, and then get out of the way.

Mr. Chairman, America is the model and hope for people in Central and Eastern Europe. I constantly encounter people who look to us with great admiration. It makes one proud to be an American, but also very mindful of our responsibility.

Change is so ever-present that it is the order of the day. Nothing can better express how the mind set has changed than the closing paragraph from an article about Lenin's tomb which appeared two weeks ago on the front page of *Argumenty I Fakty*, the largest-circulation newspaper in Russia.

The court said, "What is to be done with the mausoleum? Closing the tomb wouldn't be any good, and burying the body is not enough. The only way according to the Christian rules for Satanism is to burn the body and all the books he wrote. Perhaps then Russia will be free of suffering."

Mr. Chairman, in the same article, the largest circulation newspaper in Russia described Ronald Reagan as having the inner vision to call the Soviet Union "the evil empire." My goodness. If that alone doesn't tell you what's happened today in Russia, especially when you compare it to China or any other transition economy in the world, I don't think anything else will.

The challenge is more than a once-in-a-century opportunity. The seismic shift changes in our world make this era as historically important as the Renaissance, or even the Industrial Revolution.

We are blessed to be alive in this fascinating time, and I pray that we have the collective insight and will to rise to the challenge.

Thank you.

[The prepared statement of Mr. Holtzman appears in the Submissions for the Record.]

Senator Mack. Thank you for your special insight.

Again, I want to thank all the panel members, here, in Chicago, and in Los Angeles for their participation.

I have several questions to raise, some of which came over the Internet, because we're trying to include the American people in the hearing process.

Here is a particularly interesting question because it asks us to focus on how we take advantage of this Information Age, and as we move into this new century, but at the same time recognizing the people we have to be concerned about.

The question reads, "Thank you for this opportunity to ask the question of witnesses. This truly is a 21st Century hearing, when ordinary citizens like myself can participate in a real hearing.

"As a resident of rural areas, I am concerned that the information revolution will bypass me and my fellow citizens. What can we do to make sure that the economy still encourages a rural way of life?"

Does anyone here want to respond, or have any particular thoughts about that. Mr. Genetski, do you want to respond to that?

Mr. Genetski. Not really.

(Laughter.)

Mr. Jasinowski. I'll respond to it, Mr. Chairman, because I come out of an industrial community, and we are not being considered part of the Third Wave, traditionally speaking. In fact, you've just got to get with it, manufacturers. If they haven't gotten with the Information Age -- we really are in the Information Age now -- we've gotten left behind.

I think the same is true of the rural parts of our country. And that means that the responsibility is back on the person who asks the question, in part. And what we can do in Congress and our education and our governmental systems is continue to bring this information forward.

But we really don't have a lot of choice. You have to become modestly computer-literate. You have to pay attention to this whole new set of items, and you've got to encourage people who are young to gather the skills.

I have young children. They are all already computer literate. One of them is a seven-year-old. The other's an 11-year-old. They can compose on the computer. It's no big deal for them.

And certainly the expense is not so extraordinary. I think it's a matter of education, cultural change, get with it. I think that the rural part of the country is doing that. And so I encourage the questioner to pursue it. That's what you've got to do.

Senator Mack. Would anyone else care to respond to that?

Building on your response back in the early days of the discussion of the Third Wave in information, communications, and so forth, you always heard, at least from the people representing the so-called smokestack industries expressed a tremendous amount of nervousness, just like this person who raised the question.

Manufacturing was saying in effect, "Well, wait a minute. Don't forget about us. This is the heart of America, the foundation upon which the country was built, and you guys want to go off in this Information Age." Is there anything that the manufacturing sector of America should be concerned about regarding this so-called Third Wave or Information Age?

Mr. Jasinowski. I think there really is not a lot that is not positive, Mr. Chairman. I would just say that the Third Wave information revolution and manufacturing are now so in sync that they are one and the same.

Fifty percent of the capital spending in the last couple of years in manufacturing has been in computer and information processing items. The factory floor has been revolutionized. Everything from computer-aided design to integrated manufacturing is done. The workers are well trained now. Even CEOs are forced to learn about it, which is certainly

the last refuge -- the CEO sitting in his office with a box that he couldn't operate. Even he is, like myself, getting into e-mail and all those other things.

And so it has made us faster. It's allowed us to do it cheaper. I think the down side, you know, is spending too much money on equipment too fast before you've trained people who have done that. That's about the only big down side. You've got to be careful not to spend stuff on a lot of equipment that you don't yet know how to use properly.

Senator Mack. I'd like Senator Bingaman to engage in this in a moment.

But my own reaction is that the agricultural sector was once the foundation of the American economy. Much of America's employment was linked to the agricultural sector.

Then the Industrial Revolution came along. Eventually, agriculture adopted new technologies developed in the Industrial Revolution, and made it much more productive, and much more profitable. We did a lot more with a lot less.

I sense the manufacturing sector has adopted and adapted the information and knowledge of this new wave into the development of new technologies for production.

Mr. Jasinowski. Exactly. And that's of course the way you compete. You compete by adapting. That's what manufacturers have done with respect to technology, although they now are in many cases the leader, because we make many of these products in manufacturing that they use in the Information Age.

Senator Mack. Any other responses out there before I turn that over? I think I see a smile on Mr. Genetski's face.

Mr. Genetski. I think the main concern of persons out in the rural areas being left out of this technological informational revolution, so long as anyone has a telephone, they're going to be at the heart of this very experience we're going through.

Regardless of where you're located, if you have a telephone connection, and you have a small computer, you have the ability to participate in every way, shape, and form in the next revolution.

Senator Mack. Very good.

Senator Bingaman?

Senator Bingaman. Thank you very much.

Let me ask Mr. Jasinowski a question. I agree with your recitation of the progress that American manufacturers have made to become more competitive. One of the essential things though, from my perspective, as a larger and larger percentage of our business is in the international economy, an essential part of what it's going to take to compete in the international economy is to have good partnership between our industry and our government, so that we can assure that we have equal access to foreign markets along with other competitors.

That's my own view. I notice in your recommendations, you say our export promotion policy should be maintained. I've been concerned that one of the proposals in the House budget and in the Senate budget was, we should eliminate the Department of Commerce. And in the House, they got so specific as to say the International Trade Administration should be eliminated. And both budget resolutions call for drastic cuts in Federal support for export promotion, the Export-Import Bank, and a variety of things.

I had a conversation recently with Jeff Garten, who of course is head of the International Trade Administration. He makes a fairly compelling case that, rather than cutting back in these areas, we should try to make as much of an effort as our French, German or Japanese counterparts are making.

And he points to the fact that, for example, in China, which is an enormous potential market for U.S. manufacturers, we have just seven people in government trying to assist, which he says is just scratching the surface of what should be done.

I'd be interested in your thoughts as to whether export promotion should be maintained at current levels, whether the function of government in helping business to export is a valid function in this new world, and whether we should be shutting down the International Trade Administration and the Department of Commerce.

Mr. Jasinowski. I think you ask a great question, Senator, and I appreciate your putting it forward.

If I had my own way, I would certainly expand the resources going into EX-IM Bank, and exports generally, because we're behind our international competitors. The problem with simply going forward with that is that we have an alternative objective, which is to reduce the budget deficit.

I think that my sense is that everybody under these conditions has to take a cut. So as corporations have come back to me, and said, "I want you to go and protect this program, and I want you to protect that

program," I've said to them uniformly, based on consultation with my leadership, "Everybody takes a cut in this. So that includes the EX-IM Bank."

Nobody can afford not to have some cut. We feel somewhat more sanguine than perhaps yourself and others, because of the fact that we reduced our costs of manufacturing by 20 percent in the last decade, and improved our quality. We think we can do that in even the export programs.

Having said that, we've been pretty tenacious about opposing extreme cuts in EX-IM Bank funding. My information was that in some of the House appropriations process, that the EX-IM Bank funding cut was not as drastic as the language you were just using. We would certainly continue to argue that, while they should take their share, we need to be very careful about overdoing the cuts in an area where we're already behind the international competition.

With respect to the Commerce Department having served there -- and I think they have done a good job in this Administration -- in many cases, a great job, with respect to expanding exports. And Jeff Garten certainly has, and the secretary has. The problem is, you can't defend the Department of Commerce as it stands.

So if you say, "I'm going to defend it the way it is, "you've got a losing hand. So our view is that we're prepared to discuss reform in our overall international trade functions. We just want to have a high level of emphasis on exports and negotiations. And we want it to be with a Cabinet officer.

Now, whether or not you have an enhanced STR, or you create some other kind of department of trade and technology, I think that's part of the debate right now. My first preference wouldn't be to put a priority on eliminating the Department of Commerce. But I wouldn't defend it as it stands.

We've chosen not to. We'd rather defend the need for a high level effort, because again, when you're talking about restructuring government, I think everything has to be on the table. And I think people who suggested restructuring the Department of Commerce have a valid set of concerns. It doesn't make sense the way it stands. So why not talk about changing it?

Senator Bingaman. In the budget resolutions that I've seen, they don't propose to restructure it. They propose to eliminate it.

Mr. Holtzman. Senator, may I respond to that, please?

Senator Bingaman. Certainly. Go right ahead.

Mr. Holtzman. I can't think of one real live example in the six years that I've lived in Central and Eastern Europe of the Commerce Department doing anything to help American businesses improve exports.

I think the one thing that President Clinton and Secretary Brown have very effectively done, which as you indicated comes close to what some of the European heads of state and the senior cabinet level officials do is, I think they've been very helpful on a selective basis that promoted specific large American transactions, which I think they should continue to do.

Beyond that, and except at a very senior level, cabinet officer to cabinet officer, I don't really see much assistance that the staff people and the others that are part of this effort do to help.

The one thing, Senator, that could be done that would immediately boost American exports would be to reduce the trade and tariff barriers to have a free trade zone, for example, on a reciprocal basis with the countries of Central and Eastern Europe that would participate.

That one thing alone would do infinitely more good than any effort that the U.S. Commerce Department or any government agency could do.

Senator Bingaman. Do the firms that you work with take advantage of OPIC, the Overseas Private Investment Corporation? And do you think that that's a factor in their decisions to make the investments that you're helping them make?

Mr. Holtzman. I would say this, Senator. OPIC has definitely made a very positive contribution. And I would say that under Ruth Harkin's leadership, they have done more in the last several years at OPIC than has cumulatively been done in its history.

I would say this. I do believe that most of what OPIC does, by providing political risk insurance, by providing guarantees, while it has done so at a cost, could probably be done also on a commercial basis. I do think that the service they provide is very valuable.

What they do by being first in the market and often going where the private sector is not ready to go is very useful. But I think we should view OPIC's role as a transitional role, and one that should only continue until the private sector is ready and willing to perform the functions that they do.

Mr. Jasinowski. Senator, if I could come back, I want to stress again that, with respect to the EX-IM Bank and the funding that's associated

with various credit measures, certainly the vast number of major manufacturing projects are positively affected by that.

And other competitors use that. Now, when you get other competitors not to use it, then we can move to something where we didn't have to have it. And there are various proposals around that. But as long as the other competitors are using those with respect to power stations, aircraft and the rest, we need that.

I think in the resolution on the budget, there are not drastic cuts in that. So I think the issue is more the Department of Commerce, and we'll have to debate that, I think, in the next several weeks and months.

But we certainly are strongly supportive of the EX-IM Bank funding. I would not want to see drastic cuts in that.

Senator Bingaman. Let me just ask one other thing, and I think that you implied the answer.

We've had technology partnership programs in the Department of Commerce -- the Advanced Technology Program specifically -- that's run out of NIST, the National Institute of Standards and Technology. We have a similar one in the Department of Defense, the Technology Reinvestment Project, which is a partnership program.

Is it your judgment that those are not worth defending either?

Mr. Jasinowski. I don't think it's quite that black and white. I really don't think they're defensible as they stand. I think that for any of these corporate subsidies, they have to do the same kind of cost/benefit analysis that we're asking be done on regulations.

I am not as a part of our institution defending any program without meeting this test in this budget deficit requirement. I think frankly a lot of those programs got wrapped up too fast, and they couldn't all meet that cost/benefit test.

Certainly Congressman Walker is right, by putting emphasis on basic research -- having said that, there's a very substantial number of our members who believe that the partnerships themselves are very, very valuable, and that modest amounts of money used in cooperative technology efforts that are in the precompetitive phase is a set of experiments that the Americans should continue to work at because it does have payoffs.

But again, the emphasis is always put on the partnerships before the money. Everybody believes the money ought to be cut. It's a question of whether or not you eliminate it, or reduce it.

We really ought to be very cautious about large expenditures into areas where you're approaching the border of commercial activities. So I think frankly this debate is a pretty positive one. I think we were moving too fast. But our position would be not to eliminate those programs altogether, but to see if we can't manage them more frugally, and find better ways to see what their costs and benefits are.

Senator Bingaman. That's all I have, Mr. Chairman.

Senator Mack. I would like to address both a comment and a question to Ms. French.

You probably couldn't see Alvin Toffler when you were making your presentation, because he had moved away from the table, and is seated in the audience. But you referred to technology advances in knitting machines and communications allow for mass customization. When you said "last year we produced 20,000 garments and made 885 different styles, giving us an average run of 22 pieces per style, all customized, resulting in \$5 million in sales" you were making the same point he had raised earlier, that we've got to move away from the concept that everything is better if it's massively done.

I thought your testimony was terrific. With respect to the problems of communication and government's role and the inability to get answers out of government. What can we do to pull down the barriers that both inhibit communication and, frankly, slow down, if not deny, opportunities to establish new businesses? I would be interested in some of your thoughts as to what you might think those barriers are that you have to deal with on a day-to-day basis.

Ms. French. First of all, as I say, not only am I very naive politically, my business skills have been learned as I've gone along. I am basically a creative person. I make my living as a creative person, coming up with new things that haven't been done before.

And I think that my business changed because all the advisors that I had five years ago were telling me that I could not survive and I had to let go of my business. And I didn't let go of it. I took a creative approach, and changed it.

So my way of looking at everything is creatively, maybe not a true business way of doing it.

As far as how I could help it, I wish I knew the answer to that. I would love to tell you. But I do think that by opening up channels, which is exactly what we're doing here, but opening up more channels so that we can have a face in government, feel that government is a friend -- if I felt

that government was my friend, I think it would be much easier for me on a day-to-day basis.

But I'm really afraid of government. I'm a little afraid of putting a foot wrong, because there are so many things that matter to my business that I don't know.

I may use this as an example, the fact that I have been able, because of my communication channels, to certainly become a national company, and so thus am able to do business in every state. I also am faced with trying to find out the laws, rules, and regulations of all those states. For a very small company this is extremely difficult to do.

So I'm involved here in discovering nexus. I think if Congress can do one thing for people like me who are reaching out nationally for a new audience, you might consider the Bumber Bill, which would make it a flat rate for interstate business.

Right now doing business in 50 states is extremely difficult. Within each state you have many different definitions of what creates a nexus. So if I focus on one thing, maybe that right now would be something that would certainly help my life a great deal.

Senator Mack. Thank you very much. Again, I appreciate your comments.

To demonstrate how different this hearing is, one of the Members of our Committee, Senator Larry Craig, was unable to be here today, but sent in a question via Internet. He is in Chicago at a conference.

By a coincidence the person I was going to address the question to is also in Chicago.

Senator Craig asks, "Those who fail to learn from history are doomed to repeat its mistakes. What happened to dampen the growth path of the U.S. economy starting around 1973, and what should Congress learn from the experiences as we look forward to the 21st Century?"

I wonder if you might have a comment or two on that, Mr. Genetski?

Mr. Genetski. Sure. I believe that what happened was the increase in tax burdens, calling on government to do more and more, which it's not able to do efficiently.

One thing that we have to focus on is that whenever we ask government to do something else, as great as it may seem, like helping a manufacturer export items to Eastern Europe or something like that, it involves an additional expenditure. It involves an additional cost.

You can't just focus on what the benefit of this particular program is, because the program may well have some benefit. We have to focus on what the lost opportunity is, because taxpayers are not going to have that money and that resource to go ahead and try and behave as productively and efficiently as they can.

I would also suggest that we look as closely as possible at all this research that I talked about, because the research is really fascinating. If in fact it continues to show that whenever government gets involved in anything that there is a waste of roughly half of the money, we are talking about huge inefficiencies in the economy.

When we look back in history we find that, sure enough, it was the late 60s, the 1970s, when we had the most serious and most dramatic growth in the government sector. So it's not surprising to me, and I don't think it's surprising to any classical economist, that when government took over more and more responsibilities, that was the time that living standards began to suffer.

Mr. Jasinowski. Mr. Chairman, I just wanted to reinforce Mr. Genetski's point about the amount of waste that there is in the system.

And, add the regulatory system to the amount of waste that affected the economy, in part with your question -- Dale Jorgenson at the Harvard Business School has suggested that the environmental regulations waste half of the resources associated with fulfilling them. Again, the 50 percent figure that he was using, those regulations began to ramp up in the 80s and 90s.

So I think an enormous drag on the American economy in a wasteful sense has been the regulatory system.

Senator Mack. I have one last question that I will pose. We've received a whole series of questions over the Internet that we're just not going to be able to get to this afternoon. We will make an effort to try to answer these questions through e-mail.

The last question comes from the State of Florida, Dr. Thomas G. Bonberger of Shands Hospital at the University of Florida.

He asks, "What should be the role of government and its relationship to the development of the computer, digital and telecommunications, analog technology" -- I guess my reaction is that I remember the debate that we had back in the 80s about high definition television.

There was a real effort to try to get the government involved in pushing America into the forefront of high definition television. As it turned out, that was the wrong thing to do.

I think what government has to do is provide an environment conducive to growth and investment opportunities and allow a free flow of capital into investments. We should get out of the business of trying to determine what particular products we're making the investment in.

Dr. Bonberger asks another question further down: "What role will government play in the exploration of the genome, and how will this affect future generations?"

Maybe this is a bias, as opposed to a good philosophical response. But my inclination at this stage is to say that we ought to keep the Federal Government actively involved in the National Institutes of Health. At some point when we have a viable alternative, then I think we might want to reconsider.

I will just again close the hearing this morning, this afternoon, and thank all of you for participating. I want to mention a few organizations that have made this possible: Affinity Videonet, AT&T, C-SPAN, the Internet Multicasting Service, the Senate Recording Studio, and of course the panelists. And I might also add the citizens who participated, both through C-SPAN and the Internet. This is a real example, I believe, of the kind of approaches that we can take to trying to make government more responsive to its people.

The meeting is adjourned.

[Whereupon, at 1:00 p.m., the meeting was adjourned.]

SUBMISSIONS FOR THE RECORD

**PREPARED STATEMENT OF SENATOR CONNIE MACK,
CHAIRMAN**

Good morning and welcome to this "first of its kind" 21st Century hearing on the 21st Century economy.

America and the world are embarking on a journey into a new age of human endeavor and achievement. This era will experience tremendous change in every aspect of our lives. We are already witnessing unparalleled change in the global economy, in technology and communications, in business and industry, and in communities and families.

These changes mean that Industrial Age government is obsolete. Government in the Information Age must become dramatically smarter, smaller, and simpler. An Information Age government shouldn't just be more efficient in meeting Industrial Age objectives, as some propose. Instead, government must be redesigned and its policies reformed to maximize freedom for innovators and entrepreneurs, and to build new avenues for individual creativity and prosperity. If we can successfully redesign our government, especially its economic policies, then the new technologies of today and tomorrow will help create a world of unprecedented economic opportunity and prosperity for future generations.

Today, we will explore society's transition into this new era and focus on the role of government in the Information Age economy. Maybe the most fundamental and profound fact of the technological change we are witnessing is that the power of the computer chip now doubles every year and a half. That pace will get even faster. In the next 10 years, microchip power will increase by a million times. And the power of global computer networks increases geometrically as millions of new users are linked together every month.

What does that mean for government? It means a bureaucratic, heavy-handed, Industrial Age government can't hope to keep up. Today's government is trying to manage yesterday's economy. That is not only a waste of increasingly scarce resources, it creates barriers to future growth and prosperity. Clearly, a government built on old notions of

regulation and control cannot hope to survive, much less succeed in an environment of ever-expanding individual freedom in the Information Age.

Today's hearing is a modest example of how the technologies of the information revolution are changing American government. This is the first congressional hearing to make full use of interactive video teleconference technology. Seven out of 10 witnesses are testifying from remote locations around the nation and abroad over an interactive audio/video network. We are being transcribed onto the Internet and invite the C-SPAN and on-line audience to submit questions to the Committee. Our e-mail address is JEC@TOWN.HALL.ORG.

I'd especially like to note the locations of two of our witnesses: Paul Johnson is testifying from London, England and Congressman Bob Walker from Ephrata, Pennsylvania. I point these out to emphasize that the information revolution is already reaching every corner of the globe, from the biggest cities to the smallest towns. As long as we avoid creating artificial barriers to the information transformation, no one will be left behind as we embark on this exciting journey into the Information Age.

I can foresee future hearings in which all the witnesses testify from their homes and all Americans will be able to participate. And we'll cut the costs of these hearings by half or more compared to the traditional way. For example, we've cut the cost of today's hearing in half by using interactive technology rather than bringing everyone to the nation's capital.

I would now like to welcome the witnesses on our first panel, Alvin Toffler here in Washington, Joel Kotkin in Los Angeles, and Paul Johnson in London. Thank you for joining us.

PREPARED STATEMENT OF ALVIN AND HEIDI TOFFLER

"What is a 'Third Wave Information Society'?"

The *First Wave* of change, launched by the agricultural revolution of 10,000 years ago, led to the transition from hunting, gathering and foraging to the great peasant societies of the past. The *Second Wave* of change, triggered by the industrial revolution some 300 years ago, gave rise to a new factory-centered civilization. It is still spreading in some parts of the world as hundreds of millions of peasants, from Mexico to China, flood into the cities searching for minimal-skill jobs on factory assembly lines.

But even as the *Second Wave* plays itself out on the global stage, America and other countries are already feeling the impact of a gigantic *Third Wave* partly based on the substitution of mental power for muscle power in the economy.

The *Third Wave* is more than just technology and economics. Our transition from a brute force to a brain force economy is accompanied by painful social, cultural, institutional, moral, and political dislocations. The *Third Wave* helps explain why so many industrial-era institutions, from giant corporations to governments, are dinosaurs gasping for their last breath. It is why America is suffering from simultaneous crises in everything from the education system, the health system, and the family system to the justice system. They were designed to work in a mass industrial society. But America has left that behind.

Driven by global competition and other forces, America today is completing its transition from a *Second Wave* nation with a rusty smokestack, assembly-line economy to a sleek computer-driven, information and media dense economy and social system that, surprisingly, will have many features of the pre-industrial past. Swept along by the *Third Wave* of history, we are creating a new civilization.

*For the differences between Second and Third Wave eras
In America, turn the page...*

SECOND WAVE AMERICA
 1865-1955

ECONOMIC SYSTEM**Factors of Production:**

Land, labor, capital.

Appropriate information/knowledge substitutes for all other factors.

Capital:Based on tangible assets.
(Example: Bethlehem Steel)Increasingly based on intangible assets.
(Example: Microsoft)

Scarce Resource.

Essentially limitless.

Money:

Gold, paper, etc.

Electronic, digital.

State has monopoly of issuance.

Private issuers multiply. Alternate currencies spring up on internet and elsewhere.

Work:Physical labor predominates.
Rote, repetitive, largely interchangeable.Knowledge work predominates.
More creative, less interchangeable.

Batch process. Fixed hours.

Continuous flow. Round the clock.

In factories and offices.

In homes, cars, airplanes, etc.

Innovation:

Intermittent.

Constant.

Scale:

Big business and big work units dominate.

Small business and small units more important.

Organization:

Vertical. Bureaucratic.
rigid, long-lasting.

Virtual. Anti-bureaucratic. Net-
work-like. Flexible. Ad-hocratic.

Infrastructure:

Emphasis on transport.
(Roads, highways, bridges,
port facilities).

Emphasis on communication.
(Electronic neural system based
On extra-intelligent networks).

Transactional speeds:

Fast.

Approach real-time.

SOCIAL SYSTEM

Individual

Mass production, distribution,
education, media, entertain-
ment create highly homogeneous
mass society. Individuality
suppressed.

De-massified production, distribution,
education, media, entertain-
ment create highly heterogeneous,
de-massified society. Individuality
promoted.

Family

Family stripped of functions like
education, health, care of aged,
etc. Work moves out of home.

Work and other key functions move
back into home -- computer education,
home shopping, health care, care of
elderly, banking.

Civil Society

Weakened as government
functions multiply.

Strengthened as government
functions are reduced.

Population

Heavily urbanized.
Giant cities are where the jobs
are.

Increasingly post-urban.
City cores are gutted as
Jobs disperse geographically.

POLITICAL SYSTEM

Economic conflicts dominate politics. ("It's the economy, stupid!").

Nationalism.

Majority-minority conflicts.

Government big. Civil service bureaucracy dominant, blocks change in government structure.

Corruption crude.

Parties strong.

Mass movements, mass democracy and pseudo-democracy.

Indirect democracy--i.e., representation and pseudo-representation.

Cultural, religious, ethnic, gender and life-style issues become more important. (Examples: "No smoking allowed!" "Restore the family.")

Localism and transnationalism.

Minority-minority conflicts.

Government smaller. Bureaucracy reduced. Elected officials gain power relative to bureaucracy.

Corruption sophisticated.

Parties weaken as interactive media and grassroots protest groups proliferate.

Temporary coalitions of minorities.

Semi-direct democracy--electronic feedback from citizens combined With traditional representation.

PREPARED STATEMENT OF JOEL KOTKIN

Before starting I want to assure that my mother raised me to be a relatively well-behaved adult, so I feel a little uncomfortable spending my time now essentially telling you Washington folks how essentially irrelevant much of what you do is and how much *more* irrelevant it could become in the future.

Fundamentally national politics in America has lost its relevancy because it has -- at least until recently -- missed many of the key developments and issues that are now transforming reality.

I would like to deal with three aspects of this change -- the political, the cultural and the economic -- and try to do it in as few words as possible.

Political ... The underlying assumption of Washington politics, most particularly for democrats, has been that most of our problems can, and should, be dealt on a national level.

This assumption has its historic base in a series of developments, from the creation of the national road and transit system in the early national period, the civil war, reconstruction, the industrialization process, the First World War, the depression, the Second World War, and finally Cold War and struggle for civil rights.

With each of these developments, the logic for strong *National* solutions to problems was fairly compelling. It is difficult, at least from my perspective, to see how these problems could have been handled outside of a fundamentally national perspective.

As a Democrat, although clearly one out of step with much of the party, I honor the work of Roosevelt, Truman, Johnson, Humphrey, the Kennedys and, most particularly, Dr. Martin Luther King in addressing and trying to deal with these national problems.

As an American, I also honor the work done particularly in winning the Cold War, by Republicans such as Eisenhower, Nixon and Reagan.

But now the forces of history are moving away from centralized solutions. Rather than a nation become more homogeneous we are becoming more and more a collection of quasi-independent states and regions, many of which are essentially at economic and cultural loggerheads with each other.

Today, for example, my adopted home state of California, like the rest of America, competes and trades with foreign countries, indeed we are the predominant trading state. Yet, at the same time, we find much of our most ferocious competitors coming not from abroad but from other states,

notably in the south and intermountain west, who have invested millions of dollars to pull businesses and investments away from our state and to theirs.

To say, we have a fundamental common interest, for example, with a Utah or Texas which seeks to siphon off our industries is clearly a stretch.

In effect, then, we have no National competitiveness is largely chimerical. When I speak in California, or the Puget Sound, or Texas, or Omaha, Nebraska, I don't sense business people care particularly about their "American competitiveness", but about their "Regional competitiveness". The issue becomes not how Omaha helps America compete against the world, but how Omaha can fit into the global economy as best it can.

This regionalism is the reality for many business people, particularly those from the smaller companies what increasingly dominate the economy. Regions are going to, like companies, try to come up with strategies that attract capital, whether from Wall Street or The City of London, Maranouchi or Singapore; that can bring skilled people to their regions; or help jumpstart business in areas of their own relative competitive strength.

One other quick point, with the dissemination of information now available, there is no reason for anyone in Omaha to think that Washington bureaucrats or Congresspeople have better access to the data than they do. The City Manager of a small town in Central California can have much the same information on the internet as a Harvard trained bureaucrat in D.C.

In this environment, I would suggest that the Federal role must be rethought; that economic development funds or the taxes spent on them be sent back to localities to plot their own strategies. Robert Reich, or his Republican equivalent, is not in a position to determine what is appropriate for Phoenix, Philadelphia or Los Angeles...and they should stop acting as if they did.

At best, Washington's role should be seen as helping set some baseline rules so that interstate trade remains unhindered and that some rules, necessary for civilized economic competition, are kept in place.

Cultural...This fragmentation of America also has an important cultural element. As the nation changes in its ethnic composition, the very nature of the American identity will change. The critical issue then will be finding the commonalities that hold an increasingly diverse population together.

Up until the turn of the century, for example, the United States was a predominantly Anglo-Saxon, Northern European culture. The direct line from Britain to America was quite distinct and commonly accepted.

Today that reality is completely changed. By some estimates, for example, only one out of four Americans has any British descendants; one out of every three schoolchildren is African-American, Latino or Asian. The face of America -- and what people bring to the culture -- has changed dramatically.

Nor is America uniform in its diversity. There are in Ethno-Racial terms at least three American different Ethnic-Cultural realities:

In much of the South, for example, diversity is largely an issue of black and white. The legacy of slavery and its aftermaths are the predominant issue. Whatever the cultural divisions, they center on the aftermath of that experience. A somewhat similar pattern can be found in parts of the Urban Midwest, such as Detroit, where both blacks and whites from the south migrated in huge numbers.

Second, throughout large sections of the rural intermountain west, the plains and the midwest -- as well as selected pockets in various parts of the country -- you have what I call the Valhalla culture, which is overwhelming white and native born. This culture has become even more Valhalla as large numbers of former urbanites flee to these areas, seeking among other things the comfort of a monocultural environment.

Lastly, there are the Cosmopolitan regions, concentrated particularly in the cities of the Northeast, the Gulf Region, Atlantic Florida, and the West Coast. Here the impact of recent immigration is profound: Over 70 percent of all 1980's immigrants landed in seven metro areas - Los Angeles, New York, Miami, San Francisco, Houston, Washington, and Chicago. For example, roughly one-third of Los Angeles and 25 percent of Bay area residents are foreign born; the National average is only nine.

These areas are the focal point for both enormous cultural conflict and creativity. They also house many of the ethnic tribes I have written about -- Jews, Arabs, Chinese, Japanese, East Indians, and the other Asians. These areas are also effectively sanctuaries for various "out groups" such as lesbians and homosexuals, as well as numerous creative types.

The issues of integration and assimilation, of language and culture are deeply felt in each of these three zones in profoundly different ways. Any attempt to impose an identikit solution from Washington would be ill-advised.

Yet at the same time, it is challenge for the national institutions to keep some standards, largely around the ideals bequeathed from the founding fathers; but making it work for three Americas will prove very difficult.

Economy... Finally there is the economic dimension. Historically, both political parties have oriented their message for the old top-down heavily concentrated industrial economy.

Democrats often identified themselves with newcomers and smaller businesses, and later labor, Government-dependent business and various entitlement lobbies. Republicans have largely been the party of larger companies and conservative small business owners.

In Washington, these economic forces remain at the heart of the debate. But in much of America the dynamism has shifted to smaller firms who create the bulk of the jobs and increasingly dominate the higher-value end as well.

This economy does not have much of a presence in Washington, although some regional political people understand its importance. This economy is not just a bunch of Mom and Pop businesses although they are one element -- but include sophisticated networks of regional business.

Here in Southern California, we have been living at the heart of these changes. The end of the military-industrial era here has meant a greater reliance on diversified networks of smaller companies -- many of them run or operated by recent immigrants -- in the fields as diverse as garments, textiles, medical equipment, computer software and entertainment. In each of these areas Southern California has the largest concentrations, with Northern California as the leading competitor.

In our recent economic crisis, out of which we are only now slowly emerging, politicians of both parties, but particularly democrats, focused their hopes -- and those of our population -- on typical Washington top-down solutions such as much ballyhooed defense conversion plans.

Those plans, so popular with Washington politicians, have proven virtually worthless. Billions have been wasted on elaborate projects, enriching consultants and a handful of companies but creating very little of value. The conversion that has worked has come from within companies and more often by individuals redeploying themselves in new industries.

Fortunately, the new economy that is developing here and elsewhere has been able to grow largely on its own. Fifty-three percent of all private sector employees in Los Angeles, for example, work in companies less

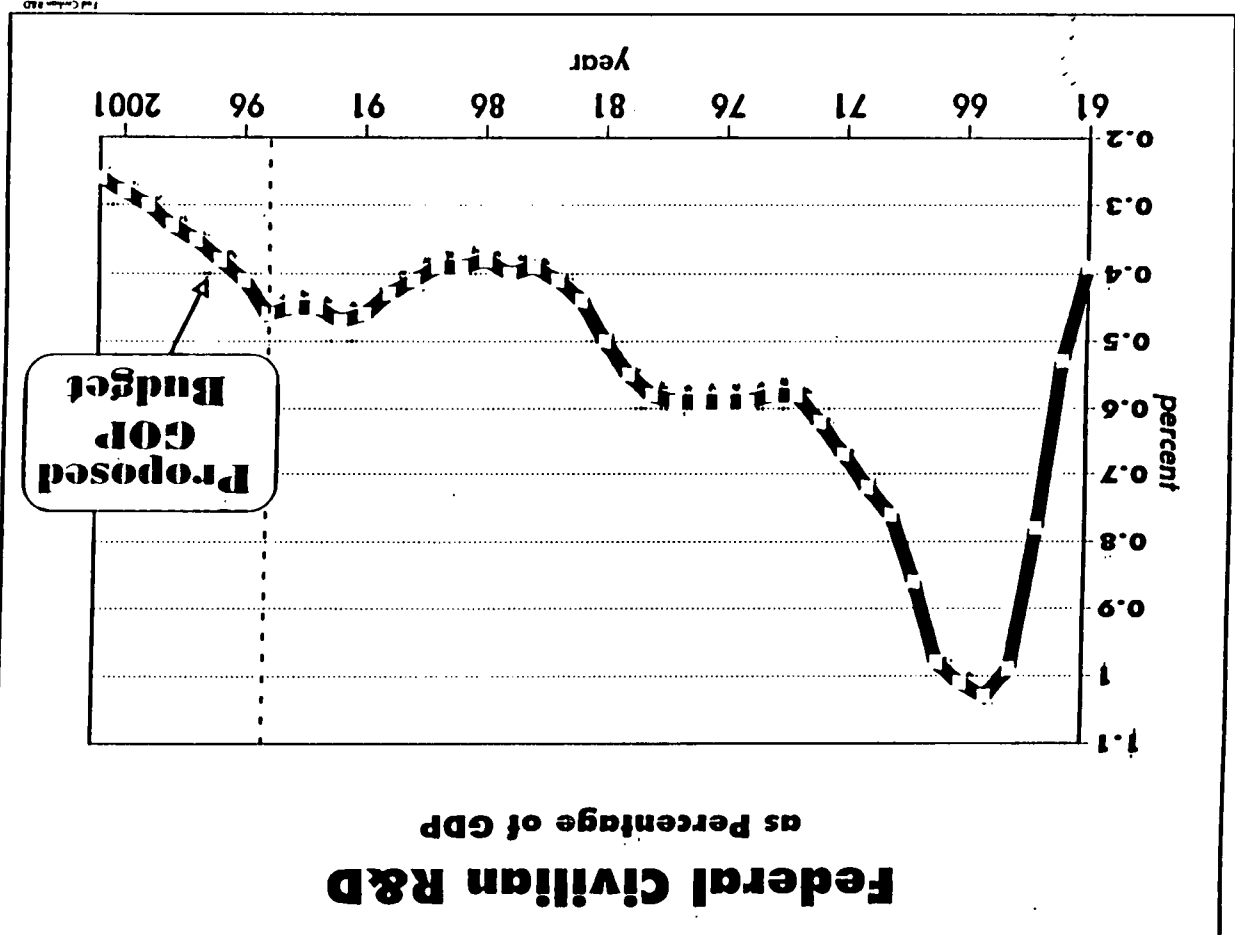
than fifteen year old. Most of these have no lobbies, no influence in Sacramento, much less Washington.

Although our case here may be somewhat extreme, similar developments have taken place elsewhere and will again as economic conditions force people to rethink, redeploy and redesign their economic strategies.

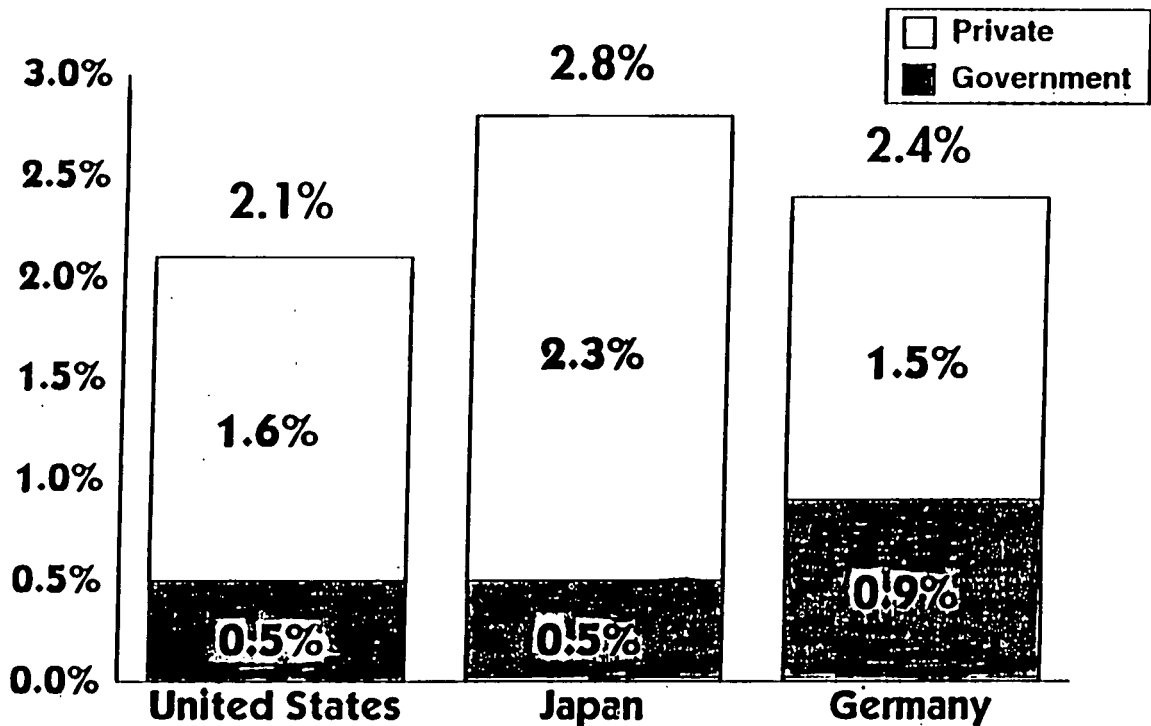
For the most part, Washington should stay away from this process. And if it does anything, it should do so largely by first **listening** to the makers of this economy and then only do those things that make sense to help it develop.

Again, thank you for the opportunity to share these thoughts with you. And please forgive me for my bad manners.

CHARTS FOR SENATOR JEFF BINGAMAN

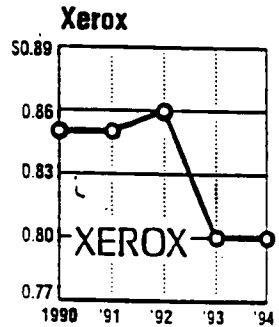
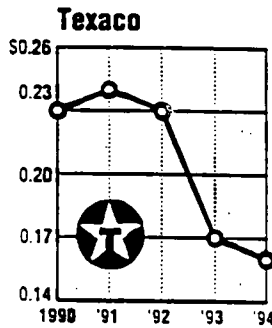
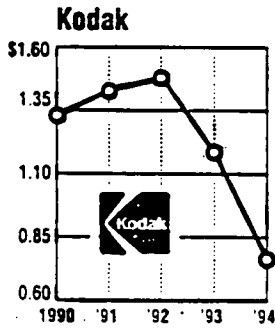
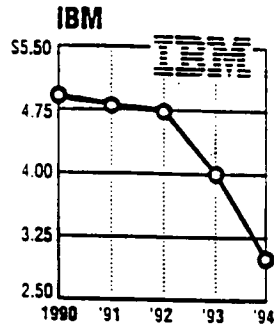
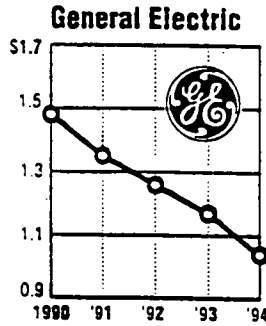
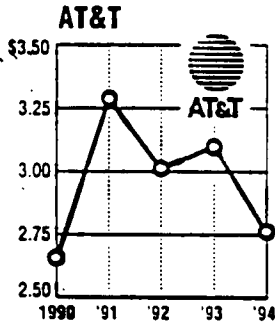


Non-Defense R&D as a Percentage of GDP 1992 (by source Funds)



What Happened, Big Spenders?

R&D spending by major U.S. high-tech companies, in billions



Note: All figures adjusted for inflation, stated in 1990 dollars

Source: Schonfeld & Associates

PREPARED STATEMENT OF SENATOR ROD GRAMS

Thank you, Mr. Chairman for scheduling this truly historic congressional hearing.

In 1984, George Orwell's landmark novel, technology was portrayed as evil and intrusive. But the year 1984 has come and gone, and today -- in 1995 -- we've come to realize that technology has a broad capacity for good. Instead of alienating people, technology can bring them together. We'll witness that today as people from around the country and around the globe are united electronically in a congressional hearing room on Capitol Hill.

The events that take place this morning will certainly expand the concept of "town hall meeting" ... and are especially timely considering the start of Group of Seven economic summit later this week in Nova Scotia.

I'm going to keep my opening remarks brief because I'm most interested in hearing what our witnesses have to say, and eager to observe how they will say it through the various technological media we will employ today.

But I do want to stress the importance of why I believe our economy must merge onto the Information Super-Highway, and why we must streamline our economy so it will be capable of this high-speed task.

The private sector is utilizing information and technology to its advantage, yielding better products ... more efficiency ... at a lower cost.

For example, consider the ATM card. I would guess that nearly every person in this room has one in their wallet. You can take it to just about any automated teller, anywhere in the world, and it will verify your account and give you money.

Twenty years ago, this was a figment of some inventor's imagination. But now, few of us can imagine life without 'round-the-clock' access to our money.

Now, the changes we will experience in the 21st Century will be truly astounding. Some people may even consider some of these changes somewhat scary. But we cannot ignore newer and more efficient technologies, clinging to the cumbersome policies and procedures of the past, just because we're intimidated by their sheer magnitude.

As one of our witnesses, Alvin Toffler, will testify, our economy has been transformed from one based on agriculture to one based on industry. And it must now transform itself once again to accommodate the vast

changes we're experiencing in information and technology, what Mr. Toffler calls the "Third Wave."

Yes, the Information Age is upon us, and it is moving fast. But government has been slow to respond. Because our government is so enormous, it has been highly resistant to most efforts to modernize and prepare for competition in the global marketplace.

Now, this is not to say that our government should actively promote certain technologies. On the contrary. While some in the current Administration believe we should get the government involved in yet another area of our daily lives, to have a government policy which helps certain companies at the expense of others would be a bureaucratic nightmare, not to mention the stifling effect it would have on our competitiveness abroad.

Government must step aside, deregulate, decentralize, and simply retreat. The technology of today will lead to greater opportunity, more and higher-paying jobs, and substantial economic growth tomorrow. By making way for these advancements, we will encourage American success in global markets and ensure our economy's ability to interconnect with the world.

**PREPARED STATEMENT OF
REPRESENTATIVE ROBERT WALKER**

Mr. Chairman, thank you for the opportunity to testify on the "21st Century Economy."

Since the end of the Cold War we have been struggling to define the best application of government resources to carry forward the technological process made necessary by our national strategy during the Cold War era.

We need to create an opportunity for every American by leading the transformation to a Third Wave, Information Age Society that will be the growth of a global economy.

The Information Age will create opportunities in a wide range of areas: Computer, worldwide electronics, molecular medicine, break-throughs in material technology, exploring and manufacturing in space, microminiaturization, and virtual reality.

A space based economy is the economy of our future, the Third Wave. We will be living and manufacturing space. America will no longer look at space as the alien but as the new frontier. We will see economic development of space by using free market principals espoused by commercial providers. We will be working together to create strategies and ideas that will make us respond in ways that enhance America's lead in space and aeronautical research.

We are also looking at a knowledge based society. A society that is actively involved in the information era. We already have living proof that America can succeed in the 21st Century. All around us scientists and entrepreneurs are inventing a better future. All around us corporations are re-thinking and re-engineering to produce more, better, and faster with fewer resources. All around us the private sector and private citizens are changing, adapting to today's competitive realities.

A successful 21st Century America is Pro-Entrepreneur, Pro-Science and Technology, Pro-Savings and Investment America that is inventing the best products with the highest values in the world. Second Wave Industries accumulate more and more and get bigger and bigger. Third Wave organizations are subtracting functions instead of adding functions and are subcontracting functions so that they remain quick, efficient and productive.

We need to decentralize more of the power by placing it in the hands of more people. Third Wave organizations are empowering their

employees because these employees often have information and responses to crises and opportunities faster than those on the top.

Third Wave organizations want all employees to think, question and take risks; an employee who shows individualism.

Now what we need to do is re-engineer government to follow Third Wave principals by cutting waste, lowering costs, increasing productivity and quality. This will also have the benefit of allowing us to cut taxes on the entrepreneurs and investors so we can create more economic growth.

We need to begin this restructuring of government in order to keep up with the rest of the world and the changes in the future. Government should be lean and flexible. It has been my hope ever since I arrived in this body, that Congress and the Executive Branch be more forward looking institutions. It seems to me that we are always trying to solve yesterday's problems. Instead as a government we should be looking at ways to anticipate what lies ahead and enact policies that are future oriented.

Government structures should be based on Third Wave realities. We should not only down size government but change what is outdated. Many of the charters for the current cabinet agencies are based on our First Wave or Second Wave principals. We need new department enabling legislation that would follow Third Wave principals in which government promotes science, trade, telecommunications, information and education.

For example, one of the restructuring options which should be considered is the combination of the Departments of Labor and Education. Because of rapidly changing technology we will need to create a system of effective lifetime learning.

No longer can one expect that the education one receives in one's youth will be sufficient to enable one to maintain the skill levels necessary for America's competitiveness in a rapidly changing economy.

Another Executive Branch reform that I have long advocated is the creation of a Department of Science. To me, this would be the focal point for future oriented programs within the Federal Government.

As we enter the 21st Century, science will play an increasingly important role as a driver of economic growth. As we have seen in the recent past, inventiveness has been a key to job creation.

A Secretary of Science would be the member of the President's Cabinet who would work with the other Cabinet secretaries to assure that

new ideas are brought to bear on the policy deliberations of the Executive Branch's most important policy-making council.

The department I am proposing would combine the science elements of the existing Commerce and Energy departments as those two agencies are terminated. It would also incorporate into the new department the National Aeronautics and Space Administration, the National Science Foundation, the Environmental Protection Agency, as well as the United States Geological Survey. These organizations would no longer be separate independent agencies.

Mr. Chairman, for the first time in many years we are looking at a major restructuring of the Executive Branch of government. We should take this opportunity not only to downsize what everyone acknowledges is overly large but also out of date. Many of the charters for the Cabinet agencies were formulated during the 19th Century. When the Department of Agriculture was created in 1862, over half the population lived and worked on the family farm. Today's economy is not only based on our agrarian heritage but it is to an increasingly extent anchored in science, trade, telecommunications, and information. As we reduce the size of government we should rationalize what remains into cohesive units which address problems as they exist today.

Economic change can open vast new horizons of growth and employment. Political change can open the doors for more hope and opportunity. Cultural change can create a foundation of values on which to build a future. Technological change can provide the means to pursue our dreams.

The challenge we face is to mold those changes in ways that lead to hope rather than hate; foresight rather than fear; virtue rather than victimization; vision rather than vitriol. That challenge is not just for politicians and policy-makers. It is a challenge for all Americans in an era of revolution.

PREPARED STATEMENT OF JERRY JASINOWSKI

EXECUTIVE SUMMARY

How the economy has changed. 1) The United States has become much more integrated into a highly competitive global economy. 2) There is greater competition at all levels, both in product and labor markets. 3) There have been revolutionary changes in manufacturing that have led to a transformation of how products are made, particularly on the factory floor and in the utilization of workers. 4) There has been a boom in capital investment, much of it in computers and information processing, that has contributed to a sharp rise in manufacturing productivity. 5) Workers are taking over control of production in an environment requiring increased skills and knowledge; this has been bolstered by incentive-based compensation systems. 6) All these changes have led to an increased capacity to grow with less inflation and a flatter business cycle.

Global integration. The main impetus for structural change originated with greater international competition, particularly pressure from imports penetrating the American market. During the early 1980s, foreign competition was seriously aggravated by the appreciation of the dollar. Even without this, however, the United States would still have had to contend with increased competition from the Third World, which had industrialized by the late 1970s. As a result, there is now a much greater emphasis on international markets by firms, both with respect to competing with imports and exporting to foreign markets in order to provide new opportunities for growth.

The combined effect of the low dollar and cost control at the firm level has made American industry highly competitive in world markets. For instance, the American share of world manufactured exports this rose from a low of 11.6 percent in 1986, when the dollar was still highly overvalued, to 12.9 percent in the early 1990s.

Greater competition at all levels. There is much greater competition in product markets, due to global competition and deregulation. In essence, prices are no longer set just in the domestic economy, and firms possess limited market power. Rather, prices are set in the global economy, and firms are forced to compete by raising productive efficiency and lowering costs. Simultaneously, there is greater competition in labor markets.

Revolutionary change in manufacturing firms. In the face of greater competition, firms have aggressively reduced costs and restructured. There was a general flattening of the managerial system. Compensation was made more dependent on the profitability of the firm. After a long period in which firms had evolved into diversified conglomerates, they began to emphasize core businesses. They sold off subsidiaries and outsourced many activities, reducing overhead. The trend toward outsourcing became particularly marked during the early 1990s, when increased use was made of outside firms not only for inputs to production but also services and technical expertise. Greater emphasis was placed on product quality. The technique of continuous monitoring of products with automatic feedback to the production process has now become so common that it has acquired the generic term Total Quality Management (TQM).

Firms also undertook technological and process improvements. The most widely used

is just-in-time (JIT) inventory control. A similar process improvement is material requirements planning. In statistical quality control (SQM), computers are used to monitor the quality of output and analyze defect rates. Other examples of process improvements are computer-aided manufacturing and networks. Finally, computer-aided design (CAD), in which graphics and visual software enable engineers to draft and manipulate designs on a terminal.

Capital investment and productivity. The current business cycle has witnessed a boom in business investment, which has been concentrated in computers and information processing equipment. In 1994, business fixed investment grew by 13.6 percent in real terms, while investment in equipment increased by 17.5 percent. Of the gains in equipment, fully 47 percent was accounted for by computers and information processing, and 26 percent was comprised by computers alone.

While productivity dropped throughout the economy during the mid-1970s, it rebounded in manufacturing starting in the early 1980s, and actually accelerated above its prior trend. The gains in productivity reflect several factors. We calculate that 30 percent was accounted for by reduced employment, 25 percent by rising capital intensity, and 45 percent by technological advance.

Higher productivity implies a faster growth rate of potential output -- the long-term rate of growth that is consistent with a stable rate of inflation. This can be roughly measured as the growth in the labor force plus the trend in productivity growth. We suspect that potential output in the late 1990s will be higher than the Federal Reserve's widely-cited estimate of 2.5 percent per year.

The new worker. The automation of the production process has meant that manufacturing jobs now require extensive technical knowledge, and as a result higher levels of education. The term "knowledge workers" -- employees with technical skills -- describes much of today's labor force, nowhere more than in manufacturing. The rise of skilled workers has to some extent been associated with the decline of pyramidal management. The higher salaries that go with these technical jobs are not dependent on advancing in a hierarchy, but rather reflect the value of the specialized skills in the market. As a result, organizations are more likely to be flat, and workers are likely to be organized into teams that combine particular sets of skills.

A further implication of knowledge-based work is that education will assume increasing importance. With the market paying salaries based on skill levels, workers who are most likely to be successful will be those who have had access to higher education, and who have obtained degrees in professions that are in demand.

The capacity to grow with less inflation. There are several reasons to expect inflation to remain low. One consequence of the more competitive environment was a drastic change in price expectations. Since the 1980s competition has kept prices lower, with

the result that industry can only achieve higher margins by controlling costs. Simultaneously, workers have kept wage bids lower in an effort to preserve jobs. This new disinflationary mentality has gradually taken hold throughout the manufacturing sector, and has a deeper implication. With price expectations permanently lower, it has become possible to produce more output at lower inflation than in prior decades.

A final possible implication is that the business cycle as a whole may turn out to be flatter, with longer slower expansions and shallower, less frequent recessions. This reflects two factors. First, historically, a large share of the decline in output during recessions is accounted for by the selling off of inventories. Better control over inventories implies less severe recessions. Second, the primary cause of recessions has been a buildup in inflation, followed by a tightening of monetary policy. A general tendency toward lower inflation coupled with more stable monetary policies points to a less volatile path for the economy.

Further policy implications. The nation's overall focus in the new economy must be to do everything possible to improve our ability to compete. This in turn dictates that we move forward on two broad fronts. First, we must examine existing premises about what is acceptable policy, particularly with respect to government actions that are wasteful, impede private sector activity, and are simply too expensive in today's more demanding world. The transformations in manufacturing provide a guide for what the government should do. Second, we need to advance a positive agenda for manufacturing, for entrepreneurship, for growth and for jobs.

Regulatory Reform. The current regulatory system is extremely costly. We estimate that in 1995 direct expenditures for compliance with environmental regulations were in the range of \$128 billion, with up to \$87 billion paid by business. There are also indirect costs in terms of lost production, which occur primarily because the capital stock becomes unproductive. The costs in terms of lost output came to 2.7 percent of real GDP, or approximately \$149 billion in constant 1987 dollars. Congress should reform the regulatory system by repealing unnecessary and burdensome regulations. Environmental regulations should be made target-oriented, giving the private sector flexibility in meeting goals, in place of the current command and control system. All new regulations should be subject to a requirement of risk assessment and cost-benefit analysis.

Reducing the Federal Budget Deficit. The Federal deficit should be reduced. At its current levels, the Federal deficit is keeping real interest rates higher than they have to be, while at the same time Federal dissaving only creates an imbalance between saving and investment that worsens the trade deficit. A lower Federal deficit would lower real interest rates, while at the same time boosting savings and improving the trade balance.

Monetary Policy. Monetary policy should not be allowed to become so tight as to force the economy into a straightjacket of no more than 2.5 percent growth. Instead, policy should be sufficiently accommodative to allow growth rates in the 3 percent range. Both because of higher productivity and greater competition in labor markets, there is little risk of

accelerating inflation.

A Positive Agenda for Growth. 1) In order to stimulate investment, repeal the Alternative Minimum Tax (AMT), and cut taxes on capital gains.

2) In order to stimulate technological advance, the R&D tax credit should be made permanent, and possibly expanded. Patent protection should be strengthened.

3) In order to promote exports, controls should be dismantled while export-promotion policies should be maintained.

4) Education is sufficiently important that it will require greater action from all sectors. The Federal government should put emphasis on standards and educational programs. The states should reform existing guidelines for private sector training and vocational education.

STATEMENT OF
JERRY J. JASINOWSKI
PRESIDENT, NATIONAL ASSOCIATION OF MANUFACTURERS
BEFORE THE
JOINT ECONOMIC COMMITTEE
ON THE NEW ECONOMY
JUNE 12, 1995

I. INTRODUCTION

This hearing is on the economic developments likely to dominate the early twenty-first century. In brief, there are six themes I would like to emphasize that reflect the big structural changes that are underway and will continue through the next decade. Taken together, these extraordinary transformations define a theme of rapid and major change that is the largest we have seen since the industrial revolution of the last century. This new environment of more rapid change requires intelligent adaptation on the part of both business and government.

The structural changes of the last decade are so major that they alter the way in which the economy works -- they define a new economy. The major structural trends consist of the following: 1) Global integration -- the United States has become much more integrated into a highly competitive global economy. 2) There is greater competition at all levels, both in product and labor markets. 3) There have been revolutionary changes in manufacturing

which have led to a transformation of how products are made, from the factory floor to the role of workers. 4) There has been a boom in capital investment, much of it in computers and information processing, that has contributed to a sharp rise in manufacturing productivity. 5) Workers are taking over control of production in an environment requiring increased skills and knowledge; this has been bolstered by incentive-based compensation systems. 6) All these changes have led to an increased capacity to grow with less inflation and a flatter business cycle.

One way to think about these issues is in terms of the flow of causation. The initial cause was the increase in global competition. This induced a response on the part of business and industry, i.e., the reorganization of the firm, increased application of new technology, and increased capital investment. This implied a similar evolution in the roles of workers. The final outcomes are higher productivity growth, and a greater capacity to grow. I would now like to discuss each of these themes in more detail.

II. GLOBAL INTEGRATION

The initial force that set in motion the structural transformations in manufacturing was severe international competition, which actually threatened the survival of many American industries. Increased competition from overseas had been coming for quite some time, as imports penetrated the American market, but during the early 1980s, foreign competition was seriously aggravated by the appreciation of the dollar. Even without the appreciation of the dollar, however, the United States would still have had to contend with increased competition

from the Third World, where labor costs are lower. By the late 1970s, much of the Third World had begun a process of industrialization, and was now competing in sectors ranging from steel, autos and computers which had heretofore been dominated by the advanced economies.

As a result, American firms have been forced to place much greater emphasis on international markets, first to protect themselves against imports, then to look at export opportunities. As American industry has successfully focused on global markets, this effort has paid off more than is generally realized. Since the late 1980s, American industry has been highly competitive in world markets. The low dollar and strong productivity improvements have given the United States a comparative advantage in many industrial sectors. One indication is that there has been a significant increase in the American share of world manufactured exports. This rose from a low of 11.6 percent in 1986, when the dollar was still highly overvalued, to 12.9 percent in the early 1990s. The improvement in competitiveness traces back both to the lower exchange rate, and to better control over costs at the firm level.

In general, trade flows reflect two main causes. The first is the relative price of traded goods -- domestic cost performance and the exchange rate. As detailed below, American firms have become very effective at keeping costs under control. The second is the global business cycle. Over time, about half the movement in exports and imports is caused by changes in relative prices. Roughly 35 percent is caused by the business cycle in the United States and its trading partners.

While there is a widespread perception that the United States has had a permanent

PREPARED STATEMENT OF BRENDA FRENCH

Mister Chairman, Members of the Committee, thank you for the opportunity to join you today. I commend you for holding this hearing to address the changing role of the government as we move away from the Industrial Age into the Knowledge Age.

I am Brenda French, founder and designer of French Rags, a wholly vertical manufacturing operation offering a collection of knitwear separates for women. French Rags' success can be primarily attributed to the ability to adjust and adapt to the changing needs of our customer. What we are today is totally different than how we started out or even what we were just six years ago. It is this very evolution of French Rags that I want to share with you today, for I see a parallel with the issue we are addressing today -- changes needed as government transitions into a new age.

I am a modern example of the old fashioned American Dream. As an immigrant from England, I came to this country in 1962 with \$80. After 15 years in the fashion industry in New York, I moved to Los Angeles in 1978 and started French Rags. The business was born out of necessity. Finding myself divorced and and the sole provider for my young son, I resorted to tapping my

knitting skills learnt as a young child at home in wartime England. With \$500 in hand, I started a fledgling knitting business which mushroomed rapidly from knitting scarves at home with sales of \$165,000 in the first year to opening a factory in Los Angeles with an added sweater line, the second year, with sales of \$1.5 million. The early to mid '80s, saw my business bloom into a \$10 million business, selling to retail giants such as Neiman Marcus, Bloomingdales, Lord & Taylor, Robinsons, among others. But it started to unravel almost as quickly as it rose. After ten years of successes, sales were dropping everywhere and merchandise returns were escalating. By 1988, as the recession was creeping in, the retail marketplace was in trouble and so was my business. The retailer was failing to follow the customers needs; the buyers were not listening and continued to dictate taste; as money got tighter, the customer wanted value for the dollar; working women's shopping time became more limited; and they wanted choice, choice choice. Change was in the air.

Opportunities as an Outcome of Change

Having established relationships with my customers during my personal appearances all over the country over those ten years in business, I decided that I had nothing to lose by getting their input. I sought many out and found that they were unanimous as to their needs.

The product was right, i.e. wearable, flattering clothes, choice as to color and style. But they were adamant about value and service and all agreed that shopping in stores was akin to going to the dentist. I watched the growth of catalogue shopping; the advent of home shopping networks; the opportunities new technologies were bringing. The needed change evolved from listening, learning and opening up communications channels.

The French Rags story can jump to today's operation. New distribution channels were established for selling directly to the customer. Regional agents, an untraditional sales force composed of community-involved women, were recruited to sell through trunk shows nationally. Basically, customers were going to be given service, ease of purchase and choices, all essential elements to keep them in the fold. Technological advances in knitting machines and in communications, allowed for mass customization and although not intentional, we became manufacturers producing "one 'ofs". As an example, last year we produced 20,000 garments, made 885 different styles, giving us an average run of 22 pieces per style, all customized, resulting in \$5 million in sales. We were able to adapt to the customer's wishes individually and still remain profitable. That became key to our success.

The Government's Customer

And herein lies the parallel that I alluded to at the beginning of this testimony. I am, like all business in a certain sense, a captive customer of the government. Not that we work for the government, but we are a revenue source to it, adhere to the rules and regulations and are a part of the whole in which government plays a leading role. But government seems to have lost touch with its "customers", just as I had. Much like change was forced on me by the business climate, so does change now force itself on government -- to serve effectively the new environs that surround us. The only way to get back in touch with its "customers" is to open channels and then listen and change.

Customization seems to be a buzz word of our time and government would do well in "customizing" its efforts to support business and thus ensure new and small firms to have the opportunity to develop and enhance their value in the marketplace without interference from unfair practices and inappropriate barriers. Most of today's government policies apply to all businesses regardless of size -- a climate that regrettably favors big business. From a policy perspective, it should matter whether policies optimize the capacity of the national economy to generate and assist small business as well as entrepreneurs. And I do differentiate the two.

Entrepreneurs are the visionaries, the innovators, while small businesses could be franchises. Still, customizing policies by size is warranted and should be a consideration. Therefore it matters how small business is categorized. For example, the SBA defines "small business" as one with fewer than 500 employees -- a range too large to be on target as to needs. Companies with 10 employees deserve different considerations than those with 20, 50 or 100, and certainly, 500 employees.

In the approaching the Knowledge Age, laws that worked in the Industrial Age may no longer work and therefore are in need of review, revision or outright deletion. New ones will need to be written, to be more compatible with the new realities of the business climate. For instance, laws and regulations that make working in the home either illegal or at the very least, complicated and difficult to comply with, would be out of synch with the growing popularity of cottage industries, as well as with working mothers who need to earn that second income while caring for small children at home. Antiquated laws that were once written to protect, may now prove burdensome and unproductive in the new socio-economic climate we are in.

The entrepreneurial spirit has always been a strong American trait. Historically it was the entrepreneur of the likes of Ford, that built this country. Somewhere

along that track, the interests of big business overtook us. But, according to a recent *Inc.* magazine article, "nothing is as important to the health of the U.S. economy as the rate at which entrepreneurs create new companies." They create the opportunities for new jobs, often create new markets, and venture onto new ground that has not yet been sown. Government action can be effective in promoting their growth by acting as a catalyst, finding new ways to manage their needs, reaching out with incentive programs that promote training grounds, minimize fees and, in short, listen and flex with innovative programs customized accordingly.

But the communications channels need to open and be in place in order to succeed.

Los Angeles' Mayor Richard Riordan has already taken a lead in understanding this. His leadership has put a face to that city's government. His office's L.A.'s Business Team, in coordination with the L.A. Economic Development Corporation, sends out field workers, offering face-to-face conversations with local businesses as to their needs. Basically, the city has established new pipelines straight into the business community. The Federal Government would do well to take similar action and create new distribution channels much like I did in my business' turnaround.

What does the entrepreneur need?

A user-friendly government. Easy access to information. A "chat" room with appropriate government channels. A climate of compatibility and support. An opportunity for a company to move forward without bearing the burden of defending itself along the way from unforeseen government toll booths. Government needs to have a longterm approach, recognizing that additional taxes reaped from increased business would more than offset any losses from fines, or losses from forcing a company out of business. As we modem ourselves and interact electronically with our customers, so can the government set up channels with their "customers", the entrepreneurial business communities. There needs to be a one-stop shop for information. It is impossible for the busy and oftentimes overwhelmed entrepreneur to be on top of all the policies that affect their business, globally sometimes. It creates a situation of "us versus you" -- business versus government, whereas in the best of all worlds, we should be on the same side to build a stronger and more competitive America. It has been the role of government to be a revenue builder and it remains the role of business to minimize payment wherever possible. Business has not been able to keep up with all the red tape involved, and State and Local governments have not been able to be an effective watchdog, enforcing regulations. There needs to be easy

access of all information. It is time we all worked together and dropped the "us versus you" positions.

Conclusion

But to do so, there has to be moral accountability. What is the goal here? To fight City Hall or to have City Hall on the same side? Government does have to reengineer itself to accommodate the changes. It is not an easy task, but together it can be done. The government must have an integrated, coherent approach in setting up communication channels that delve deeply into business communities nationally, ensuring a successful transition into the new realities of our society.

The key is to listen and adapt to the ensuing changes. There is nowhere else to turn.

PREPARED STATEMENT OF FREDERIC PRYOR

SOME DEVELOPMENTS OF THE U.S. ECONOMY IN THE 21st CENTURY

Cliches may be true, but quite often they are true. We are entering the information age and much of the testimony of this hearing has rightfully focused on the opportunities and problems of this transition. We must, however, avoid the enthusiastic notion that by aligning ourselves with electronics, we will develop a new sense of community, our American democracy will flourish, and we will automatically become a better society. Of course, the post-industrial and cybernetic model of our economy has considerable appeal; it is exciting to consider the opportunities offered by the information highway, and it is important to explore the trends of technological change, population growth, and production. But we must also consider the human resources undergirding our emerging post-industrial economy to determine if our society can function effectively in the information age.

My analysis focuses on three trends that will structure our future economic development: the increasing gap between our future educational requirements and our present educational level; the declining employability of an increasingly larger segment of the labor force arising from this gap; and the rising inequality of wages, income and wealth resulting from this employment problem.

A Rising Gap between Future Educational Requirements and Present Educational Levels

Table 1 about here.

Obviously, the rising level of technology requires increasing cognitive skills of the population. Table 1 combines data drawn from the Decennial Census of Occupations and the skill ratings drawn from the Dictionary of Occupational Titles to show changes in the average level of general skills of members of the work force. These calculations show a changing composition of occupations such that those occupations requiring greater cognitive and "people skills" have increased over time, while those requiring manual skills appears to have stagnated.

Table 1: Characteristics of All U.S. Jobs

	<u>1960</u>	<u>1960</u>	<u>1970</u>	<u>1980</u>	<u>1990</u>
Substantive skills (cognitive skills)	3.65	3.76	3.96	4.16	4.40
Interaction skills (people skills)	1.90	2.04	2.22	2.39	2.64
Motor skills	5.06	5.08	5.12	5.03	4.89

Notes:

The scales run from 0 (low) to 10 (high) and show the changing skill levels of the employed labor force that arise from the changing composition of occupations. These were calculated from skill levels of 400 occupations and census data on the occupational composition of the labor force. The calculations are based on the assumption that the skill levels of specific occupations have not changed. Complete details of the calculations are provided in Pryor (1995, Chapter 3).

Although the shift toward occupations with higher cognitive skills is well known, the production of such skills by the American educational system is not rising to this challenge. This can be seen from the 1992 results of the National Adult Literacy survey, financed by the National Center for Educational Statistics. The survey asked a representative sample of the population to perform particular tasks in order to determine their cognitive skills along several different dimensions. From these results reported in Table 2, we can draw two important conclusions.

Table 2 about here.

First, the cognitive skills (reading, information processing, and quantitative) of adults have remained roughly the same for the last three decade cohorts measured (from Part A of the table). Moreover, reading, science, math, and writing skills of 17 year old students in our high schools have also not greatly changed in the last two decades (from Part C of the table).

Second, on the average this cognitive level of the adult population is low. For instance, about two fifths of all adults cannot interpret instructions from an appliance warranty, identify information from a bar graph, or use a calculator to determine the difference between regular and sale prices from an advertisement. About one sixth cannot understand the meaning of a term given in a government brochure on GSI, locate an intersection on a street map, or calculate postage and fees for certified mail (from Part B of the table).

One obvious implication of such results can be immediately drawn: A significant share of our work force does not have the cognitive skills to participate fully in the high-tech future that awaits us in the information age of the 21st century. The information revolution will pass them by because they will not be able to process effectively the information that they receive.

Table 2: Indicators of Variation of Educational Quality

A. National Adult Literacy Test (NALIT) Scores: Averages and Variation

Age group	Median years of schooling	Reading (Prose scale)		Information processing (Document scale)		Quantitative (Quantitative scale)	
		Average score	Coefficient of variation	Average score	Coefficient of variation	Average score	Coefficient of variation
25 - 34	12.9	283	22%	281	22%	281	23%
35 - 44	13.1	289	23	283	23	283	24
45 - 54	12.8	282	23	273	23	282	24
55 - 64	12.6	260	24	249	25	261	26
> 65	12.2	230	29	217	29	227	36

B. National Adult Literacy Test (NALIT): 1992 Levels of Ability

Age group	Reading			Information processing			Quantitative		
	At or below	At or above	At or above	At or below	At or above	At or above	At or below	At or above	At or above
Scores	225	275	375	225	275	376	225	275	376
25 - 34	16%	41%	4%	14%	41%	4%	17%	41%	5%
35 - 44	14	35	6	16	39	5	15	36	6
45 - 54	16	41	5	17	37	3	17	41	5
55 - 65	26	57	1	30	64	1	25	55	2
> 65	44	76	1	53	85	0	45	71	2

C. National Assessment of Educational Progress (NAEP) Reading Tests: Trend of 17 Year Old Pupils in School

Age in 1992	Average score, reading	Coefficient of variation	Average scores, other tests						
			Science	Mathematics	Writing				
1971	38	285.2	16%	1970	303	n.a.	n.a.		
1975	34	285.6	15	1973	296	1973	304	n.a.	
1980	29	285.5	15	1977	290	1978	300	n.a.	
1984	25	288.8	14	1982	283	1982	299	1984	212
1988	21	290.1	13	1986	289	1986	302	1988	214
1990	19	290.2	14	1990	290	1990	305	1990	212

Notes:

All scales run from 0 (lowest) to 500 (highest). The scores for those 65 and over are biased downward because of difficulties with the test caused by visual and other physical impairments. The coefficient of variation is the standard deviation divided by the mean.

Prose skills on NALT scale. Prose scale 225: Underline meaning of a term given in a government brochure on supplemental social security income. Prose scale 275: Interpret instructions from an appliance warranty. Prose scale 274: Compare two metaphors in a poem.

Document skills on NALT scale. Document scale 230: Locate intersection on a street map. Document scale 277: Identify information from a bar graph depicting source of energy and year. Document scale 278: Use information in a table to complete a graph including labeling axes.

Quantitative skills on NALT scale. Quantitative scale 238: Calculate postage and fees for certified mail. Quantitative scale 278: Use a calculator to determine difference between regular and sale price from an advertisement. Quantitative scale 383: Determine shipping and total costs on an order form for items in a catalog.

Sources:

The data Part A come from unpublished data supplied by the Educational Testing Service. Average years of schooling come from Robert Kuzinski and Andrea Adams, "Educational Attainment in the United States," U. S. Census Bureau, *Current Population Report, Series P-20, No. 462* (Washington, D.C.: GPO, 1993), p. 7. The data for Part B come from National Center for Education Statistics, *Adult Literacy in America*. (Washington D.C.: GPO, 1993). The data in Part C come from Ina V.S. Mullis, et al., *Trends in Academic Progress*, National Center for Educational Statistics. (Washington, D.C.: U.S. Department of Education, 1991) and unpublished information supplied by Educational Testing Service.

The Declining Employability of Larger segments of the Labor Force

If demand for a labor force with high cognitive skills is rising, while the supply is stagnant, at some point both unemployment and the share of the adult population that is not in the labor force should start to increase.¹

From the trend of unemployment rates of both men and women from 1950 through 1990, we see a slow but statistically-significant increase. If this continues, the percentage of unemployed will double in slightly less than half a century (Pryor, 1993, Chapter 3). A high percentage of these people seeking employment are low-skilled workers, who experience both more unemployment and also longer spells of unemployment than others. The average unemployment rate over the 40 period from 1950 to 1990 was 5.7 percent and, although we are currently at a stage in the business cycle when our unemployment rate is lower than this, we must avoid complacency; long-term trends are not encouraging.

Equally alarming, over the last quarter century from 1965 to 1990, the non-participation rate in the labor force of prime-age eligible male workers has increased from about 4 percent to 6 percent (Juhn, Murphy, and Topel, 1993). More aggregate data suggest this trend began before 1965. These non-participants are men who are not in school and who have up to thirty years of potential labor market experience. For high school graduates, this includes men up to 48; for college graduates, up to their early 50s. They are not yet ready for retirement but are simply out of the labor force and not looking for work. Again, it is important to understand that a predominant share of these workers out

¹ This assumes, of course, that the U.S. economy does not develop a type of dual economy with a high-tech and a low-tech sector, each employing workers of the appropriate skills. Such a possibility appears excluded because of the potential impact of imports, which would wipe out any such a low-tech sector. That is, wages in most of our trading partners using the same low-tech methods are much lower so that this type of low-tech sector could not survive.

of the labor force has a high school education or less and is relatively unskilled. This trend is also disturbing.

The employment problems of these less educated men are exacerbated by competition with immigrants for the jobs they might obtain. In recent years an increasing share of these legal immigrants to the USA has less than a high school education. Moreover, the educational level of illegal immigrants appears lower than that of legal immigrants. Thus those poorly educated American-born men face increased difficulties in obtaining low-skilled jobs and, as a result, are more likely either to end up unemployed or out of the labor force.

Although the participation rate of women in the labor force has risen steadily over the last 40 years, some signs suggest that this increase is slowing. One would expect that the demand for low-skilled workers will begin to affect women in the same way as men, especially as the wage differential between men and women continues to narrow.

This means that if present trends continue their course, the share of poorly educated men and women without jobs will grow. Technology has advanced and we can not return to the days of the 1950s or before when there were job opportunities for anyone, no matter how unskilled, who was willing for work. In the 21st century there simply will not be the jobs for such workers. Larger numbers will be actively looking for work or will have dropped out of the labor force because jobs suitable for their low level of skills and knowledge will simply not be available. These problems, I must emphasize, are structural and do not occur because of lack of aggregate demand. I see little evidence that the economy is unable to absorb high-skilled workers.

Increasing Inequality of Wages, Total Income and Wealth

The increasing number of low skilled workers who are unemployed or out of the labor force

means that competition for the low-skilled jobs is greater and that real wages of these jobs should decline, which means that the gap between wages of low and high-skilled workers should widen. A large economic literature (summarized by Levy and Murnane (1993) and Danziger and Gottschalk [forthcoming]) shows that this is exactly what is happening. Since this trend, which has appeared since the late 1960s, has been documented at length, it requires no repetition. Debate has focused on the degree to which this has occurred because of particular demand and supply elements, for instance, a certain type of technological change. And other factors giving rise to greater inequality of wages within particular occupations or industries or within groups of workers with the same education and age have also been isolated. But an important cause of wage inequality also appears to be the growing gap between our educational requirements and our actual educational levels with the resulting downward pressure on wages of low-skilled workers.²

Table 3 about here.

If wages are becoming more unequal, this is likely to be reflected in an increasing inequality in the distribution of income. As shown in Table 3, this is exactly what is happening. The money income of families (related people living together) or households (families plus unrelated people living together) became more equal from 1950 through the late 1950s or early 1970s, but since then have become increasingly unequal.

Other approaches toward income inequality reveal similar trends. For instance, if the

² It has been argued that the decline in wages of the low-skilled is also due to the impact of foreign competition. I have shown elsewhere (Pryor, 1993) that imports have had a greater adverse impact on those U.S. industries relying on low-skilled workers than on high-skilled workers. Nevertheless, it should also be noted that the ratio of imports to the GDP has remained roughly constant during the 1980s at a time in which the gap between wages of the high and low skilled workers in America continued

Table 3: Five Year Averages of Inequality Indicators

		Money income:		
		Families		Household
		SQ/IQ	Gini	Gini
1950-54	8.9	.363	.410	
1955-59	8.2	.357	.402	
1960-64	8.4	.365	.411	
1965-69	7.4	.350	.398	
1970-74	7.6	.356	.397	
1975-79	7.8	.361	.401	
1980-84	8.8	.375	.410	
1985-89	9.6	.394	.426	
1990-92	9.8	.399	.430	

Notes:

The money income data are pretax and include money transfers. The SQ/IQ statistic is the average income of the top quintile of income receivers to the average income of the bottom quintile of income receivers. The Gini coefficients of inequality have a range between zero (perfect income equality) to 1.00 (complete inequality of income where one income recipient receives all income).

Data on the ratio of family income of the top quintile to the bottom quintile come from Mary Hanson, *Trends in Income by Selected Characteristics 1947 to 1988*, U.S. Department of Commerce, Bureau of the Census, *Current Population Reports P60-167* (Washington, D.C.: GPO, 1990), p. 16. The other two series come from various yearly editions of U.S. Department of Commerce, Bureau of the Census, *Money Income of Households, Families, and Persons in the United States: 1991*, *Current Population Report, P60-180*, Washington, D.C.: GPO, annual.

Inequality data are recalculated to take account of the size, composition, and age of family members, the same trends in inequality emerge (Karely, forthcoming). If we continue this line of inquiry and examine the inequality of consumption, taking account of the fact that consumer durables are consumed over a period of years, the same trends also appear (Cutler and Katz, 1991). The pattern of inequality of wages and salaries follows a roughly similar pattern as well.

Of course, such data on income inequalities reflect income only in a single year, rather than a lifetime. It is possible that these spells of poverty are only temporary and do not reflect real poverty or inequality of incomes over longer periods. If this is so, then these statistics showing a declining equality of annual income are not as serious as it might first appear.

But long-term average incomes are also becoming more unequal so that arguments about the unimportance of short-term inequality fall to the ground. Using income tax returns Joel Slemrod [1992] shows that the average income of taxpayers for the seven-year period from 1967 through 1973 was more equal than in the seven-year period from 1979 through 1985. This tax sample omits, however, a significant proportion of low income families. Utilizing income data from the University of Michigan's Panel Study of Income Dynamics (PSID), Charles F. Stone and Larry Radbill [1993-a and 1993-b] show that average incomes over the ten-year period from 1969 to 1979 were more equal than over the nine-year period from 1979 to 1987. For this they use two samples: labor income of prime-age males and total family income. Thus, from 1980 onward lifetime incomes are becoming more unequal as well. Jonathan R. Yeum (1992) shows that year-to-year mobility in the income distribution declined significantly between 1972 and 1986 for family income, for equivalent incomes

(taking family composition into account) and for earnings of the family head.³

Of course, these long-term inequalities are somewhat less than the inequalities for a given year since people sometimes have particularly low or high incomes in a certain year. Steven V. Rosa [1993] presents some interesting results based on two ten-year samples examining this idea. He shows that the same families in the low income quintiles were much more likely to experience low or negative income growth over the decade than families in the high income quintiles. Moreover, this gap in income growth widened over time. Moreover, black/white differences in average income increased over time. In sum, all these studies of long-term income point toward greater lifetime inequalities of income in the 1980s than in the previous decade.

Several studies of a more tentative nature also show a considerable inherited component in the income distribution. For instance, Gary Solon (1992) shows that if a father's income is in the lowest quintile, his son has a 49 percent chance or more of also having an income in the lowest quintile and a mere 17 percent chance of rising to the median. Using quite different statistical methods and a sample of incomes of fathers and sons from the National Longitudinal Survey, David Zimmerman (1992) obtains roughly similar results. In sum, social stratification by income appears to have hardened in the U.S.

Several intractable mechanisms reinforce this trend toward an ever-widening inequality of income:

³ Reporting some preliminary results, Isabel V. Sawhill and Mark Condon (1992) use two nine-year samples and present data suggesting a contrary conclusion, namely that although lifetime incomes are becoming more unequal, income mobility from quintile to quintile has not greatly changed. But this study is criticized on a number of technical grounds by Stephen V. Rosa, who among other things points out that it is necessary to adjust to take into account random fluctuations of income in a single year by comparing several year averages of incomes ten years apart in order to avoid bias.

First, as the requirements for higher cognitive skills increase, it becomes increasingly more difficult to catch up if one has started or has fallen behind.

Second, a high proportion of the poor are single mothers with children. Studies of family breakdown in America show that, other things being equal, children from such families are much more likely to drop out of school. (Such evidence is summarized by Blankenhorn [1993] and McLanahan and Casper [1995]). The proportion of single-parent families continues to grow, and, other things remaining the same, we would expect more low-skilled workers and the subsequent unemployment or labor force non-participation arising from this source.

Third, neighborhoods in America are highly clustered by household income and even more so, by race. A high proportion of poor African Americans are clustered in the same census tracts and, as noted by Douglas Massey and Gary Denton (1993): "Growing up in a ghetto increases the likelihood of dropping out of school, reduces the probability of attending college, lowers the likelihood of employment, reduces income earned as an adult, and increases the risk of teenage childbearing and unwed pregnancy." They also note a linguistic handicap: "Black English has become progressively more distant from Standard American English, and its speakers are at a clear disadvantage in U.S. schools and labor markets." Gary Orfield (1993) also presents data showing that segregation of black students in primary and secondary schools increased from the mid 1980s to the early 1990s - for the first time in two decades - and was at the same level as in the early 1970s. Moreover, the percentage of Latino students in schools that were predominantly minority has been increasing since the late 1960s. Thus "neighborhood effects" are increasing in importance as a cause of non-participation in the labor force or unemployment.

Finally, if the savings rate continues to fall, if the share of the work force

covered by private pensions continues to remain about the same (Beller and Lawrence, 1992), and if the share of the population covered by health insurance continues to fall, then the ranks of the poor in the 21st century will be swelled by the old and the sick.

Three other implications of this trend toward greater income inequality also deserve brief notice:

First, income inequality should increase more in future recessions, at least if Congressional plans for transforming various entitlement programs into block-grant programs to the states are realized. This would occur because state governments will likely continue to be bound by budget-balance requirements. Therefore, during periods of recession, public assistance would not increase as much as during the period when such programs were an entitlement financed by the federal government. As a result, the economic plight of the temporarily poor would increase. Although this could be remedied by some type of block grants indexed to general economic conditions, such a provision does not appear under consideration.

Table 4 about here.

Second, because high income families save a larger share of their income than low income families, the increasing inequality of income has also been accompanied by an increasing inequality of wealth holdings, as shown in Table 4. These inequalities of wealth are, of course, also carried forward from generation to generation and increase social stratification.

Third, if the nightmare forecast by those worried about the ecology ever occurs so that prices of raw materials rise in comparison to other prices, low income people will be hit more hard than high income people because a higher share of their expenditures are for raw

material intensive products (Pryor, 1995).

In sum, if present trends continue, America's 21st century economy could be well described by Benjamin Disraeli, the conservative Prime Minister of Britain in the late 19th century, as: "Two nations; between whom there is no intercourse and no sympathy; who are as ignorant of each other's habits, thoughts, and feelings, as if they were dwellers in different zones, or inhabitants of different planets who are formed by a different breeding, are fed by a different food, are ordered by different manners, and are not governed by the same laws . . . the Rich and the Poor."

Final Remarks

In my forthcoming book (Pryor, 1995) I try to show that many of the economic trends that will influence our 21st century economy are favorable. For instance, for a variety of reasons, volatility of production appears to be decreasing, even as the economy becomes more internationalized and exchange rates are experiencing greater monthly and yearly fluctuations.

Nevertheless, the electronic techno-utopia of this digital age does not seem to be sustainable if the three trends I have described continue. This is because the growing economic and social inequalities and the widening gap in the life chances of different segments of our population are bound to lead to increased social tensions, increased crime, increased family breakdown, and increased social disorder. Those considering themselves truly conservatives in the sense given to that term by Edmund Burke are deeply concerned with maintaining the social fabric protecting and giving meaning to their lives. They have reason to be alarmed about such developments. They may also be concerned that the American dream of economically rising on the basis of one's efforts may become applicable for only the children in families with more than average incomes and that we must tell the children of the poor that their chances of escaping the economic position of their parents are increasingly smaller.

It is easy to dismiss the implications of this development without realizing that rich and poor are in this nation together, and that what affects one group will have an impact on the quality of life of the other. There are limits to which we can try to solve these problems by private and walled suburbs and more prisons. This opportunity gap exists not only among African-Americans in the inner city but among whites in many rural areas as well and, in the course of our daily lives, it is difficult always to avoid these areas. Most adversely affected by such a change in the quality of our lives will, of course, be the most vulnerable - our young children and our aged parents.

Clearly the problems arising from a growing gap between the demand and supply of skills that have led to a decreasing rate of labor force participation and a growing income gap between low and high skilled workers are not going to be solved by our current policies. Nevertheless the three trends I have described are not inescapable and they can be influenced by long-term public policy. In particular, some nations in the world appear to have had some success in improving the cognitive and other skills of workers who, in the United States, are becoming increasingly unemployable.

This Committee deserves compliments on beginning hearings about the future of the U.S. economy that will allow us to attack more systematically than before particular long-term economic problems facing the nation. I am most grateful for the opportunity to discuss some of my ideas with the Committee.

I strongly hope that these hearings about the general developments of the future of our economy will lead to a set of further hearings about the future of our economy that will allow closer attention on specific problems. If such hearings are being planned, may I suggest that you focus at least one set of hearings on the problems concerning the match between the labor skills needed for the information age and the current skills of our labor force, as well as the results of various current programs that are aimed at developing greater skills of the labor force so that, in the future, we will not have the social problems arising from an increasing unemployability of our workers. This is an impact of our ever-increasing level of technology and it is a problem that will remain with us for the entire 21st century unless we begin now to take appropriate policy measures.

BIBLIOGRAPHY

- Blanchhorn, David. 1993. Fatherless America. New York: Basic Books.
- Beller, Daniel J. Beller and Helen E. Lawrence. 1992. "Trends in Private Pension Plan Coverage," in John A. Turner and David J. Beller, editors. Trends in Pensions 1992, Washington, D.C.: GPO:50 - 97.
- Cotter, David M. and Lawrence F. Katz. 1992. "Rising Inequality? Changes in the Distribution of Income and Consumption in the 1980s," National Bureau of Economic Research, Working Paper No. 3964. Cambridge, Massachusetts.
- Danziger, Sheldon and Peter Gottschalk. Forthcoming. Economic Hardship, Slow Growth and Increasing Inequalities.
- John, Chahai, Kevin M. Murphy, and Robert H. Topel. 1993. "Why Has the Natural Rate of Unemployment Increased over Time," Brookings Papers on Economic Activity, No. 2: 75 - 142.
- Karely, Lynn A. Forthcoming. "Trends in Income Inequality: The Impact of, and Implications for, Tax Policy," in Joel B. Slemrod, Editor. Tax Progressivity, New York: Cambridge University Press.
- Kennickell, Arthur B. and E. Louise Woodburn. 1992. "Estimation of Household Net Worth Using Model-Based and Design-Based Weights: Evidence from the 1989 Survey of Consumer Finances," Board of Governors of the Federal Reserve Bank, distributed paper, April.
- Levy, Frank and Richard J. Marzano. 1992. "U.S. Earnings Levels and Earnings Inequality: A Review of Recent Trends and Proposed Explanations," Journal of Economic Literature 30, No. 3 (September): 1333 - 81.

- McLanahan, Sara and Lynne Casper. 1993. "Growing Diversity and Inequality in the American Family," in Reynolds Farley, editor. State of the Union: America in the 1990s, Volume 2: Social Trends (New York: Russell Sage Foundation): 1-47.
- Massey, Douglas S. and Nancy A. Denton. 1993. American Apartheid: Segregation and the Making of the Underclass. Cambridge, Massachusetts: Harvard University Press.
- Orfield, Gary. The Growth of Segregation in American Schools: Changing Patterns of Separation and Poverty Since 1968. Washington, DC: National School Boards Association.
- Fryer, Frederic L. 1996. Economic Evolution and Structure: The Impact of Complexity on the U.S. Economic System. New York: Cambridge University Press.
- Ross, Stephen J. 1993. "Declining Family Incomes in the 1980s: New Evidence from Longitudinal Data," Challenges 36, No. 6 (November-December): 29 - 36. .
- Sewhill, Isabel V. and Mark Condon. 1992. "Is U.S. Income Inequality Really Growing," Policy Brief (Urban Institute) 13. June.
- Shamrod, Joel. 1992. "Taxation and Inequality: A Time-Exposure Perspective," National Bureau of Economic Research. Working Paper No. 3999. Cambridge, Massachusetts.
- Stone, Charles F. and Larry Rudbill. 1993-a. "Longitudinal Evidence on Earnings: Some Preliminary Findings from the PSID," Paper presented at the annual meetings of the Eastern Economic Association, March 21.
- Solon, Gary. 1992. "Intergenerational Income Mobility in the United States," American Economic Review 82, No. 3 (June): 393 - 498.
- Vonna, Jonathan B. 1992. "Accounting for Income Mobility Changes in the United States," Social Science Quarterly 73, No. 4 (December): 773 - 785.

- Wolff, Edward N. 1994. "Trends in Household Wealth in the United States, 1962 - 1983 and 1983 - 1989," Working Paper 94-03, C. V. Starr Center for Applied Economics, New York University.
- Wolff, Edward N. and Marcia Marley. 1989. "Long-Term Trends in U.S. Wealth Inequality: Methodological Issues and Results," In *Lipsy and Tice* (1989): 765 - 844.
- Zimmerman, David J. 1992. "Regression toward Mediocrity in Economic Structure," American Economic Review 82, No. 3 (June): 409 - 29.

PREPARED STATEMENT OF ROBERT GENETSKI

Broad economic movements occur in waves. For fifty years these waves focused on shifting responsibility away from individuals and toward government. At the beginning of the 1980s, the waves began to shift in the opposite direction. The Contract With America represents the second wave of a major transfer in power from government back to individuals.

The Contract is not an end in itself. It is an interim move that will be followed by a more significant and powerful Third Wave. It is this wave that will form the basis for the economy in the 21st Century. The Third Wave will produce a major boost to productivity and living standards. In the process, it will place the US economy in a position of a unsurpassed prosperity.

Shifting Power to Government

Classical economic principles extol the importance of the individual in creating prosperity. Throughout most of its history, US economic policies placed maximum power and responsibility in the hands of individuals. Policies began to shift away from these pro-growth, classical principles in three waves. The first wave came in response to the Great Depression. A frightened public began to rely more on government and less on individual initiative in an attempt to restore prosperity and economic security. Government programs, such as Social Security, began on a fairly modest scale. As they grew, these programs produced a major shift in power from individuals to government.

In the aftermath of World War II there was a major retrenchment in the power of government. Still, the seeds of government control over the lives of individuals were taking root. The Social Security system grew relentlessly, shifting power from individuals to government. Also, the experience from the Depression years left many with a view that if serious problems arose, government could solve them.

By the late 1960s, policies allowing for government control over the lives of individuals entered a second wave. Government control over retirement income was extended to include control over the funding of health care for retirees. Government also assumed responsibility for health care for the poor as well as countless other responsibilities that were previously left to individuals.

The final wave of government control occurred during President Carter's Administration. Government responsibility extended to the creation of jobs, incomes, safety, energy and the environment. The more government tried to accomplish, the more living standards deteriorated.

Instead of living standards doubling every thirty years, by the late 1970s, living standards were rapidly declining.

The experiment with higher tax rates and a greater reliance on government was a costly failure. Instead of productivity growing at 2%-2.5% a year as it had historically, growth slowed to virtually nothing by the end of the 1970s. Each year of poor productivity meant less income for US workers.

Productivity is the key to living standards. When productivity falters, living standards suffer. Although real worker compensation may increase faster or slower than productivity for a limited time, eventually the two must move together. With productivity increasing at a 2.25% a year, the real value of a worker's salary would double every thirty years. With the shift in power and responsibility to government, by the late 1970s, productivity stopped growing.

Had greater and greater responsibilities not been taken from individuals, the inefficiencies associated with government would not have occurred. US productivity in 1981 would have been roughly 13% higher than it actually was. This means that total compensation per full time worker would have been roughly \$37,000 in 1981 instead of 32,700. Since there were 88 million full-time equivalent workers in 1981, the experiment with big government cost the economy almost \$400 billion in lost output in 1981 alone. (All figures are in 1993 dollars.)

Restoring Power to individuals

The deterioration in living standards in the late 1970s led to a backlash against government. What followed was the first wave of a broad historical movement back toward pro-growth classical principles. In 1981, President Reagan began to reverse almost fifty years of government intrusion. Critics of the first wave complained about many of the changes. They argued that the tax cuts benefitted the rich, that government spending and regulation continued to grow rapidly, and that reforms in the Social Security system placed more power than ever in the hands of government.

While all of these criticisms were valid, they missed a sense of what was happening. For the first time in half a century, the American people were beginning to question whether a more powerful government was an asset or a liability. In 1989 the first wave came to an end. During the years 1981-89 living standards for the typical worker had increased by anywhere from 7%-12% depending upon the measures used. This was the first significant increase in living standards in twenty years and provided the first hint of the direction future policies would take.

Few leaders in either party realized the significance of the first wave. Some complained that whatever improvement occurred was the result of increased government debt. Oddly enough, they chose to associate the improvement in productivity with an increase in government debt. Actually, the productivity improvement in the 80s came in spite of more government debt. The increase in government debt resulted primarily from a failure to control the growth in government spending.

Many observers failed to recognize the role of lower tax and regulatory burdens in improving productivity and living standards in the 1980s. As a result, the first wave was followed by a move backward. From 1989 to 1994, major new tax and regulatory burdens were placed on the economy. Productivity faltered and living standards quickly reversed their upward trend.

The second wave emerged from the setback of the past five years. The Contract With America is the main symbol of this wave. As with the first wave, this one has its shortcomings. The focus of the goal of a balanced budget threatens to do more harm than good.

If the arguments about the negative effects of the deficit on future generations are correct, then cutting taxes makes no sense at all. Fortunately for the sake of overburdened taxpayers, the arguments about the damage from government debt are not valid. My research indicates that tax cuts may well lead to lower government revenues within the first five years. However, tax cuts also lead to higher private incomes. In the wake of the tax cuts in the early 80s, private incomes rose by \$3.50 for every dollar of lost revenue to the government.

If tax cuts raise private incomes by more than the loss of government revenues, then such a policy is clearly beneficial. It must be political myopia that leads some policy makers to limit their analysis of tax changes to their impact on government revenues alone. There should be no doubt that cutting taxes in an overtaxed economy makes a great deal of sense regardless of the impact on the Federal deficit. Hence, a balanced budget amendment that would serve to discourage tax cuts would not be in the best interests of the economy.

As with the first wave, focusing on the shortcomings of the present moment misses the significance of what is happening. The second wave is attempting to shift power from government to individuals as quickly as possible. The family tax credit and the focus on cutting government spending are designed to accomplish this objective.

When it is over, the second wave will have accomplished several things. It will mark the end of the tragic experiment of taking power from

individuals and giving it to government. Power and responsibility will flow from government to individuals. Productivity and living standards will once again be increasing. As this move advances, the third and final wave will begin.

The Third Wave

The Third Wave will permanently shift vast amounts of power and responsibility from government to individuals. The broad outlines of the Third Wave are already emerging in different areas. The move toward term limits is characteristic of the Third Wave. Term limits provide further incentives for politicians to shift vast amounts of power and influence from government to individuals. In the Third Wave, politicians will serve brief periods in government and then have to work under the laws they created.

A low, flat rate tax is another characteristic of the Third Wave. This simple change would save over \$100 billion a year in direct costs and more than another \$100 billion in indirect costs. Every bit as important as these savings is the transfer of power that accompanies such a change. Rather than lobbying Congress for tax favors, a simple, flat tax would enable those in the private sector to devote all their time and energy toward producing their output as efficiently as possible.

In the Third Wave the responsibility will be placed primarily with individuals, not with government or insurance companies or HMOs. Instead of serving third parties, doctors and hospitals will be able to serve their new customers -- their patients.

Another major policy change in the Third Wave will be the privatization of Social Security. This move will get its impetus from Chile's experience. Chile privatized its social security system in 1981 and the results have been astonishing. In less than ten years from now the typical Chilean worker (whose annual income is roughly \$5,400) will have more assets in a retirement account alone than the total assets of the typical American family. Few policy makers will want to explain to their constituents why they refuse to support a similar plan for US citizens.

One of the most exciting aspects of the Third Wave is the implication for productivity and living standards. The structural changes in the Third Wave will not just improve productivity performance to match the 2%-2.5% trends of history. Rather, productivity performance will surpass its historical trends as the new move towards efficiency makes up for the inefficiencies of the past 30 years. Instead of simply doubling in the next 30 years, living standards can be expected to increase by one and a half times their current level.

Can the Third Wave possibly overcome the entrenched power of the bureaucracy? Will power be shifted so completely away from government and back toward individuals? Absolutely! The reason is that the Third Wave is being ushered in by three powerful forces: the computer chip, the Telecommunications Revolution and the spread of democracy around the world. Each of these forces is interacting in a way that will shift power away from the government and toward individuals.

The computer chip has contributed to an outpouring of research that measures the efficiency and inefficiency of economic processes. What this research is showing is that government is far less efficient than even the most diehard conservative could have imagined. In the areas of regulation, education, health and retirement benefits, studies are finding average waste that approaches 50%.

Although research into the true cost of government inefficiency is still in its infancy, the results across a wide range of studies tend to be conclusive. Just as Fidel Castro has a difficult time conceding that communism has failed, many who spent their lives extolling the virtues of government can not believe its damage can be so great. As further studies confirm the huge cost of government, the last defenses of the bureaucracy will crumble.

The Telecommunications Revolution will ensure that the results of the latest research are transmitted throughout the world. This is already leading to an acceleration in the move to shift power away from government in one country after another.

Finally, the spread of democracy will ensure that politicians that stand in the way of these changes will be quickly replaced by those who are willing to shift power back towards individuals.

The timing of the changes that usher in the Third Wave is extremely important. Having slipped well below its historical trend, the US is operating at a level far below peak efficiency. Even with the productivity improvement of the 80s, the economy continues to move further from its most efficient level. In 1993, potential productivity was 30% above the actual. From the standpoint of salaries, it means that compensation per full time worker could have been \$48,000 instead of \$37, 000. For the economy as a whole, this shortfall amounted to \$1.2 trillion in 1993 alone.

There is no way to tell how long it will be before the Third Wave begins. However, delay is costly. Accelerating the move toward the privatization of social security, toward a low, flat tax, and toward the adoption of individual medical accounts will lead to an unprecedented

boost in productivity and living standards. Politicians who are wise enough to understand the forces at work will help to accelerate the changes and will be tremendously successful. Those who attempt to defend the bureaucracy will soon find themselves involved in other endeavors.

When the final wave has ended, the United States of America will truly fulfill the dreams of the Founding Fathers. More so than at any time in its history, the country will be a land of plenty, a land of unsurpassed opportunity.

PREPARED STATEMENT OF MARC HOLTZMAN

Mr. Chairman, Members of the Committee, thank you for this opportunity to share my views and perspectives from Eastern Europe and the new nations of the Commonwealth of Independent States (CIS). As an American living and working in the region since mid-1989, I have had the privilege of witnessing, first hand, economically tumultuous and historically unprecedented changes. In spite of frequent setbacks and frustrations, these countries have made considerable and impressive progress as we move toward the 21st Century.

America's role in the 21st Century economy of Eastern Europe and the CIS is still uncertain. Actions and policies pursued today will have considerable influence over whether American commercial and trade interests will potentially play a dominant role in the development of these dynamic economies. The economic outlook for the region is still unclear. More importantly, if American policy and the American private sector fail to aggressively inspire and solidify the development of free market economies, it is unlikely that anyone else will.

The opportunities in the part of the world are enormous. Let us look at Russia first, as it is the most dominant country in the region. Despite Chechnya and other setbacks, tremendous progress has been realized on the road to a free market economy. Thanks to visionary policies (first launched by the Czech's) under now Prime Minister Vaclav Klaus and later used as the model for Russia's initial reform effort), today almost seventy-five percent of Russians work in the private sector. The market capitalization of all Russian industry is valued as little more than \$20 billion. This compares with Exxon which had a market capitalization of more than \$75 billion. Much more needs to be done for Russia's natural resources alone, it does not make sense that assets should be priced so inexpensively in an equity market. The opportunities are incredible! Of course, there are many frustrations and challenges to doing business in Russia, but the rewards can be very satisfying.

In spite of the forward movement, we are at a pivotal crossroad. This is perhaps the most delicate time in Russia's transition. The reforms and privatization efforts launched in 1993 have done much to set Russia on a course toward a market economy. However, there is still much to be done. The population needs to see more tangible results of this effort. The new wealth being created is still not as evenly distributed as it should to maintain popular support. Events unfolding today will in large part determine the shape of the first part of the next century. Will this part of the world grow, prosper and become an important producer and consumer

in the 21st Century? Or, will this become the next battleground for the political instability and economic chaos? Our actions today are likely to significantly influence the outcome.

There are two strong arguments for dramatically increasing and encouraging the American private sector's economic presence in Eastern Europe and the CIS. The first case can be expressed in terms of morality. It is the right thing to do. The American ideal is overwhelmingly the cultural, social and economic model for the peoples of this region. An economically more secure and prosperous society in the next century will inevitably mean that our world will be a safer place.

However, from a practical point of view, commercial and consumer relationship being forged and built today will determine the shape of the economic landscape of the next century. Two years ago, a thirty second nationwide television commercial in Russia cost approximately \$2,000. Today the cost has increased by more than ten times. A similar commercial in the United state can cost more than \$100,000. Proctor and Gamble, Mars and other farsighted American companies realize that this is a once in a lifetime opportunity to establish brand loyalty and a customer base at a relatively low cost. One tenth of the population of the Earth live in the nations of Eastern Europe and the CIS. They comprise one of the largest potential consumer groups in the world.

American participation, to date, has been painfully inadequate. Since no other force in the world is capable of leading the way, we must do more. The role we play today will determine how these nations evolve. One way ore another, the result will leave a major imprint on the economy of the next century. At one extreme, Balkan style conflicts, poverty, and political instability could dominate the region. Economic growth, trade development and peace would give way to violence, stagnation and a significant threat to our own security.

What could the 21st Century look like if we do the right thing today? Like some other developing nations, the countries of Eastern Europe and the CIS are an emerging market, but these countries are not a developing society. While democratic institutions and ideas may be new, in many respects, these are highly developed societies. Educational standards are high; literacy rates exceed those of Great Britain.

Imagine if Eastern Europe and the CIS follow Poland's example. The Economist recently called Poland "Europe's Tiger." GDP has been growing at least 5 % per annum since 1993. All the key economic indications point toward healthy and sustained growth.

In order to fully appreciate the earth shaking changes occurring in the region, it is important to appreciate that there are actually three economies working together. First, you have the state sector. Many parts of the state sector have been successfully privatized. Banks, factories, shops and restaurants, across the board, have been privatized and restructured and are healthy economic forces today. The key is to put these businesses into the hands of the private sector. There is still much ahead to be privatized, including utilities, telecoms and other large enterprises. What is left will be partly comprised of dinosaur type, antiquated companies with little chance of a bright future.

The second sector is the underground economy. This includes the unreported economy and is more of a transitional phenomena. The third sector, and most vital, is the newly emerging private economy. This is the hope of the future.

Our work is almost entirely focused on the private sector. My colleagues and I take great pride in having raised more than \$100 million in investment and having created thousands of new jobs.

- What can Congress do? First, these countries do not need more government aid and socialism exported and repackaged from the West. These countries need reduced trade barriers, both from the United States and the European Union. The United States should press the European Union to liberalize and open trade to and from the East.
- A clear timetable should be spelled out for the early membership into the European Union. Immediate NATO membership should be granted as soon as soon as these countries meet the qualifications. This would ensure practical security to these nations, as well as psychological comfort to investors. Certainly the four Visegrad Countries -- Poland, The Czech Republic, Slovakia and Hungary already qualify.
- Expand the North American Free Trade Agreement (NAFTA) To include the Visegrad countries. Clearly outline what criteria will have to be met for the other nations of the region to qualify for membership.
- Let the private sector lead this vibrant transformation. Let market forces continue to do what only the private sector can do best. Governments should set the conditions and then get out of the way.

Mr Chairman, America is the model and the example of hope for these people. I constantly encounter people who look at us with great admiration. It makes one proud, but also mindful of the responsibility we have.

Change is so ever present, that it is the order of the day. Most importantly, attitudes are improving. Nothing can better express how the mind set has changed that the closing paragraph from an article about Lenin's tomb from the front page two weeks ago of Argumenty I Fakty, the largest circulation newspaper in Russia.

“But what is to be done with the mansoleum? Closing the tomb wouldn't do any good and burying the body is not enough. The only way, according to Christian rules for Satanism, is to burn his body and all the books he wrote. Perhaps then Russia would be freed of suffering.”

This challenge is more that a once in a century opportunity. The seismic shifts changing our world will make this era as historically important as the Renaissance or even the Industrial Revolution. We are blessed to be alive in this fascinating time. I pray that we have the collective insight and will rise to this challenge.

Thank you.



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