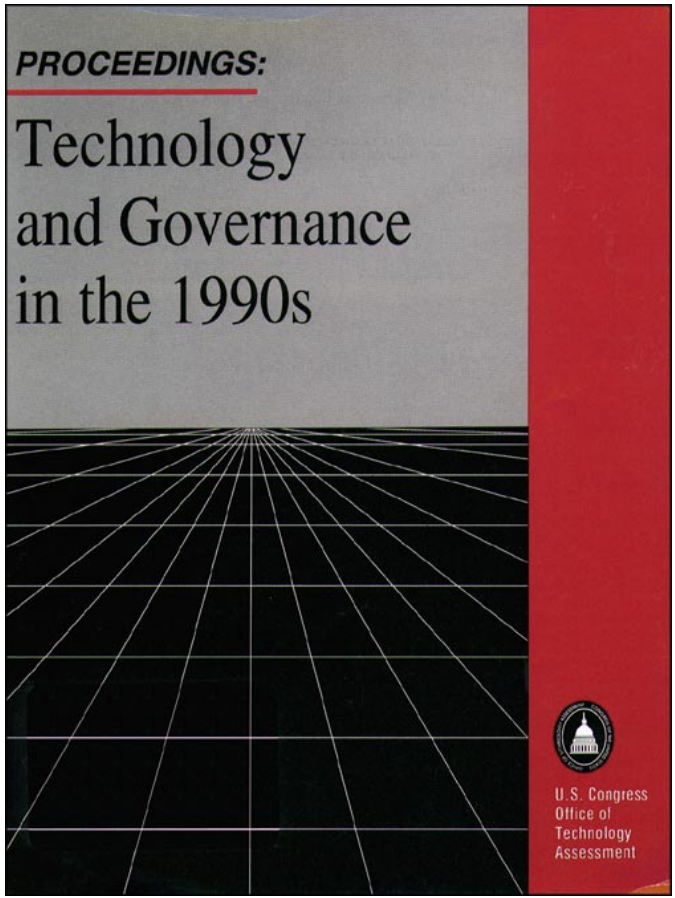
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Foreword

Twenty years ago, Congress created the Office of Technology Assessment to demystify the roles of science and technology in governance—to make specialized information more accessible. For two decades, during which time the influence of technology has grown enormously, OTA has examined key socio-technical issues of our time, providing detailed information to congressional committees an other policymakers.

On January 27. 1993, in celebration of OTA's twentieth anniversary, the agency's Congressional Technology Assessment Board hosted a one-day Forum on "Technology and Governance in the 1990s" for members of Congress and key congressional staff. The Forum was designed to address several goals:

- To raise congressional and public awareness of the most critical issues *faced* by our nation and the world.
- To equip policymakers with an improved understanding of how best to deal with these issues.
- To show how technology is woven into socio-economic, domestic, and international policies, and to demonstrate the need to adapt our policies, methods of governance, and institutional mechanisms to this reality.

Five topics were chosen, selected on the basis of national and/or global urgency, likely continued importance to the legislative agenda, and the centrality of technology in creating or solving the problem: international security, sustaining the global environment; U.S. economic competitiveness: health care:and public education. Distinguished speakers were invited to address the topics--outlining the problems, the reasons for their urgency, and alternatives for resolution.

This book contains the five papers presented that day. The proceedings arc being published to allow for wider dissemination of the authors' presentations of these timely issues.

OTA wishes to acknowledge the generous financial support of the Carnegie Corporation of New York and Corning Incorporated, without which the Forum could not have taken place. In addition, OTA thanks the members of the Congressional Technology Assessment Board (TAB) and the Technology Assessment Advisory Council (TAAC) for their ongoing cooperation and support.



ROGER HERDMAN
Acting Director

Note: *The views presented in these proceedings are those of the authors and not necessarily those of the Carnegie Corporation of New York, Corning Incorporated, OTA, the Technology Assessment Board, the Technology Assessment Advisory Council, or individual members thereof.*

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By
The Honorable
Robert S.
McNamara

A New World Order and Its Implications for Arms Reductions

The world's nations face a great challenge. If they can take advantage of the end of the Cold War to move toward a system of collective security—a system in which the United Nations Security Council and other multinational organizations. particularly the regional organizations, play major roles-then the risk of war between nations. and the risk of unrestrained conflict within nations, will be substantially reduced.

As a consequence, military expenditures across the globe can be cut dramatically.

Adapting to a Post-Cold War World

Although there was clear evidence for several years that the Cold War was ending, nations throughout the world have been slow to revise their foreign and defense policies, and slow to strengthen regional and multinational organizations to reflect that fact. Let me point to the U.S. as an example.

In this country, defense expenditures in 1992 approximated $300 billion. In constant dollars, that was 10 percent more than a decade ago. Moreover, President Bush's 5-year defense program, presented to Congress in January 1992, projected that these expenditures would decline only very gradually over the next 5 years. Defense outlays in 1997, in constant dollars, were estimated to be approximately 10 percent higher than 21 years earlier, under President Nixon, in the midst of the Cold War.

Such a defense program is not consistent with my view of the post-Cold War world.

Before nations can respond in an optimum manner to the end of the Cold War, they need a vision of a world which will not be dominated by East-West rivalry, a rivalry which for more than 40 years has shaped foreign and defense policies across the globe.

The Inevitability of Conflict

As the military action in Iraq, the Yugoslavian civil war, and the turmoil in Somalia, Angola, and Cambodia demonstrate, (his post-Cold War world is not going to be a world without conflict. There will be conflict between disparate groups within nations, and conflict extending across national borders. Racial and ethnic differences will remain. Political revolutions will erupt as societies advance. Historical disputes over political boundaries will continue, and economic differentials among nations arc going to increase as the technological revolution of the 21st century spreads unevenly across the globe.

In the past 45 years there have been 125 wars, resulting in 40 million deaths. Third World military expenditures now total almost $200 billion per year. approximately 5 percent of GDP. They arc only slightly less than the total expenditures in the developing world for health and education.

It is often suggested that the developing countries were turned into an ideological battleground by the Cold War and the rivalries of the great powers. That rivalry was a contributing factor, but the underlying causes for Third World conflict existed before the Cold War began, and they will almost certainly continue even though it has ended.

"The U.S. will live in a multipolar world, and its foreign policy and defense programs must be adjusted to that reality"

Moreover, to disorder in the Third World may well be added the potential for strife in the states of the former Soviet Union.

In those respects, therefore, the world of the future will not be different from the world of the past—conflicts within nations and conflicts between nations will not disappear.

But it is also clear that in the 21st century relations among nations will differ dramatically from those of the postwar decades. In the post-World War II years the U.S. had the power—and to a considerable degree it exercised that power—to shape the world as it chose. In the next century that will not be possible. While remaining the world's strongest nation, the U.S. will live in a multipolar world, and its foreign policy and defense programs must be adjusted to that reality.

Japan is destined to play a larger and larger role on the world scene, exercising greater political power and, hopefully, assuming greater political and economic responsibility. The same can be said of Western Europe, which has just taken a dramatic step toward economic integration. From that is bound to follow greater political unity—despite the opposition to the Maastricht Treaty—and that greater unity will strengthen Europe's power in world politics.

And by the middle of the next century, several of the countries that in the past we have labeled as Third World nations will have so increased in size and economic power as to be major participants in decisions affecting relations among nations.

For example, there is likely to be a population of 1.6 billion in India, 400 million in Nigeria, and 300 million in Brazil. If China achieves its economic goal by the year 2000, and if it then moves forward during the next 50 years at satisfactory but not spectacular growth rates, the income per capita of its approximately 1.6 billion people by 2050 may be roughly equal to that of the British in 1965. *China's total* gross natiional product would approximate that of of the U.S., Western Europe, or Japan, and almost surely would substantially exceed that of Russia.

These figures am, of course, highly speculative. I point to them simply to emphasize the magnitude of the changes which lie ahead, and the need to begin now to adjust our goals, our policies, and our institutions to take account of them.

In such a multipolar world there clearly is need for developing new relationships, both among the great powers and between the great powers and other nations.

A New World Order

I believe that, at a minimum, the new world order should accomplish five objectives. It should:

1. Provide to ail states guarantees against external aggression. Frontiers should not be changed by force.
2. Codify the rights of m minorities and ethnic groups within states, and provide a process by which such groups that believe their rights have been violated may seek redress without resort to violence.
3. Establish a mechanism for resolution of regional conflicts, and conflicts w i t h i n nations, w i t hout unilateral action by the great powers.
4. lncrease the flow of technical and financial ass assistance to developing countries to help thcm accelerate their rates of social and economic advance. which are disgracefully low in parts of the world, particularly Sub-Saharan Africa.
5. Assure preservation of tile global environment as a basis of' sustainable development for all.

In sum, I believe we should strive to move toward a world in which relations among nations would be based on the rule of law. a world in which national security would be supported by a system of collective security. The conflict prevention, conflict resolution, and peacekeeping functions to accomplish the objectives outlined above would be performed by multinational institutions-o rcorganized and strengthed United Nations and new and expanded regional organizations.

That is my vision of the post-Cold War world.

Alternative Vision

In contrast to my vision. many political theorists predict a return to the power politics of the 19th century. They claim that with the elimination of ideological competition between West and East, there will be a reversion to more traditional power relationships. They say that major powers will be guided by basic territorial and economic imperatives: that the U. S., Russia. China, India, Japan, and Western Europe will seek to assert thcmselves in their own regions while while competing for dominance in other areas of the world where conditions are more fluid.

This view has been expressed by the realist school of political scientists, the leading advocate of which is Michael Sandell, a political theorist at Harvard, who has said:

> *"The* end of the Cold *War does not mean an end of qlobal competition between the superpowers. Once the ideological dimension fades, what you're left with is not peace and harmony, but old-fashioned global politics based on dominant powers competing for influence and pursuing their internal interests. "*

Professor Sandel conception of relations among nations in the post-Cold War world is historically' well-f(mndcd, but I would argue it is not consistent with the increasingly interdependent world-interdependent economically. environmentally, and politically in terms of security-into which we are moving. I n that interdependent world I do not believe any nation will be able to stand alone. The United Nations charter offers a far more appropriate framework for relations among nations i n such a world than does the doctrine of power politics.

In contrast to Professor Sandell, Carl Kazen, former director of the Institute of Advanced Studies at Princeton, wrote in *International Security:*

> *"The international system that relies on the national use of mili - tary force as the ultimate guarantor of security, and the threat of its use as the basis of order, is not the only possible one. To seek a different system. . . is no longer the pur - suit of an illusion, but a necessary effort toward a necessary goal. "*

That is exactly what I propose we undertake.

A System of Collective Security

To repeat, the new world order which I propose would require:

- Renunciation by the great powers of the usc of force in disputes among themselves and renunciation of unilateral action in dealing with regional or national conflicts.
- Agreement by the Security Council that regional conflicts endangering territorial integrity, or national strife carrying the risk of widespread loss of 1ife of the kind we arc seeing in Bosnia today, will be dealt with

" . . . In the increasingly interdependent world into which we are moving, I do not believe any nation will be able to stand alone"

"Had the U.S. and other major powers made clear their support for a system of collective security . . . the Iraqi invasion of Kuwait might have been deterred"

through the application of economic sanctions and, if necessary, through military action. imposed by collective decisions and utilizing multinational forces.

Such a world will need leaders. The leadership role may shift among nations depending on the issues at hand. Often it will be fulfillcd by the U.S. How'ever, in such a system of collective security, whenever the U.S. does play a leadership role, it must accept collective decision making. We're not accustomed to that: it will be very difficult.

Correspondingly, if the system is to survive, other nations must accept a sharing of the risks and costs: the political risks, the financial costs, and, most importantly, the risks of casualties and bloodshed.

Had the U.S. and the other major powers made clear their conception of and support for such a system of collective security, and had they stated they would not only pursue their own political interests through diplomacy without the use of force. but would seek to protect nations against attack, the Iraq invasion of Kuwait might well have been deterred.

Arms Reduction

While steps are being taken to cstab-1ish a worldwide system of collective security of the kind I have outlined, the arms control negotiations-including those relating to the proliferation of weapons of mass destruction-which have been underway in several different fora should be expanded in scope and accelerated in time.

Particular attention should be given to establishing long-term goals for nuclear forces, beyond those incorporated in the START II agreement signed by Presidents Yeltsin and Bush earlier this month.

Today there arc approximately 40,000 nuclear warheads in the world, with a destructive power over 1 million times that of the Hiroshima bomb. Even assuming that the reductions called for by START II are implemented, the stock of nuclear warheads of the five existing nuclear powers is not likely to be reduced below 9,()()() to 10,000 warheads by the year 2003.

So the danger of nuclear war—the risk of destruction of societies across the globe-will have been lowered, but surely it won't have been eliminated.

Can wc go further? The answer must be yes,

If there was ever any reason to doubt that conclusion, it should have been swept away by the recent disclosures of how close the world came to nuclear disaster in 1962 during the Cuban Missile Crisis. It was a dramatic demonstration of human fallibility, of the degree to which political and military leaders are so often captives of misinformation, misjudgment, and miscalculations.

Retrospective View of the Cuban Missile Crisis

The actions of the Soviet Union, Cuba, and the U.S. in October of 1962 brought those three nations to the verge of military conflict, and they brought the rest of the world to the brink of nuclear disaster.

None of these nations intended by its actions to create such risks. To understand what caused the crisis, and how to avoid such events in the future, participants in the decisions of the three nations were brought together by Harvard University, Brown University, and the governments of the Soviet Union and Cuba in a series of five conferences—the last of which was a meeting chaired by Fidel Castro in Havana, Cuba, in January 1992.

By the end of the third meeting, which was held in Moscow in January 1989, it had become clear that the decisions of each of the three powers immediatedly before and during the crisis had been distorted by misinformation, miscalculation, and misjudgment. I shall cite only four of many examples:

1. Before Soviet missiles were introduced into Cuba in the summer of 1962, the Soviet Union and Cuba believed the United States intended to invade the island in order to overthrow its president and its government. As I shall I discuss more fully in a moment, we had no such intention.
2. The United States believed the Soviets would not move nuclear- warheads outside the Soviet Union-they never had—but in fact they did. In Moscow we were told that by Oct. 28, 1962, the height of the crisis, Soviet strategic nuclear warheads had been delivered to Cuba, and their missiles were to be targeted on cities in the United States.
3. The Soviets believed the missiles could be introduced into Cuba secretly. without detection, and that when their presence was disclosed, the U.S. would not respond. Here, too. they were in error.
4. Those who urged President Kennedy to destroy the missiles by a U.S. air attack, which in all likelihood would have been followed by a land and sea invasion, were almost certainly m istaken in their belief that the Soviets would not rcspond with military action. At the time, the CIA had reported there were 10,000 Soviet troops in Cuba. At the Moscow conference, participants were told there were in fact 43,000, a1ong with 270,000 well-armed Cuban troops. Both forces, in the words of their commanders, were determined to fight to the death. ” The Cuban officials estimated they would have suffered 100,000 casualties. The Soviets expressed utter disbelief we would have thought that, in the face of such a catastrophic defeat, they would not have responded militarily somewhere in the world. The result almost certainly would have been uncontrollable escalation.

By the end of the meeting in Moscow, we had all agreed we could draw two major lessons from our discussions. First, in this age of high-technology weaponry, crisis management is dangerous, difficult. and uncertain. Due to misjudgment, misinformation, and miscalculation of the kind I have referred to, it is not possible to predict with confidence the consequences of military action between the great powers and their allies.

Second, therefore, we must direct our attention to crisis avoidance. At a minimum, crisis avoidance will require that potential adversaries take great care to try to understand how their actions will be interpreted by the other party. In this respect, we all performed poorly 30 years ago during the missile crisis. Let me illustrate my point by referring to an exchange at the opening of the Moscow meeting.

President Gorbachev's aide, Georgi Shaknazarov, was the chairman. He asked me, as one of the U.S. participants present who had been a member of President Kennedy’s Executive Committee during the crisis. to ask the first question. I said. “My question is a very obvious one, from our point of view. What was the purpose of the deployment of the nuclear-tipped missiles into Cuba by the Soviet Union?

Shaknazarov asked, ‘“Who wants to answer?”

Andrei Gromykok, who for over 27 years had been the Soviet Foreign Minister, and had been n the Foreign Minister in 1962, was present and he

“The Cuban Missile Crisis was a dramatic demonstration of human fallibility”

responded, “I can answer that question with a few words. Their action was intended to strengthen the defensive stability of Cuba, to avert the threats against it. I repeat, to strengthen the defensive capability of Cuba. That is all.”

I then replied, “Mr. Chairman, that leads me to make two comments. My first comment is stimulated by the implication of Mr. Gromyko’s answer—the implication being that the U.S. intended. prior to the placement of missiles, to invade Cuba, I want to make two points with respect to that implication. The first is, if I‘d been a Cuban, I think I might have thought that. And I want to state quite frankly, with hindsight, if I had been a Cuban leader, I think I might have expected a U.S. invasion.

“We had authorized the Bay of Pigs invasion. We didn't support it. militarily—and I think this should be recognized and emphasized, as it was specifically the decision of President Kennedy not to support the operation with the use of military force—but, in any event, we had assisted in carrying it out.

“And after the debacle, there were many voices in the U.S. that said the error was not in approving the Bay of Pigs operation but in the failure to support it with military force. The implication was that at some time in the future, force would be applied.

“Secondly, them were U.S. covert operations in Cuba which extended over a long period of time. The Cubans knew that. My recollection is that the operations began in the late 1950s and extended into the period we’re discussing, the summer and fall of 1962.

“And thirdly, there were important voices in the United States—important leaders of our Senate, important leaders of our House-who were calling for the invasion of Cuba.

“So I state quite frankly again that if I had been a Cuban leader at the time, I might well have concluded there was a great risk of U.S. invasion. And I should say as well, if I had been a Soviet leader at the time, I might have come to the same conclusion.

“The second point I want to make—and I think it shows the degree of misperception that can exist and can influence both parties to a dispute—is (hat I can state unequivocally wc had absolutely no intention of invading Cuba.

“1 don’t want to suggest there were no contingency plans. Obviously there were. But I state again, we had absolutely no intention of invading Cuba, and therefore the Soviet action to install missiles with that as its objective was, I think, based on a misconception--a clearly understandable one, and one that we, in part, were responsible for. I accept that. ”

Some of us, particularly President Kennedy and I, believed at the time that the U.S. faced great danger during the missile crisis is. However, during the Havana Conference a year ago I learned we had greatly underestimated that danger.

While in Havana we were told by the Russians that the Soviet forces in Cuba in October of 1962—which, as 1‘VC said, numbered some 43,000 instead of the 10,000 reported by the CIA—possessed 36 strategic nuclear warheads for the 24 intermediate-range missiles that were capable of striking in the United States. At the time the CIA had stated they did not believe there were any nuclear warheads on the island.

We were also told by the Russians that their forces included six dual-purpose tactical launchers for which they had nine tactical missiles with nuclear warheads to be used against a U.S. invasion force. Most importantly, we learned that the authority to usc those nuclear warheads had been delegated to the Soviet field commanders in Cuba; i.e., no

further authorization from Moscow was needed.

We need not speculate about what would have happened had a U.S. attack been launched, as many in the U.S. government were recommending to President Kennedy on those critical days, Saturday, Oct. 27, and Sunday, Oct. 28. We can predict the results with certainty.

The U.S. forces were prohibited from carrying nuclear weapons. The commander had sent a message to the joint chiefs and to me, asking for such authority, and we told him he was crazy.

He said, "We know we're going to face tactical nuclear weapons," and we replied, "It's beyond belief. You are prohibited from carrying nuclear weapons."

But no one should believe that the U.S. troops, had they been attacked with nuclear weapons, would have refrained from calling on the nuclear forces that were at the ready in the U.S. And where would it have ended? In utter disaster.

The Nuclear Power Debate

Human beings are fallible. We all make mistakes. In our daily lives they are costly, but we try to learn from them. In conventional wars, such mistakes cost lives, sometimes thousands of lives. But if such mistakes were to affect decisions relating to the use of nuclear forces, they would result in the destruction of nations. Surely this must lead to the conclusion that, insofar as achievable, we should seek to return to a nonnuclear world.

An agreement among nations to eliminate nuclear weapons must provide, of course, for protection against violators. There are many ways by which this can be done. I won't discuss them here other than to say none of them would require retention, at most, of more than a few hundred weapons by the existing nuclear powers or by a supernational authority. Compare that figure with the 9,000 or 10,000 that are likely to remain in 2003 under the START II regime.

More and more political and military leaders are accepting that basic changes in the world's approach to nuclear weapons are required. Some are going so far as to agree that the long-term objective should be to return, insofar as practical, to a nonnuclear world.

But that's a very controversial proposition. Leading Western security experts, both military and civilian, continue to believe that the threat of use of nuclear weapons prevents war. Zbigniew Brzezinski, President Carter's National Security Advisor, has said with reference to a proposal for eliminating nuclear weapons: "It is a plan for making the world safe for conventional warfare. I am therefore not enthusiastic about it."

A report of an advisory committee, appointed by the former U.S. Secretary of Defense, Richard Cheney, makes essentially the same point.

However, even if one accepts their argument, it must be recognized that their deterrent to conventional force aggression carries a very high long-term cost: the risk of a nuclear exchange.

John Foster Dulles, the Secretary of State under President Eisenhower, recognized this problem nearly 40 years ago. I was amazed to read a year or so ago that in 1954 he wrote in a very highly classified, top-secret assessment of nuclear strategy:

> *"The increased destructiveness of nuclear weapons is creating a situation in which national objectives could not be obtained through war, even if a military victory were won."*

Dulles went so far as to state, "Atomic power is too vast a power to be left for the military use of any one country." Its

"More and more political and military leaders are accepting that basic changes in the world's approach to nuclear weapons are required"

"Returning to a nonnuclear world . . . would greatly strengthen the hands of those who seek to control or limit the spread of other weapons of mass destruction"

use, he thought, should be "internationalized for security purposes. " He proposed, thcrct'ore, to "universalize the capacity of atomic thermonuclear weapons to deter aggress ion" by transferring control of nuclear forces to a veto-less United Nations Security Council.

Dulles' concern in 1954 was echoed very recently by a committee of the U.S. National Academy of Sciences in a report that carried a number of signatures, among them that of General David C. Jones, the former chairman of the Joint Chiefs of Staff. The report stated, "Nuclear weapons should serve no purpose beyond the deterrence of nuclear attack by others. "

Should we not begin immediately to debate the merits of alternative long-term objectives for nuclear forces of the five declared nuclear powers, choosing from among three options:

1. A continuation of the present strategy of "'extended deterrents''—as recommended in the above-mentioned report of Secretary Cheney's advisory committee—but with the U.S. and Russia each limited to approximately 3,500 warheads, the figure agreed upon by Presidents Yeltsin and Bush.
2 A minimum deterrent force-as recommended by the committee of the U.S. National Academy of Sciences —with each major nuclear power retaining 1,000 to 2,000 warheads.
3 As I strongly advocate, a return, insofar as practicable, to ii nonnuclear world.

Controlling Proliferation of Weapons of Mass Destruction

While we're debating those issues, shouldn't we also debate how best to deal with the proliferation of weapons of mass destruction among other nations?

Over the last three decades, efforts have been **made to** limit the spread of nuclear, biological, and chemical weapons. The Treaty on the Non-Proliferation of Nuclear Weapons was agreed to in 1968, and the Biological Weapons Convention in 1972. The treaties have done much to slow the spread of these weapons.

Yet today, at least three countries-Israel, India, and Pakistan—in addition to the five declared nuclear powers, are believed to possess the capability and the materials to rapidly assemble, if they have not already assembled, nuclear weapons. Others are said to have a biological weapons capability. And still others are carrying out research that could place them in these categories. Of equally great concern, about 25 countries have ballistic missiles capable of delivering weapons of mass destruction.

It is clear that the international community needs to redouble its efforts to limit the spread and prevent the usc of these weapons of mass destruction. Returning to a nonnuclear world, insofar as that's achievable, would greatly strengthen the hands of (hose who seek to control or limit the spread of other weapons of mass destruction.

One of the main complaints of the nonnuclear developing countries has been that the nonproliferation treaty is a discriminatory agreement which prevents them from acquiring nuclear weapons without requiring those already possessing weapons to dismantle their arsenals. From this point of view, the Biological Weapons Convention and the Chemical Weapons Treaty, which do not distinguish between "haves" and "have nets," are preferable models.

I think it is time to confront the issue head on. If wc truly want to stop the proliferation of weapons of **mass** destruction and the means of delivering them, I see no alternative to some form of collective. coercive action by the Security Council. To begin with, the Council should agree

to prohibit the development, production. or purchase of any nuclear, chemical, and biological weapons and ballistic missiles by nations not now possessing them. Countries in violation of relevant Security Council resolutions would be subject initially to strict economic sanctions on the part of the international community. If those sanctions failed to alter their behavior, a United Nations military force would destroy the weapons.

Countries now in possession of such weapons of mass destruction would be subject to iternational inspection and control and **would be** asked to approve a treat! prohibiting "First Use. "

Potential for Reductions in Military Expenditures

As we move toward a system providing for collective action against military aggression wherever it may occur, m i Iitary budgets throughout the world can be reduced substantially. Those budgets now total nearly $1 trillion per year, of which the U.S. accounts for roughly $300 billion.

I believe that during this decade that trillion dollars could be cut in half. The huge savings of $500 billion per year could be used to address the pressing human and physical infrastructure needs across the globe.

In the case of the U.S. it should be possible, within 6 or 8 years, to cut military expenditures from the 1989 level of 6% of GDP to below 3% .

Military expenditures of (developing countries, which as I've said come close to spending $200 billion per year, approximately 5 percent of GDP, could be reduced by the end of the century to 2 or 2½ percent.

The costs of wars, the costs of arms procurement, and the costs of defense in these developing countries hale caused a number of them to sacrifice social and economic advance, and let me turn to Pakistan to illustrate this point. I turn to it not because it's the greatest offender, and certainly not because it's the only offender, but it an easy case to consider.

Pakistan's defense expenditures approximate 7 percent of GDP. It's a country with significant unmet political and economic development needs, and I believe those have been sacrificed to finance the defense program.

For example, in the late 1980s, only half of Pakistani school-aged children were enrolled in primary education facilitics, and only one-fifth were receiving secondary education. The percentage of females in primary school and secondary education was less than the average—about half as much as the percentage of males.

Even in the lower-income and middle-income Asian countries, such as Sri Lanka or China, the primary school enrollment and the secondary school enrollment, as a percent of children in the age groups, was about twice the level of the enrollment in Pakistan.

Health statistics offer a similar picture. In countries such as Chile. Argentina, Mexico, Costa Rica, and Panama, the population per nurse is about 500; in Pakistan it's about 10 times that high. As a result, infant mortality in Pakistan is more than twice as high as in those other countries, and life expectancy is much less.

While it is extremely difficult to draw hard and fast conclusions about the relationship between poverty and military expenditures from statistics such as these. it is clear that a country such as Costa Rica, which has only an 8,000-person Civil and Rural Guard force, and which devotes less than I percent of its GDP to military-related expenditures, has more resources at its disposal for social and economic purposes than countries that spend nearly an order of magnitude: more on the military.

"The greater the political power of the security forces, the less likely it is that the requirements for democratic governance will be met "

One of the most important effects of military expenditures. which has serious implications for political advance and for economic growth and development in the developing world. is the degree to which it strengthens the political influence of the armed forces at the expense of the civilian groups within society.

In many parts of the Third World, economic systems function primarily to benefit a relatively limited number of people, and political systems are frequently manipulated to guarantee continued benefits to the elite. If development that meets the needs of all social groups is to occur, if democracy is to spread. there must be, among other things, a relatively equitable distribution of resources. This, in turn, relies on the existence of a political system that both allows all groups to articulate their demands, and is capable of producing workable compromises between competing interests. The greater the political power of the security forces, the less likely it is that the requirements for democratic governance will be met.

Linking Financial Aid and Military Expenditures

The role of the military is, of course, the prerogative of each government. Nonetheless, the international community needs to identify ways in which it can reward those countries that reduce security-related expenditures in favor of development.

Therefore I strongly urge the linking of financial assistance, both from OECD nations and from multinational financial institutions. through conditionality. to movement toward "optimal levels" of military expenditures. The optimal levels should take into account the external threats to a given country.

The conditionality', this relationship between external financial aid and developing country military expenditures, can take many different forms. One form was proposed in *Facing One World,* a report of a committee set up by the Secretary General of the United Nations and chaired by former German Chancellor Helmut Schmidt. The group, which included ex-presidents or ex-prime m inisters of both developed and developing countries. urged that, when decisions concerning allocations of foreign aid are made, special consideration be given to countries spending less than 2 percent of their GDP in the security sector.

I am conscious that application of conditionality, in whatever form it may take, will be difficult and contentious. Nevertheless, it is, I believe, an essential part of the solution to the waste represented by excessive military spending in poor countries.

Conclusion

In sum, with the end of the Cold War, I do believe we can create a new international order. And yet we have barely begun to move in that direction.

If together we are bold-if East and West and North and South dare break out of the mind-sets that have guided us for the past four decades-we can reshape international institutions, and relations among nations, and we can reduce military expenditures, and we can do so in ways which will lead to a mm-c peaceful and far more prosperous world for all of the peoples of our interdependent globe.

Its the first time in my adult 1ife we've had such an opportunity. Pray God we seize it.

Q How do you view the relationship between regional organizations and the larger world community?

I don't think the regional organizations have attempted to play a role. For example, the OAU (Organization of African Unity) is moribund. They can't agree they should play a major part in Somalia. I don't believe the people of the United States are going to put 25,(X)() people into another Somalia without the OAU being present.

We're going to have to allow a little time for these regional organizations to be strengthened. In the case of Somalia, for example, the OAU should be encouraged to address this issue, to lay down some standards of potential intervention.

I think the U.S. should assume a major part of the responsibility for the weakness of regional organizations today, as well as for the weakness of the United Nations. The U.N. has been ineffective for 30-odd years. It is still suffering from the determination of the West and the East that it would not succeed. It's going to take time to rebuild it.

Progress has been made. We're all deeply indebted to the U.N. Secretary General for his initiatives, but we've had tens of thousands killed in Bosnia, we've had tens of thousands if not hundreds of thousands die of famine in Africa, we've had millions of refugees across the face of Europe and acress Africa, and wc stand the risk of many, many more of these conflicts.

We must turn to the regional organizations. There isn't even any such organization i n the Pacific. We must bring together, in some form of structure, Russia. China. Japan, the U. S., and the major nations of the Pacific Rim, and talk about how we're going to address common security problems in that region.

It'll take time to do this, and while wer're doing it. I think the U.N. is going to have to assume more responsibility than I believe ultimately it should.

Q *What do you think of the threat to world security as a result of the reprocessing of spent nuclear fuels, extracting weapon-grade plutonium? Specifically, what do you think of Japan's current practice of shipping its spent nuclear fuel to France and Britain, where they are reprocessing it, keeping the waste, and then sending weapon-grade plutonium back to Japan? Can a high-technology nation like that, with the reservoir of plutonium, become a super nuclear power overnight?*

Japan can become a super nuclear power any t i me i t wants to, whether it reprocesses the plutonium or doesn't, and I think it's about time wc all recognized that, including the Chinese.

I attended a meeting a year ago in Beijing, and they tried to get the group to sign on to a proposition stating, "All foreign troops should be withdrawn from all foreign bases."

I said, "Let me tell you something. There isn't a Chinese in this room who on a secret ballot will, or should, vote for that proposition. What do you think would happen in the Pacific if wc withdrew all our troops? Do you want Japan to be a nuclear power? If you don t, you'd better develop some long-term) stable security system for the Pacific. It doesn't exist today. "

The U.S. has no legal obligation to defend Israel, but it does have a legal obligation to defend Japan. That situation is unstable unless there is a relationship in the Pacific that will permit us to carry out that legal obligation in ways that arc appropriate to our own security. That absolutely requires that wc maintain forces in the area. I don't think wc have to maintain forces as large as we have, and I don't think we have to maintain the kind we have, but if wc want Japan to refrain over the decades from developing

"The U.S. should assume a major part of the responsibility for the weakness of regional organizations today, as well as for the weakness of the United Nations"

nuclear weapons, we've got to address the basic security requirements of Japan and the region, and we haven t done so.

Q *What transformations are needed in the Security Council to realize your objective? Wouldn't it be necessary to bring in Japan and Germany, and wouldn't that create enormous pressures to bring in Brazil and other countries? If the Security Council gets very big, it won't be able to do what you want.*

You're absolutely right. If you add Japan, you've got to bring in Germany, and if you bring in Germany you already have France and Britain. Arc you going to have three from Western Europe, and not Brazil and not India, and not Nigeria? That's impossible.

On the other hand, to negotiate a deal in which you open this whole thing up, wc might end up with the ECOSOC (Economic and Social Council), in a sense. The ECOSOC is a totally ineffective body. And whatever wc think of the Security Council, it's a heck of a lot more effective than ECOSOC, so lets keep it that way.

Why don't wc set up a mechanism? For example, why don't we agree that France, Britain, and the U.S.—permanent members of the Security Council—will not vote on anything in the Security Council without consultation with Japan and Germany? If you want to take it to the extreme, let's agree that those three permanent members won 't cast their votes unless they arc representative of the votes of all five countries.

Now, I'm not really suggesting you go that far, but what I'm saying is that we can do much mm-c than wc arc doing.

Q *The second point of your five points describing the new world order was that minorities within states should have some means of redress, other than violence, through some international involvement. At the present moment, I doubt that would be acceptable to any country, including the United States. How do you propose to proceed from where we are today to a situation in which that* **would** *be accepted?*

I think wc should begin to discuss the problem. I don't know that it's unacceptable, and I'd take it step by step.

The first proposition I made in that point was to codify the rights of minoritics and ethnic groups. Some might take the position it's already codified in the charter of the United Nations, To some degree that's true, but the codification is so general it doesn't help us very much in dealing with the situation in Yugoslavia, for example.

I think wc could begin by expanding the definition of minority rights and ethnic rights. There would be objection to it, but it could be done, and then we could set up a process that could be used by minorities that feel the prescribed rights in the codification arc being violated.

But what do you do if codified rights arc being violated, the process is being followed, and no relief is in prospect? That's when you get to the point of disagreement, and there I think you would find that the Security Council might well, under certain circumstances, agree to intervention.

In the case of Bosnia, suppose that the Security Council would have agreed to some action before the killing started, or before it went very far. What action would we have proposed'? And what would have triggered it? How much killing would we accept before wc reached the point where we were moved to act?

Take the list of 125 wars over the past 40 years that have led to the death of 20 million people, and, with hindsight, say what should we do? We no longer have the East-West struggle. We didn't address those in the past largely because of

the East-West struggle. That's gone, thats no 1onger an excuse for not addressing it.

Q ***How*** *important do you think population growth is to international security, and what's your recommendation for the United States in this area?*

There arc two revisionist schools of thought that are saying the population problem is not a problem, or, in any event, that the way wc are talking about dealing with it is wrong. One is a school of economists that maintains if you just let market forces operate, this population problem will be taken care of by itself, that intelligent parents, properly educatcd, will make the right decisions.

There's much evidence to show that increasing female education, just through the primary level, will, over time, lead to substantial reductions in fertility. Today fertility in Sub-Saharan Africa is running on the order of 6.2. That means the average female during her reproductive years will produce 6.2 children.

This school of economists would say, let's be sure every girl child in Sub-Saharan Africa goes to school, and this problem will take care of itself. If you look at a long enough period of time, that's correct.

But by the time that period occurs, the *500* million people in Sub-Saharan Africa today arc very likely to be five times that, or about 2.5 billion. So I don't agree at all with that school.

The other school of thought is populatcd by many of my feminist friends, who tell me I'm trying to impose on females some form of restriction. I'm not; I'm simply trying to make available to females the opportunity for them to guide their 1ives, and to guide the lives of their children.

Why am I so concerned about it'? Well, there arc many, many reasons. There's considerable evidence to show that where these fertility rates arc as high as they arc in, say. Sub-Saharan Africa—6.2 or 6.3—the infant mortality rates arc very high. Maternal mortality rates arc very high; illiteracy rates are very high; caloric intake is very low. Caloric intake for the average of the 500 million people of Sub-Saharan Africa today would have to be increased 25 percent to even reach that of China.

The Sub-Saharan Africa population I've pointed to, at roughly 500 million today, is projected in recent figures from the World Bank to stabilize at about 2.9 billion. If you take into account the effect of AIDS, World Bank projections show population won't stabilize below about 2.7 billion.

Is that consistent with optima] economic and social advance for females and children and others in Africa? Definitely not. What can wc do about it'?

The first thing to do is to make contraception available to all who want it, and that is not now being done. Studies have indicated that there is a substantial demand for contraception beyond what is presently being met, but I think one has to go beyond that, and this is where we begin to get into controversy.

We cannot wait until wc put all the females through primary school, and have a natural demographic transition take place. If wc do, the present population of the globe, whatever it is—5.2 or 5.5 billion—may not stabilize below 12 or 14 billion, and I think that raises very serious social problems, and it may raise some sustainability problems.

The U.S. can take a lead. We are already doing quite a bit. There is about $800 million a year in foreign exchange assistance made available to the developing countries for fertility reduction and

"Sub-Saharan Africa, the contraception prevalence rate is about 10 percent; that needs to be quadrupled"

contraception prevalence increases. Of that $800 million, the U.S. provides on the order of $300 million. Japan provides about $50 mill ion.

In addition, wc need to increase the world foreign exchange flows to the developing countries. so that during this decade contraception prevalence can be increased significantly. In Sub-Saharan Africa, the present contraception prevalence rate is about 10 percent; that needs to be quadrupled.

If it's quadrupled, and continues on after that, the 500" mill ion, instead of stabilizing at 2.7 billion, can be brought down to a stabilization level of 1.5 billion, which is three times what they have now.

There's a tremendous problem here, and the U.S. can do far more (h an it has in dealing with it.

Q Could you give us your thoughts on the relation of the economic recovery in the former Marxist counties to our national security, and how far we should be going to aid them?

I would be in favor of the West providing whatever economic assistance can be effectively utilizcd by those nations, to advance their rates of economic and social advance. That applies particularly to such countries as the Czech Repubic, Hungary and Poland. I'm not at all certain how much external financial assistance can be utilized in Russia itself.

Russia needs much, much more than it is presently receiving in the form of technical assistance, to help it restructure its institutions—its political institutions, its legal structure, its financial systems, its governance.

As an illustration, I don't think they're going to be able to privatize quickly their very large Russian institutions, nor do I think they need to do so in order to greatly increase the effectiveness of those. They can commercialize them, they can begin to insist they follow accepted principles of accounting. They can begin to insist that they usc what are called "shadow prices" for their labor and their goods, and they can begin to insist they use some incentives.

To put it very simply, I would provide from the West whatever economic and technical assistance can be effectively used.

Sustaining the Global Environment

By
The Honorable
Gro Harlem
Brundtland

Over the past century, industrial production has multiplied 50-fold. We may project a future world economy multiplying first 5-fold and then 10-fold. We may project a world population doubling or tripling some time in the next century. But we will never reach such a stage, because the carrying capacity of the earth will have been exceeded. This is why wc arc compelled to manage a transition more important than the agricultural and industrial revolutions.

History is full of examples of how human ingenuity can be wonderfully creative, but also incredibly destructive. We have no other option than to change, to change profoundly. and to make change our friend, not our enemy. The policy platform of the new administration includes American leadership on global environmental issues. This means dealing with big issues, controversial issues, complex issues—issues we cannot afford to ignore.

The START II agreement, the chemical weapons agreement, and all the other major breakthroughs in disarmament which have made this world a safer place for ourselves and our children must be followed by equally bold steps that will safeguard the future of our planet.

Today, despite the problems in places such as the former Yugoslavia, Iraq, Somalia, or Cambodia, the gravest threats to our future come not so much from military aggression as from our own way of living, from tacit acceptance that poverty and destitution arc facts of life in the South, and from extravagant usc of natural resources in the North. This means wc must deal with environment and development not merely as a pollution problem, but as a challenge to the present inadequate way in which our countries and the world arc organized and governed.

Exponential growth in our usc of finite natural resoureces will inevitably come to a full stop. By means of example, with a double-digit. coal-fired economic growth in China. dwindling food production in Africa, and competition for water in the Middle East, our earth will become uninhabitable. We must chart a new course for global development, and soon, before it is too late.

Our Common Future

The rich world has had a frim grip on the Third World for hundreds of years. We arc now in a situation where that picture may change because wc in the North have become increasingly dependent on developments in the Third World.

If the Third World sees no option but to follow unsustainable development policies, we too will become the victims of a shrinking ozone layer, of global warming, loss of biodiversity and contamination of food chains-all global problems that cannot be stopped by border controls.

At the Rio Conference on Environment and Development in June 1992, the developing countries presented their demands for equity and justice. They were right to point out that it is the industrialized world which is placing the greatest burden on the global environment.

The) were reluctant to accept new requirements for self-restraint, and pointed to how the rich world has been developing for decades without concern for the environment or finite natural resources. They rightly stated that poor and underdeveloped coun-

" It is in our own interest to assist the poor countries to achieve sustainable growth, and to integrate them thoroughly into the global economy"

tries could not be asked to forego development because the rich countries already had used up environmental space.

The World Commission on Environment and Development, which 1 had the honor to chair, worked to find common ground between the North and the South. Our report, *Our Common Future*, which was issued in 1987, focused on underde - velopment and poverty as a main cause and effect of environmental problems in the South. It focused on a different kind of underdevelopment-the overuse of natural resources—as a main cause of environmental problems in the North.

Poor people and poor countries have few options but to overexploit their environment in order to survive. Poverty and uncertainty about the future serve as incentives for- people to have more children, since in many countries children become an economic asset to the family even before they are 10 years old. When the population grows faster than the economy, if the latter grows at all, poverty becomes endemic. Rising numbers of poor, uneducated people who lack health services, safe water, and energy will inevitably undermine their own environment and deplete the resources on which future generations depend.

The world population is now about 5.5 billion, and it is growing exponentially. The World Bank stipulates that it might stabilize at some 12.5 billion by the middle of the next century. But where precisely it stabilizes in the range between 8 billion and 14 billion will depend on policy decisions.

This is why it is so important that President Clinton has argued for the resumption of U.S. funding for the United Nations population activities. Sound population policies must include far more than family planning alone. Raising the status of women, rising incomes for families, improved health and education are equally important.

The situation in Haiti serves as a warning of what may happen if the downward spiral of poverty, population growth, and environmental degradation is allowed to continue unchecked. That country's environment is being destroyed more rapidly than anywhere else in the world.

The boat people making their way to Florida may only be the tiny prelude to the global upheavals wc will face. To avoid a proliferation of Haitis and Somalias, we must assist developing countries in making a new start, gradually taking on the rights and the obligations of equal partners.

If we should fail, our predicament can be variously described. Steady deterioration of the quality of life—traumatic for the rich, catastrophic for the poor--is perhaps the least dramatic way of describing humanity's future.

Foreign Aid Critical

There is, regretably, "aid fatigue" in the world today, not least as the result of domestic problems in many industrialized countries. Still, wc must operate on two fronts. We cannot afford to postpone international problems during our own healing period. 1 am often asked, for this very reason, by friends in the Third World to emphasize Norwegian aid performance which for many years has remained in excess of 1 percent of GDP, the highest in the world, and three times higher than the average of OECD countries.

Norwegian aid is poverty-oriented, and has focused on health, basic needs, women, children, education, family planning, and, increasingly, on the environment.

Yet aid alone is not sufficient to solve the poverty problem. Aid must be designed to help in building sound national economics, and in implementing policies of social reform.

We must launch a full-scale, committed offensive against poverty and undcr-development in the Third World. It will not be successful unless the U.S. is willing to take a leading role. If we provide comfort and restore hope, the n we can avoid much more costly operations.

Now that communism is no longer a threat to our free societies, containment should no longer be a major motive for foreign aid. We must realize that it is in our own interest to assist the poor countries to achieve sustainable growth. and to integrate them thoroughly into the global economy.

This will require that we relieve their suffocating debt burden, i reprove the quality and quantity of our foreign aid, while we require that sound domestic, social, and economic policies are implemented. Even more importantly, we must remove our barriers to trade with the Third World, as we must among ourselves. The conclusion of the Uruguay Round is now long overdue.

Energy is the Key

Energy is a crucial issue. Energy consumption has grown by a factor of 20 over the past 150 years. Energy usc is the key to any development strategy.

The triple E's—Energy, Environment. and Economy-are inextricably linked. Unless we find more prudent ways of using energy, this exponential increase in our energy usc will continue. The problem will be further aggravated by the increasing needs for energy in the South, where more than 90 percent of the population growth will occur.

Many of today's environmental problems are caused by energy production and consumption. It leads to acid rain, deforestation, flooded valleys, polluted rivers, erosion of our architectural heritage, and specific disasters such as Chernobyl and the Exxon Valdez.

The World Commission on Environment and Development called attention to the need to improve energy effciency and to shift toward a more sustainable energy mix. The Commission also pointcd to the need to avoid extreme fluctuation in oil prices. We emphasized the difficulty of developing alternative energy sources as long as oil prices remain low. and we recommended that new mechanisms for dialogue between producers and consumers be explored.

It would be highly irresponsible to continue to rely on what I call the "Doris Day doctrine" in global energy relations. While exciting in some human relations, "que sera, sera" is not a principle that can guide our energy future.

We should treasure energy resources more, price them properly rather than subsidize them, and keep more of them available for future generations.

Implementing Climate Policies

At Rio we adopted what amounted to a watered-down climate convention. It fails to set firm targets, but it is a new beginning and it requires that **wc start to** implement climate policies immediately. Moreover, it is the first of a new generation of international environmental agreements, as it laid down the fundamental principle that solutions must be cost-effective.

The essence of this central principle is that we should aim at achieving maximum environmental benefit for the minimum cost. It is obvious that it will take longer-and we all will lose-if we squander our resources on the most costly problems,

We should not request all countries to reduce their emissions by an equal percentage. Clearly, the marginal costs of

"We should treasure energy resources more, price them properly rather than subsidize them, and keep more of them available for future generations)

"American gasoline is one of the best buys there is in any industrialized country, and such prices offer little incentive for energy conservation"

reducing emissions by, for example, 1 ton will vary greatly from country to country, as well as between different sources within each country.

In a globalizcd economy, private companics often find themselves caught in a squeeze between the need to respond to national environmental demands on the one side, and short-term profit objectives on the other. They may also be facing foreign competitors who may be subject to less stringent requirements.

Let me usc the example of acid rain to illustrate this problem. Acid raid is a serious problem for Norway. Some 90 percent of (his pollution comes with the wind from other countries. The problem must therefore be dealt with at the regional level. Further reductions in our low $S0_2$ emissions would cost 10 times as much as similar reductions would in Poland, We could improve the environment far more quickly and cost-effectively by promoting investment in cleanup operations in Poland rather than in Norway.

Norway contributes only about ().2 percent of global $C0_2$ emissions, and can therefore only make a marginal contribu-(ion to solving the problem, Nevertheless, we have introduced high carbon taxes. Furthermore, the tax is I inked to the transfer of financial resources to developing countries as a means of helping them to curb their own emissions.

The U.S. contributes 25 percent of global $C0_2$ emissions. More important, however, are the per capita figures U.S. emissions amount to 5.8 tons of $C0_2$ per person per year, whereas the figure for Norway is only one-third of that. One of the reasons for our low figures is our abundance of hydropower. France has a similar situation, since their nuclear energy influences their statistics.

Although many people have commented on the dubious nature of statistics, it seems irrefutable that the U.S. could provide a major share of the answer to this global problem. To a non-American, it seems that this could be done by means or measures that would be sensible for a number of reasons, such as, for example, reducing the country dependence on the resources of the Gulf, and promoting development of renewable resources of energy.

Europeans have a hard time understanding how controversial the issue of taxing oil and gasoline is in the U.S. To us very low gasoline prices seem an obvious source of revenue which could provide at least a part of a solution to a deficit problem. Even when adjusted for inflation, the prices in the U.S. after Iraq's invasion of Kuwait were far below those that sent the nation into fury in 1979 and 1980. Still, the price here is only one-fourth of the price in Norway or Italy.

About one-fourth of the price you pay here is tax, while the picture is the opposite in Europe, where up to three-fourths of the price is tax.

Thus, American gasoline is in fact one of the best buys there is in any industrialized country, and such prices seem to offer little incentive for energy conservation.

Pricing the Environment

Speaking of incentives, the idea of "green" taxes has increasingly become a subject of debate. Given the high level of unemployment in OECD countries, it is no wonder that new taxes arc unpopular if they increase the burdens on private enterprise. Green taxes could therefore be compensated by lowering other taxes.

In Norway, an official Green Tax Commission" has studied ways of pricing the environment more properly. In my opinion, sustainable development requires both a high level of employment and an improved environment. This cannot be achieved without changes in our

economic policies. We must consider whether to lowcr taxes on the "good'' things. such as work and investment, and raise taxes on the "bad" things, such us pollution and depletion of natural resources.

A report issued by World Resources Institute indicates that tax increases generally spell trouble by discouraging work and savings, and that they may trigger the flight of labor and capital outside tax jurisdictions. However, a rc~enuc-neutral shift in taxation should be quite possible.

If applied properly, such a shift could harness market forces in support of environmental improvements by inspiring companies and households to act innovatively and efficiently. Such a shift would lead to additional net savings, since damage to the environment and to public health would be reduced, as would the cost of incremental environmental protection measures.

Such a change would be more likely to succeed if it involved dialogue and cooperation between the private and public sectors. Environmental protection need riot be antigrowth. On the contrary, it must fuel I growth. Some companies may of course face short-term adjustment problems. We should not be euphoric and pretend there will be no problems, but wc should have faith in our own innovative capacity. Look at what wc accomplished with ozone-depleting substances. They are on the verge of being phased out completely because knowledge and skill were put into action to find alternatives once there were prospects of regulation.

There is tremendous talent available in the United States. There is no reason at all why both the economic and environmental performance of the U.S. should not be the best in the world. I am convinced that millions of non-Americans felt President Clinton was right when he said in his inaugural speech, "There is nothing wrong with America which can - not be cured by what is right with America."

The Role of Technology

I believe that all countries, rich and poor, are well advised to invest more in the skills of people. An increasingly well-educated population must be the core of a new supply-side agenda for the 1990s and beyond.

The U. S., Japan, and Europe must be the engines of change, but technological advances i n the North w i 11 (rely provide partial solutions unless technology is also disseminated to the Third World. This does not mean that we must weaken the protection that patents provide. In fact, effective patent systems are necessary to promote technology dissemination and transfer, ensuring a proper return on research and development.

Patent protection has sometimes been regarded as a major barrier to the usc of technology. However, studies commissioned in preparation for the Rio conference raised doubts about this. The evidence indicates rather that lack of capital, lack of skills, lack of markets, and the weakness of infrastructure arc the major barriers to the diffusion of environmentally sound technology.

It is difficult to see how the Third World can become a reliable new market for high-tech products if the knowledge base is too thin. It would therefore be a good international industrial policy for governments to support companies to work with Third World companies in the fields of technology, research, and development.

The 10 largest companies in the United States spend more on research and development than the entire Third World, including China. Clearly, technology cooperation should become a natural part of forward-looking foreign policies.

"Technological advances in the North will only provide partial solutions unless technology is also disseminated to the Third World"

The World Resources Institute has found that research and development funding has largely been devoted to fields of little relevance to environmental quality. The heart of the matter seems to be that in many countries the need for new technology to solve environmental problems has been inadequately recognized, and that the role of governments in encouraging such technologies is poorly defined.

One problem is that technology is seldom widely spread when it is based on "technology push." "'Need pull" is what is needed instead. The difficulty in the case of environmental technology is that this need is not a private need but a public need. This is a serious problem as our economic systems do not sufficiently take into account harm done to people's welfare or the environmcnt. A part of the solution must therefore be to make economic agents act in harmony with the needs of society today and in the future.

Environmental and other public needs argue convincingly in favor of policies to support environmentally benign technologies. We need industrial policies with targets and purposes that only democratic governments can set.

The 1990s will be a decade of destiny, in which wc must summon all our human resources, our knowledge, and our moral conviction to seriously face the real challenges of the future. The forces of technology, of finance, and of electronic communications must not be al lowed to take over powcr which was vested i n democracy to shape our future.

The Challenge of the 1990s

Therefore, the challenge of the 1990s is to deepen and widen the forces of democracy, and to lift democratic decision-making also to the international level. Even the most powerful nation state is too small for addressing global challenges.

If we maintain the illusion that each nation can act in isolation, we risk postponement of critical decisions which will only be made effective when states act in cooperation. We also risk an increase in the current skepticism and lack of confidence in democracy, politics. and politicians.

People do not believe in politicians when they promise to do what is in reality beyond the reach of their present powers. People are used to holding politicians accountable and to measure the results and how they arc able to improve the quality of life. If the results do not meet people's expectations, they arc quick to turn against politicians and the political system itself.

If this alienation is allowed to continue, we risk a gradual disintegration of our traditional political institutions. The antipolitical establishment mood in many countries is one such sign. The increasing racism and xenophobia in many European countries today is a frightening reminder of dark chapters of European history.

All our efforts to solve the new global threats must be underpinned by true internationalism. There will be competition, clearly, but such competition between companies and countries must be governed by fair, open, agreed upon, and enforceable rules.

In the final analysis, the problems of envirnment and development depend on the global dissemination of the ideas of democracy. The unveiling of the environmental ecocide in Eastern Europe, committed under totalitarian rule, clearly shows that only people who arc allowed to participate in pubic 1ife, without fear, will be able to build community purpose, instill social responsibility, and assert the larger vision of a just and sustainable future.

"If we maintain the illusion that each nation can act in isolation, we risk postponement of critical decisions which will only be made effective when states act in cooperation"

The resource of human minds and our ability to organize our communities, and community of countries. arc what wc must rely on in a major transition period toward a sustainable relationship between people and the earth. If I had not believed that people would have the capacity to govern and to reconcile the two, I would have felt less inspiration working politically to integrate enironmental issues into policymaking as I have been doing for nearly two decades now.

We need a global democracy. This will only be possible if Europe and North America can lead; those parts of the world which have been benefited by the history and tradition of democracy for more than 200 years certainly have a special responsibility.

I want to conclude by reminding you of the words of Winston Churchill, who spoke here, in this same area, 50 years ago. He said, "Europe and the United States must lead, for their own safety, and for the good of all walk together in majesty, in justice, and in peace."

This is exactly the same challenge to us all at this very moment 50 years later.



Q *Will technology alone provide for a sustainable global development, or will will need to look for reductions in the standard of living from the northern countries?*

I believe if we do the right things, if we change our systems, and especially if wc start using energy in a better manner than up to now, then wc can make a major contribution to the necessary changes that may increase the standard of living which is necessary in the Third World. The focus is *not* to reduce our standard of living, but to change it, absolutely.

Q *I'm curious about the politics of development assistance in Norway. How do you sustain a level of development assistance in escess of 1 percent of GNP? Is this a popular program? What arguements are effective in persuading the Norwegian people to sustain this level of development assistance?*

I can remember many election campaign since the '70s, when I first started as a politician at the national level, where people came up to me in the streets and criticized events they had read about in the papers-c. g., boats carrying food to India. There arc always very strong arguments for using the money at home. and there arc always needs at home that could be taken even better care of.

My party, and also the conservative party, stood up and said, look. wc have to do our share to alleviate poverty and destitution in humanity globally. It is necessary for politicians to make these kinds of arguments. Otherwise the sentiments can spread, and they arc dangerous because without a global aspect to our domestic problems, they cannot be solved.

Alleviating poverty and opening markets, increasing democracy, and, not the least of all, taking care of the environment-these issues need to be dealt with on behalf of each citizen in the United States, or in Norway, for the future of their own children, for their own health, for their own security.

Q *You noted the importance of enhanced educational status in the developing nations, and also in Eastern Europe. There are also major health status problems. What would your suggestions be in terms of how Western, democratic, developed nations might effectively pursue approaches to enhancing health and education status in these needy countries ?*

"We live in an age where complicated issues are presented in 30-second sound bites. This tends to confuse people's willingness to concentrate on in-depth thinking about the future"

I think generally the political will or ability in the years after 1989-90 to invest and to support the Eastern European countries and Russia have not been sufficient. It would have taken a broader agreement in the West to go in with more resources, more people, and more willingness to invest and to aid these countries into economic progress and social purpose in a new situation, in what I would call a social market economy.

1 think we have to be more forthcoming to the needs of the Eastern European countries and the previous Soviet Union because there is instability and it is a security risk to us if we do not help increase the confidence in democracy. And how do you do that without giving people the feeling that their 1ives become improved when democracy is introduced? That is a challenge, and education, health, and employment are the basics of that.

Q *There are few topics as contentious in the U.S. as taxes—green or otherwise. Can you point out some of the lessons Norway has learned for dealing with the unintended or undesired consequences of green taxes?*

It has not been easy. After our introduction of green taxes, the problem of competitiveness became acute for certain Norwegian industries because other countries reduced or at least did not increase their level of taxation in these areas. We had to back away from some of our initial goals.

But wc have not abandoned our policy. We are going to stand on this policy, and we are fighting in Europe and other places to have others follow because we know it's the only way to have sustainable development, to have an energy mix which is wise, and to give the right incentives for using resources in a non-wasteful way.

Q *Democracy tends to work from crisis to crisis. What you're talking about are things that need to be done, but are a little bit ahead of a crisis. How do we create motivation in the political centers of this world?*

I see no other way but for us to reach out to the general community. This has become, in a sense, more difficult: wc live in the age of television, an age where complicated issues are presented in 30-second sound bites. This tends to confuse people's willingness to concentrate on more in-depth thinking about their own society and about the future.

The media and the communications revolution makes us able to reach every person, all around the world. There is a potential for building democracy and purpose which is absolutely fantastic. But the way these things arc driven by commercial interests—for issues that can "sell" at the moment-create a problem in long-term thinking, and in taking seriously some basic aspects of our own societies and our own future.

When people lose sight of the central issues, we—as politicians and as scientists—have to move out even more into those places where we meet them, not through the television screen but directly. Because it is when wc answer questions, like you asked me now, in an audience where peep 1 e see us talking, not i n one-minute or half-minute sequences, but in paragraphs, that they can improve their own knowledge and thinking.

This is a new beginning for a new administration. There are many opportunities for positive change. As the President said in his inauguration speech, it is critical to explain the consequences of not making some bold decisions, and hope that four years from now people will see that those decisions were wise.

: By
~ Dr. Laura
: D'Andrea
: Tyson

Economic Competitiveness in the US.

When historians examine the decade we're in, and the one wc just left, they will find it a remarkable period because of the fundamental changes that occurred.

The Cold War has ended. One of the world's two military superpowers has self-destructed. We lived for half a century in a world of two military super[pwers, and now wc have only one: the United States.

There's also been a somewhat less remarked upon change in the world economic system. For the last 50 years the U.S. was the only economic superpower. But in the 1990s the world has become a tripolar economic world, with three relatively equal economic superpowers—Europe, Japan, and the United states.

This tripolar world is a world which is much more interdependent because of trade and foreign investment flows, and it's a world which is increasingly competitive Indeed, Fred Bergsten of the Institute for International Economics has called the new economic order one of "competitive interdependence."

The economics of Europe, Japan, and the United States arc linked by trade, and they're linked by investment. They arc also striving to gain market share, and they are striving to attract quality foreign direct investment-often at one another's expense.

So in this competitive, tripolar economic world, how does the U.S. shape up to the competition?

The Good News

I want to start with what I think is the good news, and the real news, and that is that the U.S. remains the most productive and richest economy in the world. The average standard of living of Americans, as measured by GDP per capita, still exceeds that of any other industrialized nation by a substantial amount. As a recent careful study by the McKinsey Group documents. our absolute level of productivity still exceeds that of any other industrialized nation.

Also, since 1986 we have seen an export boom in the United States, so wc have emerged once again as the world's largest exporting nation. Exports have accounted for a large fraction of the rather slow growth wc have experienced in the past four years.

That's the good news. Nonetheless, I would like to emphasize that. in terms of relative competitive position, there are signs of weakness, signs of problems, and before wc turn to these problems I want to give you my personal history in terms of being involved with the issue of national competitiveness.

Defining National Competitiveness

It was just about a decade ago that John Young, then CEO of Hewlett-Packard, chaired President Reagan Commission on Industrial Competitiveness. That commission came up with a number of recommendations to build, restore, strengthen, and improve U.S. competitiveness.

"GDP per capita in the U.S. over the last 19 years has grown more slowly than GDP per capita in the other advanced industrialized nations"

At the end of the process John Young found that he still didn't have a very good statement of what the problem was. He had a lot of solutions in search of a problem,

So a number of academics from Stanford and Berkeley got together and came up with a working definition of national competitiveness. It has become the standard definition, and this is the one I will use now. I will then discuss some signs that suggest the U.S. position on national competitiveness is something about which we should be concerned.

The definition of competitiveness we devised in 1982 had two parts:

1. The ability of a nation to have its goods and services meet the test of international competition-i. e., compete in world markets.
2. The ability of a nation, while it's competing in world markets, simultaneously to provide real increases in real living standards for its citizens cm a sustainable basis.

Keeping that definition in mind, if we look back on the past decade since that report came out, we can see signs of weakness in the U.S. position.

Inability to Balance Trade

The first danger sign is the accumulation of very large trade imbalances. We accumulated over a trillion dollars' worth of trade imbalances during the 1980s. During our recent export boom, we had a situation where our exports were growing rapidly and we were growing slowly at home, and our imports were growing slowly. We got our trade imbalance down significantly—we got it down to about $70 billion last year—but it looks like it's going to be going up again.

If you look at the numbers through the third quarter of this year, we're already at $68 billion, and the fourth quarter is obviously going to bring in substantial additions to that number.

The point is, we made some improvemen t because we slowed down our growth rate, the rest of the world increased its growth rate, and we exported more and didn't import as much, but we weren't able to come to a position of trade balance. And now, if wc start growing more rapidly than the rest of the world, as some indicators suggest we w i 11, then we may in fact see a rising trade imbalance problem.

Declining Standard of Living

Another sign of weakness is that the standard of living—the GDP per capita in the United States, the broadest definition of our living standard—actually declined in 1991 and 1990.

Of course, those were recessionary years, but if you look at historical data, GDP per capita in the U.S. over the last 19 years has grown more slowly than GDP per capita in the other advanced industrial nations.

Moreover, if you look decade by decade—if you look at GDP per capita growth rates in the United States going from the '50s to the '60s to the '70s to the '80s—you see a downward trend. Our growth rate is clearly decelerating.

These figures become more disturbing when you look at indicators such as wages and family incomes. Consider wages, for example. The most recent economic report of the President, prepared by my predecessor, Michael Boskin, stated that in 1972 average real weekly earnings in the U.S. were $315; in October of 1992, they were $255. Thus, there has been a 20-year period in which we've had a decline in real average weekly earnings of nearly 20 percent. This means that during the '80s, a period

when we had a boom, average real weekly earnings were declining.

Look at the figures another way: Average real median family income decreased in 1991. That is more than a recessionary, short-term situation, because that figure has been virtually unchanged from 1978. For 13 years we have had no growth in median real family income. And that is despite the fact that many families now have more hours of work because they have two earners rather than one.

The other thing I want to mention about this is that there has been growing inequality. I'll cite only one statistic here, the one I find the most compelling and the one that worries me the most: *Eighteen percent of fulltime workers cannot earn enough income to support a family of four above the poverty level.*

Thus, if you look at the trade situation, and you look at our declining standard of living situation, you can see there are some problems we need to address to improve our national competitiveness.

Determinants of Competitiveness

When we worked on competitiveness a decade ago, we tried to think about what determined that national ability: What are the fundamental underlying determinants of national competitiveness? The way to address this question is to think a little bit about how companies compete.

Companies can compete in two major ways. They can compete on price—i.e., by offering products at a relatively low price. compared with other companies- or they can compete on Technology-i.e., by improving the quality of a product or by introducing an entirely new product. Let's look at each of these in turn.

Competing on Price

If you think in terms of a company, there are two fundamental determinants of price—the cost of or the prices that you pay your inputs and their productivity.

How much does it cost you to hire a worker, and how productive is the worker? How much does it cost for you to purchase or lease a piece of equipment. and how productive is the piece of equipment

Let's examine the labor cost issue, because that's where our standard of living is tied in. If you look at our competitive position on thee basis of price for wages, you might say we have improved, but we've improved because our wage growth has been so anemic. Our wage growth has been negative, in real terms. for many of our workers.

Although we have become more price competitive because we've had lower wages. that doesn't translate to national competitiveness. If we compete on the basis of lower wages, we're not going to get that other half of the competitiveness equation, the part about rising living standards.

Thus, competing on wages is not an effective national competitiveness strategy. It will work for an individual company, and it can work for a nation in terms of selling more goods and services, but it cannot work for a nation in terms of generating rising living standards for its populat ion.

Business Week last year noted that the U.S. ranked at the bottom of 12 industrial countries in terms of the increase in manufacturing wages that had been realized over the 1980s. and the Business Week editorial concluded, "The U.S. is more competitive ." I would argue that the U.S. was more price competitive as a result of this. but it wasn't more competitive in terms of being able to generate rising: wages for its population.

"Eighteen percent of fulltime U.S. workers cannot earn enough income to support a family of four above the poverty level"

If you don t want to compete on wages, on living standards, and you want to compete on price, then you're going to have to go to the other part of the cost equation, which is productivity, and that's why economists generally agree that the most fundamental determinant of long-run competitiveness is productivity growth.

If you want your competitiveness to grow over time, it depends very much on how fast your productivity grows. There is widespread agreement that, although we're not sure precisely why, the U.S. has had an overall slowdown in productivity growth since the 1970s, and it has had the lowest productivity growth of the G-7 nations for a substantial period of this time. Overall, our productivity growth has been below 1 percent for the last 20 years.

That brings us to the next question. If we could accept the notion that productivity growth is the most important determinant of national competitiveness as I have defined it, and if you look at the evidence that our productivity lead is diminishing because our productivity growth is falling behind that of our competitors, then the policy challenge becomes, What do we do about productivity growth?

This question generates lots of controversy, but one of the things economists agree on is that capital per worker is the most fundamental, easily measured determinant of productivity growth. For example, between 1959 and 1973, capital per worker in American private business increased 2 percent annually, and productivity increased 2.8 percent annually. Between 1974 and 1991, capital per worker only grew at 0.6 percent annually, and productivity grew at slightly less than 1 percent annually.

Right away you can see the correlation. lf wc don't supply our workers with modern capital and equipment, with advanced technology. then they will be less productive, and over a long period of time we will not be able to support high growth in real wages.

This of course brings us to the issue of investment, because the way we get capital growing relative to labor, the way we supply our workers with the most modern technology, is to invest in plant and equipment, and that is an area where we have really fallen short for quite a long time.

According to the Private Sector Council on Competitiveness (which was started by John Young as the private sector continuation of his public sector effort in 1982), for more than 20 years the U.S. has been investing a smaller percentage of its gross domestic product in plant and equipment than the average of the other advanced industrial nations: and during the last three years it has invested less than every single one of the other advanced industrial nations; and in 1991, American investment in plant and equipment hit a 14-year low.

In addition, if wc examine net national investment—i. e., above and beyond what needs to be invested simply to take account of depreciation-then the percentage of net national investment in GNP in the U.S. was lower in the 1980s than it was in the '70s, and that was lower than it was in the '60s.

As this is a declining trend of net national investment out of GDP, wc should not be surprised to find that the growth of net, nonresidential capital stock-i.e., what wc really arc adding to the productive capacity of the economy—has been slowing down since the mid-'60s,

Let me comment on public investment, because one of the things that will be an important part of the Clinton administration is the importance of public investment as well as private investment.

In real terms, we spend only half now of what wc spent on public investment relative to GNP in the 1950s and the '60s. What is invested in infrastructure, in education, in civilian research and development programs, etc., is in real terms a lower percentage of our GNP than was invested decades ago.

Again, international comparisons are important. The level of public investment relative to GNP is one and a half times greater in Germany, and three times greater in Japan, than it is in the United States.

Our commitment of resources to public investment, as a percentage of GNP, has been trending clown over time. The rates of Japan, Germany. and some of the other European nations have been trending up.

There is a lot of controversy about the exact number to usc to measure the rate of return to public investment. The overall conclusions of several recent studies suggest that public investment can be complementary to private investment, and actually can help realize the returns to private investment, and that public investment has a positive contribution to make to the economy.

In considering competitiveness from the point of view of productivity and investment. and then the role of private and public investment, where do wc come out in terms of various policy areas?

The problems l'm talking about-the investment problem, the productivity problem, even the underinvestment in public investment areas—those problems were all identified in the last economic report of the President, which came out in mid-January.

I agree with the points made in that report. The first was that we have to work to improve the incentives for private investment in the U.S. We have unwittingly put into our tax system disincentives to invest, and we have to try to take out some of them.

Currently under discussion in the new administration is some form of investment tax credit, as well as some form of targeted capital gains relief to encourage the formation of new entrepreneurial business activities. We have to do something to encourage investment in the private sector.

We also need to change the composition of government spending. President Clinton is very committed to moving public spending to investment programs-to infrastructure programs, to civilian technology programs, to education programs, and to health programs that are so essential to the well-being of our workforce.

Then, finally, wc have to tackle deficit reduction. Theres a lot of discussion going on about deficit reduction. and I think it's important to emphasize that deficit reduction is not an end in itself, its a means to an end. The reason we need to reduce the deficit is because the government deficit absorbs resources that could otherwise be used for private investment.

In 1991, for example, the federal deficit exceeded personal savings. We were generating a certain amount of personal savings in the U. S., but the federal deficit was taking more out of the national savings pool than we as individuals were putting in. The government deficit in that year-199 1—absorbed about 22 percent of total private savings (i.e., personal and business savings combined).

If we can get the deficit down, we will be able to free up resources for private investors, and that's a very important part of productivity development, and thus national competitiveness development.

"We have unwittingly put into our tax system disincentives to invest, and we have to try to take out some of them"

"The U.S. position in many critical technologies is slipping—in some cases it's been lost altogether– and future trends are not encouraging"

Competing on Technology

If you'll recall, I mentioned above that the two main ways to compete are on price-—which is either competing on wages or on productivity-or on technology.

Technology itself, of course, helps you compete on productivity. Capital per worker and productivity are correlated not just because you're giving workers more machinery to work with, but because you're giving them better machinery to work with.

We also can think about technology as having a direct effect on the ability to compete, and here wc need to examine how we're doing in terms of supporting the input into technological development and diffusion. The input 1' II discuss here is research and development spending.

As a percentage of GNP, the U.S. invests less in civilian R&D as a percentage Of GDP than most of its major competitors. Indeed, wc invest only half as much in civilian R&D, compared to GDP, as is the case in Japan and Germany.

Over the past 19 years, again according to the Private Sector Council on Competitiveness, the U.S. has had one of the slowest growths in civilian R&D spending of all of the advanced industrial countries. In the recession years—1 990 and 1991—real R&D spending in the U.S. actually decreased.

Thus, wc arc underinvesting in civilian R&D. That's the first point. The second point, which is also well documented by a number of studies, is that the U.S. seems to lag in the commercialization of technologies.

We have not lost our lead in innovations, although our lead is diminished, but we do not seem to be able to commercialize as well. Firms in the rest of the world seem to do better.

This has led the Council on Competitiveness to a conclusion that was very important in the formulation of a technology program during the Clinton campaign. The conclusion of the Council on Competitiveness is that the U.S. position in many critical technologies is slipping, in some cases it's been lost altogether, and future trends arc not encouraging.

This conclusion was reached about a year ago in a very influential report, and there were a number of suggested public policy proposals made in that report. Many of them arc being picked up in a variety of places.

Some of them, for example, have shown up in the Competitiveness Policy Council, a group headed by Fred Bergsten that was established by the 1988 trade bill. It's a bipartisan group with private interest group representatives, and they have laid out a technology strategy. Some of the proposals in the Nunn-Domenici plan for a competitive America are similar to the ones I'm about to suggest, as are some proposals from the Senate Economic Leadership Group and the House Science Committee.

I'm going to mention a few proposals that were outlined in what was for many people the most compelling document of the Clinton campaign: the technology policy document that came out at the end of September.

First of all, wc must improve incentives for private investment in research and development. Here the most important issue is the need to make the R&D tax credit permanent.

We have a tax credit, one which has proven to have a beneficial effect on research and development spending by private companies. R&D spending by private companies has been shown to have a positive spillover effect on the nation. But R&D is a long-term activity. and wc need a long-term tax credit situation so companies can make R&D decisions appropriately.

The second issue on which there is a great deal of consensus is the need to increase the share of federal R&D funding for civilian technologies. Already we have had some decline in the share of federal R&D spending going to the military, from a peak of about two-thirds down to about 60 percent. But we really have to move more. Of the federal R&D dollars, a larger share should go to civilian programs, a smaller share should go to military programs.

Thats not to deny that there have been important benefits from military R&D. If you will look at the history of the computer industry, or the history of the semiconductor industry, or the history of the commercial aircraft industry in the United States, you certainly see that i n their infancy, in the days of their development into world leaders, military-funded R&D played a very critical role.

But as Eric Bloch has argued very effectively, the spillover effects of military R&D have become less important, and they arc likely to become even less important in the future.

One reason for that is because for a number of technologies, the frontier is in the civilian market. The second reason is that we'd better not rely on military R&D budgets in a world of declining military budgets. And the third reason is the nature of the competition. It was okay for us to rely on military programs when wc didn't have very serious competition. But if wc rely on military R&D programs and our competitors rely on civilian R&D programs. we may find ourselves getting to the market a little more slowly than they.

We must figure out ways to increase the share of federal R&D funding that goes to civilian purposes. We need more federal R&D money for prccompetitive research and development, stages where the gains arc hard to capture by individual firms and where private R&D is likely to be inadequate. A recent report by the National Academy of Sciences drew a similar conclusion, noting that existing programs for channeling federal monies to generic, nonmilitary technologies arc underfunded and uncoordinated. NAS added that the programs need to bec insulated more from political ntlucrwc.

Thus, we need a new approach. one with more coordination, more funding, and a better delivery mechanism. I assume I will be working on this quite actively in the administration with my counterparts in Commerce, in the Office of Science and Technology, and with members of Congress. I assume wc 11 also be trying to build on some of our successful programs.

We have had some success with the advanced technology program at NIST (National Institute for Standards & Technology). It's a small program, but it's widely viewed to be a fairly successful program. We've obviously had some successes with dual-use technology programs in DARPA (Defense Advanced Research Projects Agency), We've had some successes, although there is more controversy about this, with some of the CR ADA (Cooperative Research and Development Agreement) programs at the national labs. And some of the FCCST (Federal Coordinating Council for Science and Technology) initiatives have been viewed to be quite successful.

Finally, let me comment on diffusion, because you can talk about our problem as one of not investing enough in civilian technology, and you can also talk about our problem as one of diffusion.

The Clinton administration has emphasized this point a lot, in the context of trying to work on expanding a national manufacturing extension service—building on the federal and state programs that arc in place. Reviews of these programs conclude they have been relatively suc -

"The spillover effects of military R&D have become less important, and they are likely to become even less important in the future"

"Some of the policies and institutions that served us well in the old world need to be looked at again"

cessful in diffusing technologies, in diffusing quality management practices, and in providing small firms with access to sophisticated testing facilities and training programs.

We also encourage diffusion by encouraging investment in general, because diffusion occurs when firms increase their rates of investment. When companies buy new technology, it gets diffused quickly.

The new administration is committed to complementing the civilian technology program with a very active training and education program. After all, wc want to make our workers more productive by giving them modern equipment, but we also have to worry about the skills of our workforce. And we have to do something about the fact that we spend only 20 percent as much as other advanced industrial countries in training our workers.

Conclusion

Let me end with a couple of observations from my recent book about trade policy in high-technology industries. What I concluded was, although the trade problems are very thorny, the fate of our high-technology industrial base depends much less on the trade battles that wc fight abroad than on the choices we make at home. We need to fight our trade battles in a serious and informed way, but We cannot hoodwink ourself into believing that if we have a problem it's because of an unfair trading practice. If we have a problem wc must first look to the home-grown causes of that problem.

The second general observation I made in this book is that in this tripolar competitive world in which wc are no longer the economic superpower, and we are the only military superpower, some of the policies and institutions that served us well in the old world need to be looked at again. We need to change our own policies and change our own institutions because the nature of the challenges we face is different.

I conclude that book with the observation that it's fortunate for us, that the collapse of the Soviet Union provides an opportunity for us to reconsider our priorities, and to shift our resources from the military challenges of the past, which we ably met, to the economic challenges of the future, which I hope this new administration will help us meet.

Medical Care Reform: Building a Viable System

By Dr. Arnold S. Relman

Our system for providing health care in this country is in deep trouble. It is not really a system at all; it is a "nonsystem," a disorganized hodgepodge of ad hoc arrangements for the delivery and payment of medical care, which. in response to innumerable conflicting private and public interests, have simply accumulated over the past half century without any overall plan or direction.

It is, in short, a typically American institution, as American as apple pie. But it isn't serving our needs very well anymore. In fact, it has become a major social and economic burden on the country, which is now demanding correction.

The problem does not lie with our unexcelled medical science and technology, nor with the technical competence of our medical personnel. The problem is the way we provide and pay for medical care.

American biomedical scientists have won more Nobel Prizes than all their colleagues in the rest of the world combined, but the American health care nonsystem would win no awards. Judged by its ability to meet social needs, our system suffers seriously by comparison with those of many other advanced Western countries.

We are failing to provide decent care for a large and growing fraction of our citizens because we simply cannot afford the increased cost. Medical care has become monstrously expensive, and its cost continues to rise at an absolutely insupportable rate.

Waste, inappropriate and inefficient usc of services and resources, inequity, and excessive administrative overhead are seen at every turn. These problems have been obvious for many years. and suggestions for major reform have been made many times before. But now, with the election of a new president who is committed to health care reform, with mounting public clamor for change, and with the congressional leadership on both sides of the aisle declaring themselves ready for enactment of new health care legislation, We seem to have come at last to a true crossroads in our national journey toward health care reform.

We cannot stay where wc are. We must move, but in which direction? What do we do?

A spate of proposals has recently been introduced in the Congress, and many more have been debated in the public arena, but until now there's been no sign of coalescence around any one of them. However, there seems to be agreement on the general goals. We want medical care for all our citizens, at a cost wc can afford, in an accountable system that promotes quality and efficiency, encourages innovation, and allows for some freedom of choice.

That's a tall order. Many believe it is unrealistic, not attainable in the foreseeable future, it' ever. 1 disagree. I believe that if the richest country in the world can afford to devote 14 or 15 percent of its economy to health care, it can certainly have a system second to none, with all the desired charactcristics—provided we recognize what needs to be done, and are willing to do it.

"I cannot imagine a patient walking into a surgeon's office and saying, 'Doctor, just give me the standard, low-cost operation. I don't want the top of the line"

Delivery System: the Heart of the Problem

First wc must identify the basic causes of our problem. We cannot set the system right until wc understand what IS wrong, and how it got that way. Most discussions of health care reform have focused on the payment side of the system, particularly on funding and on medical insurance.

That's understandable, because the insurance system is seriously flawed and in urgent need of reform. But reform of insurance cannot do the job by itself; it does not go to the heart of the problem, which is to be found in the medical care delivery system.

Current legislative proposals, in my opinion, pay insufficient attention to the delivery system, yet that is where the ultimate success of efforts at health care reform will be decided. The main thrust of my comments will be concerned with the delivery of medical care.

Physicians' Role in Medical Cost Crisis

The medical care system is in essence a reflection of how physicians practice their profession. That may sound like a physician's parochial conceit it, but a moment's reflection may convince you otherwise.

Physicians are paid only 19 or 20 cents of the health care dollar in America, but their decisions and advice largely determine how most of the rest is spent. Physicians order the tests and the procedures, they command the use of hospitals and nursing homes and outpatient facilities, they prescribe the drugs and recommend the use of medical goods of all kinds.

Of course, all of this is usually done with the consent of patients, and sometimes even at their request; but the fact remains that most medical care. unlike most other services, is not independently selected at the discretion of the recipient.

Furthermore, considerations of service price, which are so important in most other kinds of choices made by consumers in our economy, arc much less constraining in medical care, because three-quarters of the cost is paid by third parties.

Quality is not much of a consideration either, because patients are rarely able to determine in advance the quality of the medical services they will receive. And even if they could, few would want anything less than the best available.

I cannot imagine a patient walking into a surgeons office and saying, "Doctor, just give me the standard, low-cost operation. I don't want the top of the line."

In sum, patients are not consumers in the usual sense, and the market for medical care, if you want to call it a market, is not like the markets for most economic goods and services. People can shop for medical insurance, but not for their personal medical services.

I'm not suggesting that patients cannot or should not participate in decisions about their care. They often can, and. if they wish, they should be given all possible information to help them do that.

But most people who arc ill, or fear they are ill, want and need to depend on their physician—and it's primarily the physician who decides what will be done, based on his or her assessment of the particular situation.

However, with relatively few exceptions, there is much room for differing medical judgments on what ought to be done in any given situation. Despite the recent enthusiasm for "practice guidelines," most of the day-to-day practice of medicine cannot now, and probably never w i 11, be reduced to rigid algorithms.

In short, while consumer choice of medical services is limited, physician choice is not. The options open to the physician for the use of medical resources are often very wide, and they may have widely varying price tags. There is hardly any place in the practice of medicine where properly informed and motivated physicians could not effect tremendous savings and reduce the rate of medical cost inflation by making certain choices and not others-without risking the patient's welfare, and in the process often improving the quality of care.

I conclude that the most important proximate cause of our medical cost crisis is the behavior of our physicians. In doing so, I do not suggest that doctors are more greedy or venal than other mortals; they are not. In fact, I believe they arc probably less inclined to put their own economic interests above their clients' welfare than are many other professional providers of specialized services in our economy.

But doctors are human, and like other humans they respond to externalities. Their behavior is influenced by how they are paid, how their practices are organized, how they are trained, and how they are buffeted by the economic and social forces now donminating the delivery of mceical care.

Most physicians arc paid on a piecework basis. The more tests, procedures and sevice they prescribe and provide, the more money they're likely to make. Most physicians practice alone, or with one or two associates, in private offices where there is little or no professional accountability or peer review.

Most physicians are specialists and are trained to provide an expensive, technology-intensive kind of medical care. They are also trained to do everything that might possibly' help the patient. with little or no regard for the flattening of the cost-benefit curve.

This behavior is reinforced by the expectations of patients, who want no expense spared if there is any chance of benefit. particularly if they're insured or if they know somebody else will pay.

Physicians also face an increasingly competitivc professional environment. The number of practicing physicians. most of them specialists, continues to grow far more rapidly than the population, and the number of available insured patients continues to diminish.

Commercialization of Health Care

Physician behavior is also greatly influenced by the vast commercialization of the medical care system that has occurred in the past few decadcs. I estimatc that approximately a third or more of all medical serviccs in this country arc now provided by investor--owned facilities

Competition, overbuilding, the duplication of facilities, and the still largely open-ended funding of the health care syste drive these providers to expand their revenucs. But entrepreneurialism is also rampant in the private, voluntary sector, where there arc the same economic imperatives to generate mm-c business in an increasingly threatening and competitive environment.

Advertising and marketing are widely employed by all kinds of facilities. investor-owned or not, and also by doctors in private practice. The advertising by the hospitals and the health care facilities has as its primary target the practicing physicians, who arc encouraged to refer their insured patients and usc the facilities maximally.

Physicians are also invited to become investors in goods, services and facilities, with very attractive opportunities for income, with the obvious purpose of generating still more referrals and more rev-

enue for the providers. Probably 10 or 15 percent of al1 physicians are now involved in such so-called b"self-referral" arrangements; in places likc Florida and California, the hothouses of medical entrepreneurialism, the number may be as high as 40 percent.

All of these considerations, added to the lack of the usual constraints on the consumers of medical care, inevitably drive today's practitioners to do more for their patients even when less might be enough, to usc resources lavishly when a more prudent usc of resources might be appropriate.

Revolt of the Payers

Years of double-digit medical inflation have finally produced what might be called "thc revolt of the payers," an effort by the third-party payers to contain costs rather than simply pay the bill.

Government adopted prospective payment-DRGs (Diagnosis Related Groups)—for hospitals, and a fee scale for paying doctors. DRGs have at least temporarily slowed the cost increase in Part A of Medicare, but have also caused hospitals to shift more of the burden to the private insurers, because the DRGs pay hospitals less than their costs.

The long-term effects of physician payment reform remain to be seen, but control of the volume of physician services is still an unsolved problem. I read in the *Washington Post* today that total expenses for Medicare are expected to go up by another $21 billion this year, so it's clear that whatever methods for cost control have been used so far by the government in the Medicare sector have not been entirely successful.

Private insurers, for their part, have relied largely on what has come to be known as "managed care" to control their costs, mainly through various kinds of utilization review. Judging from the continued escalation of private insurance premiums, the net effect on costs so far has not been very impressive. Furthermore, third-party payers arc not well equipped to micromanage the practice of medicine. When they attempt to manage care, they have only blunt instruments at their disposal, and they concentrate on costs rather than the complexities and subtleties of personal medical care. The result is unwelcome and intrusive interference with the professional responsibilities of physicians, and an increasing degree of administrative hassle and overhead that has angered and frustrated most physicians.

In my almost 45 years of being a physician, I cannot remember a time when practicing physicians were so angry at, and demoralized by, what they consider to be unreasonable bureaucratic intrusion into the practice of medicine.

And yet, there is no doubt that the medical car-c delivery system needs management; without it, costs will continue to spiral out of control. The question is not whether we need management of the medical care delivery system. The question is, who should do the managing, and how? Neither insurance companies nor the increasing army of profit-making, utilization review companies that are now being hired by the insurance companies arc qualified to do the kind of management that's needed.

I submit that those closest to the patients, those responsible for the medical decisions, should do the managing. Only physicians in close touch with their patients are in a position to know how to use medical resources cost-effectively, with appropriate concern for the welfare of each patient.

I believe the best way to reform the delivery system is to put the direct responsibility for cost control on physicians, by requiring them to livc within a fixed, per-capita budget. That easily translates to a national budget, if you

"When third-party payers attempt to manage care, they have only blunt instruments at their disposal, and they concentrate on costs rather than the subtleties of medical care"

want to think of it as a way of national cost control. To make it possible for physicians to take appropriate responsibility for cost control, we must change the circumstances that have determined their behavior until now.

Competitive HMOS

Doctors of the future will be practicing responsible, accountable, cost-effectivc carc in group model HMOs (Health Maintenance Organizations)--private, not-for-profit, cooperative or membership-owned HMOs, with open enrol1ment.

HMOs should be paid on a capitation basis, and they should compete, not, as some would have it, on the basis of price, but on the basis of quality. The price should be fixed nationally, with appropriate regiona1 and 1ocal variations—according to economic conditions and the severity mix of patients, etc.—and with appropriate re-insurancc protection against the occasional outlier, which could be a disaster for a small group.

As I've said, these HMOs should compete for patients, and for doctors to work in them, on the basis of quality, riot price. Physicians who work in these HMOs should be paid salaries-no bonuses, no incentives for doing more or doing less. They should be paid fair, competitive salarie, based on the assumption that physicians in such organizations, as a group, should receive approximately the samc fraction of the health care dollar **that** they do now, after practicc expenses.

The distribution of that money should be a matter of self-administr;ition by the doctors. Let each group of doctors--given a fixed, lump-sum of money, which represents an agreed-upon percentage of the total premiums paid into the group or paid into the system as a whole—manage themselves, set their own salaries, decide how much more they think their neurosurgeon is worth than their primary care practitioners, and so on.

Impossible, you say? A pipe dream? Not at all. I've seen it happening, very successfully. in several places around the country.

An arrangement like that enables physicians to act as the fiduciaries they ought to be—as the purchasing agents for patients, staying apart from an increasingly entrepreneurial, m:irkct-oriented system, which up until now has drawn the physicians in.

A system like this enables physicians to do what they were trained to do when they were students and residents, to do the right thing in the best interests of their patients, and to act as discriminating purchasing agents for their patients, dealing with the medical-industriiil complex and all the new products and the expensive new drugs and tests.

They will be expected to live within a fixed budget, and their professional income will be 1imited to their salary. I think it should be made illegal for physicians to makc money by self-referral arrangements.

I applaud Rep. Stark for his original bill, which dealt with self-referral to diagnostic laboratories. It only covered Medicare, but I believc that this principle should be applied across the board to all physicians and all self-referral and self-dealing arrangements. It may surprise you to know that, in my opinion, the majority of American physicians agree on that score . Currently **the** American Medical Association and other m major groups, such as the American College of Physicians and the American College of Surgeons, support that idea.

The arrangements I am advocating promote professional standards, accountability, and also the appropriate use of m edical manpower. Wel1-organized HMOs use medical manpower efficient-

"I believe the best way to reform the delivery system is to put the direct responsibility for cost control on physicians, by requiring them to live within a fixed, per-capita budget"

"We should establish mechanisms for technology assessment. Without that, we are the helpless captives of an explosion of expensive, glittering technology"

ly. They usc no more than the necessary number of physicians per number of patients covered. which is substantially less than the number of physicians we have in the country today, and they usc at least 50 percent—sometimes more--of their physician fulltimc equivalents in primary care. In contrast, the health care system at the present time is gradually changing to a mix of 80 percent specialty, 20 percent primary care.

When I started out in medicine, it was just about the reverse: in the last 40 years we've see n this enormous increase in spec i al ists.

Now, I am not a Luddite. My academic career was based on specialized medicine, research, and developing and applying all kinds of new, expensive tech - niqucs. I believe specialization is necessary for continued innovation and improvement in the medical care system, but it's out of control. We don't need all the specialized care and all the specialists we have now.

Reforming Medical Care Funding

In order to put all this into effect, we will need major reform of the payment and the insurance sidc. We can't get changes in the health delivery system without major changes in the funding of medical care, and the way insurance works.

I believe we ultimately will need a universal insurance system, providing standard benefits in approved, accountable, not- for-profit HMOs, with some kind of semipublic oversight. We will need a discrete, earmarked medical care fund, supported by a universal health tax, to pay for personal care, research and education, and preventive care.

The American health care system depends on a flourishing. vital, innovative research and educational establishment. That establishment has to be identified, it should be supported through the general medical care fund, and it has to be accountable for what it does with its money. I believe there would be plenty of money in such a universal fund to do that, as well as to pay for the increased amount of preventive care we need.

Everyone should be in the system but free to pay for additional benefits outside. Everyone should be financially responsible, according to their means, for paying into the system. Ultimately, we'll have to break the link between employment and health insurance. We can't do it abruptly, but the amount of money that employers arc now putting into the health care benefits of their workers ought to be paid as increases in taxable salary, which then the employees would use to pay taxes into the medical fund.

Steps We Can Take Now

Now, I admit, the Clinton administration is not going to put forward this proposal in the next 100 days, and even if it did it would be dead on arrival in the Congress. Nonetheless, wc ought to start thinking in these terms.

What can we do in the meanwhile to control costs and move toward universal coverage? There arc many things being considered that might be politically possible. For example:

- We should increase "'pay or play,' making it more attractive for small employers by reforming the small insurance market. If wc want to raise some tax revenue, maybe wc can cap the tax deductibility of employers' premiums.
- To get universal coverage as quickly as possible, we should expand eligi - bility for Medicaid. It is unconsc scionable that in many states in this country a person income has to be less than half the poverty level before he or she is eligible for health insurance.

- As quickly as possible we ought to move Medicaid and Medicare and employment-based insurance toward HMOs. Furthermore, we need policies that wi11 encourage and support the formation of HMOs.
- We should start right away to reform the medical manpower situation. We are producing physicians, most of them specialists, at a rate our system cannot absorb. The morc physicians we produce per population, the more money we're going to spend. Government and academic institutions and teaching hospitals should face the fact that we need a fair and reasonable method of controlling the output of total doctors, and shifting the balancc from too many specialists to morc primary care physicians.
- We should establish mechanisms for increased technology assessment, and reporting of outcomes. Without that. wc are the he helpless captives of an cxplosion of expensive, g1ittering technology that's been inadequately evaluated. We need to reduce the vast area of grey uncertainty which the marketers and the advertisers exploit, and focus in on those new technologies that are truly cost-effective and worth the money.

  A simple example: Right now the Food and Drug Administration is required by law to require pharmaceutical companies requesting approval of a new drug to submit evidence of effectiveness and safety. But there is no requirement that the company also submit comparative evi - dencc on the relative cost-effectiveness of their new product with respect to existing products that may be much cheapcr. That kind of informat ion, if it comes out at all, is avail - ablc much later, after the marketing blitz, and after an enormous amount of money has been spent.

  Establishing multispeciality groups is an ideal way to improve the reporting of outcomes." Uniform reporting, group responsibility, peer review, and internal education would make the practice of medicinc far more interesting and rewarding to those in these practices, and would quickly generate a vast amount of information, which we are not currently getting out of our fragmented, solo practice, private office based system.
- And, finally, if we want to effect major social change for the pubilic good, we must educate the public to understand why it is in their interest, economically and medically. We are, all of us, paying that huge bill—this year it will be $940 or $950 billion--and we're paying for it in a crazy, disorganized, indirect, inequitable, and uncontrollable way. And furthermore, we're probably paying at least $200 billion--maybe $250 billion--more than we would need to pay if we had an efficient, rational, responsible system.

  We need to tell people you can't get anything for free. If you want decent medical care, there is a way to give you the best available care at the lowest possible price, and put you in charge. You will have to decide ultimately how much you want to pay for' insurance that will do this, but you can be assured you wil1 see where the money goes.

  The money will be earmarked. It will not be lost in the general government funds, it will not be subject to a year to year manipulation by the Congress. It has to be an earmarked, separate fund which people pay into and which is u used for the purposes described.

  I believe that, with appropriate education and with some courageous political leadership, the people will

"We're probably paying at least $200 **billion–** maybe $250 billion–more than we would need to pay if we had an efficient, rational, responsible system"

"If you're going to change a system that depends on how doctors behave, you'd better consult with them"

agree, because it's in their best interests, and I believe the medical profession wil1 agree, because ultimately it's in their best interest.

Certainly it's in the best interest of young physicians who arc starting out. Most young physicians are aware that the times arc changing. They're anguished about their own futures as independent and respected professionals, and they want to practice good medicine. Yes, they want to make a decent living, but they want to feel they're doing good, that they're going to be respected by their colleagues, and that their patients will appreciate what they do.

Consult the Physicians

I want to make one final point, which has to do with the newly appointed Presidential Task Force on Health Care Reform. It is made up of very distinguished people, and headed by Hillary Rodham Clinton—but not one of them has had any experience in the delivery of health care, not one has lived in the health care system, not one is a physician. Now, obviously, health care reform is a public responsibility and a political responsibility, but if you're going to change a system that depends on how doctors behave, you'd better consult with them.

Trying to reform the health care system without bringing the doctors to the table is like trying to win a football game with coaches alone, without any players. You can have very smart economists and planners and politicians, but if the players, the people who deliver the health care, arc not going to be involved, i t won't work. When I'm sick, I don't want to be taken care of by a doctor who's angry and dispirited and demoralized and can't wait to get out of his practice.

I think we have to recognize that the new system-whatever it ends up being—won't work unless the delivery system works well, unless doctor-s are brought into the system and rewarded for doing the right thing.



Q *You made the point that doctors are only paid 19 or* 20 *cents on the health care dollar, but they probably determine about 98 percent of the medical decisions. If in fact that's the case, why do you turn over to the government, to somebody other than doctors, the determination as to what services ought to be provided to whom, and at what prices?*

Because the present system in which doctors practice forces them to make socially bad decisions. The economic incentives are wrong.

Q *I understand the notion of having a budget and of cavitating, and I also agree with you that the current system rewards doing more, and in fact a significant amount of unnecessary kinds of things. What 1 don't understand is why you're not prepared to allow the capita ted physician or physi - cians to innovate, introduce prevention, figure out ways to negotiate with the hospitals, figure out ways to negotiate with the subspecialists, to reduce those costs, and in fact to be able to profit in that.*

That is, why there can't be an economic incentive for delivering a better product, as opposed to being salaried?

The answer to your question is, you can't quantify quality very effectively. Furthermore, I don't believe it's necessary. My

reading of the mood of young American physicians is that they don't want to be businessmen, they don't want to figure out how to make more money. They want to make a decent 1iving, they want to get good fringe benefits, they want to be proud of the care that they give, they want to be well thought of ybj their colleagues. I don't believe that doctors have to be given an economic incentive to be efficient and creative.

We did very well-there was plenty of creativity and plenty of commitment--before health care was turned into an industry.

Q Yeu've spoken very *eloquently of what's wrong with the system that delvers medical care to sick people.* Could *you give us some view of what you think is the appropriate role for physicians and medical educators and researchcrs in preventin,g disease? And do you think that some of the current problem is due to the current medical infrastructure focusing on disease treatment instead of its prevention, and the promotion of public health?*

I think you huve to make a distinction between medical care and health care. Medical care is what I've been talking about. Health care is concerned with protecting and promoting the public health. It requires many other kinds of interventions, and goes far beyond what doctors and hospitals and nurses and technicians can do.

A large amount of the pathology that brings people to hospitals and doctors' offices is social pathology--gunshot wunds, drug abuse, alcoholism, violence. That's why it's so easy to point out the tremendous disparity between the enormous amount of money we invest in medical care and many of the common measurcments of public health, which show us to be not advanced at all.

We spend more money on medical care than anybody else, but our infant mortality and our longevity and immunizations and so on are not very much to write home about, and that's because these things require social and political action.

If wc spent more money on education, reconstructing our inner cities and our poor rural neighborhoods, and so on and so forth, would that give some relief to the medical care system? Wou1d it reducc some of the expensc'? Thats a complicatcd question, and although much has been written about it, I'm not sure we know the answer.

Obviously we have to commit ourselves to prevention, because at the very least, whether we save money or not, we are certainly improving quality of 1ife. Whether it really would add significantly to the solution of our health care cost problem, I don't know.

Q *You hinted that the public might accept access to hea1th care through prepaid systems, HMOs in particiular. Do you envision the medical profession--young physicians, men and women—accepting employment through HMOs? Without them, you don't have a system.*

Yes, I can easily imagine young physicians doing that, because the alternative isn't very attractive. Remember, the alternatives are closing down, and the fact of the matter is that more and more young physicians are joining groups and are taking salaried positions.

Of course, it's a generational thing-the older physicians arc not, but it's happening with younger physicians.

I also want to make a point I didn't have a chance to discuss. The system that I'm describing should be the system that is subsidized by the medical care fund. It should not be required for everybody, as

long as they contribute their share of the tax.

It should be like public education. You have to pay for it, but if you don't want to use it, and you want to spend your own money to send your kids to a private school, that's your option.

I think the publicly subsidized system ought to allow point of service options, so, for example, you can supplement your payments into the system if you want to go see some famous consultant when you have a tough problem. Or if you don't want to be taken care of by that system at all and you want to buy your own indemnification insurance-–and you can afford the $20,000 or $30,000 a year that a family policy might cost—fine. I think people ought to be allowed to do that.

I'm not at all afraid of a two-tiered system developing, because only about 5 percent of the country will be able to afford private insurance. Most of us will be in the system that is publicly subsidized, and most doctors will be in the system, and most of us will have a major stake in seeing that it works properly.

Q In your remarks you mentioned you have seen systems that are working, By that did you mean there are individual HMOs, perhaps nonprofit HMOs, that are managed well? Or are there systems outside this country similar to what you're recommending?

I've done a lot of traveling during this last year and I've looked at many HMOs, of all kinds-ones that are successful and ones that are not. In my judgment, from the point of view of the quality of the care, patient satisfaction, doctor satisfaction, and cost, there are indeed successful HMOs which meet all the criteria.

What about other countries? Look at Canada. Canada does many things right that we can't do. It takes care of everybody, it covers all necessary costs, and so far Canada isn't going broke from health care, although we should note that in the last couple of years their costs are escalating almost as rapidly as ours.

Canada's system has features I think we can learn from. One is that they have a single payer, and a very efficient insurance system. Their overhead costs are minuscule compared to the terrible overhead costs that we pay for private insurance.

Doctors in Canada aren't hassled with insurance forms. They fill out a form after they've seen a patient and at the end of the month they get paid automatically. The trouble is that the Canadian system doesn't control the volume of services, it controls only the price. Because i t doesn't control the volume, it ratchets down the price to keep doctor payments within 1imits; so the doctors run faster and faster and faster to maintain their revenues.

Furthermore, the Canadians haven't seen fit, or aren't able, to invest as much in health care as we can, so they don't have as many facilities. Thus, there are queues for some things—greatly exaggerated, in my opinion, but nevertheless real.

Q The cost of dying is rising faster than the cost of living. I understand some substantial fraction of medical care cost is in the last year of life. Would you comment on whether this is an area where, from a cost-containment point of view, we need to do something ?

Most people die slowly, and they get sick before they die, and they need a great deal of attention, so it's not surprising that we should spend a lot of money as chronic diseases progress.

The question is, is it being spent needlessly, clearly with no expectation of any

benefit'? 1'm i~urc some is. Maybe a lot is. If you make rounds on the intensive care units of most of our teaching hospitals, or you make rounds in neonatal intensive care units, you see hopeless, moribund patients being kept alive for various reasons.

There is money being wasted. How much, and how it impacts on the overal] cost of health care, I don't know. But I do know that if you had a rational system that was not driving to keep the intensive care units full and increase hospital revenues, and if doctors weren't being paid on a piecework basis, you'd have doctors with fami1ies and patients asking the relevant questions: What makes medical sense, what makes ethical and personal sense'?

Q Given the high cost of medical education, which studen ts choosing specialties must take into account, and the strong emphasis you mentioned on new high-technology medicine practiced by specialists, what sort of institutional and financial programs do you envision to change the balance of primary care physicians to specialists?

Students, in debt, come out of medical school, finish their residency, and look at what's going on out there. They see that if they become a radiologist or a procedure-oriented neurologist or a neurosurgeon or opthalmologist, they can work a 40-hour week and makc three or four times as much money as their colleague who chooses to be a family practitioner or a genera1 internist, who is working long hours, is on call all the time, and is fighting to make a deccnt living. Why would they want to go into primary care?

So we have to make some major changes. First, we h have to change that disparity. I think if you made primary care more rewarding, and the disparities much less, more people would choose primary care, particularly if they practice in groups. One of the really dispiriting and dismaying things about a lot of primary care is that you're alone. You're alone with uncertainty and multiple problems. you wish you could talk to colleagues, and you wish you had easy access to consultants-that's what you get in a group.

We have to recruit people in medical schools who arc interested in primary care, and wc have to reduce the burden of the cost of medical education, with loans and scholarships and grants, to attract them into primary care.

Q How will this new approach affect the amount of money spent on medica1 research? Also, do you foresec a shift of emphasis in research--e.g., perhaps less emphasis on extremely sophisticated diagnostic methods, and more of an emphasis on more effective and lower cost health care delivery?

I am not suggesting any lower priority for medical research. On the contrary, I believe wc ought to invest more in medical research, because it pays off. There's plenty of money in the system. We're going to spend $950 billion for health care this year; wc definitely can afford to give medical research and teaching hospitals and education the $20 billion or so they will require.

We as a nation are so rich. If we were as rational as wc arc rich, wc could have just the kind of health care system we want.

As for a shift in emphasis in research, the main issue is to determine what's effectivc and what isn't. If very expensive, very sophisticatcd technology can do a significantly better job, then we should usc it. I believe we can afford all

"We as a nation are so rich. If we were as rational as we are rich, we could have just the kind of health care system we want"

the diagnostic technology we need if we use it rationally.

Let's take MRI (magnetic resonance imaging), for example. We're probably spending more than $10 billion a year on MRI. I know there are places in this country where a patient comes in to see a general practitioner and says, "Doctor, I've got a bad headache." The doctor replies, "Well, who knows, you might have a brain tumor. Let's order an MRI." Any good physician knows that's irrational.

However, we can afford the rational use of MRI and any other sophisticated technology that significantly improves the diagnosis or treatment of disease.

Q Would you discuss the present medical delivery system, rural versus urban, and what impact your proposal will have on that?"

There was a study published recently in *The New England Journal of Medicine,* which pointed out that the demography of the country is such that you could not have three competing HMOs in one third of the country, because the population isn't dense enough. So "managed competition," in the sense of having competing HMOs, wouldn't be applicable in many rural areas. But you certainly could have one HMO, and I have seen a couple of very impressive examples of well-organized. not-for-profit HMOs which have outreach programs in the rural areas.

They have a clinic in small towns and in rural areas, staffed by members of the HMO—usually there's one internist, one pediatrician and one family practitioner, and a nurse or two, and a simple diagnostic laboratory, backed up by circuit rider specialists who come out to deal with elective problems. Rapid transportation into the central facility is available when hospital care or tertiary speciality services are needed.

It works beautifully, it keeps costs down, it provides much better care than most of these communities had before, and it keeps the doctors happy, too. They don't feel isolated, they don't feel alone, they can enjoy the skiing and the fishing, and still stay in contact with their colleagues.

Rethinking Public Education

By Derek Bok

What I know best are universities and colleges, and I could easily devote more than the allotted time talking about these institutions, their exotic problems. their political correctness, their vaulting tuition. their scientific misconduct and questionable handling of money.

Not to mention various other problems. Universities put too much emphasis on research and too little on discovering how they can help their students learn. They concentrate too much on providing the services and programs that society will pay for, and do not show enough leadership in finding ways to offer the research and the teaching that the country needs. Alas, the two are not always the same.

But that said, I think it fair to remark that universities are not where our critical educational problems lie. America stil1 has the best system of highcr education in the world. Our scientists continue to win most of the Nobel Prizes, students come from all over the world to study with us, we have the largest and most accessible system of higher education for the most diverse group of students in the world.

Very few people would make such a favorable assessment of our primary and secondary schools. Therefore, I want to concentrate today on public education as the more urgent and important task bet'orc us, particularly at the dawn of a new administration.

Public Schooling in the Spotlight

Public schools in this country have been very high on the national agenda for a full 10 years, ever since 1983, when the Gardner Commission issued its report. To the best of my knowledge, that is a record length of time for public schooling to get that kind of high-level attention in this country.

Why have we continued to give greater than normal attention to public education over such an extended period of time? The answer is contained in four propositions which a great many people in this country be1ieve:

1. Education is vital to improving the productivity and competitiveness of our economy at a time when that economy is being challenged by foreign competition more than ever before.
2. The academic proficiency of our young people has gradually declined in recent decades.
3. Whether you look at science, math, reading, writing. or analytic skills, our students rank below their count counterparts in almost all other industrialized countries.
4. The root of these problems lies in our schools, either because--depending on your point of view—they're underfunded, or encrusted by rigid bureaucracies, or staffed by mediocre teachers, or weakened by flabby ideas and undemanding standards.

When you put all those propositions together, you have a very powerful case for being deeply concerned about public education in this country. I see only one problem with it: All those propositions are either wrong, unproven, or subject to serious qualification.

Although I believe there is an urgent need for the reform of public education. I think it's important to start by being clear about the underlying premises.

In my view at least, we should not exaggerate the role of public education in raising productivity and making us competitive in world competition. Education is not the most immediate cause of our productivity problems, and improving education will not necessarily improve productivity.

It certainly won't do it in the short-run, and it will only help improve productivity in the long-run if we decide to save more, and invest more, and if American companies decide to reconfigure their operations to fully utilize highly educated workers. None of those improvements is foreordained, and none can be taken for granted.

As for the declining educational standards, that seems to me something of a myth inspired by reporters and publicists, who find it very difficult to keep the public's attention without talking about decay and imminent collapse. If you look at most tests of achievement over- the last 20 or 25 years, they indicate our students are performing about as well as they ever have. Some of them even show that students arc performing at higher levels than they had before.

That is true for the reading levels of 17-year-olds, it's true of math and science for 9- and 13-year-olds. It's true for blacks and Hispanics in math and reading at ages 9, 13, or 17. All of these groups are performing better than in the last 20-odd years. The idea that everything is declining is simply not supported by the evidence.

As for student achievement compared with other countries, there are dismaying results. It is disturbing to find, in one poll I recall, that we were performing worse in math that students in Thailand and other far-off countries. Yes, these are disturbing findings, but you have to look at those tests very, very carefully, and read the fine print. When you see that students in some underdeveloped countries arc doing better than ours in math, it's a pretty good bet that their tests are being taken by the very small percentage of the population that makes it to high school. That isn't comparable to the 75 percent of young people that complete high school in this country.

Whatever international comparisons show, and however dismaying they may be, it would also be a mistake to believe that the differences are explained primarily by differences in the quality of our schools, or our school practices, or the length of the school year, or the amount of time on tasks that teachers spend in our classrooms. The most careful work I have seen on international differences suggests that by far the most important reason for our poor showing in those competitions is that a much higher percentage of American children grow up in poverty or in broken homes, not that they have attended inferior schools.

When you get through revising these popular beliefs, does it mean that we no longer need to worry about the quality of our schools? Certainly not. It does mean, 1 think, that there are a lot of other factors besides schools that have a lot to do with how much our students learn—nutrition, parental attention, the amount of TV that is watched, the quality of neighborhoods.

It does mean that if any occupant of the White House is really serious about wanting to be remembered as an education president, he should also try to be remembered as a housing president, an antipoverty president. a health president, and a great many other kinds of presidents, as well, because a serious assault on education must include serious attention to this whole range of problems.

Societal Gains From Reform

That said, however, I still believe that schools can have an impact. You have only to look at the many examples that have now been accumulating of inner-city schools, in blighted neighborhoods, that are still managing to do much better than other schools with similar ethnic and income groups in their student popu-1ations. When you see the higher achievement scores, the higher graduation rates, the larger numbers of students going to college—— you get a sense of what can be accomplished by successful school reform.

Improving schools will also be important for a lot of reasons other than productivity, whatever the connection with schooling and productivity may be.

Schools are one of the few places in our society where problems of race relations and diversity that are so important to keeping our society somewhat unified and cohesive **are** being confronted. Schools continue to provide places of opportunity for students who might otherwise be forgotten. ” They also do a lot to make better citizens. We know, for example, that voting rates in this country arc below those of almost any other advanced country in the world. What we don’t always remember is that when you look at the reasons why people don‘t vote, by far the most important factor is how much education they have had.

So in all these ways reform of schools is important. And in addition, you have to believe that as our workforce becomes better educated and better able to deal with higher level prob1em so1ving, American business will find a way to usc those ski1ls productively, with higher paying jobs.

U.S. Goals Have Changed

To recapitulate, our schools are doing as well as they ever have. The problem is, that isn't good enough. The world has gotten more complicated, and though our standards haven't declined, our needs have gone up, and we have not improved the quality of education to keep pace,

Although the best way to improve that student achievement would be to reduce poverty, diminish crime and stop drugs, improving schools is surely important enough to be worthy of our best efforts.

We’ve made a lot of false starts in the past 10 years in trying to improve our schools, and that’s not altogether surprising, because historians of education tell us this is practically’ the first time in which America has asked its schools to make learning and clear thinking, problem solving, careful reading and writing their primary goals.

That astonished me the first time I heard it, and yet, as one looks into it, it’s true that for generations wc didn’t really want a terribly intelligent work force. What we wanted was an obedient and disciplined workforcc.

As a result, other goals took precedence throughout most of our history-goals such as integrating the races, or assimilating immigrants, or teaching them the American way of life, or helping students adjust to life problems, or teaching basic ideas of citizenship. These were all very worthy goals, but not the same thing as making as your primary objective the need to develop well-educatcd, articulate, problem-solving, 1iterate people,

Thus, we’re at a rather early stage of truly caring about improving these intellectual skills, and after a decade of vigorous experimentation, we‘re beginning to arrive at a consensus.

We’ve learned that the way to improvc schools is not to hand down a lot of detailed rules that prescribe what students should learn, and how they should be taught. We did a lot of that in the early ‘80s, and it didn‘t work very well. It

“For generations we didn't want a terribly intelligent workforce. What we wanted was an obedient and disciplined workforce”

"The exceptional talent, that thin stream of excellence that's so important in providing an inspired teacher, a mentor, a future principal, is being drained out of the system"

merely exasperated teachers and diminished their morale. That shouldn't surprise us; no one ever taught a good class because they were ordered to do so. Education is a much more complicated process.

The emerging consensus is a wiser one. It's also much harder to implement, because it recognizes there is no one big thing we need to do, but a number of things, and you can't just do them incrementally or piecemeal, because they're all interdependent. No one change is going to accomplish very much if the other changes aren't made at the same time.

Recipe for Reform

Six steps are necessary for reform. Let me try to cover them briefly.

1. The states, in cooperation with the federal government, must set minimum goals and standards that define what all students should learn. Setting those minimum standards and articulating the goals are critical if you're going to lift the levels of achievement across the country, if you're going to focus effort in the schools and establish clear priorities, and if you're going to provide a basis on which we can assess how well we're doing, and hold schools accountable.
2. The second goal, which follows from the first, is that we need good ways of measuring the progress schools are making toward achieving the goals. If you don't have those measures, there's no way by which states and school systems will know how individual schools are doing, there's no way by which parents will be able to assess the quality of their schools, there's no way teachers will know how well their collective efforts are succeeding.
3. Once these goals and methods of assessment and accountability are in place, we have to give schools a lot of discretion in deciding what teaching materials, what methods, and what kinds of policies are needed to achieve the goals we want them to meet. Schools that manage to meet those goals should be left alone, and freed of a lot of the regulations they now are encumbered with. Those that don't meet the goals ought to be given new leadership, with the funds and authority and the help they need to try to turn themselves around.
4. If schools are going to discharge these responsibilities, they're going to need principals who are intellectual leaders, capable of motivating and guiding and involving their teachers in a collaborative effort to improve schools. All the studies we have of effective schools indicate that leadership is a very important component, yet in this country choosing principals has always been a rather casual occupation. It's a post often given to popular coaches who are tired of the football field, or people who seem to get along with everybody; you teach them some management, how to deal with unions if you have them, and how to deal with building management and maintenance problems, and then you let 'em go. But that's not the kind of leadership we need. We need intellectual and academic leadership—that's a very different thing, and requires very different preparation and selection.
5. We need to recruit better teachers. For years, public schools were able to capitalize on some kind of captive audience, by making heavy use of women and minorities, whose careers were blocked in many other direc-

tions. That is over now. Many talented women and minorities are going into law, business, and medicine. Education majors today in this country tall somewhere in the bottom 40 percent, or even 30 percent, of their college classes.

The chanccs in the late '60s that someonc with an IQ of 130 would go into teaching were just about as great as the chances that somebody with an IQ of 100 would go into teaching, proportionately speaking. Today the chances that someone with an IQ of 130 will go into teaching are less than a fourth of those of someone with an IQ of 100. The exceptional talent, that thin stream of excellencc thats so important in providing an inspired teachcr, a mentor, a future principal, is being drained out of the system.

To correct that, we need to begin by paying teachers more. Only a 10-percent increase relative to other professions, would, according to the best estimates we have, increase the number of applicants enough for us to lift the standards of our teachers up to the averagc for all college graduates. I've never heard a good reason why we should settle for less than average quality of college graduates to teach our students.

Simply offering higher salaries isn't enough. We a1so have very casual methods of selecting teachers in many parts of the country. When able candidates apply they aren't necessarily chosen. Teaching is the only learned or quasi-learned profession I know in which people with higher academic records do not receive any more money during the course of their careers and are not promoted any more rapidly than people with lesser ability and intellectual accomplishments. Once teachers are hired, they rarely have an opportunity to col1aborate with their colleagues, to talk about the desperately difficult problems they facc in trying to improve learning in their schools. Many of them have little opportunity to participate in school policies.

For all those reasons-their working conditions, methods of selection and promotion, as well as the salaries they rcucivc-talented people do not become teachcrs or do not stay long once they begin. It's not just that the students who major in education are not up to the normal standard in the college classes to which they belong. The best of the students who major in education and graduate never go into teaching. Of the ones who do go into teaching, the more ablc among them are the first to leavc. Among those who leave, the ablest are least likely ever to return. What we are getting at every stage is a progressive 1oss of our most talented group, and the results over time are quite serious and must be correctcd.

6. Finally, we have to find some way of strengthening the incentives for students to learn. If you look at surveys of teachers across the country. you find that one of the most disturbing changes is in the number of teachcrs who regard student apathy as a seri - ous problem. There's little wonder in that. Part of the explanation may have to do with the quality of teaching, but a lot of it has to do with the fact that there are so few incentives for students to be motivated to take their work seriously.

   There arc only two incentives under the current system that I can think of. One is to graduate, because that helps you get a job--that's very easy. The other is to do well enough to get into college. That affects rela-

"How can we break through that thick crust of tradition of the vested interests to bring about the reforms we need?"

tively few people, because only about 200 of our 3,000 or *3,500 colleges* are very selective, so it's not that difficult for most high school graduates to get into a college they want to go to.

If we are going to motivate students, we're going to have to add to those incentives. We're going to have to make the quality and the quantity of their schoolwork matter to their future lives. Somehow we have to develop in businesses and universities enough confidence in the curricula, and the ways in which students are assessed. so the quality of a student's record w i 11 matter when it comes time to hire students or decide whether to admit them to college.

Those arc the six basic steps. They're very daunting, but as I said before, what really makes it tough is that we have to do them all if we're going to get reasonablc improvement. Paying student teachers more is not going to help very much if the systems arc rather casual about hiring better teachers. Goals and standards arc not going to help much if the students aren't motivated to reach them. Good teachers aren't going to accomplish much unless they arc ably led, and given a real chance to work together to improve and participate in the curriculum and teaching policies of their school.

So we're talking about really massive changes that arc bound to encounter a lot of resistancc and inertia.

The ultimate question is, how can we break through that thick crust of tradition of the vested interests, and all the other forces that block substantial change, and try to bring about the reforms wc need? We know that issuing orders won't work. We've tried that-teachers arc expert at adapting to orders and rules without changing fundamentally how they teach. What other method can we USC'?

'Parental Choice' System

The most popular idea in recent years to create a motive for change is to turn the schools into a competitive system. By giving vouchers worth sums of money to parents, schools would bid for and compete for students, just as commercial firms compete for business. The pressure of trying to attract enough students with their vouchers would force schools to get better.

That's a very attractive idea—it might even be correct. But it is also a very expensive method. It would require the government to assume the share of the total school budget now borne by private schools. Thats not an inconsiderable number of billions of dollars—and once we begin we're never going to be able to draw back. So we need to be absolutely sure that competition is going to work before we start down that path. Alas, there are quite a number of reasons why it might not work.

One is that we may not get many new schools springing up to create this competition. It takes a lot of work to develop new schools. It's not clear that the mere handing out of vouchers will bring lots of schools into being, particularly in rural areas and inner cities where starting new schools is a pretty tough business.

It's also not clear, if wc do get these new schools, that they arc going to be superior to the schools wc have already. One of the other things that is widely believed, I think inaccurately, is that private schools do much more for their students than public schools, and that, if we only had more schools likc those coming into existence, competitive pressures would lift the quality of what we do.

Actually, the performance of students in private schools is only slightly better than the performance in public schools, and a large part of the difference may be

explained by **the fact that** the parents who send their children to private schools tend to be more involved in their education, more supportive, and hence have a positive impact on their learning.

So it's not clear how much improvement the new schools will give us. Furthermore, we're not even sure students **will choose** the academically superior schools. Once before we gave a lot of choice to students, when wc opened up the required curriculum and established a lot of electives in the '60s. What we found then is not that the students flocked into the academically demanding courses. Quite the contrary, they began to take baskct-weaving and life adjustment and sports in modern American life, and all sorts of things that acid-tongued conservatives objected to, and rightly so. Why should we assume that students will do better choosing schools than they did choosing courses'?

Finally, of course, there is the problem of the schools that arc left behind—the unsuccessful schools. What's going to happen to them?

Public education is not like business; unsuccessful schools will not go bankrupt. We have some experience with what happens to them when their students leave--remember "white flight" when busing was in vogue. Like old soldiers, they don't die, these schools, they just 1 imp along, in somewhat worse shape than they were before. No choice plan that I have read has made a serious effort to come to terms with how we can deal with those lagging institutions to try to make them better.

In sum, parental choice is certainly an experiment worth trying. But it's very much unproven, and it would be hazardous to bet the family store on that as the instrument of reform.

Community Coalitions Show Promise

I f I were to guess how large-sca1e reform could occur in this country, i t wou1d not be through competition, i t wo uld not be through merit pay for teachers—that's never worked where it's been tried—and it wouldn't be through issuing more regulations.

The best hope that I can see is if coalitions arc formed in cpmmunities--political leaders, business leaders, universities, school officials, teachers, and other leaders who feel strongly enough about the need for changing their schoos that they're prepared to work together until real real reform takes place. Only such coalit ions are powerful enough, only they have all the interests in the room that can worry about how to establish the connect ions between school and work, and school and college, and create the incentives we need. Only they have power to strike a grand bargain in which the teachers get higher pay and more autonomy from nagging regulations--in return for the kinds of accountability and standards and goals that we need to improve the system.

Government's Role

What can the federal government do to speed the process of reform'? Its role, perforce, must be limited; public education remains primarily a local responsibility. Yet I believe the federal government can do a number of useful things to help us progress.

It certainly can do a lot, and I hope *will do a lot,* make sure that children in this country arrive at school in larger numbers truly ready to learn. According to a 1991 survey of kindergarten teachers in this country, some 35 percent of young children are coming to school unprepared. And what do I mean by "'not ready

"Parental choice is certainly an experiment worth trying. But it's very much unproven, and it would be hazardous to bet the family store on that as the instrument of reform"

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for school'"? Let me just quote one New Jersey teacher:

> *"It is so sad to realize just how many children are not ready to learn when they come to school. They deserve to know by age five their full name; they deserve to know the name of the town in which they live; they need to know that a pencil is something you write with, and not something to eat; and that someone believes in them, no matter what."*

Now, what does it take to improve (hat'? Obviously, one could start with fully funding Headstart, early child nutrit ion, prenatal counseling, and so on. We're behind almost all countries in those areas. Nearly half a million of our children are malnourished, and 12 million report they go to bed hungry at some point every month. Fetal malnutrition, I am told, affects some 10 percent of all the babies born in the United States.

All these things take their toll on IQ, on motivation, on ability to learn. They're relatively easy to correct, and they're a good investment-they return many more dollars than the cost of implementing them.

Secondly, the federal govemment can participate in setting goals, and it can participate in helping to develop better ways of assessing schools and teachers and students to see how they arc progressing toward those goals.

This is a very competitive country. If wc set goals, and define the measures to see who is reaching the goals, and publicize the results, we're going to motivate a lot of people and affect their behavior positively.

If we've got the goals wrong, and if wc arc measuring progress in the wrong way, particularly if we are measuring progress in schools by some kind of trivial true-and-false, multiple (his-and-that, that tests the accumulation of little facts, then that is exactly what we're going to get in return; and that is not what the future of this country requires.

There's a lot the federal government can do in improving the quality of teachers and principals. Teacher training programs are, by all accounts, mediocre. Some kind of competitive grant that would inspire institutions to vie with one another to come up with more creative programs would be very helpful.

We can also use more money for science education, not just to train the *25* to 33 percent of new high school teachers of science and math who arc not really qualified to teach those subjects, but also at the elementary school leve1. In the third grade, girls and boys arc equally interestcd in science, but at that point girls begin to 1ose interest. If wc have no teachers with any background in math and science, it clearly isn't going to help in keeping alive such interest in science as girls at that point i n their lives seem to have.

We need fellowships for principals to obtain proper training. With help from the federal government wc could create some incentives for creativity in that area by providing portable fellowships that would makc universities work much harder to try to attract aspiring principals and prepare them for effective leadership.

And finally, of course, wc need to finance a process of continuing experimentation. We are just beginning to learn what works and what doesn't. It terribly important to continue that process. We need pilot experiments of school choice plans, wc need mm-c work on how to use technology to improve learning, wc need new textbooks in science, experimental schools—a whole 1ist of things that will teach us how to improve practice and policy in the public schools.

We spend billions of dollars on health research. We spend only about $85 million at the Department of Education to explore new frontiers and find solutions to problems in education. That seems to me an imbalance. I have no doubt that if we make an investment to improve through experimentation and research the ways in which young people learn, these expenditures will more than pay for themselves.

In looking over this list of initiatives, I would close by making a plea that Washington could in some way reach out to universities to form a new partnership to help strengthen public education.

In the past 10 years of debate about improving schools, one of the striking things to me is that almost no attention has been given to the role of universities. That is understandable, because most universities have neglected public education shamefully by putting it in schools of education and relegating them to the margins of their campuses. Because of this neglect, education schools are viewed by most people as part of the problem, not part of the solution.

Despite this unhappy record, we cannot expect to improve public education without the active participation of universities, because it is universities after all that attract and train the teachers and principals we have, and universities that do most of the research on how students learn or how well our education programs are functioning, and how technology can improve instruction. They don't perform those tasks as well as they should; with greater leadership from Washington, I think they could do much better.

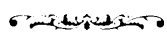
There is a precedent. After World War II the government reached out to universities and asked them to help in making two great advances. One was to expand access in our system of higher education for veterans, for the Baby Boom generation, for women, for minorities. The other was to make America the leading center of scientific research in the world. In only 20 years, both of those objectives were achieved with distinction.

Unfortunately, with Vietnam, with Watergate, with campus protests and many other misadventures, that partnership has fallen into disrepair. What I would suggest is that at the dawn of a new administration we reach out to one another and reconstitute the partnership that has served our country so well in the past, and enlist universities in a more active effort to participate in the process of social reform. It's hard to imagine a more suitable subject to begin this work than the reform of public education.

Conclusion

I do believe we have a great opportunity to make progress now in public education. The task is immensely difficult, but we should not lose heart. We have come through what is probably the most creative period of experimentation we have ever known in improving public education. By virtue of that process we have begun to formulate a working consensus about what we should do to make things better.

This is not an issue like drugs or crime or poverty, where the problems often seem intractable and inscrutable. We know where we want to go; what we really need is the will and determination to get us there. I hope, with the help of all of us, we will be successful in that endeavor.



Q I'd like to get your reaction to something some colleges are doing to help train teachers. Freshmen are given the option to get a

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baccalaureate degree and a teaching certificate at the same time; this preserves the option to teach. It seems to me if we could fix it so students didn't have to decide in advance if they wanted to teach, but could preserve the option, we might attract some really good young people into the profession, at least temporarily.

For a number of reasons, it's a splendid idea. We implemented it at Harvard, and more and more colleges arc doing it, with the help of state licensing boards. It provides another source of attracting talent into teaching. If we're ever going to get as many teachers as we're going to need in the next decade, when about half of our current teaching force will retire or leavee, and if we're going to do it at the levels of quality we want, we're going to have to get away from thinking about (caching as something that we train people for in graduate school and then they spend their life doing it.

We're going to have to get some of these undcrgraduates, who may spend a few years teaching before they do something else. They're very bright and cager. We've also got to try to get people in m midcareer into (caching. There arc lots of scientists and engineers, and even lawyers, who have gotten to a stage in their careers where they'd like to teach kids. We've got to find a way of attracting them and training them to do so.

All of this will give some healthy competition to established programs of teacher training.

Q Almost every carefully done piece of research on how to teach better, or how to run schools *better, almost always works when it is tested in a few schools. The results are wonderful. The problem is, it never propagates throughout society. Is there a federal role in what I might call educational extension scervices? Is there a way the federal government could bring the states together cooperatively to find a way to do that?*

I don't have a detailed plan for this. 1 take your very good point as apparent and valid on its face, without need of a reply.

One thing wc have found in some of the work wc have done at Harvard is how extraordinarily isolated teachers arc. and how extraordinarily isolated prinipals arc. We put together something called a "principal center." where attendees pay their own way and come together for weekend and evening programs. They have a lot to do with picking what the agenda and the topics wi11 be, and the Harvard faculty tries to assist them in putting together a good program, and providing whatever learning wc can to help them deal with the problems they have.

The amazing thing is the enthusiasm for this, Several hundred principals very quickly got involved because, as wc should have known from research, they have amazingly little opportunity to sit down with peers. And if they don't come together and talk about matters of com~-mon interest, obviously they're not going to learn about the best practices being developed, either through research or elsewhere.

So I think wc need extension, wc need everything wc can get to increase the amount of cooperation among and col - laboration within schools and people who arc grappling with these tremendously difficult problems of how to help students learn better. I think your idea is a perfectly splendid one.

Q As you've identified math and science as areas in which the priorities increase enormously, you've also focused on isolation, which is clearly a problem within schools—prin-

cipals being isolated, individual teachers being isolated. But the area which seems to me is a particular problem is the isolation of people teaching science in the public schools from science itself. Do you think universities or the professional schools are indeed ready to address that aspect of the continuum?

There are universities that have done a fair amount of this kind of teaching. At Harvard we have a professor or two in the science who gives a night course that's open to teachcrs. We have other professores who have summer courses for teachers who want to catch up in their field. Yale has done very good work in creating courses for pubic school teachers to come together on a regular basis in certain fields such as history.

If this were identified by the government as a real need, and every university was expected-not commanded, but asked to he1p out in this common effort to keep science and math teachers up to date-it could be done. After all, universities have as big a stake as any in improving K-12 education.

My experience tells me I could find professors and other qualified people who **would be willing** to teach in the evening or a summer course, or take part in some other form of collaborative venture.

What we lack is a structure to set certain priorities. so people could really focus on the priority needs and figure out a way on every campus to get them done. As it is now, the problem is enormous, and nobody's quite sure of where they should be beginning—and since there arc so many other problems, they just don't get to it. It doesn't have to be like this; universities cou1d do **much** better. I would likc to see them rail and and challenged to do so.

Forum Speakers

Robert S. McNamara served as U.S. Secretary of Defense from 1961 until 1968, He then served as President of the World Bank Group of Institutions until 1981, Since his retirement. Mr. McNamara has served on the boards of several corporations, and he is currently associated with a number of nonprofit institutions, including the World Resources Institute, the Trilateral Commission, and the Overseas Development Council. Mr. McNamara is the author of The *Essence of Security; One Hundred Countries, Two Billion People: The McNamara Years at The World Bunk; Blundering Info Disaster;* and *Out of the Cold. He is* the recipient of numerous awards, including the Presidential Medal of Freedom with Distinction and the Albert Einstein Peace Prize.


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Gro Harlem Brundtland's third term as Prime Minister of Norway *began in November 1990. She chaired* the World Commission on Environmen(and Development, which pub] i shed the landmark document, Our *Common Future.* This document focused international attention on environmental issues and led to the U.N. Conference on Environment and Development. Mrs. Brundtland has received a number of awards, including the Third World Prize for 1988, the Indira Gandhi Prize for 1988, and the Onassis Foundation's Delphi Prize for 1992.

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mittee on a Global Economic Strategy for the United States.


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Derek Bok was president of Harvard University from 1971 to 1991. He is now Harvard's 300th Anniversary University Professor and previously serveed as professor and then dean of the law school. Mr. Bok is on the board of the International Peace Academy and of the Citizens Democracy Corps and served until recently as a member of the National Commission on Public Service. He has authored a number of books and journal articles, including: *Universities and the Future of America; Higher Learning; Beyond the Ivory Tower: Social Responsibilities and the Modern University;* and *Labor and the Community.* A graduate of Harvard Law School and a former Fulbright Scholar. Mr. Bok is also the recipient of numerous honorary degrees.


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