This is not a textual record. This is used as an administrative marker by the William J. Clinton Presidential Library Staff.

Collection/Record Group: Clinton Presidential Records
Subgroup/Office of Origin: Speechwriting
Series/Staff Member: Jordan Tamagni
Subseries:

OA/ID Number: 14670
FolderID:

Folder Title:

Stack: S  
Row: 91  
Section: 7  
Shelf: 3  
Position: 3
On Israel's Independence Day the Army Chief of Staff, Ammon Shahak, was asked by the Yediot newspaper whether there was more worry about the eroding status of the Israeli Army in the eyes of the Israeli public or by Syria's steady buildup of missiles and chemical weapons. General Shahak answered: "Neither."

"What really troubles me," he said, "is the Israeli society, which in recent weeks has gained dangerous momentum. I have a doubt that we have not won a lot. I am referring to the differences between Jews and non-Jews, between Sephardim and Ashkenazim, between left and right. We cannot allow these arguments to penetrate into the minds of our youth and affect their motivation."

General Shahak's remarks reminded us that the really important wars today involving Israel, Egypt, Jordan, Algeria, Palestine, Turkey and Morocco are the wars inside these countries, not between them. When the Arabs and Israelis were at war, the issue was whether Israel would coexist with the Arabs. On this the Arabs were united against, the Israelis united in favor. But the Arab-Israeli war is over. The issue today is how Israel will coexist with the Arabs in ... in an unhappy cease-fire or with real peace and normalization? On this question the Arabs and Arab societies are deeply divided.

In the Arab world the internal struggle does not stop. People want to open their societies and link up with the global economy. They want to create their own area of peace, but the ironical, as a necessary ritual if they want to really attract foreign investment and U.S. assistance, they have to modernize. Against them are arrayed those forces in the Arab world that view modernization as a form of surrender. They seek to isolate those who they believe are losing their identity and estranged from their past. They are the new "ultra-Orthodox" forces, like the group that recently bought the Eldridge Street Synagogue and then abandoned it. They hope to buy it back and restore it to its former glory. Amnon Shahak has said that this weakens us a lot. I doubt that this was his intention.

In Israel there is a new civil war, in which peace with the Arabs is bound up with how Israel will relate to the Jewish world. It has grown sharp that the Israeli philosopher David Hartman now worries about the "new partition of Israel" - between an ultra-Orthodox Israel with its capital in Jerusalem and a secular Israel in the capital in Tel Aviv. The same ultra-Orthodox forces in Israel that oppose the peace process because they see it as another form of surrender are those that will only bring Israel more Pizza Hut, Blockbuster Videos and smut-filled cable channels. Those who want to pass a law denominating Conservative and Reform Judaism the ultra-Orthodox. Professor H. S. Hert, the peace process and Reform Judaism are all the same thing - vehicles that promote assimilation and a loss of Jewish identity. Tragically, too few U.S. Jews understand this. They think the battle against Jews is with the Arabs. That is a war over Jerusalem, which is being controlled by the Jews. The real issue is whether Jerusalem will be controlled by the Jews who see it as a city of tolerance and pluralism, where every street of Judaism is treated as legitimate, or whether Jerusalem will be controlled by Jews who want it to be a Jewish city that says no to the modern world - the sister city of Teheran.

"The issue in Jerusalem is not simply whether the Arabs are being excluded, it's whether the Jews are being included - whether Israel is building a Jerusalem where all Jews will feel welcome and legitimate," observes the Middle East scholar Stephen P. Cohen.

While American Jews are out buying newspaper ads defending Israel's right to build housing in any Arab district of Jerusalem, they have failed to notice that an increasing number of Israelis do not feel Jerusalem is their spiritual capital anymore. It may be where the Government sits but it is not a place where people feel comfortable living or visiting, because of the increasing domination of ultra-Orthodox over the city's life.

That's why General Shahak is right. The decisive wars are inside now. Who wins the Jewish-Jewish battle for Jerusalem, and who wins the Arab-Arab battle over modernization, will determine how the Arab-Israeli conflict ends.

---

Journal

FRANK RICH

Reverse Exodus

WASHINGTON

My first brush with organized religion was as part of a hopelessly disorganized Sunday kindergarten class, praying in a makeshift sanctuary in a Jewish Community Center in downtown Washington. But this was the 1950s, so we didn't remain in chaotic quarters for long. A gleaming new synagogue was being built closer to the suburb where all religions were moving as fast as the boom could carry them. By 1959, a year after the post-Knesset break, the JCC itself fled 16th Street for the stylin' promised land of Rockville, Md.

No one liked the move. I was among those who felt that this weakened us a lot. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959. I have been a member of the JCC, along with many others, for 16 years, from my first brush with organized religion in 1959.

American Jews go back downtown.
NATO Expansion, Ready or Not

While America has been occupied by other concerns, President Clinton has set in motion an epochal change in the map of Europe that is now racing toward realization. The change is the eastward expansion of the North Atlantic Treaty Organization, and it picked up momentum yesterday with completion of an agreement to govern Russia's relationship with the alliance.

But as Mr. Clinton declares the imminent arrival of a new era of peace, unity and democracy in Europe, the American people and the Senate have reason to wonder whether NATO expansion is necessary or wise. They certainly have NATO to debate the issue before it is settled.

Fortunately, the Constitution anticipated just such a rush to action by the White House and gave the Senate the final word. NATO enlargement will require approval by a two-thirds majority in the Senate. By the time that vote is taken, some of the shine may have faded from the relentlessly positive picture depicted by expansion supporters in Eastern Europe and the United States.

There is no longer doubt that come July, NATO will offer full membership to Poland, Hungary and the Czech Republic. The last obstacle to that invitation will disappear in Paris on May 27 when Mr. Clinton and President Boris Yeltsin sign the newly minted agreement on Russia's role. But neither the agreement nor NATO's invitation will remove the numerous problems inherent in expansion. Russia's role itself remains very much in doubt despite yesterday's announcement. At best, the accord merely papers over vitally important disagreements. By masking them, it may end up exacerbating the differences in the future.

Of course, this particular agreement is not legally binding on NATO and will not require approval by the Senate. Administration officials call it a "political agreement," which is another way of saying the United States and its European allies can ignore it if they feel their security is threatened.

The specific commitments are equally hollow. NATO says it has no plan, no intention and no reason to place nuclear weapons on the territory of new members. That means it can put nuclear weapons there anytime it determines they are needed to deter a threat. NATO also pledges not to station troops permanently in the nations that join, but retains the right to build military installations that can be used by NATO forces in a crisis.

The only real commitment the Russians won was agreement by NATO to consult regularly with Moscow on political and security issues and to work together whenever possible on matters like peacekeeping missions. Even here, Russia will lack the power to block NATO actions it opposes.

None of this seems likely to assuage Russian concerns that a new dividing line is being drawn across Europe and that this time it will be closer to its doorstep. It remains hard to see how the expansion of a cold-war military alliance will help consolidate democracy and free markets in Russia, which should be the primary concern of Europe and America.

Beyond Russia's unsettled anxieties are potential problems about former Soviet-bloc countries that will not be offered NATO membership anytime soon. The Baltic nations of Estonia, Latvia and Lithuania, in particular, are justifiably nervous that they will be slighted. Romania and Bulgaria, hardly the kind of robust democracies Americans might want to defend militarily, already are talking of NATO membership.

After Mr. Clinton welcomed the agreement with a phone call yesterday, Secretary of State Madeleine Albright traveled to Capitol Hill to brief members of the Senate. She knows the debate has barely begun.

The Leverage of Federal Research

An exhaustive study for the National Science Foundation has discovered that the novel ideas conceived by American patent holders depend far more on research paid for by government than on research paid for by private industry. The finding belies the glib assertion, heard often in Congress last year, that as private industry expands its research budget, Washington can scale back its research activities. The implication is that proposed cutbacks in Federal research would damage the economy.

Ten years ago, private industry and the Federal Government spent about the same amount on research and development. Today the Government still spends about $60 billion—a third of the total—much less if corporate expenditures in Federal research programs. Meanwhile, industry-funded research and development has soared to about $120 billion. Yet the Government's relatively small research budget has produced big results. Research funded by government and nonprofit agencies accounts for over 70 percent of the scientific papers cited in the study's sample of recent patent holders.

One explanation for the disparity is that government, more often than business, pays for basic research—that is, research that yields benefits from which spread throughout the economy, raising productivity. Industry spends its money on more narrow pursuits, like development of a specific product. Also, government and nonprofit researchers publish their findings early. Some industry research is suppressed to preserve proprietary advantage.

Spending on research and development contributes perhaps half of the growth in American living standards. Each dollar spent on basic research permanently adds 50 cents or more each year to national output—an impact that is many times larger than spending on the government's own research and development. The latest study suggests that government and university-based research pack the biggest wallop. Even so, the Administration and Congress are working on budget plans that would cut Federal research by between 14 and 20 percent—a chilling prospect for inflation.

President Clinton ran for office in 1992 on an agenda of public investment. It was a good idea then. It is an even better idea now.

The New York Times

THURSDAY, MAY 15, 1997
A NEW study has found strong evidence that publicly financed scientific research plays a surprisingly important role in the breakthroughs of industrial innovation in the United States, suggesting that impending cuts in the Federal science budget might eventually hurt the economy.

The study, prepared for the National Science Foundation by a private research group, found that 73 percent of the main science papers cited by American industrial patents in two recent years were based on domestic and foreign research financed by government or nonprofit agencies. Private companies paid for the rest.

Such publicly financed science, the study concluded, has turned into a "fundamental pillar" of industrial advance.

Advocates of Federal spending on scientific research are seizing upon the study to bolster their position. The science foundation finances much basic research, and its officials acknowledged that they had questioned the wisdom of cuts in the science budget. But they said the patent study was part of continuing research on science trends that began long before the current push to trim the deficit.

Democrats and Republicans are generally united in earmarking Government financing for science for sizable cuts as part of a plan to reduce the Federal deficit and balance the budget by 2002. This year, the Federal research and development budget

Continued on Page C10
Study Finds Publicly Financed Research

is about $65 billion. Budget analysts say the Clinton Administration wants to shrink it 14 percent in the next five years, and Republicans want to reduce it by about 20 percent.

The study, to be published in Research Policy, a bimonthly journal based at the University of Sussex in England, a leading forum for this kind of analysis, is starting to circulate in the United States in manuscript form. Science policy groups say no previous study has addressed the intellectual foundations of American industry in such depth and with such rigor.

"It's a watershed," said Dr. Martin A. Apple, executive director of the Council of Scientific Society Presidents, a policy group in Washington that represents 65 science organizations and lobbies for more money for science. "It's a wake-up call for Federal investment policies."

Charles F. Larson, executive director of the Industrial Research Institute, a nonprofit group in Washington that represents large companies, said the report would be widely influential. "It's going to make people realize something they should have known all along — that public investment in academic science, through Government-funded programs pays dividends to society," he said. "It pays off handsomely."

On the other hand, budget cutters seem unlikely to find the report so persuasive as to set aside the ax. They argue that much fat can be sliced from the Federal science budget without damaging high-quality work at universities.

Basic science, the kind that pursues fundamental knowledge for its own sake with no clear vision of how it might be practically applied, has long been considered a prime source of military and economic power. Yet the exact relationship between science and innovation has been much debated since the start of the Industrial Revolution.

In recent years, as private industry in the United States has grown big and sophisticated enough to surpass the Government in overall spending on research, some conservatives have suggested that public support of basic research is passe. Publicly financed research gave birth to high-technology industry, they say, but it is no longer so important.

The new study sharply contradicts that view. It examined one of the most vivid expressions of industrial creativity: patents, the main way that companies and inventors reap commercial rewards from their bright ideas. Once granted, patents give the holder a monopoly to produce, sell or profit from an invention for a period of years.

Patentable ideas include new kinds of machines, methods, processes and material compositions including drugs and computer chips. The Supreme Court ruled in 1980 that patents could also be granted for genetically engineered forms of life.

The new study, the most thorough examination to date of the scientific foundation of American patents, strongly suggests that public science lies at the heart of innovation. The study is the culmination of 17 years of patent investigations by CHI Research Inc., a consulting firm in Haddon Heights, N.J., that analyzes contemporary science for industrial and government clients around the world.

Its customer for the most recent round of patent work is the National Science Foundation, a Federal agency. The foundation's budget is up about 1.5 percent this year, to $3.27 billion from $3.22 billion, an increase that almost matches inflation.

CHI Research, starting in 1980, while working for the National Science Foundation and other clients, began examining the role played by research in American patents. The main clues came from the scientific reports that patents cite on their front pages as evidence of their intellectual foundations.

For instance, patent No. 4,565,785 assigned to Harvard University in 1986, lists 52 scientific reports in...
Science Is a Pillar of Industry

Research: Public vs. Private

Private industry in the United States has surpassed the Federal Government in overall spending on research. But a recent study has found that more than 70 percent of the scientific papers cited on U.S. industrial patents came from public science — research performed at universities, government labs and other public agencies.

Most research dollars now come from industry...

<table>
<thead>
<tr>
<th>Year</th>
<th>Industry</th>
<th>Federal Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

...but patents cite public science most often.


- Industry: 26.7%
- Academic: 52.1%
- Government: 11.0%
- Non-Profit: 10.2%

The New York Times

Sources: National Science Foundation; CHI Research Inc.

The rise, the study concluded, is "truly remarkable, and indicative of a rapidly increasing dependence of patented technology upon contemporary science."

Expert reaction to the study so far is favorable. David C. Mowery, a business professor at the University of California at Berkeley who studies technology policy, said the CHI Research team "has gone further than anybody else" in probing the inspiration behind patents.

Wesley M. Cohen, an economist at Carnegie Mellon University in Pittsburgh who studies American industry, said some experts might question whether the rise in citations was simply based on changing habits of documentation, for instance, as the advent of electronic databases eased the tracking of journal articles, or actually indicated an increasing reliance.

But, he added, his own research, involving nearly 1,500 interviews with industrial lab managers, suggested the rise was real. "The effects of academic research may be more pervasive in industries than previously thought," he said.

Mr. Larson of the Industrial Research Institute said, "Industry depends considerably on academic science for new knowledge."

Dr. Narin, the lead author of the patent study, said he hoped his work would help dull the budget ax. "Look at the things that are coming out of the research pipeline," he said. "We'd be fools to close it down."

Scientists cite dangers of cutting research budget.

Times, the National Aeronautics and Space Administration 255 times and the Sloan Foundation 22 times. Some research projects were financed by multiple public agencies.

The overall role of public support was impossible to tally because some papers made no mention of their source of funds. That was especially true for reports from industrial laboratories, where the source of funds was often implied but not stated.

Further narrowing its focus, the study set aside patents given to schools and governments and zeroed in on those awarded to industry. For 2,841 patents issued in 1993 and 1994, it examined the peak year of literature references, 1988, and found 5,217 citations to science papers.

Of these, it found that 73.3 percent had been written at public institutions — universities, government labs and other public agencies, both in the United States and abroad. American institutions represented 43.9 percent of that figure and foreign ones accounted for 29.4 percent.

Over all, only 20.4 percent of the science citations in American industrial patents referred to papers from American industry, and 6.3 percent referred to reports from foreign industry. Even International Business Machines — famous for its research prowess and numerous patents — was found to cite its own work only 21 percent of the time.

"Regardless of how the data are arranged," the study said, "it is quite clear that public science plays an overwhelming role in the science base of U.S. industry."

The study found that industry's dependence on all science was soaring. It compared the number of science citations, both public and private, in the two study periods and found that they had almost tripled.

The rise, the study concluded, is "truly remarkable, and indicative of a rapidly increasing dependence of patented technology upon contemporary science."

The rise, the study concluded, is "truly remarkable, and indicative of a rapidly increasing dependence of patented technology upon contemporary science."

The study found that industry's dependence on all science was soaring. It compared the number of science citations, both public and private, in the two study periods and found that they had almost tripled.

The rise, the study concluded, is "truly remarkable, and indicative of a rapidly increasing dependence of patented technology upon contemporary science."

The study found that industry's dependence on all science was soaring. It compared the number of science citations, both public and private, in the two study periods and found that they had almost tripled.

The rise, the study concluded, is "truly remarkable, and indicative of a rapidly increasing dependence of patented technology upon contemporary science."

The study found that industry's dependence on all science was soaring. It compared the number of science citations, both public and private, in the two study periods and found that they had almost tripled.

The rise, the study concluded, is "truly remarkable, and indicative of a rapidly increasing dependence of patented technology upon contemporary science."

The study found that industry's dependence on all science was soaring. It compared the number of science citations, both public and private, in the two study periods and found that they had almost tripled.

The rise, the study concluded, is "truly remarkable, and indicative of a rapidly increasing dependence of patented technology upon contemporary science."

The study found that industry's dependence on all science was soaring. It compared the number of science citations, both public and private, in the two study periods and found that they had almost tripled.
MEMORANDUM FOR THE VICE PRESIDENT

FROM: JACK GIBBONS


Gergen reiterates the broadspread concern that support for science and technology, especially federally funded R&D, has slackened and is headed downward as we move toward a balanced budget.

As you recall, the 104th Congress tried to deeply slash R&D but persistent efforts by our Administration and allies outside government largely blunted those efforts. Things are somewhat easier with the 105th Congress but we are a long way from home. For example, Congress is trying to deeply cut the President’s request for R&D in renewable energy technology, energy efficiency, and global climate change just when we need such activities more than ever.

Some members of Congress (e.g., Gramm (science in general), Mack (medical research)) have called for a doubling of support for research over 10 years, roughly equivalent to the “7 percent solution” (but only in authorization, not appropriation). George Brown submitted an Investment Budget Bill which would significantly increase (about 5% per year) civilian research, infrastructure, and education and still balance in 2002 by not including tax cuts. His bill lost (91-339) but he believes he’s helped raise the level of awareness.

I’ve discussed with Janet Yellen the notion of the Administration taking a position of maintaining our basic research budget at least at constant dollars but, as we progress to a balanced budget, moving toward a support level that rises proportionately with long-term economic growth. This could be called the 5 percent solution. Yellen generally agrees with me; but, not surprisingly, Raines doesn’t favor our taking such an explicit position at this time. The position I took at the 1997 AAAS S&T Policy Colloquium (April 23) on the budget favors such a long-term direction (see highlight on page 2 of attached).

Joe Stiglitz (CEA) published a paper 18 months ago at my urging which underscores the high social rate of return on research. The paper, which includes Michael Boskin’s paper by reference has been widely quoted.
My bottom line is that I hope the President will be able to continue and perhaps make more explicit his "protection" of the R&D budget, especially for basic research. Given the strong and growing support for research in Congress and elsewhere, I hope we can stay ahead of the curve.

Attached are some additional background material and talking points for you.

Attachments
(1) Background and Talking Points
(2) Gibbons AAAS Speech
(3) Gergen article
June 3, 1997

**Background: Joint Statement on Scientific Research**

On March 4, 1997, 23 organizations spanning the scientific and engineering community issued a Joint Statement on Scientific Research calling for an increase in federal research budgets in the range of 7 percent for FY 1998. (Full text of the Joint Statement on Scientific Research is attached.) They called upon Congress and the Administration "to renew the nation's historical commitment to scientific research and education and indicated that funding increases of this level are necessary for meeting the challenges of the next century. The statement further indicated that A[t]o constrain still further federal spending on their scientific programs would jeopardize the future well-being of our nation.

The effort was notable because the 23 organizations represent a cross section of scientific and engineering disciplines, representing 108 different societies, associations, and organizations with well over 1,000,000 members. Several members of Congress, Representative George Brown (D-CA), Senator Phil Gramm (R-TX) and Senator Joseph Lieberman (D-CT) released their own statements (excerpts attached) in conjunction with and support of the Joint Statement.

The Joint Statement and the comments by Rep. Brown, Sen. Gramm, and Sen. Lieberman emphasize the importance of science and technology investments for our nation's economic growth and overall standard of living. They express a growing concern that it will be impossible for the U.S. to maintain technological leadership unless federal investments in R&D are given priority. Among the statistical trends cited which indicate the erosion of the U.S.'s commitment to investment in science and technology:

- federal investment in basic research has declined in real terms for the past five years,
- since 1970, Japan and Germany have spent a larger share of their GDP on research and development relative to the U.S., and
- research investments as a percentage of GDP are approaching a 40-year low.

Analyses of the Administration's FY98 request for science and technology have found the recommended funding level to be stable or a slight decrease over FY1997, depending on how one adjusts for inflation. The House Science Committee found the FY98 budget increased the administration's budget request for NSF.

**Highlights of the Administration's R&D Budget Proposal**

- The administration's Science and technology investments accounted for approximately 2.5 percent ($75 billion) of the Federal budget in the President's FY98 request.

- The Administration's FY1998 budget augmented stable funding levels with targeted increases including:
A 3% increase in the funding of NIH and in science, engineering, and education R&D at the National Science Foundation.

A five-year, 1 billion dollar increase in NASA's space science budget, funding research into the origins of the galaxy and the possibility of life beyond Earth.

An 8% increase in the basic research budget of the Defense Department.

A 4.6% increase in basic science research programs at the Department of Energy.

A $289 million increase in funding for university-based research to strengthen the University-Government partnership and a $497 million increase in peer reviewed R&D programs.

Talking Points

- The administration is completely convinced that federal research pays high returns – CEA estimates returns greater than 50%.
- The administration strongly supported federal R&D in our FY98 budget and we expect that our R&D programs will be supported within the framework of the recently negotiated budget agreement.
- We have taken pains to provide funding within the context of a balanced budget. Increases in research would pay high rates of return but these federal investments must be weighed against other budget priorities. We are willing to discuss increases in R&D but only in the context of an overall budget which achieves balance.
Joint Statement on Scientific Research

As the federal government develops its spending plans for Fiscal Year 1998, we call upon the President and Members of Congress to renew the nation's historical commitment to scientific research and education by providing the requisite funding for the federal agencies charged with these responsibilities. Our call is based upon two fundamental principles that are well accepted by policy makers in both political parties.

The federal investment in scientific research is vital to four national goals: our economic competitiveness, our medical health, our national security and our quality of life.

- Scientific disciplines are interdependent; therefore, a comprehensive approach to science funding provides the greatest opportunity for reaching these goals.

We strongly believe that for our nation to meet the challenges of the next century, agencies charged with carrying out scientific research and education require increases in their respective research budgets of 7 percent for Fiscal Year 1998. These agencies include, among others, the NSF, NIH, DOE, DOD, and NASA. The increases we call for strike a balance between the current fiscal pressures and the need to invest in activities that enable long-term economic growth and productivity. Such increases would only partially restore the inflationary losses that most of these agencies suffered during the last few years.

Prudent planning argues for strengthening the respective activities of major research agencies, as already recognized in pending legislation. To constrain still further federal spending on their scientific programs would jeopardize the future well-being of our nation.

This statement was endorsed by the Presidents (or the equivalent officer) of:

American Association of Physicists in Medicine
American Astronomical Society
American Chemical Society
American Geological Institute
American Geophysical Union
American Institute of Biological Sciences
American Institute of Physics
The American Institute of Professional Geologists
American Mathematical Society
The American Physical Society
American Society of Engineering Education
Association for Women in Mathematics
Association for Women in Science
Astronomical Society of the Pacific
Council on Undergraduate Research
Engineering Deans Council
Federation of Materials Societies
Geological Society of America
The Institute of Electrical and Electronics Engineers, Inc.
Materials Research Society
Mathematical Association of America
Optical Society of America
Society for Industrial and Applied Mathematics
Joint Statement on Scientific Research:
Excerpted Statements by Members of Congress

REPRESENTATIVE GEORGE E. BROWN, JR: "I am very pleased to see that the Nation's science community is speaking out against efforts to balance the Federal budget on the backs of research and development investments. I hope that today's press conference and joint statement will be the first of many actions taken by these prestigious organizations.

"Investments in research and development programs are among the most important expenditures the Federal government can make. Economists estimate that as much as half of our Nation's economic growth in the last hundred years is due to technological innovations. If we continue to under invest in science and technology, our efforts to balance the budget will leave our children a less prosperous future.

"Federal R&D has, as in the joint statement of these science organizations points out, declined in real terms over the last five years. Further, every balanced budget plan offered by any Republican or from the Administration calls for further reductions in these investments over the next five years. While there are some on both sides of the aisle that have called for either spending increases in particular areas of research (such as health research) or across the board in science, none of those proposals identifies how such increases will be accommodated in a balanced budget scenario. Until you take that step you are just playing with monopoly money....

"Just as we have a generational obligation to balance the budget and not make the next generation pay for our consumption, we also have an obligation to continue to invest in those programs that will leave the next generation in a position to enjoy a robust, growing economy. I believe that my budget proposal does that, and I hope that the science community can work to educate others in Washington about the importance of these investments."

SENATOR PHIL GRAMM: "I want to thank the leaders of the American Chemical Society, the American Physical Society, the American Astronomical Society, the American Mathematical Society, and the other societies here today for their support for increasing federal investment in science. This is exactly the goal of my legislation, which would double the amount of federal investment in basic science and medical research over ten years....

"If we as a country do not restore the high priority once afforded science and technology in the federal budget and increase federal investment in research, it will be impossible to maintain the United States' position as the technological leader of the world.

"Since 1970, Japan and Germany have spent a larger share of their GDP on research and development relative to the U.S. We can no longer afford to fall behind. Expanding the nation's commitment to research in basic science and medicine is a critically important
investment in the future of our nation."

SENATOR JOSEPH I. LIEBERMAN: "Several months ago during the heat of the summer of 1996, President Clinton and every member of Congress received a letter signed by 60 Nobel Laureates which contained a simple message: America's investment in research over the last fifty years has been a vital source of our economic and political strength around the world, as well as the quality of life Americans enjoy at home. It has only been through the Federal Government's patient investment in science, argued the Nobelists, that Americans have benefited in so many extraordinary ways from advances in the understanding of our world.

"I am...optimistic that the stage is set to move forward on policy decisions that will guarantee increased economic growth and national security, and represent a very important investment in America's future.

"My optimism is a product of two recent events. The first was introduction of S. 124 by three Senators Gramm, Mack and Hutchison entitled the National Research Investment Act, calling for a doubling of federal investment in basic science, technology and medical research over the next ten years. Second, in last month's release of President Clinton's budget, science and technology programs were increased almost across the board about three percent on average, which is significant given the considerable fiscal constraints and the intense scrutiny to which every program and agency is subject.....

"I believe the optimism of the present moment comes primarily because of some troubling facts which have convinced members of both parties that something more must be done to stimulate good research and development.... If you believe as I do, that our current prosperity, intellectual leadership in science and medicine and the growth of entire new industries are directly linked to investments made thirty years ago, then you have got to ask where will this country be thirty years from now? It is likely that several countries, particularly in Asia, will exceed on a per capita basis, the US expenditure in science. Japan is already spending more than we are in absolute dollars on non-defense research and development. These facts led Erich Bloch, the former head of the National Science Foundation, to write that the whole U.S. R&D system is in the midst of a crucial transition. Its rate of growth has leveled off and could decline. We cannot assume that we will stay at the forefront of science and technology as we have for fifty years.'

"Although difficult, the partisan conflicts and rifts of the past several years may have performed a useful service in clarifying the debate over when public funding on research is justified. I believe it is a mistake to separate research into two warring camps, one flying the flag of basic science and the other applied science. Rather the research enterprise represents a broad spectrum of human activity with basic and applied science at either end but not in opposition. Every component along the spectrum produces returns - economic, social and intellectual gains for the society as a whole. If we can put this division behind us, we can examine regions within the spectrum which need federal support, those best developed through the encouragement of the market, and finally, those which require a mixed approach. This is a process in which pragmatism should be
encouraged.

"The challenge that faces us is to take the remarkably broad consensus for federal research and build a similar consensus as to what actions can help us to achieve our shared goals. Participants in the complicated dance of science include the federal government, private industry, national laboratories, large and small universities, professional societies and entrepreneurs willing to risk their wealth on the commercial success of a new idea. If we are to maintain and build on our world leadership, the Federal government must continue to play a pivotal role."
The 7 percent solution

Funding basic scientific research is vital to America's future

As many of us gazed up at the Hale-Bopp comet this spring, wondrous and serene in the heavens, an angry e-mail ripped through the scientific community below. It was written by Alan Hale, one of the men who discovered the comet two years ago.

Hale, it turns out, earned a Ph.D. in astronomy from New Mexico State University in 1992 and has since had terrible trouble finding decent-paying work. His wife, a nurse, is the family's main source of income. So disillusioned is he with America's "scientific illiteracy" and the drying up of research jobs that he would not encourage today's students to pursue scientific careers.

For many in the field, there is poignant irony in Hale's story. He is one of many younger Ph.D.'s who could put their names on new discoveries in science and technology in the years ahead. A recent visit to the California Institute of Technology and the Jet Propulsion Laboratory nearby found scientists bubbling with excitement about prospective breakthroughs. Yet there is a legitimate and growing fear among these same people that the nation really doesn't understand or support their endeavors. Few are as gloomy as Hale, but nearly all share his concerns.

Down, down, down. The clearest form of national support for science is the federal budget, which funds 60 percent of the country's basic research. For decades, expenditures increased. In each of the past four years, however, federal investment in research has declined, and President Clinton's budget calls for yet another drop next year.

Since March, in an unprecedented show of unity, the leaders of over 40 organizations representing more than 1.5 million scientists, engineers, and mathematicians have endorsed a joint statement expressing alarm that research investments as a percentage of GDP are approaching a 40-year low. They urge that federal spending on research and development be increased by 7 percent next year—enough to make up for past inflation and to reverse the trend. A growing number of Republicans, led by Texas Sen. Phil Gramm (a deficit hawk), and some Democrats are joining the fight. Gramm wants a doubling of science spending over the next decade.

The arguments for substantial increases are compelling. Some believe the end of the cold war means we no longer need scientific research to protect our security. What they ignore is that the lag time between basic research and military application is often 30 to 50 years—weapons used in the Persian Gulf war, for example, emerged from research in the 1960s. Who can say with certainty today that we will not need advanced military technology a quarter century from now?

Economists believe research is also essential to growth and keeping our competitive edge. Stanford's Michael Boskin estimates that half of all long-term economic growth since World War II in industrialized nations is due to technological progress—which, in turn, is rooted in basic research. At the University of Pennsylvania, Edwin Mansfield has found that academic research in science has a "social rate of return" in the form of lower prices, better products, and higher productivity that exceeds 20 percent.

Finally, we should understand how science advances our quality of life. Allan Bradley, science adviser to President Bush, and now dean of engineering at Yale, points out, for example, that in the past five years "we have learned more about the human brain and central nervous system than in all prior history," thanks to imaging and chemical tests developed by engineers from basic physics, chemistry, and mathematics. Since brain-related disorders send more Americans to the hospital than any other disease group, this progress is very good news indeed.

At a time of scarce resources in Washington, it is tempting to see the scientific community as just one more hungry claimant. That's shortsighted. Like public education, serious funding for science is a vital national investment. The men and women in our laboratories stand at the threshold of dazzling new breakthroughs, and the nation should be standing there with them, supporting their work and sharing in their joy of discovery.
A Talk With Bill Clinton

The President shows himself to be at once confident about what we should do to better life for the next generations and guarded about how much we can achieve toward that end

A few months ago editors from this magazine interviewed President Bill Clinton in the White House for just under an hour. The physical setting for dealing with a President is usually grander than that for encountering most other politicians, and theoretically calmer. The typical congressional office is cramped enough that an interviewer can hear aides yelling in the next room. “Yeah, he’ll get right back to you—he’ll be done with his three o’clock in a minute.” The Oval Office, in contrast, is the only uncrammed area in the otherwise jam-packed suite of offices in the West Wing of the White House, and one is meant upon stepping into it to be struck by its sense of space and serenity.

Any competent politician knows how to act as if the visitor of the moment were the most fascinating human specimen imaginable. But all around a President are people looking at their wristwatches, a photographer snapping official mementos of the meeting, someone recording every word the President utters in interview situations, and a variety of other assistants whose interest in the visitor begins and ends with whether he or she will get out of there on time.

We encountered Bill Clinton at the end of a day (June 25) that was an extreme example of the meter-is-running nature of his life. Earlier Clinton had met with the Presidents of Estonia, Latvia, and Lithuania—an event that was no doubt front-page news in the Baltic States but was barely mentioned in the United States. Soon afterward he had a similar meeting with the President of Uzbekistan. The next morning he was scheduled to travel to France for the annual G-7 meeting of leaders of major industrial nations.

Then, around four o’clock that afternoon, news arrived of the terrorist bombing in Saudi Arabia that killed nineteen American soldiers. Through the late afternoon Clinton met to discuss the bombing with his national-security team. Shortly after six there was an announcement in the press room that the President himself—not some representative or press secretary—would make a statement. The room came alive as camera crews checked their equipment, technicians brought in a giant lectern (which resembled a huge coffin stood on end) and hung the presidential seal on the front of it, and correspondents did teaser broadcasts to say that news was about to be made. At 6:25 a small door near the lectern opened and the President entered—along with the Vice President, the Secretary of Defense, the White House chief of staff, the national security adviser, and assorted other officials whose presence underscored the solemnity of the event. Clinton read a brief, stern statement admonishing the terrorists, which ended “America takes care of our own. Those who did it must not go unpunished.” Without taking questions he walked out of the room.

At 6:40 he walked into the Oval Office, where he found . . . us. Much like the leaders of the Baltic nations and Uzbekistan, we were hoping in the time allotted to steer President Clinton’s attention toward issues that mattered a lot to us—in this case, his views on long-term economic challenges. As Clinton sat down to talk with us, an aide handed him a sheaf of briefing papers that covered the issues we seemed likely to focus on and the themes he should stress. Clinton glanced at it for a second and set it on a table. People used to mock Ronald Rea-
gan's dictum that memos for the President should be boiled down to one page. His idea makes more sense when one sees how much time a President actually has to read and reflect.

Journalists interviewing politicians are often surprised to find that they sound smart. Politicians are made to seem bufferons when presented in television sound bites. Also, they spend much of their lives boning up on issues and explaining the positions they take—the very skills that are on display in most interviews. There are exceptions: Ronald Reagan, Gerald Ford, and Edward Kennedy have been known for coming across in conversation as affable rather than insightful—to say nothing of Dan Quayle. But politicians as varied as Richard Nixon, Jimmy Carter, Newt Gingrich, and Lyndon Johnson all got ahead partly by persuading people in

---

**Clinton was most animated in talking of similarities and differences between this turn of the century and the last one.**

---

small groups that they were figures of complexity and depth.

Bill Clinton has this skill. During the first ten or fifteen minutes of our interview he seemed logy and understandably preoccupied. But when we went back and read it on paper, even that part of his conversation was surprisingly coherent, and after he woke up, he had the sort of zip usually associated with his informal TV appearances. By the end of the interview, when we had turned off the tape recorders and were being given the evil eye by staffers and Secret Service agents, he was in his familiar buttonholing mode, standing a little closer than other people do, looming over us with his size and heft and almost but not quite putting his hands on our shoulders—in general, being the complete communicator.

---

The substance of Clinton's comments was not quite as reassuring and upbeat as his manner, or as politicians are ultimately required to seem. He talked in detailed and enthusiastic terms about steps he thought would help the country weather its upcoming economic transition—brought about by the global economy, the rise of computers, the ever-growing gap between rewards for highly skilled and for unskilled workers. But beneath his action plan seemed to be a fatalistic awareness that this transition would be wrenching, like the one a century ago that accompanied the rise of unions and mass production. Like Newt Gingrich or Jack Kemp, Clinton is brimming with specific policy ideas. But Gingrich and Kemp suggest, in tone more than in words, that once their reforms—tax cuts, empowerment zones—are in place, everything will be great. Clinton's implied argument, more appealing to a historian's or a journalist's sensibilities, is that things never work out perfectly, but modest changes can make a difference in the long run.

On only two issues did Clinton give answers that were either artfully evasive or simply conventional. The evasion concerned, of course, Social Security. The question was not whether the program costs too much or gives too many of its benefits to people who don't need them. Rather, it was whether the payroll tax that funds Social Security has become another source of economic unfairness in America, taking as it does the biggest tax bite, proportionally, from the people with the lowest incomes.

Clinton dealt with this in a way that avoided the flat-earthism of saying that nothing is wrong with Social Security without being suicidally specific about exactly what should be done. He said, “What I think about Social Security is that we've always done whatever it took to preserve the program in a way that was healthy for the economy. We've always done it in a bipartisan fashion.” The vehicle for doing so, he made clear, was a bipartisan commission that would give both parties cover for doing what had to be done—just what happened in 1983, when the previous set of Social Security changes was passed.

Clinton's conventional answer concerned budget deficits. Since the day he took office, they have blighted his life. Having run in 1992 on a two-part economic platform—cutting spending in general and raising some taxes to reduce the deficit, while increasing spending for education, job training, public works, and other “investment” accounts—Clinton discovered during his first year in office that fighting the deficit was driving out nearly every other goal. (The logic ran like this: bigger deficits might cause inflation; fear of inflation would cause the Federal Reserve to raise interest rates; fear of high interest rates would cause the bond and stock markets to crash; fear of these crashes made the Clinton Administration drop most of its investment agenda.) After Republicans took control of Congress last year, they tried to push through budget plans and constitutional amendments requiring that the budget deficit shrink to zero within seven years. These efforts failed—but the trend of budget deficits nonetheless changed dramatically during Clinton's term. Relatively speaking, U.S. deficits in the late 1980s were the largest among all industrial nations. Now they are the smallest. Some economists therefore argue—as Thomas I. Palley and Robert A. Levine did in the July Atlantic—that a continued effort to eliminate the deficit has become more dangerous than the deficit itself, and that America could again make Herbert Hoover's error of holding down spending when spending could produce growth.

"I basically don't agree with those economists, frankly," Clinton said when asked about this theory. "You could argue that the problem is solved. We have an operating surplus—our budget would have been in balance the past two years, with a surplus, were it not for the interest on the debt run up in the twelve years before I took office." But, he added half sincerely, "there is no point in crying over spilled milk." It is still important to keep the deficit down, so that interest rates will remain low and the private economy can create as many jobs as possible. This, he said, will do more good for more working Americans than would government spending or even tax cuts, which could raise the deficit.

---

The subjects that made the President animated involved the long-term economic trends with which the victor in this election—and the victors in the next
few presidential elections—will have to cope. One of these is the continuing polarization of both American society and the American economy. When running in 1992 Clinton constantly pointed out that the rich were getting richer, the poor were getting poorer, and the middle class was melting away. Since America didn't have “a person to spare,” he said, it was crucial to redirect economic and educational forces so that more people would have a fair chance to compete. Yet during his time in office the polarization has continued. We asked whether anything could stop it—in particular, the education and job-training programs he seemed to present almost as a panacea for any undesirable consequences of world economic trends.

Clinton's answers were both activist and, again, fatalistic. When asked whether an emphasis on education would lead to a more equal society, he said, “The truth is, no one knows the answer to that.” In one modest way, he said, the trend toward inequality had been corrected: the income of the poorest 20 percent of Americans had recently begun to rise, rather than actually falling, as it had for the previous fifteen years. (This, he said, was owing mainly to the budget plan he proposed in 1993, which roughly doubled the Earned Income Tax Credit—a kind of income-tax rebate for low-income workers.) “The inequality is still pronounced and increasing,” he said. “because [incomes] in the upper twenty percent and the upper five percent and indeed the upper one percent are growing even faster than those in the middle and at the bottom. But at least [incomes at the bottom] are starting to grow again. So that suggests that if you have the right sort of economic strategy—pro-growth, pro-jobs strategy—you can at least give real growth to people in the middle and below.” As for inequality in the longer run, he said, “Now, on the education thing, the reason I tell you I don’t know is because I don’t think we've done enough to know that. For example, a lot of these benefits from education come in the form not only of individual opportunities but also of increasing productivity, and that takes place over a long period of time. But I do believe we could get some rapid gains for the bottom half of the wage distribution, maybe for the bottom sixty percent, if we could accelerate things like the passage of the GI Bill for America's workers, which I have been proposing for a long time, so that every worker would in effect have an account with the federal government. Instead of having to figure out which of seventy programs you might be qualified for, you just get a voucher if you're unemployed or underemployed that you can take to a training facility.

“Also, I assume we will have to wait beyond the election, but if we can make the thirteenth and fourteenth years of education in effect as universal as high school education is today, I think that would make a profound difference. And if we started by getting people who are in the workforce now to come back and do this, with the tax-credit proposal, I think the likelihood that people's incomes would go up is very, very high. These community colleges are almost infinitely expandable, you know, and they are by definition related to the emerging economies in the areas they serve.”

Clinton also talked at length about the importance of “democratizing technology”—essentially, making sure that computers and similar advances are made available to the broadest possible group of Americans, rather than becoming another means of enriching the rich. Showing his usual love of examples drawn from recent travels, he described a computer project he had seen in Union City, New Jersey. The students at this school come mainly from immigrant families with per capita incomes well below the state average. The school system put computer equipment donated by Bell Atlantic in parents' homes and trained them to use the software, largely for communication. “You had first-generation immigrant parents with their children learning to E-mail the principal and the teachers and find out how the kids were doing,” Clinton said. “Two years later this school has an attendance rate that is better than the state average and test scores above the state average in one of the wealthiest states in America. That has to have an impact on the earnings prospects for those young people. If that will work for children, the same thing will work for adults.”

It is very difficult to imagine Bob Dole talking in comparable detail about the factors that determine economic growth and inequality. The economic policy Dole embraced just before he selected Jack Kemp as his running mate—a 15 percent tax cut across the board—grows straight from the supply-side belief that politicians should not discuss economic details at all but should concentrate on cutting taxes. Clinton's economic perspective differs sharply from that of classic Republican supply-siders like Phil Gramm and Steve Forbes, or of techno-optimists like Newt Gingrich and John Naisbitt. Clinton's has a tragic element: economic change could create victims and leave people behind, rather than lifting every boat on a rising tide. Yet Clinton's prescriptions, as he discussed them with us, had a surprisingly Benjamin Franklinsque emphasis on individual self-help. Making health coverage and pensions transportable from job to job will help people who already have an investment in today's system, but will do little for the growing army of part-time workers and those too badly educated to seem employable at all. Nevertheless, vouchers for training programs will help workers with gumption, and the emphasis on community colleges may be more important for U.S. productivity than the traditional stress on big-time research institutions: community colleges are where the vaunted retraining of the work force can take place.

Unlike, say, Pat Buchanan, Clinton did not sound as if the United States had a choice about being changed by the global economy. “We don't want to get into a position where we are trying to guarantee the preservation of the past,” he said. “That's what President Chirac's trying to deal with in France.” In France, Clinton pointed out, overall growth has
surged for the past three years, but the unemployment rate has stuck at 12 percent. "because in effect they have tried to guarantee a social safety net that doesn't fit with the vibrancy and the dynamism of the world. There has always been some churning in this economy. There's always been some churning in it, and some winners and losers. We shouldn't be trying to freeze the past, but we should be trying to ease people's path to another future."

"Ease"—not "ensure" or "promise" or "preserve." It is a longer-term, more modest, and probably more realistic prospect than he offered four years ago.

The other main theme in the discussion was the interaction among energy use, global environmental effects, and long-term economic growth. During the 1992 campaign Clinton never managed to portray himself as the environmentalist in the race. In the Democratic primaries Paul Tsongas recommended an energy-conserving gasoline tax, which Clinton opposed. In the general election Clinton had to fend off George Bush's attacks on his environmental record in Arkansas, and he always looked less ecologically aware than his running mate, Al Gore. But after last year's Republican Congress took what proved to be an unpopular stance against environmental regulation, environmental protection became an important distinguishing theme for the Democrats. In environmental matters as in economics, the President argued, the country should start dealing now with international problems that will become acute if they are ignored—for example, the impact that bringing more than a billion Chinese into the automobile age will have on air quality and energy supply.

As a starting point, he said, "in the next four years we ought to do more in research generally"—a significant view in light of Congress's attempt to shrink the federal research budget. "We ought to do more in biomedical research, both through public spending and through continued efforts to reform the FDA and accelerate the right kind of movement of biomedical products to the market. I think we ought to do more in energy and environmental research—much more. I believe that if we don't do this, if we don't find some technological fixes that make the energy we have go further and also do less damage in terms of greenhouse gases, we're going to pay a significant price.

We're way underinvesting in research and technology, I believe."

Clinton said that he did not think the United States or the world faces an impending energy shortage. mainly because in this country and elsewhere there are still vast resources of natural gas, which the market so far has kept at such low prices that a lot of it hasn't been recovered. But in the long run, he said, it will be important both to develop energy supplies and to improve conservation techniques, so as to "guarantee that Americans will have the energy they need and the world will be able to breathe its air."

Clinton said that he will try to make the case for "a dramatic increase" in research spending by "elevating the argument that I've been making that economics is a part of our national security. The classic example of this strategy is Dwight Eisenhower's promotion of federal aid to schools and a new national road system in the guise of national defense. "Whether I can be as successful in doing that as President Eisenhower was in saying, 'Look, we've got to have an interstate highway system, because it takes the army too long to go from one coast to the other,' remains to be seen," Clinton said. "But I believe that we can. I'm certainly going to try."

If he is re-elected, Clinton's attempts to make this argument may demand a further refinement in his skills and strategic view. He was at his most animated near the end of our discussion, in talking of similarities and differences between this turn of the century and the one a hundred years ago. Labor turmoil, boom-and-bust economies, ethnic changes wrought by immigration, and other shocks of that era eventually gave rise to the Progressive movement. One could make a very compelling case. Clinton said that the aftershocks from the previous turn of the century reached beyond the New Deal and the Second World War, so that the economic reforms of the Progressive era were consolidated in a panoply of labor-relations laws and the growth of an education and research establishment, symbolized by the GI Bill and the post-Sputnik research boom. "This era is analogous to that era in the following ways," he said. "We're changing our industrial paradigm—we're going from the industrial age to an information-technology age. That paradigm's change has brought enormous changes in the way people work and live. It is attended by a large increase in immigration and an increasing diversity in America, with all the tensions that brings. There are vast fortunes being made—people are having opportunities they never dreamed of. But a lot of people have been dislocated."

The difference between the eras, he said, is that America's middle class is now larger and is protected by an extensive social safety net. And "it is not as clear to people that there is a single law that the government in Washington can pass that will make everything all right. But if we do the right things, and we stay at it with a consistency and a discipline over a period of years. I think we have a chance to go through this transformation with less disruption than we had then, and more quickly—more quickly, not quickly."

At the end of the hour it was clear that the President thought he had answers to some of the country's basic economic questions. But even if his answers are the right ones, will he be able to explain them to the public? Can he persuade Congress, voters, taxpayers, to go along? When asked how he could make the case to prepare the country to live with the "right things" he offered a four-year program to "do the right things" to manage these transformations, the President said little beyond that he would do his best but didn't have a clue. We may see him continue to learn on the job.