THE G·A·O JOURNAL

A QUARTERLY SPONSORED BY THE U.S. GENERAL ACCOUNTING OFFICE

THE BUDGET DILEMMA
Searching for a New Consensus

WHERE TO NOW?
Michael Collins on the Space Program

A CRISIS BREWING
The Disinvestment of Government

NUMBER 4 WINTER 1988/89

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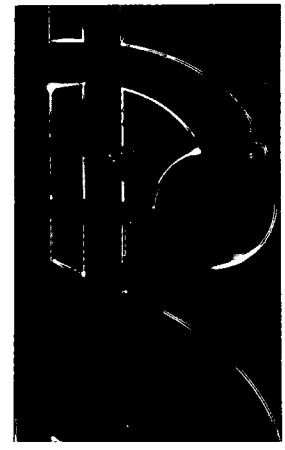
C O N T E N T S



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FROM THE COMPTROLLER GENERAL

OUR POLITICAL LEADERS face no greater challenge than to reduce the federal budget deficit. It is the key to sustaining the nation's economic growth and restoring balance to its domestic and international financial relationships. Until recently, the resolve to deal substantively with the deficit has been lacking. Now, there are hopeful signs.

When the National Economic Commission heard testimony in Washington this fall, speaker after speaker emphasized the importance of getting the budget under control. Former Presidents Gerald R. Ford and Jimmy Carter voiced agreement. So did former Federal Reserve Chairman Paul A. Volcker and his successor, Alan Greenspan. So did a succession of Wall Street representatives, and so did Hewlett-Packard Company President John A. Young, Chairman of the Council on Competitiveness, an organization of 157 prominent business, labor, and academic leaders. The recommended approaches to solving the deficit problem varied; the emphasis on the need to do so did not.

The message is being heard. When the Roosevelt Center for American Policy Studies polled 1,000 Americans this fall, 71 percent recommended that the new administration make deficit reduction its top priority.

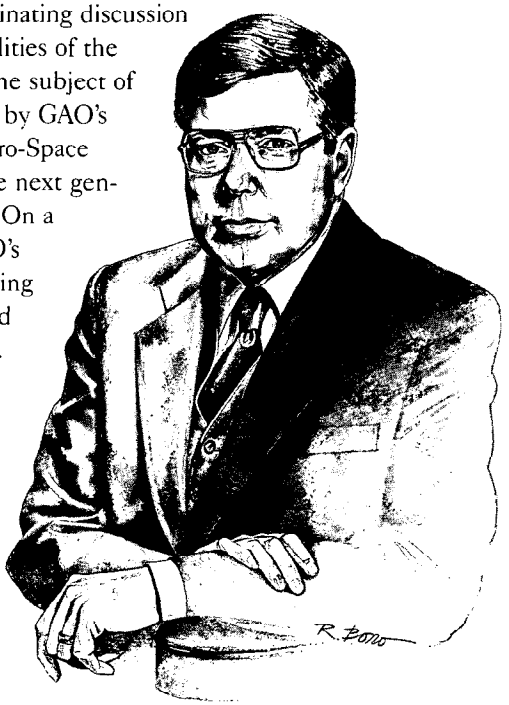
What is crucial now is a real determination to tackle the politics and substance of budgeting at the federal level. We offer an essay on the subject. "The Budget Dilemma: Searching for a New Consensus," by Assistant Comptroller General Harry S. Havens, examines the stubborn realities of the budget problem and underscores the importance of facing up to them. "The attempt to restore fiscal balance," Mr. Havens says, "will succeed only if leaders at both ends of Pennsylvania Avenue are prepared to work toward achieving mutually acceptable compromise."

Accompanying Mr. Havens's essay are articles on two of the biggest subsets of the budget. In "Defense Cuts: Where to Start," Stanley S. Fine, former budget director of the Department of the Navy, explains that defense savings will not be accomplished at the level of individual weapon systems or even service branches, but at the top levels of government where the basic questions of foreign and national security policy are decided.

The other major article in our focus on the federal budget is Peter G. Peterson's "Rethinking Entitlements." The author, a former Secretary of Commerce and coauthor of *On Borrowed Time: How the Growth in Entitlement Spending Threatens America's Future*, contends that entitlements are the driving force behind the federal deficit, and that entitlements reform "is necessary both to free up budgetary resources for new priorities and to encourage a mounting level of net national savings over the next several decades." Mr. Peterson's argument has drawn considerable comment in recent months; we have offered him a forum on our pages in order to promote further discussion.

We had the opportunity in December to deliver the annual James E. Webb Lecture before the National Academy of Public Administration. In "The Disinvestment of Government," we hope to have made an important point: that the nation is falling behind in the investment needed to keep the most basic government programs on track. The budget deficits have contributed to this emerging crisis, but are not the only cause. Postponed decisions, neglect, poor management—all have contributed to a situation that demands attention.

Our guest for this issue's round table was Michael Collins, best known as command module pilot on the Apollo 11 mission to the moon and as Director of the Smithsonian National Air and Space Museum. His most recent book, *Liftoff: The Story of America's Adventure in Space*, was the starting point for a fascinating discussion of the status and future possibilities of the space program. And while on the subject of possibilities, we offer an article by GAO's Mark Pross on the National Aero-Space Plane, which may represent the next generation of space transportation. On a more down-to-earth level, GAO's Mark Nadel discusses the growing impact of politics on science and technology funding nationwide.



In devoting most of this issue to the federal budget deficit, we hope to spotlight one of the nation's most important—and intractable—public policy problems. We, as well as the writers who have so thoughtfully contributed to this issue, invite readers of *The GAO Journal* to share their responses with us.

Charles A. Bowsher

ROUND TABLE

THE TIMES AND SPACE

An Interview with Michael Collins

THE NEARLY 3-year hiatus in the nation's manned space program came to an end this fall with the flight of the space shuttle Discovery. A few weeks before the launch, Comptroller General Charles A. Bowsher invited former astronaut Michael Collins to share his views on the state of the space program.

Mr. Collins was command module pilot on the Apollo 11 mission to the moon. He has described his experiences in two books. The first was *Carrying the Fire: An Astronaut's Journeys*. The latest, *Liftoff: The Story of America's Adventure in Space*, features his perspective on the history of the space program and his reflections on its future. Mr. Collins, who was the Smithsonian Air and Space Museum's first director, is currently an aerospace consultant.

Joining in the discussion were Harry R. Finley, Senior Associate Director in GAO's National Security and International Affairs Division, and Joan M. McCabe, Deputy Assistant Comptroller General for Human Resources.

BOWSHER—*I was interested by the subtitle of your book:* The Story of America's Adventure in Space. *Do you think that key word, "adventure," still applies to the nation's space program?*

COLLINS—Probably not. By the time of the Challenger disaster, NASA had made the business of flying into space, or operating in space, pretty much routine. What becomes routine tends to become boring, and what's routine and boring certainly cannot be characterized as adventure. In that sense, NASA was somewhat a victim of its own success, because so much of the support it lost had depended on the public's sense of the adventure of space flight.

Lately, we've all been looking forward to the launch of the shuttle Discovery. But the space shuttle, although a wonderful machine, is not an end in itself; it's merely a way of getting up and down. NASA's next bench mark is a space station, but that inspires no particular feeling of adventure.

Compare that with the 1960s. When President Kennedy said we were going to land a man on the moon and return him safely to earth by the end of the decade, our total data base was a 15-minute suborbital flight by Alan Shepard and a bunch of 8-by-10 glossy photos of a smiling Russian cosmonaut named

Yuri Gagarin. We didn't have much else to go on. We didn't know very much about the effects of space flight on the human body, and we certainly had a lot of untested ideas about the feasibility of the whole thing. So probing the unknown made for plenty of adventure.

Then we landed on the moon. And after that first lunar landing came the second and the third and the fourth and, finally, people just tired of it. That's been NASA's dilemma ever since.

FINLEY—*Do you think, then, that NASA is suffering from a lack of direction, and do you believe it is feasible to expect NASA to develop a strategic plan for the civilian space program?*

COLLINS—NASA *has* a strategic plan for the civilian space program. The problem is that if you ask NASA for it, you'll get a five- or six-page memo. NASA has its constituency, and you will find something in there for the life sciences, the earth sciences, the astronomical sciences, the builders of machinery, the explorers. There's a little bit in there for everybody. But it's not the kind of program that is going to get people excited or get the country mobilized behind a goal.

Some modern playwright said that if you have an idea for a play and you can't write the plot on the back of a matchbook, the play is not going to work. I think what NASA really needs is one unifying, overriding objective, which I think would pull in its wake a lot of the other things that you want to do. To me, that objective—the only one that has any hope of working—is a journey to Mars.

BOWSHER—*I remember that was mentioned in the report of the National Commission on Space, which you discuss in your book.*

COLLINS—Yes, I think Tom Paine, the former NASA Administrator who chaired the Commission, is very much a Mars advocate. But while I think the Commission's report is a fine document in many ways, I think there's so much in it that it's of very limited use as an immediate tool for getting NASA started again. The report covers the next 50 years. It's a smorgasbord of choices. I think what we need to do now is pick some of those—or better yet, *one* of those—and use that as the instrument for revitalizing the space agency.

BOWSHER—*The Paine Commission issued its report in May 1986. After that we all read Sally Ride's report on NASA's future. What did you think of it?*

COLLINS—Sally boiled it down to four choices: using earth orbit to study the earth, sending unmanned probes out to the far corners of the universe, returning to the moon, or going to Mars. She felt that if you want to go to Mars, the moon is probably the necessary first step. The idea is that you'd have the advantage of being only 3 days away but still operating on a strange planet,

and that you could learn an awful lot about how to do things in relative safety compared with Mars, which is a one-way trip of at least 9 months. But I don't agree with this approach. I think you can do all the preliminaries in Antarctica or in earth orbit or in Reno, Nevada, or some other place than the moon. I think the moon is just a detour that will siphon off a great deal of money and energy, and it's not a place that will really excite the American people. They've already been there.

MCCABE—*Some people have raised the idea of making the Mars effort an international program.*

COLLINS—That's true. The Soviet Union, for one, is very much in favor of that. But a joint effort between the superpowers wouldn't be my first choice. If the program were truly international, that would be better; let any country with the technology and the bucks throw them into the kitty.

On the other hand, I can remember when the early Saturn V rocket developed some unexplained vibrations. The first stage of the Saturn V was built by Boeing, the second by North American-Rockwell, and the third by McDonnell Douglas. NASA had a terrible time trying to figure out just which firm was responsible for those vibrations. Imagine what it would be like to do a Mars mission, not just with different companies but with different countries involved, with participants separated by oceans and language differences and cultures and even systems of weights and measures.

BOWSHER—*Then it's your sense that the United States could get the job done on its own?*

COLLINS—I think we could do it. It would certainly be a lot easier that way. If we were to make the attempt, though, I think it ought to be handled differently than Apollo. The problem with Apollo was that it was a dead end. Once you landed on the moon and came back, what were you supposed to do next? I think a Mars mission ought to be approached like this: There's an entire universe out there. Among all the countless galaxies in the universe is the Milky Way, and here in this one obscure corner of the Milky Way is a very ordinary sun, with a bunch of very ordinary planets circling around it. Eventually people are going to venture out from the Earth and explore and colonize the solar system. Mars is the nearest planet, so it's the logical place for proceeding outward bound. Not as the end point, but as the first step.

BOWSHER—*The heart of the debate is over manned versus unmanned space exploration. What is your thinking on that?*

COLLINS—I don't believe you have to choose between the two. In the practice of medicine, for example, the physician may take an X-ray or he may lay hands on you physically. Both approaches are part of the practice of medicine. You use whatever tools are available. If you want to collect information from

space, in some cases it is more efficient to send a robot of some kind, an unmanned probe. People are expensive. On the other hand, if you believe in the Niña, the Pinta, and the Santa Maria, that we're explorers and that we're going to continue to explore, that it somehow defines the nature and the character of this country to be a nation of explorers, then what you've got to have is space exploration with people. You can send all the robots in the world out there, and it doesn't make this country a spacefaring nation. It doesn't continue our tradition. Scientists can tell you it's a lot cheaper to send a robot to Mars, and I'll say fine, I agree. But it won't achieve what I see as part of our human destiny, which is to spread out to other planets.

FINLEY—*Do you think the Soviets will put a person on Mars before we do?*

COLLINS—At this point, they certainly are more interested in Mars than we are. As to whether or not that might spur funding for our own efforts, as it did in the 1960s, I don't know. I think the Congress and the nation are ambivalent about space. A number of polls that have been taken—especially right after the Challenger accident—have been very supportive of getting on with the program. On the other hand, when people are asked what should be cut from the federal budget, space usually ranks pretty high up on the list. So I get the feeling that the American public likes the space program but isn't so sure about paying for it.

MCCABE—*I wonder if you'd talk a little bit about the militarization of space. We at GAO issued a report recently showing that in 1981, there was a rough parity in space funding for NASA and the Department of Defense. Each got about $6 billion. By 1985, NASA was at about $7 billion, Defense at about $12 billion.*

COLLINS—I understand the trend. Maybe the comparison is inevitable, but I'd be less inclined to pursue it. Space was militarized with the first ICBM. In a sense it's always been militarized. Some of that's been good: I think there's a consensus, for instance, that surveillance satellites are a very stabilizing influence on the two superpowers; neither can move its forces without the other knowing about it. On the other hand, there are highly contentious things like the Strategic Defense Initiative. Is that good or bad? I think SDI does tend to rob some money from NASA, but there really isn't that much overlapping mission between the two. Whether the military and civilian space programs really compete for the same bucks, I don't know. They have different purposes.

I'd be more eager to compare civilian space spending with other things we spend money on. I think spending less than one cent out of the federal dollar on the civilian space program is probably less than we should spend. One reason is that our great export right now is aerospace products. It used to be agricultural goods, and then it was either electronics or aerospace. Of course, electronics all went to the Orient. I'm concerned that aerospace is going to follow that trend. The technologies of aerospace and aeronautics—of the space world and the airplane world—are interrelated. A new material that is very,

very light and very, very strong that is invented for a satellite is of equal value in the transport world. So, I think that if we are going to retain our competitive edge in the aerospace market worldwide, we are going to have to invest in the space technology that feeds and nurtures aerospace exports.

Why spend money on outer space? Well, high-tech jobs are one reason. A lot of research in universities is funded by NASA. A lot of advances in technology have been traced to the space programs, both military and civilian. I think to put a bit more of every federal buck toward that kind of seed corn would be well worth it.

BOWSHER—*What about the future of commercial space aviation, the idea of traveling great distances at very great speeds? President Reagan has spoken about the Orient Express: New York to Tokyo in 2 hours.*

COLLINS—People have always wanted to taxi out to the end of the runway, roll down that runway, pull the nose of the vehicle up, and climb all the way into orbit. I think we may still be farther away from that than some of the President's advisers thought when he started talking about the Orient Express. From what I know of the technology—which as an outsider isn't very much—it is very, very difficult to get a machine flying very fast through the atmosphere. The temperature of the compressed air coming into the engine is so high that the engine literally melts itself. Overcome that problem—which, I am sure, they someday will—and there's the next one, which is that these machines can't lift very much. So we're not talking about flying 400 people to Tokyo. We are talking about getting two test pilots up into earth orbit in a thing called the X-30. That in itself is a long way off.

BOWSHER—*So those New York bankers who are about 50 years old right now probably won't be making the trip.*

COLLINS—That's my guess. But someday it will happen.

FINLEY—*In light of the criticism over the quality and safety assurance of the shuttle program, do you think NASA has reacted appropriately, or have they, perhaps, overreacted?*

COLLINS—I'm tempted to say they've taken too long to get the next shuttle up, but I've also been very hesitant to criticize NASA on this score. If the monkey were on my back—if I were responsible for the safety of the next flight—I would be hard pressed to tell you where to speed up the process. I think NASA is very aware that you can have one accident and kill seven people; but have

another accident and kill half a dozen more, and the manned space program may be finished for the rest of this century. I think that is the basis on which they have approached things since the Challenger accident. Instead of saying, "Let's just fix the solid rocket," they've said, "Hey, let's open up the whole book. Anybody got a problem with any part of this machine, speak up now, and we'll try to do something about it." Maybe that's the way to go.

BOWSHER—*But it will be a while, don't you think, before they take the risk of flying politicians and school teachers into space.*

COLLINS—Well, I am in the minority on that one. Most of the astronauts I've talked to have said, "It just proves you shouldn't be flying anybody but test pilots. The shuttle is an experimental vehicle. This is crazy, trying to fly poets and priests and philosophers and school teachers and journalists and musicians and all that stuff."

I don't agree. I think the sooner we can open it up to these people, the better it will be. When the wagon trains went west over the Appalachians, they didn't just carry professional mule skinners and riflemen. They carried whole families. It's the same sort of thing. I wouldn't send them up in the next flight, but I would send them up.

MCCABE—*Do you believe the shuttle is safe now?*

COLLINS—I do. But I don't think it will ever be perfect; no machine ever is. I like to compare it with the automobile: First you put a lot of good safety engineering into it; then the procedural safety program takes over. You've got driver's education; you've got licensing of drivers; you've got safety inspections for automobiles. You've got speed limits and a zillion signs on the highway. You've got local and state law enforcement and a huge federal bureaucracy concerned with highway safety. And when it's all said and done, we kill over 45,000 people a year.

So now we've got the same human beings creating machines of unparalleled power and complexity, thousands of times more powerful than any automobile, and they're supposed to design them, build them, test them, and fly them into space with absolutely no risk. I think it's foolish to expect that. You don't expect it on the highway, and you shouldn't expect it in space. •

Harry S. Havens

THE BUDGET DILEMMA: SEARCHING FOR A NEW CONSENSUS

Recognizing the dangers of federal deficits is one thing. Solving them is another.

IT'S NO SECRET THAT federal budget deficits are a serious—and thus far intractable—problem. By absorbing large portions of the nation's savings, they have decreased the pool of domestic resources available to finance productive investment. Continued private investment has been sustained only by massive borrowing from abroad. To say the same thing another way, we have been consuming more than we produce, with the gap being made up by imported goods and services—hence the trade deficit.[1] Thus, sustained progress in reducing the budget deficit, accompanied by appropriate adjustments in monetary policy, is the key to lowering interest rates, reducing the trade deficit, avoiding a resumption of rapid inflation, and ensuring long-term growth in our standard of living.

Of course, in some circumstances, large budget deficits can be helpful, specifically when the economy is in recession with substantial unemployment and excess capacity. In general, however, when the economy is strong—as it has been in 1988—the budget should be moving toward balance or a surplus, rather than continuing the very large deficits[2] now being seen.

This view of the deficit problem, common among mainstream economists, is also widely held in political circles. Congressional concern about the dangers of continued deficits was the foundation for enactment of the extraordinary Gramm-Rudman-Hollings (GRH) legislation in 1985. That legislation mandated formula spending cuts (except in the event of a recession) if they should prove necessary to achieve targeted reductions in the deficit.

In the fall of 1987, policymakers in the Congress and the executive branch faced the difficulty of achieving the GRH deficit target for 1988—$108 billion—and were increasingly concerned about the programmatic effects of the impending formula cuts. This led the Congress and President Reagan to agree on new spending targets for 1988 and 1989 and a 2-year deferral of the remaining GRH deficit targets. (See figure 1, p. 11.) But the October 1987 stock market crash, only a few weeks later, created a new sense of urgency about the deficit problem. The resulting pressure stimulated the budget summit, where agreement could be reached only on some modest cuts in the budget. Clearly, everyone recognized the need to do something about the deficit (or at least to appear to do something about it), yet there was no agreement on the specifics of a meaningful program to attack the problem.

That same predicament led to the creation of the bipartisan National Economic Commission (NEC). Faced with a stalemate on budget policy, the Congress impaneled a group of prominent citizens to develop a solution. After the success of the Greenspan Commission's proposals on Social Security financing, the Congress hoped that the NEC's recommendations would facilitate a budget compromise with a new President.

HARRY S. HAVENS is Assistant Comptroller General.

It's too soon, however, to tell whether that will be the result. And given the political dilemmas the deficit problem raises and the limited number of options available in trying to solve it, the NEC faces a monumentally difficult task.

The current debate on the budget deficit—agreement on its dangers, disagreement on how to solve it—raises some important questions:

- How did we get into this mess in the first place?
- Why is it so difficult to find a way out?
- How can we prevent it happening again?

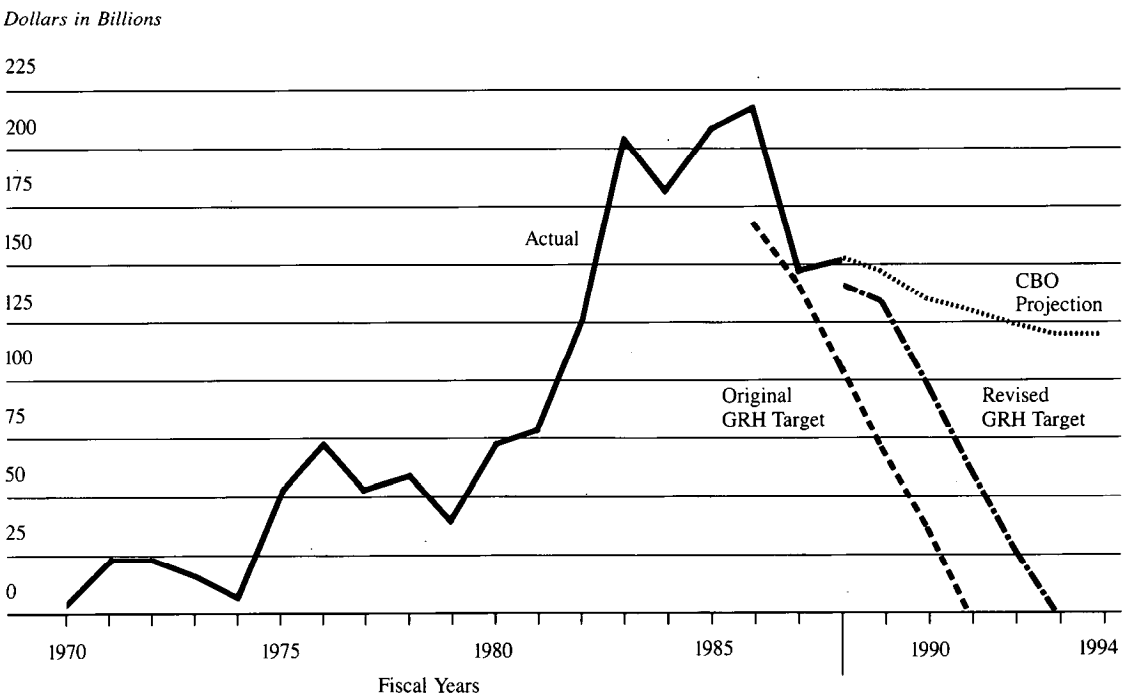
One simple explanation is that the deficit problem arose from a breakdown in the unwritten but long-standing political commitment to avoid radical changes in budget policy, and that this breakdown caused the dramatic inconsistency between taxing and spending policies that the United States now faces. The problem persists because we still lack the consensus needed to return to our historic patterns of budget policy. It can be avoided in the future only by leaders who are committed to building and maintaining a political agreement on the goals and limits of budgetary discretion. But this simple answer only begs the question of why the consensus broke down and why it has not yet been rebuilt. More meaningful answers must center on our complex political structure and our even more complex processes for deciding how much money to spend and for what purposes.

The politics of the problem

The U.S. Constitution created a governmental structure that is conservative in the classical sense: It has an intentional bias against change. By and large, we alter policies by enacting new laws—a process that normally requires agreement by a majority of the House of

Figure 1

Total Deficit



Sources: Actual Data: Office of Management and Budget. Projections: Congressional Budget Office.

Representatives, a majority of the Senate, and the President. This system is designed to prevent radical shifts in policy triggered by momentary whim. For most of the past two centuries, it has succeeded. Yet, in the 1980s, operating in this same structure, our government produced the most radical peacetime budget policy in our recent history.

This came neither by accident nor by deliberate choice. Rather, it was the unavoidable outcome of actions taken in 1981 to accelerate the defense buildup and to cut income taxes dramatically, coupled with a refusal to acknowledge and deal with the fiscal implications of those actions.

Such features of the Reagan administration's amendments to the fiscal year 1982 budget as "Rosy Scenario" (overly optimistic economic forecasts) and the "magic asterisk" (which promised, in a footnote, $44 billion worth of unspecified future cuts to move the budget toward balance) helped mask the situation, but only briefly. Subsequent efforts to constrain spending have been wholly inadequate to the task of closing the gap between revenues and outlays. (See figure 2, below.) Similarly, attempts to restore a severely depleted revenue base have proven to be much too little and far too late. (See table 1, opposite, and figure 3, p. 15.) The stalemate continues, notwithstanding the glimmer of hope arising from the budget summit and the establishment of the NEC.

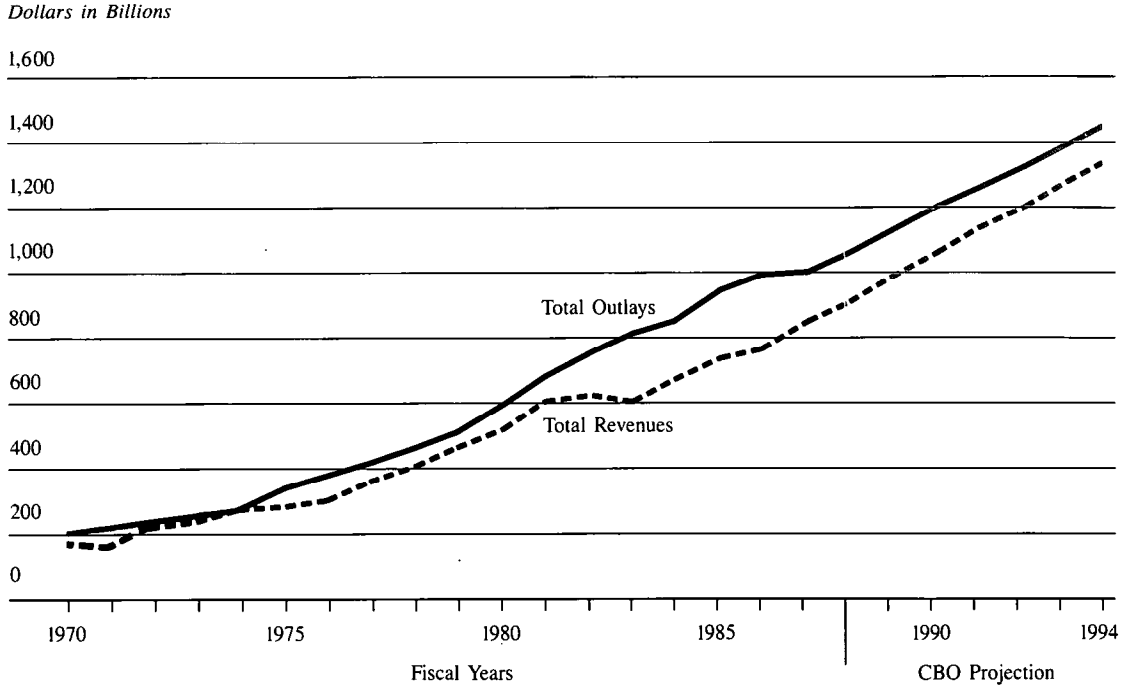
The political dilemma underlying both the origins of the problem and the continued stalemate is aptly captured in a bit of doggerel attributed to Russell Long, former Chairman of the Senate Finance Committee:

Don't tax you,
Don't tax me.
Tax that guy
Behind the tree.

Constituents pay every dollar of taxes that the government receives, and they dislike doing so. Similarly (with modest exceptions), constituents receive all the dollars that the government spends, and they want to continue getting them.

Figure 2

Budget Totals



Sources: Actual Data: Office of Management and Budget. Projections: Congressional Budget Office.

Table 1

REVENUE EFFECT OF LEGISLATION SINCE 1980

Dollars in Billions

ENACTED LEGISLATION	1987	1988	1989
Economic Recovery Tax Act of 1981	−241.7	−260.8	−285.5
Tax Equity and Fiscal Responsibility Act of 1982	56.9	57.3	55.8
Social Security Amendments of 1983	12.1	24.6	31.0
Deficit Reduction Act of 1984	22.0	25.3	27.7
Tax Reform Act of 1986	21.5	−4.5	−17.2
Omnibus Budget Reconciliation Act of 1987	—	9.1	14.3
All others	11.8	15.4	15.5
Total	**−117.5**	**−133.7**	**−158.4**
NET EFFECT ON RECEIPTS BY SOURCE			
Individual Income Taxes	−158.7	−193.1	−224.8
Corporate Income Taxes	19.7	24.2	26.8
Payroll Taxes	14.1	29.2	36.0
All others	7.4	6.0	3.6
Total	**−117.5**	**−133.7**	**−158.4**

Source: Office of Management and Budget, 1989 Budget.

Those iron rules apply whether the taxpayer or the recipient is a defense contractor in California, a wheat farmer in North Dakota, or a Social Security retiree in Florida.

Therefore, as we learned in 1981, it is politically easy to enact tax cuts and spending increases, particularly when they are endorsed by a popular and politically skillful President who dismisses concern about the financial ramifications of such acts. Moving in the opposite direction is a much greater challenge to political leadership. Proof that it can be done is seen in the enactment of the Social Security financing reforms in 1983 and the actions of some states to raise taxes and cut spending when needed to deal with budget deficits. These experiences also demonstrate, however, that success requires strong executive leadership and a political consensus on the need for action. Without these ingredients—especially executive leadership—major imbalances in government finance cannot be corrected.

A political consensus on the general need to deal with the deficits has been evident in the Congress for some time, but there hasn't been the presidential leadership and the flexibility needed to develop a successful compromise package of specific actions. That is why formula approaches, such as those embodied in GRH or in the periodic calls for a budget freeze, have had strong political appeal, notwithstanding the apparent illogic of some of their effects. The perception of "everyone sharing the pain" (even when not everyone does[3]) allows the Congress and the President to avoid explicitly deciding to impose specific pain on specific sectors.

But even the formula approach increases the tolerance for budgetary pain only slightly. In the fall of 1987, when the GRH formula cuts threatened to become substantial (10.5 percent and 8.5 percent in defense and nondefense programs, respectively), President Reagan and the Congress judged that outcome unacceptable and agreed to postpone meeting the GRH targets. So far, no more than a modest check has been imposed on the rate of growth of spending. (See figure 4, p. 16.) The impasse on budget policy persists—a reflection of the continuing failure to agree on the very substantial tax increases or spending cuts (or both) needed to solve the deficit problem.

Structural rigidities

But the problem goes beyond politics. The federal budget contains structural inflexibilities that severely restrict the choices available to leaders. The most important of these rigidities involve trust funds and fixed costs.[4] Each creates different problems for those seeking to adjust budget priorities or overall fiscal policy.

Trust funds

There are a number of trust funds, but the largest are those for Social Security and other retirement benefits and Medicare. (See table 2, p. 14.) Trust funds are financed by earmarked revenues, and according to the political commitment[5] underlying the trust funds' establishment, those revenues will be dedicated to a specific set of program purposes. As a result,

Table 2

TRUST FUND BUDGET FISCAL YEAR 1987

Dollars in Billions

	Receipts	Outlays	Annual Surplus	Accumulated Balance
Social Security	228.6	209.1	19.5	65.4
Civil Service Retirement	43.2	25.8	17.4	176.9
Military Retirement	31.9	18.1	13.8	37.5
Railroad Retirement	9.3	8.6	0.7	6.7
Medicare	90.5	81.6	8.9	57.0
Unemployment Insurance	27.6	20.5	7.1	30.0
Highway	14.4	13.6	0.8	13.6
Airport and Airway Development	4.0	2.6	1.4	9.9
Foreign Military Sales	8.5	9.9	(1.4)	5.1
Employee Health Benefits	7.1	7.3	(0.2)	1.2
Federal Deposit Insurance Corp.	6.6	5.1	1.5	16.9
All others	9.7	6.6	3.1	30.0
LESS: Adjustment for payments between accounts	(16.6)	(16.6)	N/A	N/A
TOTAL	**464.8**	**392.2**	**72.6**	**450.2**

Source: Compiled by the General Accounting Office from data in the 1989 Budget Appendix. For comparability, receipts of trust revolving funds include offsetting collections (such as insurance premiums) and outlays are presented on a gross basis.

there are serious limits on the extent to which the deficit can be reduced by altering either the revenues or the costs of the trust fund programs. Reducing their costs (for example, by limiting the cost-of-living adjustment in Social Security benefits) would, of course, reduce the total budget deficit. But if such actions are unrelated to the financial needs of the program, they call into question the political agreement under which the dedicated taxes were originally levied.

When the income of a trust fund exceeds its outlays, the excess is invested in Treasury securities as a reserve against future expenses. This is now happening at an accelerating pace as the retirement funds accumulate the reserves needed to finance benefits when the Baby Boom generation retires in the 21st century. These growing trust fund surpluses are becoming involved in the budget deficit problem in complicated ways.

For one thing, these surpluses are merged into the unified budget, thereby masking the size of the deficit in the rest of government—the part financed by general revenues. (See figure 5, p. 17, and figure 6, p. 18.) In 1988, for example, the reported total budget deficit of $155 billion actually consisted of a trust fund surplus of $97 billion and a deficit in the general operations of government (the federal funds portion) of $252 billion.

Besides concealing the true size of the federal budget deficit, trust fund surpluses also help to finance other government expenses, since they are invested in Treasury securities. This has important implications for budget policy. Because trust fund revenues and reserves are intended to be used for program purposes, not to finance the general operations of government, they will become unavailable to the rest of government when their particular programs require them. Thus the Airport and Airway Development Trust Fund reserves will be drawn down in the 1990s as we rebuild the nation's air traffic network; a similar fate is probably in store for the Highway Trust Fund.

Of even greater significance in the long run is the projected swing in cash flows for the Social Security trust funds. (See figure 7, p. 19.) Despite the 1983 decision to raise payroll taxes to build up reserves for the Baby Boom generation's retirement, Social Security cash flow is projected to turn negative sometime after 2030. (See the accompanying sidebar, "The Social Security Wild Card," p. 22.) At that point, not only will the Social Security trust funds cease to offset the federal funds deficit, they will add to any deficits at a rapidly increasing rate. While that "tipping point" is still well in the future, we should be preparing for it now, not pursuing policies that will make the fiscal policy shock worse when it arrives.

It's important to keep in mind that the trust fund reserves (like a bank account) are not drawers full of cash waiting to be paid out to future retirees. Nor are they an accumulation of the real goods and services those retirees will consume. The only thing to be found in the trust fund drawer is a collection of IOUs from the U.S. Treasury. The cash—and more importantly, the real goods and services that the cash

represents—are being consumed today by other government programs.

If the trust fund reserves are to have real economic meaning, they should constitute net additions to total savings in the economy, facilitating a higher rate of capital investment. The resulting higher rate of overall economic growth would allow the economy of the 21st century to make good on the IOUs to the future retirees while also sustaining a rising standard of living for other Americans. For this to happen, however, today's trust fund surpluses should be accompanied by an approximate balance in the rest of the budget.

It might be reasonable to ignore some of these considerations if the trust fund surpluses were relatively small in relation to the overall budget. That, however, is no longer the case. The fact that large and growing trust fund surpluses are now being used to help finance even larger federal funds deficits has become a central element in the nation's fiscal problems.

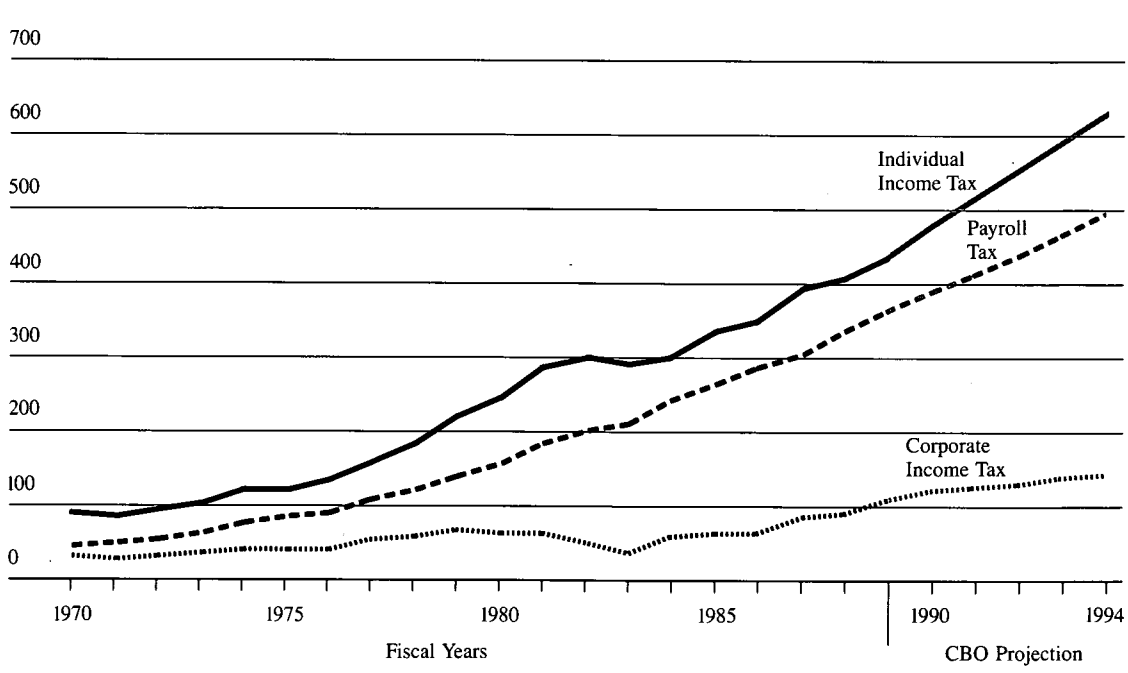
Fixed costs

Another source of rigidity in the federal budget is the group of costs that, for various reasons, are difficult or impossible to alter in the short term. The classic example of a fixed cost is interest on the national debt. In fiscal year 1987, this interest amounted to $139 billion (excluding some internal transactions, such as $35 billion of interest paid to the trust funds), or 14 percent of the total budget. Interest cost is determined by the amount of debt being carried and the market-determined interest rate on that debt. Although the amount of debt is ultimately determined through the budget process, and although government policies exert considerable influence on the general level of interest rates, the government's ability to alter interest costs is, in the short run, quite limited.

Apart from interest expense, there are few costs that are truly fixed. Yet, either by law or by contract, a number of costs are largely fixed

Figure 3

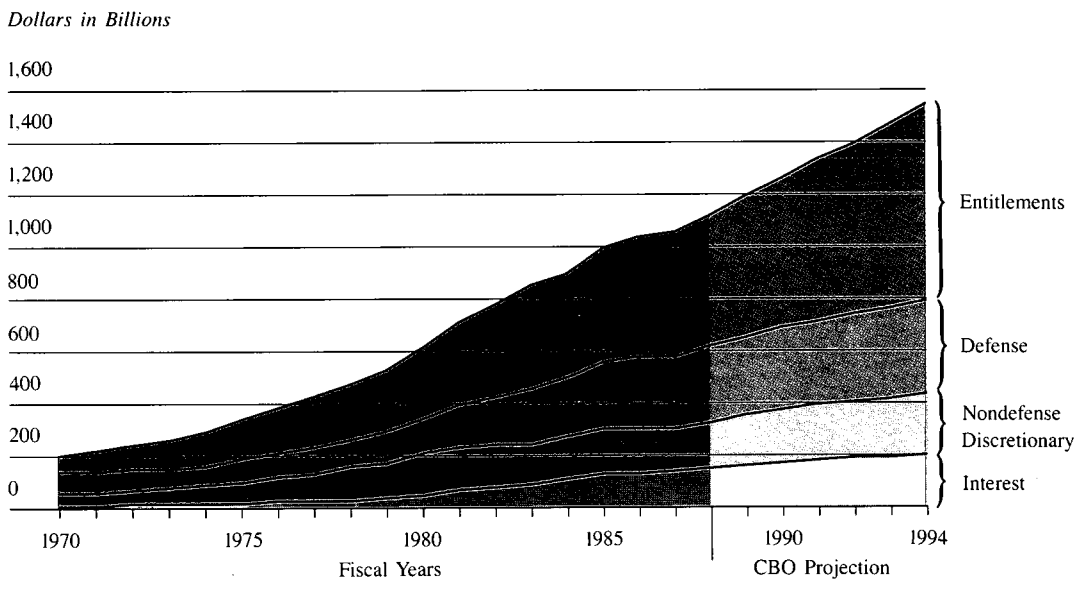
Principal Revenues



Sources: Actual Data: Office of Management and Budget. Projections: Congressional Budget Office.

Figure 4

Shares of Budget Outlays



Sources: Actual Data: Office of Management and Budget. Projections: Congressional Budget Office.

in the short term. One example is contractual obligations—ranging from supplies ordered in one year for delivery in the next to long-term housing subsidy contracts to multiyear defense procurements. The cost of these prior-year contracts and obligations in 1987 was estimated to exceed $185 billion, more than 18 percent of the budget.

Although it is legally possible to terminate almost any government contract, the termination payments often equal or exceed the current year's contract costs. So, while contract termination can reduce the future burden of fixed costs, it offers little or no immediate help on the deficit. Experience has made it clear that, especially in the case of major weapon systems, the only realistic way of avoiding costs is to terminate a program before it enters production.

Another relatively fixed cost is the set of programs characterized as entitlements. Under these programs, anyone who meets the criteria established by law[6] is entitled to the program's benefits. The largest of the entitlement programs—retirement benefits, unemployment insurance, and Medicare—operate through the self-financed trust funds discussed above. Others, however, such as farm price supports, public assistance, Medicaid, and Food Stamps, are in the federal funds part of the budget, financed from general revenues. In 1987, the entitlement programs were estimated to cost in excess of $445 billion, of which close to a quarter was in the federal funds budget. (See figure 8, p. 20.)

The cost of these programs sometimes can be reduced through more efficient management and rigorous enforcement of the law (as is true with contractual obligations, as well). But substantial savings usually require time-consuming changes in the statutory eligibility criteria or benefit formulas; there is often a lag of a year or more between the decision to seek such a change and any discernible effect on outlays.

This time lag is a matter of special importance in the U.S. budget process. By tradition, we

deal with each year's budget in isolation. If cutting a program has no significant effect on outlays—and thus the deficit—in the fiscal year whose budget is being debated, it is that much harder for an elected official to justify the cut to constituents.

"Controllable" costs

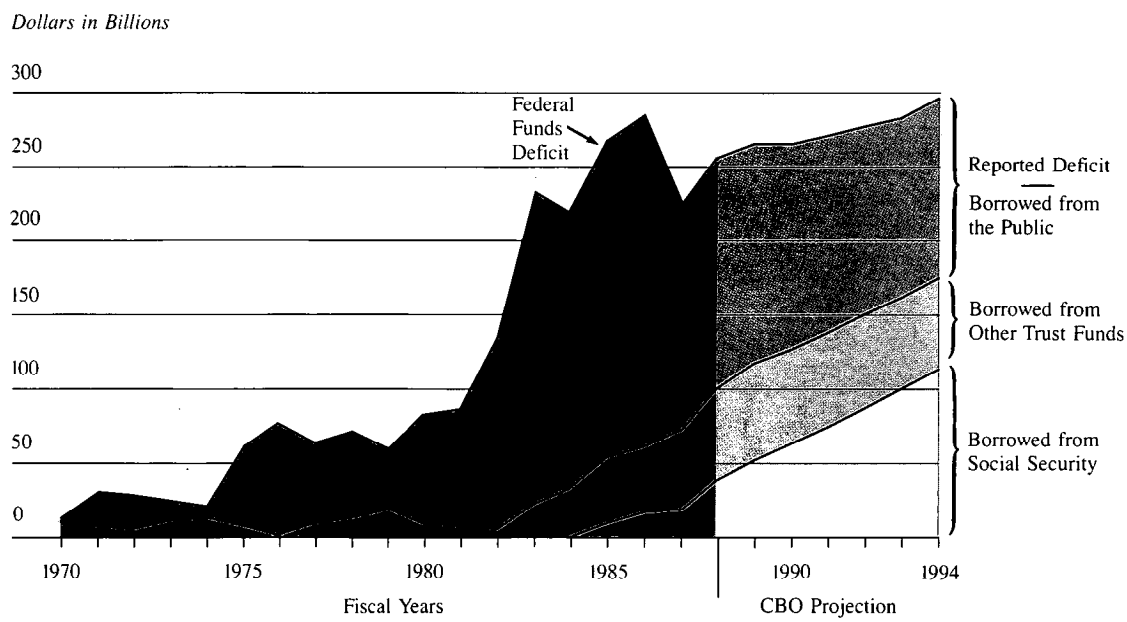
After truly fixed costs, such as interest on the debt, and costs that can be reduced only over time or by changing laws, such as contractual obligations and entitlements, the remainder of the budget is the portion that—at least in theory—is subject to short-term control through the budget process. In 1987, that portion (often characterized as "relatively controllable") was estimated to total about $266 billion. (See figure 9, p. 21.) Virtually all of it was in the federal funds part of the budget. Because of the federal budget's 1-year-at-a-time orientation and the resulting need to find ways of achieving quick outlay reductions, pressures to reduce the deficit end up concentrating on the "controllable" costs. Therefore, the make-up of these "controllable" costs and their size in relation to the $223 billion federal funds deficit are at the heart of the political impasse over the budget.

"Controllable" defense costs

Of the $266 billion of "controllable" costs in the 1987 budget, almost two-thirds—$169 billion—went to defense. More than $100 billion of that was for the salaries and benefits of the military and civilian personnel of the Defense Department. Most of the remainder was for supplies and spare parts required in the routine operation and maintenance of military forces. Some savings are always achievable through greater efficiency and more effective management, but major cuts would inevitably entail either a smaller force or one with a substantially

Figure 5

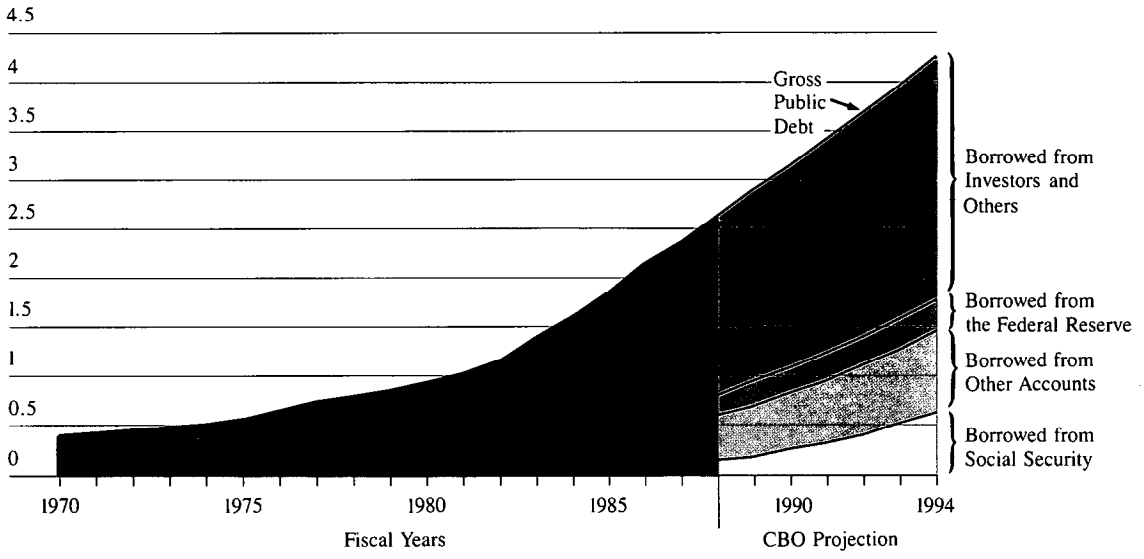
Financing the Annual Deficit



Sources: Actual Data: Office of Management and Budget. Projections: Congressional Budget Office.

Figure 6

Financing the Accumulated Debt



Sources: Actual Data: Office of Management and Budget. Projections: Congressional Budget Office. Projections of borrowing from the Federal Reserve are the author's estimates based on past patterns.

reduced level of readiness and sustainability.

Serious doubts already have been raised about our ability to acquire and support all the new weapons being planned and developed while at the same time maintaining present force levels within the defense funding likely to be available. Therefore, questions already on the table about our present defense posture's affordability seem likely to dictate a reappraisal of the balance between our international commitments, our military strategy, and the amounts we are prepared to spend on defense. (See the accompanying article, "Defense Cuts: Where to Start.") Further restraints on defense spending would make such a reexamination even more essential.

A reduced defense budget, accompanied by carefully planned reductions in the force structure, might be tolerable if our relationship with the Soviet Union were to change dramatically, if our military strategy were substantially revised, or if our international commitments were greatly reduced for some other reason, such as increased burden-sharing by our allies. Unless such changes occur, however, severe cuts today are likely to yield a renewed defense buildup a few years hence—a continuation of the last two decades' wasteful boom-bust-boom cycle of defense spending.

"Controllable" nondefense costs

It is no easier to find substantial opportunities to cut the $97 billion (in 1987) of "relatively controllable" civilian spending. As with defense, the "quick-spending" component of the discretionary civilian budget is dominated by personnel costs. These are the dollars that fund the operations of our veterans hospitals, our national parks and forests, and our air traffic control system. They pay the salaries of the people who process Social Security claims and tax returns, who conduct biomedical research, who supervise our financial institutions and markets, or who guard our borders against

illegal immigration and the traffic in drugs.

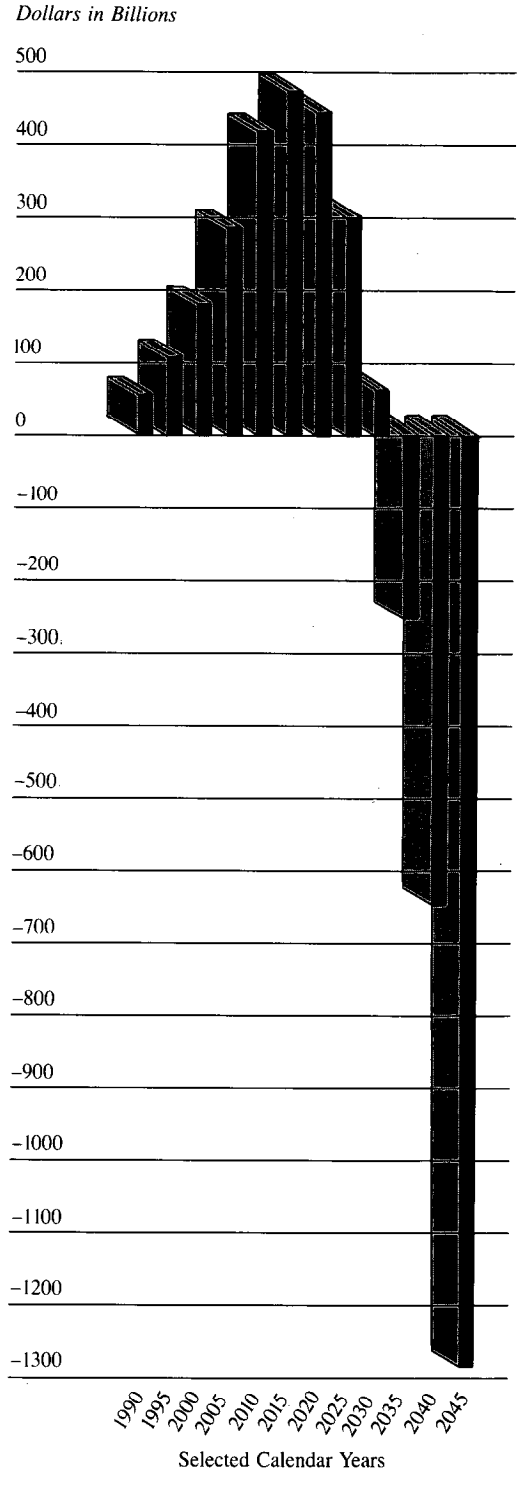
Expenditures for many of these programs have been squeezed hard in the past few years. Opportunities for substantial savings from increased efficiency are therefore likely to be scarce, and budget cuts usually will mean reduced levels of service. One way to save would be to rely on a system of user fees, where this is feasible and appropriate. Although fees already are charged in some cases, they often do not cover full costs. This is true of a range of programs, from electricity rates and water charges for federally owned dams to special postage rates for certain classes of mailers.

But, of course, calls to raise existing fees bring heated opposition from the recipients of subsidized services. So also do proposals to impose charges for some of the many government services now provided free, as was made apparent in the debate over Coast Guard user fees. In the absence of new or higher user charges, however, it will be difficult to achieve any substantial further savings in this area without significantly decreasing the levels of service in government programs touching the lives of most Americans—a politically unattractive prospect.

Further adding to our fiscal difficulties is the fact that the world does not stand still while our political leadership argues over budget strategy. New problems emerge, ranging from the growing abuse of drugs to the demonstrable inadequacies of our education system, from the public health emergency of AIDS to the natural disaster of drought. The public demands action in these and a host of other areas. Yet the impasse on budget policy often means that the problems fester for extended periods. When the political pressure finally becomes irresistible, the response is a flurry of new programs whose proponents often ignore any existing agreement on budget policy.

Figure 7

Projected Social Security Cash Flow



Source: 1988 Annual Report of the Board of Trustees of the Federal Old Age and Survivors Insurance and Disability Insurance Trust Funds.

A new budget strategy

In sum, the budget dilemma has proved intractable because of:

- The magnitude of the problem (a federal funds deficit rising toward $300 billion);
- The tradition of making budgetary decisions 1 year at a time;

- The structural rigidities imposed by dedicated trust funds and by fixed costs, which severely limit the portion of the budget in which it's possible to make meaningful cuts;
- The public's unwillingness to accept the programmatic consequences of cuts in the "relatively controllable" part of the budget and its growing demand for effective responses to new problems; and
- The impossibility of achieving a major change in budget policy without a firm agreement between the President and the congressional leadership.

The budget dilemma is both political and substantive. Solving it may prove to be one of the most difficult political challenges our nation has faced in this century. But a solution can—and must—be found, and the framework for one can be seen in the diagnosis of the problem.

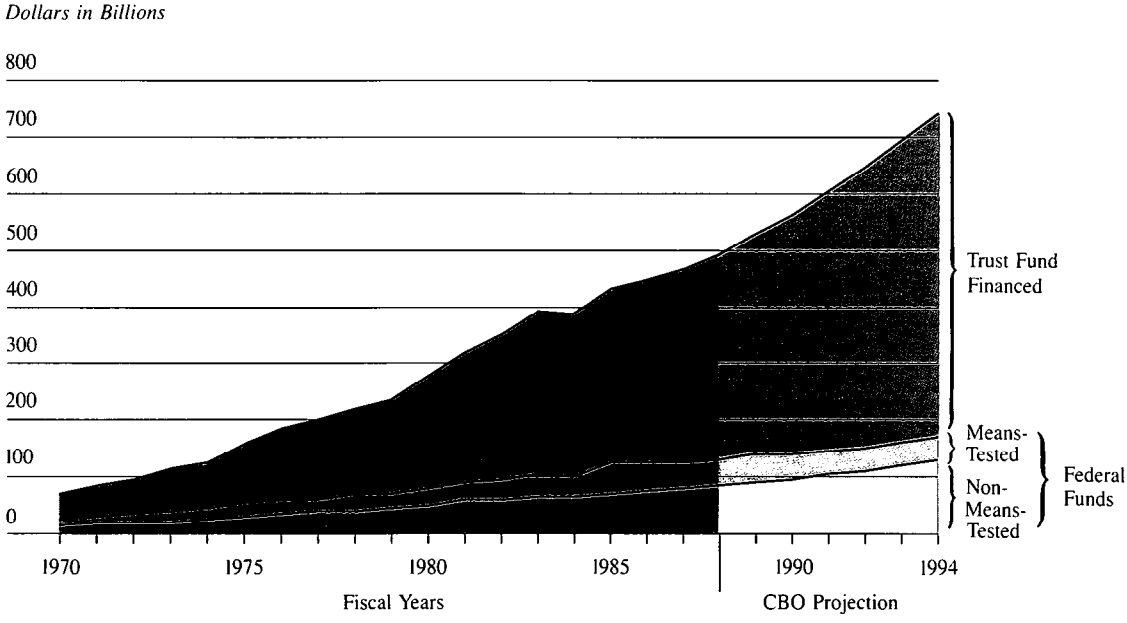
For one thing, dealing effectively with the budget deficit will require an extended decision horizon. The problem is too large to be solved in a year or two. The GRH process recognized this in setting declining deficit targets for 5 years (subsequently extended to 7).

Establishing a long-term strategy has several advantages. It allows for recognizing the effects that a growing economy normally has on revenue. It creates opportunities to adjust programs that, because of contractual or statutory commitments, are relatively uncontrollable if the budget is handled on a strictly year-to-year basis. It provides time to introduce new revenue sources in a planned way. Finally, it gives the economy a chance to adjust gradually to a less expansionary fiscal policy, particularly if compensating changes are made in monetary policy.

A long-term planning horizon is of little value, however, unless the opportunities it creates are turned into actions through a firm strategy that covers a number of years. This was one fallacy in the GRH concept. Though it set multiyear targets,

Figure 8

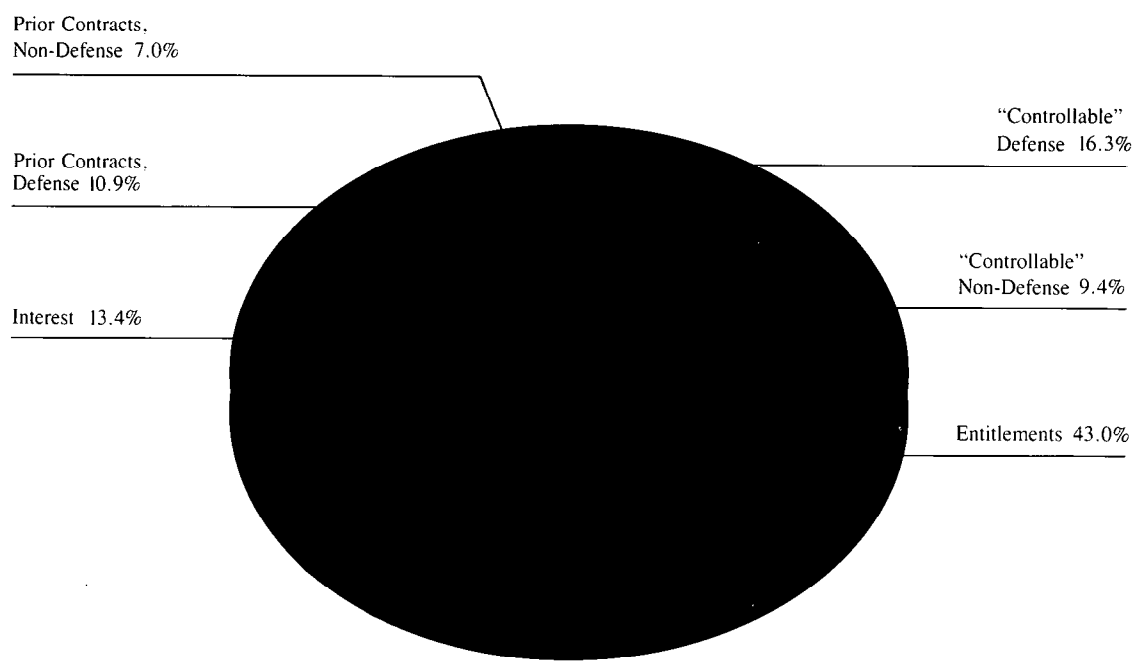
Entitlements



Sources: Actual Data: Office of Management and Budget. Projections: Congressional Budget Office.

Figure 9

Short Term Controllability



Source: Office of Management and Budget, 1989 Budget

it left the implementing actions to be taken on a year-to-year basis. That experience teaches us that it does no good to talk about the balanced budget we want to see 5 years from now and then leave the actual decisions to be made for each year in isolation. If we want the budget to be in balance 5, 7, or 10 years hence, we need to decide now on the broad outlines of that budget—the primary revenue sources and the major spending components—and begin acting now to make it come about.

Today we have great flexibility regarding 1995's budget (and very little regarding 1990's), but that flexibility erodes with each passing day as authorization and appropriation bills and managerial decisions—ranging from the hiring of personnel to the approval of multiyear contracts—lock in spending for future years. We must begin making tough choices today if we are to substantially alter the shape of the budget in the mid-1990s.

For a new budget strategy to succeed, it must be based on a sustainable political consensus. In our constitutional system, budget policy is created jointly by the President, the House of Representatives, and the Senate. Initiative rests with the President, who must produce an executive budget in accordance with the Budget and Accounting Act of 1921. The President may not impose his choices unilaterally, however, because budget policy is embodied in revenue and spending laws that must be passed by both houses of the Congress. Nor can the Congress act unilaterally, since the laws in question must either be approved by the President or be enacted (with a two-thirds majority in each house of the Congress) over his veto.

To achieve a shift in the spending and revenue patterns that exist under this system requires a political agreement between the President and a working majority in each house of the Congress. For such shifts to become part of a long-term strategy for reducing the deficit, the political agreement

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Richard P. Kusserow

THE SOCIAL SECURITY WILD CARD

THE SOCIAL SECURITY program was created by an act of Congress in 1935. When the program first went into effect, 50 workers were contributing to the fund for every person receiving benefits. That ratio has dropped steadily ever since. Currently there are three workers for every beneficiary. By 2030, there will be only two.

By the beginning of the 1980s, this trend led to considerable anxiety over the future of the Social Security system. In 1983, the Congress amended the Social Security Act both to stave off the threat of bankruptcy and to guarantee the system's long-term solvency. Several steep increases in payroll taxes were mandated, enough to generate more revenues than were necessary to cover benefits to current retirees. Payroll taxes on workers rose from 6.13 percent of the first $22,000 of earnings in 1979 to the current level of 7.51 percent of the first $45,000. These taxes will rise again in 1990.

As a result of these increases, the Social Security trust fund is now building surpluses—which are then invested exclusively in U.S. Treasury bonds—at a rate exceeding $100 million *per day*. By the end of the century, today's $100 billion reserves should grow to over $400 billion (in 1988 dollars). By 2015, payroll taxes will have produced an estimated $2.5 *trillion* (in 1988 dollars) more than necessary to meet obligations. In the years following, the "baby-boomers" will begin reaching retirement age, and the accumulated surpluses will finance the major surge in outlays.

The only practical means of maintaining the solvency of Social Security and other social insurance programs, such as Medicare, railroad retirement programs, and unemployment compensation, has been to increase payroll taxes. Today, social insurance receipts—virtually all of which come from Social Security and Medicare taxes—represent 36.8 percent of the money received by the U.S. government. This percentage approaches the 42.7 percent of federal receipts that come from individual income taxes. Another statistic that illustrates how significant payroll taxes have become: A family of four, using standard deductions, must have annual wages in excess of $50,000 before the income taxes its owes the government exceed its combined employer/employee payroll tax obligation.

Ironically, policymakers have found the American people more receptive to increased payroll taxes than to increased income taxes, even though payroll taxes are the most regressive form of taxation. It seems that people are willing to pay higher payroll taxes in exchange for the assurance that social insurance programs will remain a dependable source of benefits in times to come.

When the Congress acted to put Social Security on sounder footing, it also moved to insulate the trust fund from the budget deficits of the general fund of the Treasury of the United States. A major change in government accounting officially took Social Security "off budget." The two were reunited, however, for purposes of calculating the federal deficit in implementing the Gramm-Rudman-Hollings deficit-reduction law. The effect, since Social Security is now running a surplus, has been to mask the actual budget deficit of the U.S. Treasury. Red ink from the general fund continues to flow like a river, while Social Security trust fund surpluses are growing and can be expected to grow for decades. Over the course of those decades, the illusion may take hold that surpluses in one fund have offset deficits in the other, and that the overall deficit in government operations has been eliminated.

RICHARD P. KUSSEROW is Inspector General of the Department of Health and Human Services.

The problem is that the Social Security trust fund is not supposed to be applied against the deficit. Rather, its surpluses were meant to be stockpiled in anticipation of the time, around the year 2020, when the baby-boomers begin to draw benefits. Around that time, the accumulation of Social Security surpluses will end; after that, yearly deficits will eat away at the accumulated funds. About 30 years thereafter, the system is projected to go bankrupt.

That will happen a lot sooner, of course, if Social Security surpluses are used to finance new or expanded Social Security benefits. To maintain the viability of the trust fund under these circumstances would require that payroll taxes be increased, expansions in benefits eventually be reversed, or the retirement age be raised.

A different problem will develop if Social Security surpluses continue to be used to mask the government's operating deficits. When the baby-boomers retire, Social Security will need the money it has loaned to the Treasury. To repay the loans from the Social Security system, the government will have to collect more taxes or borrow money from someone else.

The Social Security trust fund, mounting every day toward astronomical surpluses, is an almost irresistibly tempting source of funds. It is the "wild card" in the federal budget, and it can be played any of several ways. Assuming that cutting or even delaying future Social Security benefits is politically infeasible, policymakers may settle upon one of these choices:

1. *Use the surpluses as they were intended, in preparation for the onslaught of future beneficiaries.* This choice requires that the federal operating budget be balanced without the trust funds offset.

2. *Continue using the surpluses to mask the deficits in the operating budget.* This choice lessens the pressure to contain costs or raise taxes. But the dollars borrowed from the trust fund today will need to be repaid about 3 decades from now. Income taxes will need to be increased and other means of raising revenue will need to be employed just to keep up with Social Security obligations; meanwhile, a sort of double-whammy will take effect, as the operating fund will no longer be able to look to Social Security for financing.

3. *Use trust fund surpluses to pay for expanded benefits for Social Security recipients or to pay for new social programs, such as long-term care.* This choice locates in Social Security a ready source of cash for worthy deeds, but it ignores the need for deficit reduction or the future viability of the trust fund. Future retirees would come to expect the expanded level of benefits that would be established today. The burden of paying for these retiree benefits would fall heavily both on current and future wage earners.

4. *Reduce the trust fund surpluses by cutting payroll taxes.* This choice would more fully expose the general fund deficit problem. It would also remove the temptation among policymakers to expand Social Security benefits. But it would also put Social Security back on a "pay-as-you-go" footing. The problem of financing the Social Security system would be left to future generations.

Clearly, it makes little sense to build huge surpluses in the Social Security trust fund to provide for future retirees while at the same time accumulating huge general fund deficits that will have to be repaid by future workers. Because the trust fund is so tempting a source of ready cash for other government purposes, the long-term viability of the Social Security system depends as much on getting the general fund deficit under control as it does on building the trust fund itself. As policymakers struggle with the deficit, they must understand the ramifications of playing the Social Security wild card. •

(continued from page 21)

must be stable. That is, it must hold up for a number of years in the face of opposition from interest groups and constituents who believe that they are being adversely affected.

Several factors will make it extraordinarily difficult to reach this political agreement. These include the fragmentation within the Congress and the confrontation between the Congress and the President that have characterized recent years, the continued split in party control between the executive and legislative branches, and the partisan distrust that may remain from an unusually bitter election campaign. These factors, plus the political stress created by a long period of budget austerity, will make it tougher still to maintain an agreement for the period needed to bring the deficit down to acceptable levels. To succeed, the President, the congressional leadership, and a majority in both houses of the Congress will have to start with a firm conviction that restoring a responsible fiscal policy is an overriding objective—one to which they are prepared to sacrifice other important interests—and then enter into direct, candid negotiations and compromise on the steps needed to reach the goal of a balanced budget.

The complexity of these negotiations cannot be overstated. It will not be a matter of two or three people sitting down for an hour or so to ratify a simple statement of objectives developed by subordinates. Instead, our political leaders must be prepared for weeks and months of frustrating, often brutal negotiations on the particular actions needed to attain their objectives on budget policy. They should think of the process as analogous to negotiating an industry-wide labor contract or a strategic arms reduction treaty. Occasionally there may be a dramatic breakthrough, but most of the progress will come not in miles or even in yards, but in inches.

On its own, however, negotiation among political leaders will not guarantee the success of an agreement to bring down the deficit. For the agreement to be sustainable, it also must be supported by a voting majority of the American people. And that support cannot be temporary. Citizens must be convinced that they and their families gain enough from the agreement to make the necessary compromises worthwhile. Convincing people of this, and keeping them convinced, will be a formidable challenge to political leadership—starting with the President, because of his special role in our constitutional system, but also including Members of Congress, who must vocally support the budget strategy once they have agreed to it.

Any long-term budget strategy of the kind described here must also recognize that the nation's public agenda and priorities change from year to year. In recent years, for example, such issues as AIDS, homelessness, education, and illegal drugs have emerged as widespread concerns—to say nothing of such emergencies as the 1988 drought. Inevitably, citizens will demand that the government take action on these problems; action will require money. Sufficient flexibility to respond to these types of demands in a politically effective way must, therefore, be built into the budget strategy if it is not to be undermined by newly emerging public needs.

Formulating a strategic agreement

These broad considerations suggest some specific elements of a workable budget strategy and of the political agreement that will accompany it.

As a general principle, policymakers should concentrate on seeking and maintaining better fiscal balance in the federal funds portion of the budget. It was here—not in the trust fund programs—that the problem of the structural deficit arose, through erosion of the general revenue stream, acceleration of defense spending, and the subsequent escalation of interest costs. So this is where the problem should be solved.

Policymakers must also agree to avoid using gimmicks to meet the deficit reduction targets. A gimmick is any device that creates the pre-

tense of achieving a budget target without actually altering the pattern of spending or revenues. Recent examples abound, ranging from moving transactions by a few days to change the fiscal year in which they are recorded, to selling assets, to assuming the revenue or spending effects of more intensive enforcement of rules and regulations when there is no reliable basis for that assumption. Gimmicks should be avoided because they do not work over an extended period, because they undermine the strategy's credibility, and because they are often self-defeating, as when the sale of loan assets yields less revenue than the value of the future stream of payments.

As policymakers hammer out the specifics of a budget deficit agreement, they should set firm targets for aggregate spending for each year covered by the strategy; those targets, in conjunction with "normal" revenues, should yield steadily declining deficits. As discussed above, the surpluses now flowing into the Social Security trust funds will be needed someday to fulfill the purposes for which they were intended. Therefore, the strategic target for the total budget (at full employment) should be a surplus approximately equal to the surplus flowing into the Social Security trust funds over the same period. A planned spending path that moves toward this strategic target at a reasonable pace would represent accurately the resources available for government programs—the "top line" numbers that are necessary to constrain and discipline budget negotiations.

"Normal" revenues would be those expected from an economy experiencing average rates of real growth. In view of the current and projected dimensions of the fiscal problem, the limited choices available when making spending cuts, and the inevitable emerging public needs, there is little prospect of reaching an appropriate strategic target without substantial new sources of funds. Most likely, therefore, a budget strategy will need to include new revenues. But those revenues must be real—we cannot afford another "magic asterisk." The strategic agreement, if it relies on additional revenues, must spell out the precise source of those revenues and must articulate a shared commitment to prompt enactment of legislation to produce them.

In addition to setting aggregate spending targets, policymakers should also divide each year's spending targets into firm ceilings for a few broad groupings. Such decisions would lie at the heart of the budget negotiations. Certainly these negotiations should not try to settle every budgetary detail for the period covered by the agreement. But if the top line numbers are to have any meaning, they must be specific enough that their implications are comprehensible. There must be no room for doubt about what is required to carry out the agreement. An appropriate middle ground, then, would be to allocate the top line numbers among a few relatively large and homogeneous program categories.[7]

To provide the flexibility required by changing circumstances and emerging needs, however, some portion of the total spending targets should be held in reserve as an "allowance for initiatives." Any proposal to breach the ceiling for one of the program category's allocations would represent a potential charge against this allowance and would be permitted only through the same sort of consensus process as underlies the overall agreement on budget strategy.

Deciding on these program category spending targets would be only the first part of the job; the Congress and the executive branch would have to share a political commitment to stick to the targets, constraining appropriations and other spending actions within the allocations over the period covered by the agreement.[8] Policymakers would also have to respect the allocations for future years and recognize how current spending decisions will affect those allocations. It would be essential to avoid the temptation of "camel's nose" budgeting—implementing new programs at low initial costs, without providing for the much higher costs that will inevitably follow.

Within the program category spending targets, specific spending decisions would be subject to debate and adjustment in the annual (or, perhaps, biennial) budget process. Together with the "allowance for initiatives," such a system would provide the flexibility needed to respond to changing priorities and emerging needs without violating the overall budget strategy.

This question of preserving the overall strat-

egy's integrity is an important one. The budget agreement might stipulate that the basic strategy and the program category spending limits be revised only at specified intervals, perhaps once every 4 years. Circumstances change, sometimes quite dramatically, and it would be folly to try to put the budget into a straitjacket. At the same time, a long-term strategy would lose its power as a consensus-building vehicle if it were open to general debate and revision every year. Both these considerations might be accommodated if the budget strategy were reexamined only in the first or second year of each presidential term. Between those reexaminations, evolving needs should be handled by adjustments within program categories or by consensus agreement to tap the allowance for new initiatives. Broader changes should be considered only in the event of a national emergency or a shift in the political alignment of the Congress that threatened the continued implementation of the agreement.

To make this long-term adherence to an overall strategy feasible, the framers of the budget agreement must build into the strategy a realistic assessment of budget threats. For a growing list of items, large bills are coming due within any budget strategy's time frame. A prominent example is the Federal Savings and Loan Insurance Corporation, whose bailout may cost $50 billion or more, much of which would need to be financed from general revenues. Similarly, within the next decade, we will need to begin installing a new air traffic control system and start rebuilding our aging, obsolete, and environmentally hazardous nuclear weapons complex. Each of these is likely to entail capital investments of several tens of billions.

These are just a few examples from a much longer list, and other essential expenses will arise as time passes. If provision for them is not made an explicit part of the budget strategy, along with the allowance for new policy initiatives discussed above, their sudden emergence could represent a severe threat either to the strategy or to the political consensus sustaining it.

Helpful changes in the budget machinery

Developing an effective long-term budget strategy, and building and maintaining the consensus needed to sustain it, are responsibilities of political leadership: Political issues demand political answers. Nevertheless, while the machinery of budgeting is not the real source of our current problem, improvements in that machinery can bring the problems, choices, and constraints into better focus for both the public and political leaders. This can be helpful in devising and sustaining a solution.

One major improvement would be to use a budget presentation that portrays the problems and choices realistically. The unified budget, adopted in 1968 on the recommendation of President Lyndon Johnson's Commission on Budget Concepts, was appropriate for its time and represented an important step forward. The Keynesian revolution in economics had made it essential that public debate on fiscal policy recognize the economic impact of total federal taxing and spending. Therefore, merging the Administrative Budget (as the federal funds portion of the budget used to be called) with the trust funds to create the new unified budget contributed to public understanding of government finances.

But times change and so do the challenges of budgeting. The task for the next decade or more will be to attain an equivalent public understanding of today's budget problem and of the choices faced by our political leaders as they try to solve that problem on our behalf.

It does not increase public understanding to talk about a $155 billion deficit in a $1,064 billion total budget (the 1988 figures) when the real problem is a $252 billion deficit in an $810 billion federal funds budget. At this stage in our history, the current unified budget presentation disguises the real problem rather than illu-

minating it. Accordingly, GAO has suggested restructuring the budget to reflect some of the important rigidities discussed above and to highlight key policy choices that have heretofore been obscured by the detail of the budget.

Another improvement in the budget machinery would be to simplify the congressional budget process. As congressional institutions have evolved, parallel procedures for deciding budget issues have also developed. Today, five separate procedures—budget resolution, authorization, appropriation, reconciliation, and GRH sequester—must be completed before the congressional budget process can be finished each year. In truth, additional steps must also be taken, including separate enactment of a debt limit, successive short-term continuing appropriations bills, and supplemental appropriations.

This overlaying of one process on another is a horrendous drain on the time and attention of legislators and thus on the opportunity to debate and decide other vital issues with the care they deserve. It also means that legislators must deal with the budget again and again over the course of the year. The need to reassemble a governing majority each time a key issue resurfaces creates a major challenge for the congressional leadership, particularly in the Senate, where procedural hurdles often can be overcome only by gathering a 60-vote majority.

The development of a long-term budget strategy, supported by a stable consensus, might allow the Congress to eliminate some redundant procedural steps. In particular, agreement on spending allocations for key program areas, together with the political consensus needed to sustain and enforce that agreement, could substitute for the annual budget resolution and GRH sequester procedures and obviate the need for reconciliation and multiple continuing resolutions. This, in turn, would reduce the repetitive voting on the same issues and the resultant strain on consensus.

Agreement on a long-term strategy might also make it possible to shift to a biennial time frame for significant parts of the budget—those portions that are relatively stable and noncontroversial and for which the long-term strategy is easily translated into annual appropriations amounts. This would further reduce the burden on legislative time. It would also allow operating agencies to plan and manage programs more effectively.

A third major improvement in the budget process would be to use realistic numbers. There is a history of budget estimates, forecasts, and targets that are based more on wishful thinking than on realistic analysis. This tendency has created a pervasive sense of mistrust about political manipulation of economic forecasts and their related effects on the budget. Whether valid or not, these perceptions must be changed if an enduring consensus on budget strategy is to be built. Not only must those directly participating in the process be able to trust the numbers with which they are working, but the American people must develop some basis for confidence in what they are hearing from their political leaders.

The development of the numbers used in negotiating the budget strategy and explaining it to the public must therefore be viewed as politically neutral. For long-term economic assumptions, it might be appropriate simply to extrapolate the experience of the economy over the past 5 or 10 years. In the annual budget cycle, it might be better to base the estimates on a consensus of the major economic forecasters, rather than using a forecast developed by the Council of Economic Advisers—or any other government agency that may be subject to allegations of political manipulation.[9]

Other elements of budget estimating are less easily cleared of the taint of wishful thinking or politically motivated judgments. But the risks of those distortions can be substantially reduced. The threat to credibility comes not from individual estimating errors (which are inevitable) but from systematic bias, which produces errors that all go in the same direction. The best protection is probably the regular comparison of estimates

with actual results, preferably using audited financial statements. Careful analysis of discrepancies will reveal any systematic bias and may suggest areas where more reliable estimating methods are needed.

Politics and statesmanship

These suggestions represent some of the key elements of a budget strategy that could lead the nation away from the fiscal policy black hole that now threatens us. Developing such a strategy and building the political consensus to sustain it during the initial period of adjustment are tasks that will severely strain our political institutions. The attempt to restore fiscal balance will succeed only if leaders at both ends of Pennsylvania Avenue are prepared to work toward achieving mutually acceptable compromise.

Politics has been defined as the art of the possible. Political negotiation is the art of compromising the less important to attain the more important. Political leadership is the art of defining what is important and convincing others to accept that definition. Statesmanship is the accolade awarded those who exercise effective political leadership in furtherance of the national interest. The opportunity for statesmanship is here in abundance for those who wish to pursue it. •

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1. For a full discussion of the relationship between the budget and trade deficits, see Allan I. Mendelowitz and Joseph J. Natalicchio, "The U.S. Trade Deficit and the Passing Illusion of Economic Sovereignty," *GAO Journal*, Number 1 (Spring 1988), p. 11.

2. Throughout this article, references to the "budget" and the "deficit" include the off-budget Social Security programs. Unless otherwise stated, data used in the article come from the *Budget of the United States Government, 1989* and the associated *Historical Tables* volume, published by the Office of Management and Budget (OMB), and from *The Economic and Budget Outlook: An Update*, published in August 1988 by the Congressional Budget Office (CBO). In general, the historical data come from OMB publications while the projections come from CBO and reflect its baseline estimates. Fiscal year 1988 data come from the Treasury Department's *Monthly Treasury Statement* for September 1988.

3. In 1986, the only year in which the GRH formula cuts were implemented, they actually applied to about 20 percent of budget outlays. Similarly, most budget freeze proposals exempt large portions of the budget. For a further discussion of the GRH process, see Harry S. Havens, "Gramm-Rudman-Hollings: Origins and Implementation," *Public Budgeting and Finance*, Vol. 6, No. 3 (Autumn 1986), p. 6.

4. Another source of inflexibility involves government's business-type operations, such as the Postal Service. The receipts of these operations are directly related to their expenditures, meaning that there is often little opportunity to affect the deficit by altering the net cash flow. Some of these operations are quite large. In terms of significance for the budget totals, however, they are dwarfed by the trust funds and the fixed costs.

5. This political commitment is embodied in the law establishing the trust fund and earmarking the receipts. The Supreme Court has made it clear, however, that the law can be changed if the Congress and the President choose. Thus, the real protection for future beneficiaries is not the legal status of the trust fund, but the political commitment underlying it.

6. In some programs, such as unemployment insurance, public assistance, and Medicaid, the eligibility criteria and benefit levels are established in state law, further constraining the federal government's budgetary flexibility.

7. The categories could be defined along agency lines, by the appropriation bill structure, by the present budget functional structure, or by some other set of aggregations. The choice should be one that facilitates understanding and agreement among the negotiators.

8. The agreement could be embodied in law, along the lines of the budget resolutions used by the Congress since enactment of the Congressional Budget Act of 1974. This might be a useful way of testing the political acceptability of the agreement and of recording the shared commitment to its implementation. But it is the agreement and the commitment that matter, not the form in which they are recorded.

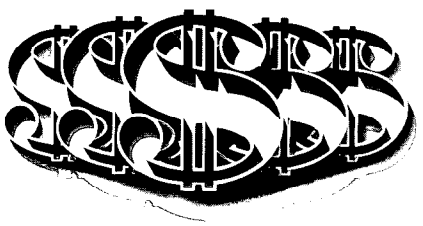
9. Historically, there has been no substantial difference in reliability of short-term forecasts produced by the major private forecasters and those of government agencies. However, the potential for political manipulation of the forecasts ("Rosy Scenario") is an important threat to credibility and should be eliminated.

Stanley S. Fine

THE FEDERAL BUDGET

DEFENSE CUTS: WHERE TO START

Any real effort to control defense spending will mean confronting some fundamental foreign policy and national security questions.



ALTHOUGH POLITICAL LEADERS have been avoiding the subject, any serious attempt to balance the federal budget must recognize defense as a target for reduction, or at least negligible absolute growth. Consider the numbers. In fiscal year 1989, the defense budget will represent 29 percent of total federal expenditures.[1] If one excludes Social Security and Medicare, which are self-financing, defense will account for 39 percent of federal spending. If one goes further and factors out interest on the national debt—which must be paid and therefore isn't susceptible to reduction—the defense portion of federal outlays rises to 49 percent. Any program that consumes such a large share of federal resources is not likely to escape the budget-cutter's scalpel.

This arithmetic may be straightforward, but as soon as one tries to apply it to the defense budget, a host of other factors intrudes. So far, restraints on defense spending have been concentrated at a low institutional level—at the level of service branches and specific programs. Cuts at this level tend to be made only in bits and pieces, and are resisted by the constituencies—both inside and outside government—that have sprung up around virtually every defense program. Real savings in the defense budget, therefore, can be imposed only at the top. America's political leaders must decide how to change foreign and national security policy in order to bring U.S. defense programs in line with the resources the nation can afford to devote to them. To do this while maintaining the nation's security will be a tough but essential assignment.

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Turbulent times

The Department of Defense (DOD) is already facing turbulent times, even if no additional cuts are imposed on it. Over the past 4 years, DOD's budget authority has been decreased by about 10 percent—from $334 billion in fiscal year 1984 to $300 billion in fiscal year 1989 (in 1989 dollars). Any flexibility available from prior-year overbudgeting has essentially been used up; consequently, in fiscal year 1989, ongoing programs have had to be scaled back, delayed, or even canceled, and personnel totals have had to be reduced.

Over the coming 4 years, the Department of Defense will have to cut the programs it had anticipated in fiscal year 1988 by the equivalent of 1 year of appropriations—a daunting challenge.

A similar squeeze seems likely for the next 4 years. The Defense Department has called for 2-percent real growth, above inflation, for fiscal years 1990 to 1993. But the Congress has allowed for only nominal growth to keep up with inflation. (See table 1.) And even in the unlikely event that DOD's requested budgets were to be approved by the Congress, total defense expenditures over the next 4 years would still be $200 billion to $300 billion below the budget that DOD projected in fiscal year 1988 for the same period. Following the congressional Budget Resolution no-growth track would require an additional $40 billion of reductions. In other words, over the forthcoming 4-year period, DOD will have to cut the programs it had anticipated in fiscal year 1988 by the equivalent of 1 year's worth of appropriations—a daunting challenge.

Nevertheless, even a no-growth or "selected freeze" policy will yield ever-rising defense costs in terms of absolute dollars. During his 4-year term, the new President will spend an average of almost $30 billion more per year on defense than was spent in Ronald Reagan's last budget. Although this growth relates only to inflation, defense will still be perceived as an area in which cuts could be made to help relieve the downward pressure on other federal programs.

Controlling expenditures

Keeping defense expenditures under control is complicated. Even if DOD had to absorb all or part of the cost of inflation, outlays over the next few years would be little affected. At the end of fiscal year 1989, for example, the Department's unexpended balances—obligations it has incurred but not paid for—will total about $271 billion.[2] In fact, about 40 percent of any fiscal year's defense budget relates to this backlog of prior-year contracts and obligations.

Table 1

COMPARISON OF DEFENSE BUDGETS
REQUESTED BY THE DEFENSE DEPARTMENT (DOD)
WITH DEFENSE BUDGETS APPROVED BY THE CONGRESS,
in terms of budget authority (BA) and expenditures (EXP)

Dollars in billions

	DOD		Congress	
	BA	EXP	BA	EXP
1989	299.5	294	299.5	294
1990	316	306	312.9	304.6
1991	334	320	325.6	316.6
1992	352	335	339	329
1993	370	351	352	342

(Note: Figures for the Congress's budget resolutions in fiscal years 1992 and 1993 are the author's estimates, based on extrapolations allowing for inflation only.)

The only way to scale down this backlog is to cut programs previously approved by the Congress. But such cancellations can be made only at the high price of lost investment in systems that, because they have gone through the internal and external review and approval processes, generally have demonstrated their utility under current assumptions about national security and military threats. Furthermore, because of termination costs, any budget savings realized from canceling approved programs usually don't show up for 2 or 3 years.

This kind of time lag does not affect the approximately 50 percent of the defense budget that goes toward military readiness and the salaries of military and civilian employees. Budget authority reductions in these areas, therefore, could have an immediate impact on outlays. But such cuts would detract from the armed forces' current capabilities. Military operating forces and civilian personnel would have to be reduced; salaries would have to be frozen; training would have to be cut back; time between promotions would have to be stretched; purchases of spare equipment, repair parts, and conventional ordnance would have to be curtailed; and operating tempo (for example, the number of flying or steaming hours) would have to be lowered, while at the same time overseas deployments of ships and personnel would have to be lengthened to fulfill present political commitments with fewer resources. These cuts would tend to weaken conventional forces at a time when maintaining or even strengthening them may appear desirable. Moreover, in this period of almost full employment in the U.S. economy and an all-volunteer force in the military services, asking defense personnel to make sacrifices in the interest of bringing down the budget deficit would not only be inequitable but would probably trigger an exodus of talent and make recruitment difficult or impossible.

After prior-year commitments and the costs of military readiness and personnel, the remaining 10 percent of defense outlays are mainly in research and

development (R&D) and budget-year procurements. These categories have already been squeezed by the past four budgets. Procurements have been stretched out in many cases to levels below economical production standards, and some minor acquisitions have been canceled. R&D has been cut so much that future acquisitions have been delayed. There is probably little slack remaining in this portion of the budget unless major programs are canceled in total, which in turn could reduce future military capability.

Regrettably, there are no line items in the defense budget for waste, fraud, abuse, and organizational and procedural inefficiencies. It is not easy to identify them where they exist, or to be sure that identifying them will result in lower budget submissions.

Of course, nonprogrammatic reductions are often discussed as ways to cut defense. Regrettably, there are no line items in the budget for waste, fraud, abuse, and organizational and procedural inefficiencies. It has been demonstrated time after time that these drains on the budget exist, but it is not so clear that they can be easily identified or that identifying them will result in lower budget submissions. Generally, any potential savings in these areas are small and are scattered across many programs and line items, each of which has a sponsor with many unfilled, "valid" needs. Therefore, savings realized by cutting waste, abuse, and inefficiency will probably be used to fund items that were previously underfunded or are now emerging as high priorities. In other words, it's unlikely that a Secretary of Defense or head of a service branch would submit a budget below any fiscal restraint imposed by the President or the Congress because of these savings.

Another possible strategy for reducing the defense budget would be to cut "pork-barrel" items. The Congress has been guilty of keeping unneeded bases open and undesired procurements going for political purposes rather than to meet military needs. The services have also done their part. In a blatant grab for national and local political support, the Navy has spent hundreds of millions of dollars through its "Strategic Home Porting Initiative" for unneeded port facilities that will become a burden on future resources.[3] The Army's misguided creation of light divisions to compete with the Marine Corps in Third World adventures resulted in the opening of new and perhaps superfluous bases in Alaska, New York, and Virginia. Such activities are not restricted to any one administration: To fulfill a campaign promise, the Carter administration sent the carrier *Saratoga* to the Philadelphia Naval Shipyard for service-life extension that cost $100 million more than it would have at a private yard—at a time when the Navy was considering closing the Philadelphia Shipyard. Although the Congress has recently been willing at least to consider closing some bases, it's doubtful that these self-serving political practices will end, particularly since the defense budget is the last significant source of pork-barrel dollars left in a squeezed federal budget.

Constituencies and special influences

What is usually not explicitly considered in discussions of defense expenditures is that defense dollars go out to *people*, and have roughly the same economic impact as federal dollars spent in civilian programs. As the defense budget has grown, it has created its own constituencies, both inside DOD and throughout the nation. Although precise numbers are hard to come by, as many as 25 million Americans (including family members) may depend for all or part of their livelihood on a continuous and increasing flow of defense dollars into the economy. Since these dollar flows have a multiplier effect, an equal number of Americans may be indirectly affected.

But because of the peculiar nature of DOD's mission, its constituencies are not focused just on economic issues. Besides being more numerous and diverse and difficult to pinpoint than the interest groups associated with other domestic programs, the defense constituencies tend to have more complex motivations. These individuals and groups are often inspired by career, psychological, emotional, political, and subjective considerations that have nothing to do with economic needs or budgetary impact—or even with the military threat. The defense budget and its growth or contraction are subject to pressures from so many special interests—not necessarily economic—that changes are difficult to discuss and debate, let alone implement. This is especially true of reductions.

The defense budget and its growth or contraction are subject to pressures from so many special interests—not necessarily economic—that changes are difficult to discuss and debate, let alone implement.

The levels at which decisions about defense spending are made can be arranged into a sort of hierarchy of influence. (See figure 1, p. 34.) At the top is U.S. foreign policy, which determines not only national security policy but also trade and economic policy. National security policy, in turn, establishes the basis for the nation's present and future defense strategies, service missions, and specific programs. This is, of course, a simplification: The process is not so clean-cut, and there are numerous feedback loops. In general, however, a decision at any of these levels affects the composition of the defense budget and the structure of defense programs.

The specifics of decisions on defense—what types of decisions, who makes them, and how they are made—differ markedly at each level. At the foreign policy level, the decisions are influenced mainly by political considerations; they become increasingly military as one descends the hierarchy to the level of present operations and future capabilities. Decisions at the foreign policy level are affected by intangibles and uncertainties, while at lower levels they become more and more quantifiable. Special interests that affect foreign policy are a mixture of the individual and the institutional; at lower levels they tend to be predominantly

institutional. Finally, at the foreign policy level, any resource and financial considerations are high-order macroeconomic, while on the lower rungs of the ladder, the considerations become increasingly specific and microeconomic.

At each of the levels of policy-making, the various influences, interests, and constituencies (see table 2) exert pressure for a "strong defense." Their motivations range widely, from military concern to direct economic and political interests to highly emotional and even quasi-religious considerations. They measure their effectiveness, however, by only one standard: the size of the defense budget. In their book, more money means a better and stronger national defense. Those groups with interests in specific programs may concentrate on lower levels of the decision-making hierarchy, but those whose main concern is the defense budget's absolute size tend to exert influence at the foreign policy, national security, and defense strategy levels, where conclusions about the defense budget are reached typically through subjective arguments, often with-

Figure 1 *Defense Budget Determinants*

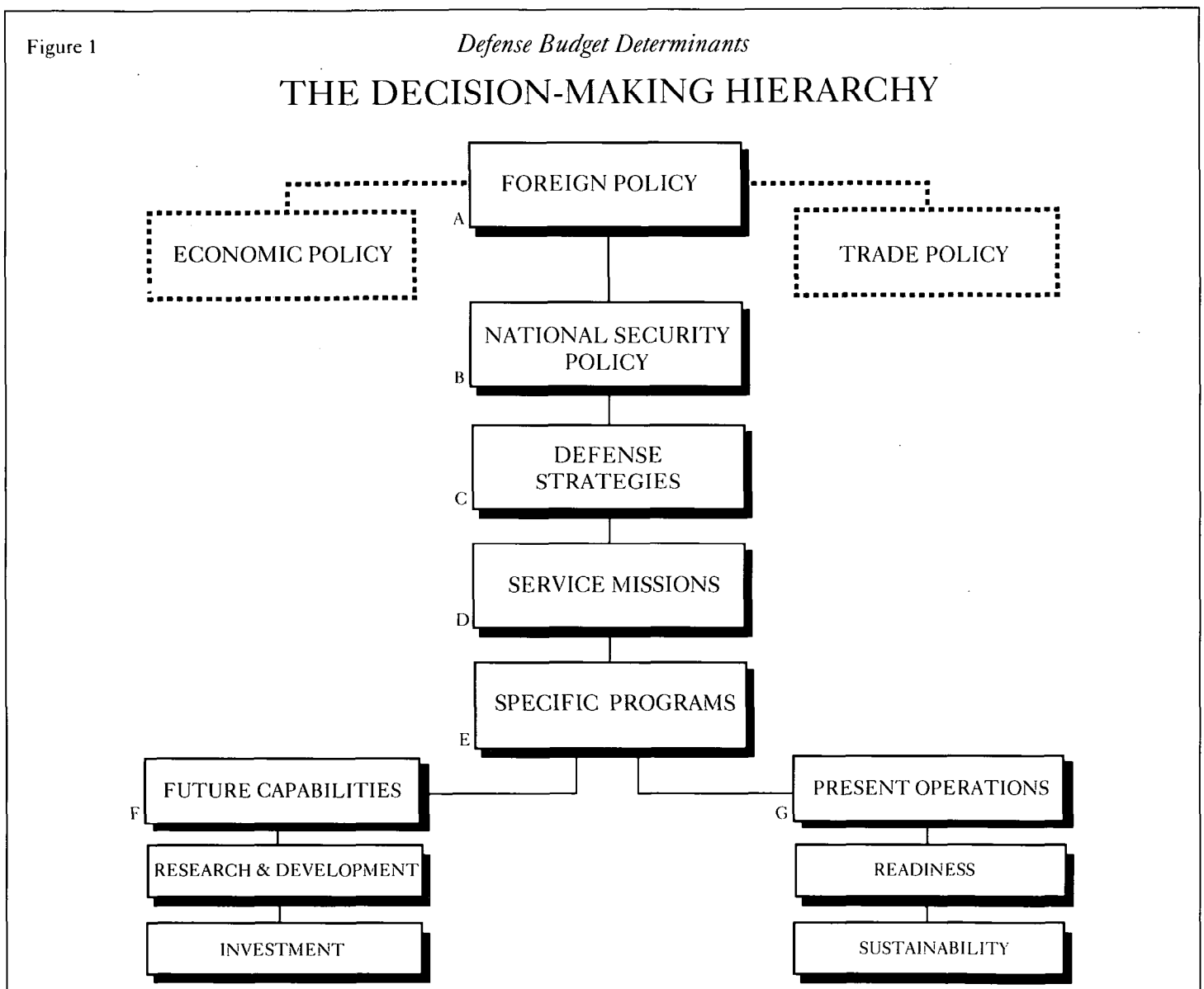

Table 2

INFLUENCES, INTERESTS, AND CONSTITUENCIES

Each of these groupings of individuals or organizations has an impact at some level of defense budget decision-making. For each category appearing here, the levels at which its influence is felt are listed under the group heading. The levels correspond with the hierarchy illustrated in figure 1:

(A) Foreign Policy
(B) National Security Policy
(C) Defense Strategies
(D) Service Missions
(E) Specific Programs
(F) Future Capabilities
(G) Present Operations

POLITICIANS	MILITARY	MILITARY-RELATED	POLITICAL-MILITARY
All levels	All levels	Levels B, D	Levels A, B, C
Federal State Local Foreign leaders	Reserves National Guard Retirees Civilian personnel Active duty military	Veterans' organizations Leagues and associations Military "alumni"	NATO SEATO Foreign governments Intelligence community
DIRECT INDUSTRY	**INDIRECT INDUSTRY**	**THINKING INDUSTRY**	**SUPERPATRIOTS**
Levels E, F, G	Levels F, G	Levels A, B, C, E, F, G	Levels A, B, C
Weapons producers Aerospace Electronics Construction Fuel and energy Transportation Consultants Shipbuilding and repair Institutes and labs Nuclear Applied R & D Systems managers Medical Labor Weapons sellers Clothing	Real Estate Travel Hotels Machine tools Moving Toys Food processing Wholesalers Finance Publishing Entertainment Accountants Lawyers Labor	Think tanks Universities Consultants "Pure" R & D Nonprofit groups Foundations Media	Atlanticists Interveners Adventurers Antiforeigners
MOVERS and SHAKERS		**RELIGIOUS and ETHNIC GROUPS**	
Levels A, B, C, E, F		Levels A, B	
Neoconservatives Former office-holders Intellectuals		Anticommunists U.S. nationalists Foreign nationals based in the United States	

out any quantitative underpinnings. The decisions made at these levels, plus those made at the service-mission level, are the ones that really determine the defense budget's overall size and direction.

"Vertical" cuts versus "horizontal" cuts

Given the present structure of defense policy-making, there are two ways to try to reduce the defense budget. The first is a "vertical" approach, through which political decisions at the foreign policy, national security, and defense strategy levels would cause specific changes to be made at the service-mission level. These changes would, in turn, reduce costs at the program level and restructure forces and acquisitions at the levels of present operations and future capabilities.

The second approach might be described as "horizontal": The services would be left to their own devices to decide which programs should be eliminated. At this level, though, because of the nature of the decision-making process, programs are hardly ever eliminated altogether. Instead, they are usually nicked, stretched, and squeezed—and thereby kept alive, if sometimes only marginally.

The missions, sizes, compositions, and budget levels of the service branches should be determined by political decisions made at the foreign policy and national security policy levels, based on overall national needs.

Logically, vertical cuts made as the result of political decisions would seem to be more cost-effective, to have less disruptive long-term effects on the economy, and to contain the arguments between various interest groups more successfully. The paradox is that the actual battle over defense dollars and how they are spent usually takes place at the level of programs and operations. At this level, larger questions of public policy and organizational analysis can be broken down into particulars of economics, finance, and perceived military threats. The quantitative impact of increases or reductions in the defense budget can be readily measured in specific, discrete terms; the impact of a spending change on beneficiaries of defense dollars and sponsors of military programs can be foreseen with some precision.

But to restrict efforts to cut the defense budget to this level—the level of programs, line items, and specific appropriations—will only draw an expanded number of constituencies into budget arguments, trade-offs, and compromises. Ultimately, rational analysis of real national security needs will suffer, and defense programs will be distorted by lobbying, logrolling, and political influence. Because of the huge numbers of activities at the service level—many of them driven as much by institutional considerations as by military needs—it will be nearly impossible to ensure that individual program changes fit in with overall service missions, defense strategy, national security, and foreign policy.

It will be similarly disastrous to follow the dictates of Gramm-Rudman-Hollings and require each service to stay within fiscal guidance ceilings. To try to reduce the federal budget deficit by forcing individual services to make cuts

based purely on their limited, institutional perceptions of military strategy and national security is to push the problem down to the level least able to make objective, nonparochial choices.

Instead, the missions, sizes, compositions, and budget levels of the services should be determined by political decisions made at the foreign policy and national security policy levels, based on overall national needs. During the last time of significant defense cuts—the chaotic period of the early 1970s—the nation's military readiness and capability suffered. This resulted not only from inadequate resources but, perhaps more fundamentally, from the inability of political and military leaders to modify foreign and national security policy—and the accompanying national commitments—so that they would match the available resources.

Today's leaders need to avoid making the same mistake. In the coming period of defense budget cutbacks, the nation will face the challenge of adjusting policies in ways that preserve the force levels and positioning needed for true national security. The obstacles will be, on the one hand, limited resources and, on the other hand, the numerous constituencies certain to oppose the necessary changes in the country's conception of its national security needs as well as in the military posture required to meet them.

Reevaluating national security

The decision to exercise top-down leadership in reducing the defense budget will be only the first step. To make the necessary cuts in a logical and orderly way, political and military leaders must consider a wide range of questions, the answers to which will provide some rationale for *vertical* defense budget reductions. The following are representative of the kinds of questions that need to be addressed.

Foreign policy

• What steps should Washington press on both the Soviet Union and U.S. allies to enable the United States to end its policy of "containing" Soviet influence?

• Should the United States continue to try to be the arbiter in Third World disputes, or should it rely more heavily on diplomacy and international bodies such as the United Nations?

• Should the United States "declare victory" in its two-generation battle with Communism as a political and economic system and concern itself less with other nations' forms of government, as long as those nations pose no direct military threat to the United States?

National security policy

• What should be the long-term objective of the North Atlantic Treaty Organization? What long-term military role should the United States take in Europe?

• From a national security standpoint, is the nuclear triad still a valid concept?

• Is it in America's long-term interest to insist that Japan increase the strength of its Self-Defense Forces in view of its economic power and emerging political strength? Might the United States merely be creating future "threats" that will justify a new round of increases in defense spending?

• Can the United States ask the Soviets to reduce their conventional military strength and at the same time ask the Soviet Union's neighbors—China, Japan, the West European countries—to increase theirs?

• At what point will U.S. foreign bases—many of which serve to defend the interests of the host nation, as well as those of the United States—cease to be cost-effective, as the price for using them continues to escalate?

Defense strategies

• Should the United States continue to forward-base 500,000 American service personnel and their families—some 1 million Americans altogether—for the indefinite future?

• From what direct military threat or threats does the "forward defense" strategy protect the United States?

• If America's European allies are unwilling to assume a greater share of the responsibility for their own security, what should America's military role in Europe be?

• Is Phase III of the Navy's Maritime Strategy, calling for direct conventional attacks against Soviet homeland bases, realistic?

Service missions

• Is it time to review the services' roles and missions, as well as those of the myriad specified and unified commands scattered throughout the world, so as to reduce program overlap?

• What roles do the Marine Corps and the Army's Light Divisions have if the United States decides on a foreign policy of nonintervention or nonintrusion in the Third World?

• Does the Navy still have an amphibious mission? If so, under what scenario? Is the concomitant investment in ships and personnel still necessary?

• Do aircraft carrier groups really have a mission against a Warsaw Pact threat, or are they useful just for Third World intervention, and even then only under special conditions?

• Is there a real need for nuclear weapons (other than submarine-launched ballistic missiles) aboard Navy surface ships and attack submarines?

Obviously, these questions only scratch the surface of some monumentally complex issues. They represent the kind of reconceptualization that will have to take place if the nation's political and military leaders are to make vertical cuts in defense spending based on reduced international needs and commitments. The resulting policy adjustments will trigger rather fierce internal confrontations. But the alternative, given continued constraints on defense spending, would be a steady, uncontrolled erosion of U.S. military capabilities; misdirection of resources to inappropriate services, missions or weapons; and devastation of the U.S. military's morale. •

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1. *Historical Tables: Budget of the United States Government, Fiscal Year 1989*. Office of Management and Budget (OMB).

2. *Budget of the United States Government, Fiscal Year 1986, Fiscal Year 1987, Fiscal Year 1988 (Supplement)*, and *Fiscal Year 1989*, OMB.

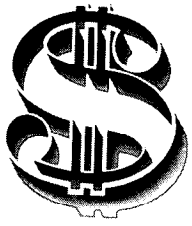
3. *Navy Ships: Information on Benefits and Costs of Establishing New Homeports* (GAO/NSIAD-86-146, June 1986).

Peter G. Peterson

THE FEDERAL BUDGET

RETHINKING ENTITLEMENTS

A call to reform a system that "enriches the present at the expense of the future."



IT APPEARS THAT everyone today, rich or poor, is entitled to something—from the elderly, who are "entitled" to more tax-free Social Security benefits than they have contributed and more health care than they need; to veterans, who are, among numerous other things, "entitled" to free health care whether or not their disabilities are service-related; to public service employees, some of whom are "entitled" in retirement to more income than they ever earned in government service; and—yes, you guessed it—to Peter G. Peterson, whose simple citizenship "entitles" him to a panoply of tax-free government benefits upon his retirement, regardless of his financial need and regardless of whether he has paid for them.[1]

The bulk of entitlements now constitute a system of "free" benefits designed (especially at the federal level) not to alleviate poverty, unemployment, or any other social ill, but rather to subsidize the consumption standards of mature Americans at all income levels.

Between 1965 and 1987, federal disbursements through entitlements programs grew from 5.4 to 11.5 percent of the Gross National Product (GNP). These percentages do not include parallel growth in state and local entitlements, nor do they reflect the large and regressive benefits handed out through consumption-oriented tax breaks, nor indeed the massive unfunded benefit liabilities we are passing down to our children. Yet, the 1965-87 increase alone amounts to 6.1 percent of GNP, a slice of our national product equivalent to our entire defense budget. It is *twice* net domestic investment in U.S. businesses, *four times* greater than the research and development budgets of all U.S. corporations, and *twelve times* greater than our net national investment in public infrastructure.

Relative to the size of our entire economy, 5 percent or 11 percent of GNP may not seem inordinately large. But the relevant comparison is not with the entire GNP. Instead, it is with that small portion of GNP—that 5 or 10 percent—that is not consumed, but saved and invested, and that therefore constitutes our society's life-line to the future. Entitlements spending threatens that life-line, for to the extent that entitlements spending contributes to our federal budget deficits, it drains our limited supply of private savings. All societies devote the great majority of their national product to current consumption; where societies differ, however, is in their collective ability to widen or narrow the unconsumed endowment that they pass on to their descendants.

That is why entitlements are so important. As long as we insist on increasing our public consumption without a political consensus to cut our private consumption, we effectively guarantee that we

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will shrink our endowment. Such a choice enriches the present at the expense of the future. It benefits today's parents and grandparents at the expense of today's children and grandchildren. And if other societies, such as Japan, continue to make a very different choice of saving and investing vastly more, it condemns us to steadily declining stature in the world of the 21st century.

The American concept of "entitlement" is inherently prejudicial against the young. We are now passing them the bill for some $10 trillion in unfunded federal benefit liabilities above and beyond our official national debt.

The American concept of "entitlement" is inherently prejudicial against the young. The prejudice is severe enough in the way we treat our children as children: Our federal budget currently allocates 11 times more benefit dollars per capita to Americans over age 65 than it does to children under age 18. Yet, the prejudice is even more grievous in the way we treat children *as future adults*. We are now passing them the bill for some $10 trillion in unfunded federal benefit liabilities above and beyond our official national debt, and we are now quietly expecting them to pay as much as one-third to one-half of their paychecks early in the next century to finance our own public retirement and health-care programs.

Entitlements spending: excesses and inequities

The term "entitlements" refers to those benefits, whether cash or in-kind, that the government pays to individuals meeting the eligibility criteria in federal programs ranging from Social Security to Food Stamps. In general, quasi-contracts give "entitled" individuals a legal "right" to receive benefits. Most entitlements outlays are authorized automatically by the Congress.

The growth in entitlements is the driving force behind our federal budget deficits. While entitlements have grown since 1965 by about 6 percent of GNP, all other federal spending (excluding the cost of interest, which simply represents the permanent cost of cumulative deficits) has actually declined from 11.00 to 9.3 percent of GNP. Even per-GNP defense spending, now shrinking, rose only half as much from 1979 to its new peak in 1986 as it fell during the 1970s. Therefore, even with federal taxation (as a share of GNP) at a higher level in the 1980s than during previous decades, entitlements growth has given birth to large federal deficits.

Entitlements come in two types: "means-tested" benefit programs targeted at the poor, and "non-means-tested" programs, for which eligibility never requires an overall income or assets test. In fiscal year 1986, spending on means-tested benefits accounted for a mere 15.1 percent of all federal entitlements outlays. At 5.4 percent of total federal entitlements outlays, Medicaid, a federal-state matching program that pays for the health-care expenses of poor and near-poor Americans, is more than twice the size of any other means-tested benefit program. The other three major means-tested entitlements programs together accounted for 6.7 percent of total federal entitlements outlays: Supplemental Security Income (SSI), whose beneficiaries are either elderly or disabled persons in poverty; Aid to Families with Dependent Children (AFDC), which pays benefits to poor, single parents with dependent children; and Food Stamps. These are the three programs that the public most closely identifies with "welfare."

Welfare programs constitute a negligible—and shrinking—fraction of total federal spending. Indeed, in the 1980s, cuts in federal benefit programs have been almost entirely limited to that small fraction of total entitlements spending explicitly targeted at Americans in poverty. The vastly larger non-means-tested, or nonpoverty, entitlements have been largely exempt from the budget-cutting process.

• At 42.7 percent of federal entitlements outlays in fiscal year 1986, Social Security cash benefits constitute by far the largest entitlements program. The original Old-Age and Survivors Insurance program pays benefits to covered workers after they retire, or to their survivors after they die. Disability Insurance, the minor partner that accounts for only 10 percent of total Social Security cash benefit outlays, pays benefits to covered workers who become disabled.

• At 16.3 percent of entitlements outlays, Medicare, the health-care component of Social Security, is one of the fastest growing of all federal benefit programs. Medicare "Part A," or Hospital Insurance, the larger of the program's two parts, pays for inpatient hospital care and related services. Medicare "Part B," or Supplementary Medical Insurance, pays for physician and outpatient hospital services. Eligibility for Medicare benefits is generally the same as for Social Security cash benefits.

• The Civil Service and military retirement systems, our nation's two most generous pension plans, accounted for 9.0 percent of federal entitlements outlays in fiscal year 1986. Non-means-tested veterans benefits, which include access to health-care services and a cash compensation program, constituted another 4.9 percent of total federal entitlements outlays.[2]

The vast majority of federal benefit dollars do not go to the poor, but rather to middle- and upper-income Americans, especially the elderly and retired.

Entitlements growth during the 1980s has been entirely due to the headlong expansion of these huge nonpoverty programs. The small portion of all entitlements that constitutes our "social safety net" has hardly experienced any growth as a share of GNP since 1979, and has actually shrunk as a share of the federal budget. And if Medicaid is excluded, it turns out that federal spending on all other means-tested benefits has actually declined in real terms over the past 7 years. The vast majority of federal benefit dollars go not to the poor, but to middle- and upper-income Americans, especially the elderly and retired.

From complacency to reform

Sooner or later, America must change course. If entitlements reform comes sooner, it will be because we will have made a farsighted choice in favor of future generations. If we fail to act now, reform will come anyway. But it will be sudden, crunching down inequitably on those least able to bear the sacrifice.

It is not just that our system of federal entitlements places a dangerous burden on today's resources, or that it fails to fulfill the legitimate goals that most of us assume a social welfare system should address. As it is currently structured, it is ill-prepared to confront the challenges of the next century: an aging population, a shrinking work force, rapidly escalating health-care costs, and slowing productivity growth. The first three of these trends may be moderated, but their direction cannot be altered. Reversing the fourth trend—slowing productivity growth—is a fundamental purpose of entitlements reform.

In order to revive the climb in living standards for all generations, America's foremost goal over the next few decades must be to raise its savings and investment balance on virtually every ledger—foreign, public, and private. To set this process in motion, America will, at a minimum, have to increase its net national savings rate—now 2 to 3 percent of GNP—to 6 to 7 percent of GNP over the coming 5 years (a rate still below its level in the 1970s) and to 10 to 12 percent of GNP within 20 years (a level just about on par with the average for today's industrial countries). By the first decade of the 21st century, we will have to be rechanneling yearly into investment some $450 billion that we now spend on private and public consumption. This will be impossible without reforming federal entitlements policy.

Reform is more crucial now than ever. To be successful, any approach to entitlements reform must be grounded on these general principles:

• The reforms must be based on prudent assumptions about our nation's economic and demographic future.

• They must keep in mind our paramount national objective: raising our collective level of savings. In other words, while we are reducing benefit costs, we must also make sure we are thereby reducing deficits and unfunded benefit liabilities in the public sector, and encouraging genuine forms of savings (such as individual retirement accounts, company pension plans, and long-term health-care insurance) as substitutes in the private sector.

• The reforms must be equitable between generations. Throwing the burden of cost-cutting entirely onto tomorrow's elderly or today's young working families is not only patently unfair, but will also undermine both the ability and the willingness of future generations to support our entitlements system.

We must develop a new and positive vision of old age as a period not of dependency, but of continued contribution to our society.

• They must also be fair to the poor. Reform should not make anyone near the poverty line worse off; nor should it proceed from the mistaken premise that budgetary savings and the alleviation of poverty are direct trade-offs. To the contrary, successful reform will allow more comprehensive support to the poor.

• The reforms must be gradual. Sudden income changes tend to inflict the maximum hardship, while allowing no time for the necessary behavioral changes in household spending, savings, and retirement habits. Gradualism, however, is possible only if we act immediately.

• The reforms must recognize that programs such as Social Security have become defining links between citizen and state. Reforms must, therefore, allow for institutional continuity. Like gradualism, continuity requires that we act now.

• Finally, we must develop a new and positive vision of old age as a period not of dependency but of continued contribution to our economy and society: We must change incentives so that we bring more older Americans back into the mainstream of economic and public life.

What follows is a series of recommendations for the reform of the federal entitlements system, focusing on Social Security, federal pensions, and health-care benefit programs.

Social Security

Vast savings could be achieved in Social Security through reforms that would not affect any household near the poverty level. In fact, part of the savings could be used to provide better support for those elderly or disabled Americans truly facing economic hardship. Another part could be redirected toward achieving other public goals, such as educating the nation's children and rebuilding its infrastructure. The rest would help to reduce the drain of the federal budget deficit on our net national savings. The following reform program would not only ensure the solvency of the Social Security system, but would make it part of an entitlements system that better serves a useful social function.

1. *Reduce cost-of-living adjustments (COLAs) for non-poor beneficiaries.* This will generate substantial long-term savings, scale back prior windfalls, and give us some degree of near-term control over our fiscal future. Holding Social Security COLAs to 60 percent of the Consumer Price Index (CPI) (assuming a 6-percent inflation rate) would, by the year 2000, save more than $90 billion annually; holding COLAs to the CPI minus 2 percentage points would save about $65 billion annually. If these COLA caps were applied to all non-means-tested cash benefits, the annual savings by the year 2000 would be $140 billion and $100 billion, respectively. A complementary reform would be to limit COLA increases to real wage growth whenever this is lower than the CPI. All COLA cuts could be targeted selectively by allowing a refundable tax credit to low-income beneficiaries.

2. *Count all Social Security cash benefits that exceed the actuarial value of each worker's contributions as taxable income.* This proposal appeals to principles of generational equity, and has the additional merit of protecting low-income beneficiaries. Since 1983, beneficiaries whose adjusted gross income exceeds certain thresholds ($25,000 for single and $32,000 for joint returns) have had to include up to one-half of their Social Security benefits in that income. If, instead, we taxed all benefits in excess

of contributions plus interest, the savings would be larger in the near term: $15 billion to $20 billion annually. As younger generations retire, however, their lower payback rate will mean that the taxable share of their benefits will decrease. Yet we need to go a step further: For upper-income beneficiaries, it would be fair not just to apply existing tax rates to "unearned" benefits, but to use a sliding-scale rate up to 100 percent to tax away the full value of benefits in excess of total contributions plus interest for families who, in any particular year, exceed the high income definition.

3. *Cut the replacement rate in the initial benefit formula for upper-income beneficiaries.* This would better target Social Security benefits at those retirees who need them most, while reducing the universal subsidy to middle-and upper-income Americans.

If the retirement age were gradually increased to 70, Social Security outlays would be reduced by about one-quarter, while payroll-tax revenue would rise due to longer average working lives.

4. *Raise the Social Security retirement age gradually but substantially.* The 1983 reform act already raises the retirement age to 67 for individuals retiring after 2022. Given greater longevity and a smaller future work force, however, this reform is inadequate. If the retirement age were gradually increased to 70, Social Security outlays would be reduced by about one-quarter, while payroll-tax revenue would rise due to longer average working lives. Thereafter, the retirement age could be "indexed" to further increases in longevity.

5. *Redirect some of the budget savings outlined above to programs designed to meet the needs of the elderly poor.* Raising the average Supplemental Security Income (SSI) benefit to 100 percent of the poverty line (for elderly as well as nonelderly disabled persons) would require about $5 billion annually. Compare this figure with the $15 billion to $20 billion that would be saved annually if all unearned Social Security benefits were taxed. In addition, measures that systematically discourage the participation of the elderly in the work force should be eliminated. Any Social Security beneficiary (under age 70) with annual earned income over about $8,000 loses 50 cents of his or her benefit for each dollar of additional income. If this deservedly unpopular "earnings test" were abolished, Social Security would lose about $1.5 billion in near-term annual revenues, but the long-term benefits of encouraging a greater proportion of the elderly to remain productive would be incalculable.

Federal pensions

By any standard, the Civil Service Retirement System (CSRS) and the military retirement system are far and away the most generous pension plans in the nation. They cover only 6 million employees and soldiers, yet pay out benefits that are about equal to all payments from all private pension plans for the entire U.S. labor force—approximately 75 million full-time workers.

Average benefit levels for civil service and military retirees tower above those for private pensioners, both because of higher initial benefit levels and because of 100 percent CPI indexing. Federal pensioners also retire much earlier with full benefits: One in six civil servants retires before age 55, and more than three-quarters of all current military pensioners are under age 65. The result is that CSRS offers its pensioners more than twice as much lifetime income as a private plan; military retirement offers its pensioners between 8 and 19 times as much.

Taken together, CSRS and military retirement now spend as much as all federal means-tested programs (except Medicaid) combined. They have also accumulated unfunded benefit liabilities of more than $1 trillion. But beyond their cost, equity alone demands their immediate reform. The explicit goal of such reform should be the achievement of item-by-item comparability with the private sector.

1. *Indexing formulas should be altered to either 60 percent of the CPI or the "CPI minus 2."* Either of these COLA caps would still leave federal retirees with a far more generous indexing scheme than those of the vast majority of private pensioners.

2. *Early retirement options should be curtailed.* Civil service workers can now retire with full benefits at age 55 after 30 years of service. A modest delay to age 60 would still leave them with more generous retirement-age provisions than practically any private-sector employee. Better yet, we should bring their retirement age into line with that for Social Security. For military retirement, eligibility for reduced benefits should be raised to 25 years of service; eligibility for full benefits should be raised to 40 years.

To date, reform of our health-care entitlements has failed because it has not met the most important criterion for genuine cost containment: changing the behavior of patients and providers.

3. *Initial benefit levels in both programs should be reduced,* both by basing awards on the average salary for the final 5 years of service (the rule in the private sector), instead of the current "hi-3" method, and by scaling back the "factor multipliers" used to compute benefits.

Health-care benefit programs

To date, reform of our health-care entitlements has failed because it has not met the most important criterion for genuine cost containment: changing the behavior of patients and providers. Before we make any progress, we will need to develop new cultural attitudes toward health and forge a new political consensus that recognizes that our current health-care policies are both unaffordable and inequitable. This will inevitably involve facing up to painful trade-offs. Finding the right mix of reforms will still require much experimentation, but with such a consensus, we could begin to act on the following principles:

- *Move toward prospective budgeting of public health-care spending.* Politically, this would force us to confront fundamental, large-scale trade-offs in allocating our national resources. Procedurally, it would force all of us, from program administrators to providers and patients, to do our best within finite spending boundaries.

- *Reshape incentives so that patients and providers make more informed and cost-conscious choices about treatment.* For patients, this will mean greater front-end cost-sharing; for providers, it will mean bearing financial risks for treatment decisions.

- *Adjust Medicare benefit levels according to financial need.* As with Social Security cash benefits, age alone can no longer be a blanket criterion for entitlement to a public subsidy.

- *Improve access to means-tested health care for those in financial need.*

Reforming acute care for the elderly and disabled

Reform of Medicare should be the single most important item on our national entitlements agenda. In the near term, we must control runaway costs in Medicare "Part B," the Supplementary Medical Insurance (SMI) program, and coordinate reforms of parts A and B of Medicare with parallel reforms in Social Security cash benefits. Successful measures will either create more cost-conscious health-care consumers and providers, or increase the share of Medicare outlays financed by beneficiaries themselves.

1. *Raise SMI's $75 annual deductible to at least $200 and then index it to SMI spending per enrollee.* This deductible (first set at $50 in 1966), has not only fallen far behind the rise in medical prices, but has not even kept pace with the general price level over the past 20 years. In addition, *raise SMI patient copayments from 20 percent to 25 or 30 percent, up to an annual "stop-loss" ceiling.*

2. *Raise SMI's insurance premium.* When SMI was founded, 50 percent of outlays were financed by patient premiums; today, that share has fallen to 21 percent. Premiums should be increased until they cover between 30 and 50 percent of costs and then should be indexed to future growth in SMI spending per enrollee. A higher premium would not

provide a cost-sharing incentive; instead, it would provide a political incentive for the elderly to take a greater interest in controlling the exploding growth in real per capita SMI spending.

3. *Tax medigap premiums.* By eliminating Medicare's cost-sharing incentive structure, private medigap policies are implicitly subsidizing a higher use of services. A 30-percent tax on medigap premiums would neutralize this subsidy, generate federal revenue, and force insurance companies to offer policies that retain some of Medicare's cost-sharing incentives.

Beyond the immediate remedies, a fundamental restructuring of Medicare will be necessary to move toward truly predictable and controllable public health-care spending.

4. *Raise eligibility for Medicare "Part A" (Hospital Insurance) and SMI benefits in accord with increases in Social Security's retirement age.*

5. *Tax the average insurance value of Medicare benefits not paid for by contributions of program participants.*

6. *Use a sliding-scale rate of up to 100 percent to tax away the insurance value of all unearned benefits for upper-income beneficiaries.*

Beyond these measures, a more fundamental restructuring of Medicare will be necessary in the long run if we want to move toward truly predictable and controllable public health-care spending. One good solution would be to design a voucher system based on prospective "capitation" payments. Each beneficiary would be issued a voucher (worth a fixed dollar amount) that could be used to buy coverage in any qualified insurance or health plan. The provider would be at risk for covering costs, and beneficiaries would have to pay out of pocket for the more expensive or "convenient" options.

Reforming long-term care for the elderly

Long-term care is one of the greatest challenges facing America in the next century. Today, the funding for 96 percent of nursing-home residents is split about evenly between personal sources and Medicaid; neither Medicare nor private insurance will cover it. A new universal fee-for-service entitlement would be prohibitively expensive, at least quadrupling what the public now spends for long-term care through Medicaid. A responsible policy must, instead, make extremely painful trade-offs, while doing its best to encourage family responsibility. A three-pronged strategy is the most sensible approach:

1. *Introduce a high (but absolute) Medicare "stop-loss" on the total cost of long-term care incurred by any elderly household* (perhaps a time ceiling of 3 years, or a cash ceiling of $75,000).

2. *Offer a modest Medicare home-care voucher with strict eligibility requirements.*

3. *Begin extensive experimentation with new forms of long-term care treatment and financing,* including prospective payment and tax-favored Individual Medical Accounts.

Reforming benefits for the poor

Our public efforts to extend health-care coverage to low-income Americans thorough Medicaid are in total disarray. And our only other income-related health-benefit program—tax deductions for employer-paid health-care—is entirely counterproductive. It gives to those who already have the most health care, and takes (through higher income taxes and higher medical prices) from those who have the least health care. We cannot achieve budgetary savings on Medicaid, but we can spend public funds more efficiently, while trying to ensure that all poor and near-poor Americans have access to at least a minimum level of medical attention.

1. *For poor and nonworking Americans,* we should "decouple" Medicaid eligibility from eligibility for Aid to Families with Dependent Children and SSI. A national choice not to pay cash benefits to many poor American families should not affect the very different national choice to see that these families are healthy. In addition, we should require that all states raise the income level of Medicaid eligibility to about the poverty line. Finally, we should move more states toward a system of prospective "capitation" payments.

2. *For low-income working Americans without health insurance,* we could require as a condition of employment that employees enroll in a Health Maintenance Organization or subscribe to minimal major medical coverage. Such a requirement could be enforced annually through the employer's tax filings; how employers and employees want to split the cost could be left up to them.

3. *We should repeal tax deductions for employer-paid health benefits.* These deductions constitute a poverty policy in reverse. Just to illustrate the magnitude of the potential savings, the extra $40 billion in tax revenues that repeal of these deductions would generate would be enough to more than double what the federal government currently spends on Medicaid.

The obstacles to entitlements reform are formidable, because policymakers are held captive by special interest groups, each with its bureaucratic and congressional constituency.

A worthwhile future

The measures outlined above are aimed at a more equitable distribution of our society's resources both between and within generations. But the obstacles to entitlements reform are formidable, because policymakers are held captive by special interest groups—each with its corresponding bureaucratic and congressional constituency—that perpetuate dangerous myths about the supposed social goals and benefits of these programs while ensuring their continual expansion.

Yet despite the formidable political obstacles, entitlements reform is of paramount importance, both to free up budgetary resources for new priorities—such as education, infrastructure, research and development, and genuine poverty relief—and to encourage a mounting level of net national savings over the next several decades. This additional savings must be sufficient, not only to substitute for the savings we now import from abroad, but also to finance higher levels of investment at home. We need entitlements reform not only to close the federal budget deficit, but more broadly, to redirect our economic resources toward the goal we all desire: a national future worth preparing for. •

1. *On Borrowed Time: How the Growth in Entitlement Spending Threatens America's Future* is a book that Neil Howe, a senior fellow at the Retirement Policy Institute, and I have written as an urgent appeal to rethink and reshape the federal entitlements system. The arguments in this article are expressed in considerably greater detail in the book.

2. Together accounting for 9.3 percent of federal entitlements outlays, the agricultural price-support system (which lacks a sound economic rationale) and unemployment compensation (the program with the soundest economic rationale) lie outside the focus of *On Borrowed Time* and this article.

FEATURES

Mark V. Nadel

THE RISE OF *POLITICAL* SCIENCE

Decisions on funding research and development are not as simple as they once were.

I do not believe that the national interest is being well served when year after year the bulk of the nation's federal research funds are channeled to a handful of already wealthy research universities.

John Silber, President of Boston University[1]

It is essential that steps be taken now to avoid sliding into decisions about what science will be done and who will do it that are based on which district has the most effective representative, or which institution has cultivated members most effectively, rather than which science should be done and who is best able to do it.

Robert Rosenzweig, President of the Association of American Universities[2]

ACCORDING TO ONE definition, politics is the process of determining "who gets what, when, and how."[3] Because the government allocates so many resources—money, power, honor—the political process invites pressure from all sides. Almost everyone mucks around in the public works pork barrel: mayors, governors, contractors, interest groups. And, of course, their lobbyists.

For decades, American scientists have prided themselves on remaining above this fray. They have received federal support through a process that is seemingly apolitical and, at least in theory, is based on merit—characteristics that have allowed scientists the luxury of feeling secure that their cause would forever command the nation's respect and resources. At the same time, this process—the peer review system—has also given scientists themselves strong influence over most funding decisions.

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But all that is history. The system of funding scientific research and facilities has begun to change. The Congress has become more directly involved, and politics and geographic distribution have become greater factors in decision-making. For the first time, the term "pork barrel" is being applied to scientific endeavors.

It may be cold comfort to scientists, but a major reason for science's heightened political profile is its importance. Expenditures on scientific research are increasingly seen as crucial to regional economic growth. The models are California's Silicon Valley, North Carolina's Research Triangle, and Massachusetts' Route 128 corridor, where the combination of research universities with substantial federal funding, high-tech firms and federal labs, and the presence of large numbers of scientists and engineers has spawned new companies and boosted economic prosperity. Other states are now establishing high-tech councils to attract scientifically oriented businesses and are looking to their congressional delegations to capture federal R&D funds.

On top of this increased activity by states, science has become increasingly expensive. Some of the recently proposed "big science" programs are enormously costly: the project to map the human genome, up to $3 billion; the Superconducting Supercollider, $5 billion; and the manned space station, $25 billion to $30 billion. The higher the sticker price, the more political attention an item attracts.

The critical issue is whether all this political attention is good for science—whether it hurts the quality of scientific research conducted in the United States and, consequently, whether it serves the national interest. Although these questions are difficult, perhaps impossible, to answer, they should continue to be raised as spending decisions are made and as present funding patterns evolve.

The current system

Expenditures for research and development (R&D) in the United States are almost equally split between industry and the federal government. This spending covers R&D on everything from medicine to spacecraft to weapon systems to consumer electronics, and is funded by such federal agencies as the National Institutes of Health (NIH), the National Science Foundation (NSF), the Defense Department, the Energy Department, and the National Aeronautics and Space Administration, as well as by private industry and universities.

A relatively small portion of this R&D is basic research—the quest for fundamental knowledge—as opposed to applied research, which seeks practical uses for that knowledge. Of the $64.6 billion the federal government spent on R&D in fiscal year 1988, it allocated about $9 billion to basic research. Although basic research, by definition, does not have immediate applications, it's not accurate to say that it will *never* have any. In fact, the federal government funds basic science precisely because it is believed that some, generally unpredictable, part of it may lead to important benefits.

Basic scientific research in the United States is conducted primarily in the universities, whose research depends heavily on the federal government. In 1988, federal agencies provided 62 percent of the estimated $11.7 billion spent at universities for research.[4] While the politicization of science affects scientists working in other settings, such as the national laboratories, it is the future

resources and direction of university science that are most on the line now.

Broad federal support for university research is a relatively recent phenomenon. It gained legitimacy only in the wake of World War II, during which scientists had proved their usefulness. In a highly influential 1945 report, *Science, The Endless Frontier*,[5] Carnegie Institution President Vannevar Bush recommended that the federal government assume responsibility for funding science in the nation's universities, that scientific grants be made on the basis of merit rather than political or social considerations, and that grants be awarded through an independent agency. The original legislation establishing NSF reflected this report, specifying that the agency should have an unusual amount of independence—for example, the President would not even be able to appoint the agency's director.

President Harry Truman used his veto to force changes in the NSF charter, since he was determined to make NSF more accountable to the President and the Congress. Nevertheless, the science funding process has provided a shield against political pressures. For decades, NIH and NSF grants for basic scientific research in universities generally have been allocated according to a system known as peer review.[6] Under this arrangement, university scientists propose individual or group research projects to the funding agencies, and these proposals are reviewed by other independent scientists—the "peers"—who advise the agency on whether to fund the project. While this advice is not binding, the peer reviewers' decisions are, in fact, rarely overturned and only major institutional awards are reviewed at the top levels of agencies.

The rationale for peer review is that it provides the best system of ensuring that only first-rate scientists and research projects receive funding. Indeed, some see it as a key element of the post-World War II political contract concerning federal support for basic research:

> "The unique feature of that contract was the assumption that science would best serve the public interest if scientists, as private citizens, retained decisive influence over how public funds were spent to support scientific activities. The integrity of peer review was regarded as essential in making that part of the contract workable."[7]

Peer review is supposed to ensure that the best scientific research is funded regardless of where it is done. But *where* is very much an issue. As GAO showed in a 1987 report, research grants are concentrated in a relatively small number of universities and states. In 1984, for example, the top 20 universities received 42 percent of total federal research funds.[8]

This concentration has long been a source of controversy. In the 1940s, when Vannevar Bush called for funding only the most meritorious projects, it was recognized that such a system would channel resources to the most well-equipped and high-prestige institutions—primarily in the Northeast and in California. In 1942, Senator Harley Kilgore of West Virginia had proposed an alternate system, under which science funding would be subject to political control and considerations of geographic equity; similarly, state universities and land-grant colleges advocated that funds be distributed on a state-by-state formula basis.

In acknowledgment of these interests, the NSF charter stipulates that geography be factored into funding decisions. Yet this requirement seems to have been largely ignored, leaving the peer review system open to charges that, in geographic terms, grant money is distributed inequitably. Lately the system has also been accused of logrolling and elitism. According to Boston University

President John Silber, peer review is not an objective process but an "old boy network."[9] Indeed, a survey of scientists by the national scientific honorary society, Sigma Xi, found that, despite general support for peer review, 63 percent of the 4,100 scientists responding agreed that the "procurement procedure for grants to do governmentally sponsored research depends on 'who you know.'"[10]

But even if the critics are correct and the peer review system has been distorted, it has not been subjected generally to the political pressures affecting most decisions about allocating resources. True, the Congress has bypassed the normal review system to provide money to favored institutions—the late Senator Warren Magnuson, for example, was legendary in his generosity to the University of Washington medical school—but such endowments have been widely regarded as add-ons. The basic system, with scientists deciding who and what gets funded, has for the most part gone essentially unchallenged.

Toward a new model

Now, however, political considerations are beginning to impinge on funding for basic scientific research. Just as the Congress has long directed the construction of particular federal office buildings, roads, and bridges, so too has it increasingly earmarked funds for specific scientific facilities—without submitting these plans to merit reviews by the traditional funding agencies. Between 1980 and 1986, the number of colleges and universities receiving specific appropriations increased from 12 to 62.[11] By fiscal year 1988, such grants totaled $225 million.[12] And although funding agencies were excluded from decisions about these expenditures, they were directed to finance these facilities out of their budgets. The Department of Energy (DOE), for example, was instructed to fund a pediatrics research center at Pittsburgh's Children's Hospital.

So far, nearly all these earmarked funds have gone to facilities rather than to specific research projects. Such grants are a response to a genuine need: Between 1963 and 1984, federal funding for facilities had decreased by 85 percent in constant dollars—from $325 million to $46 million.[13] Most observers argue that these meager levels created the recent pressure on the Congress for substantially increased facilities funding.

Earmarked funds have also had the effect of spreading the wealth. Most of these funds have gone to universities that haven't been competitive in the peer review process. In 1986, for example, universities that ranked below the top 100 in federal research funding received only 14 percent of total federal research grants but 71 percent of earmarked funds.[14]

Generally, this trend toward earmarked funds—"pork barrel science," if you will—still has only limited direct impact. The peer review system remains intact, and about two-thirds of federal research funding to universities continues to cover a large number of relatively small individual projects, very few of which will be earmarked. But the overall funding system does seem to be in a certain amount of flux. For example, in fiscal year 1988 the Congress prohibited the Defense Department from spending more than 14 percent of the funds under its University Research Initiative in any one state. As a result, California schools alone lost $11 million in anticipated funding. The 1988 budget also contained the first funds ever earmarked for specific nonagricultural

research *projects*. And in the 1989 NSF authorization, the Congress required the agency to consider institutional and geographic balance in its funding of research centers and facilities modernization.

Budget pressures

Adding to the uncertainty over the future of science funding is the huge U.S. budget deficit, which will increase political pressures on federal support for R&D. Any cuts that would be easy to make have already been made, and a large part of the budget consists of items that cannot currently be reduced because they are legally or politically sacrosanct.

As a result, discretionary items—R&D among them—are subject to ever greater scrutiny. Though federal R&D spending constitutes only 7 percent of total federal expenditures, it is 22 percent of that part of the budget considered relatively controllable. R&D is scattered among nine congressional appropriations subcommittees, and in each one it must compete against nondiscretionary programs. Therefore, when subcommittees are forced to reduce total spending, R&D may have to absorb disproportionate cutbacks.[15]

NSF already has been affected by these pressures. Its appropriation goes through the HUD-Independent Agencies subcommittee, where it competes with housing programs and the Department of Veterans Affairs. The White House had announced plans to double the NSF budget over 5 years, beginning in 1988; but instead of approving the requested 17-percent increase to $1.89 billion in fiscal year 1988, the Congress approved only $1.72 billion. As one observer noted, "Anyone who thinks Congress can give a 20-percent increase to NSF by cutting veterans' health benefits needs professional care."[16]

Quality and independence

The key issue, especially in light of the budget crunch, is how geographic and political considerations will affect the quality of U.S. scientific research. The case for peer review, after all, rests on the argument that by providing for independent expert judgment it yields the highest quality science. Despite some qualms about the system's fairness, most scientists subscribe to this argument. The question they raise is whether increased political direction of funding for major facilities will lead to poorer quality science than a system based on the judgment of experts.

On one side are those who say no—that scientific quality won't suffer and that peer review doesn't necessarily serve the interests of quality anyway. According to some universities that are now receiving congressionally earmarked funds, their previous inability to win federal grants resulted from the peer review system's bias toward prestige institutions. As Georgetown University Vice President Reverend T. Byron Collins complained, "With the so-called peer review system, how can other institutions develop their abilities?"[17] Indeed, proponents of spreading funds around argue that overall scientific vigor will increase through the creation of more centers of excellence.

Also arguing in favor of earmarking, some Members of Congress have admit-

ted more explicitly political motives. Former senator Russell Long asked, "When did we agree that the peers would cut the melon or decide who gets this money? I have been around here for a while. I do not recall that I ever agreed to that."[18] Other Members have argued that although individual research projects should continue to be decided only by expert peer review, decisions about large research facilities and programs have so much local and national impact that political considerations are legitimate and even necessary.

The danger is that projects will be supported not on the basis of scientific merit but according to their direct value to a constituency. Indeed, this seems to be a growing trend. For example, the Superconducting Supercollider, a proposed $5 billion high-energy physics facility, was broadly supported in the Congress when 25 states were being considered as possible sites. But after DOE cut the list down to 7 states in January 1988, congressional enthusiasm waned.[19] Only $100 million was allocated to the project in 1988—considerably less than the $363 million requested by the President. Rarely has localism been so apparent in the Congress's handling of a major science program.

Fearing that just such incidents will become more commonplace, many have argued that increased politicization of science funding *will* lower the quality of U.S. scientific research. According to these critics, pork barrel tactics "violate the understanding that available resources are to be allocated in the best overall interests of science—and the public—rather than in the interests of individual claimants, no matter how qualified or deserving they may be."[20]

But the Congress has made it clear that it doesn't necessarily share this "understanding." Although scientific merit will continue to be the dominant consideration, the definition of "merit" will broaden, encompassing questions of geographical distribution. Science is becoming more like defense: Even when a mission is critical, many competing goals and agendas affect its funding and execution. For example, given the near impossibility of closing a military installation when the affected region's congressional delegation opposes such a move, Congress finally had to remove itself from the primary decision-making process and rely on an independent commission for base closings.

Some scientific leaders have recognized that this is an era of limited resources and have called for the scientific community itself to set the agenda for federal science spending. National Academy of Sciences (NAS) President Frank Press has suggested creating a list of priorities for science funding—a list topped by training and research grants designed to ensure a future supply of U.S. scientists.[21] Some Members of Congress have been requesting this kind of advice. For example, in the 1988 conference report the House and Senate Budget Committees asked for guidance on priorities from the NAS, the National Academy of Engineering, and the Institute of Medicine. How

much influence scientists will have, however, remains to be seen. Having lost their insulation from political control, they may also have lost some of their power to set the nation's science agenda. In any case, setting broad priorities still leaves open the big question of exactly where funds will be spent. And as Tip O'Neill once noted, all politics is local politics. •

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13. *Appendices to Bricks and Mortar.*

14. John Walsh, "Adapting to Pork-Barrel Science," *Science*, Vol. 238, No. 4834 (Dec. 18, 1987), p. 1639.

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17. Quoted in the *New York Times* (Aug. 24, 1988), p. B9.

18. Quoted in the *Washington Post* (Mar. 22, 1988), p. A4.

19. "Budget Crunch Stalls Super Collider," *Science*, Vol. 240, No. 4848 (Apr. 1, 1988), p. 17.

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Mark A. Pross

THE NATIONAL AERO-SPACE PLANE

Two hours to Tokyo? Right now, it's one step at a time.

THE YEAR IS 2014. You're working at your desktop computer when suddenly a message from your Tokyo office begins to appear on the screen: "JAPANESE REQUEST URGENT MEETING HERE 10 A.M. TOMORROW REGARDING PACIFIC RIM TRADE BARRIERS." You key in airline reservations, and the computer issues a ticket on Northwest Orient's Hypersonic[1] Transport Flight HST-001.

The next day, at Washington's Dulles Airport, you board a needle-nose aerospace plane that is windowless and nearly wingless. This is one flight on which you don't need to be reminded to fasten your seat belt: On takeoff, gravitational forces caused by the tremendous surge of power from the supersonic combustion ramjets (scramjets)[2] pin you back in your seat.

Shortly after takeoff, flight data on the individual video display screen atop your folding tray table indicate that you have already gone through the sound barrier (Mach 1).[3] The aerospace plane reaches hypersonic speed—Mach 5—in just 18 minutes and is cruising at an altitude of 150,000 feet. Nine minutes later, the aerospace plane, now over California, begins its race with the sun across the Pacific. There is no time for a movie; the flight to Tokyo's Narita Airport takes only 1 hour and 57 minutes. You arrive in time for your meeting—but your luggage has been routed to Rio de Janeiro. Some things change; some don't.

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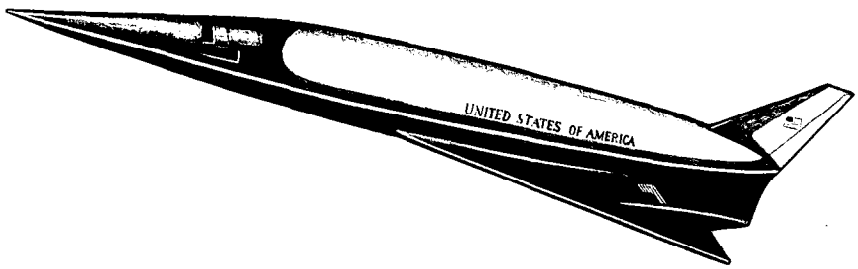
The National Aero-Space Plane program

Although the capability to fly between Washington and Tokyo in less than two hours is still a fantasy, 25 years from now it may be routine. Some of America's best scientists and engineers are working on a program to provide a technological basis for future hypersonic flight vehicles that have technical, cost, and operational advantages over existing military and civilian aircraft and space launch systems. The program's objective is to develop and then demonstrate in a manned experimental flight vehicle—the X-30—the technologies necessary for future operational hypersonic airplanes and/or single-stage-to-orbit space launch vehicles[4] that could deliver payloads into orbit more quickly, reliably, and inexpensively than today's space shuttle. This program is the National Aero-Space Plane (NASP) program.[5]

Conducted jointly by the Department of Defense (DOD) and the National Aeronautics and Space Administration (NASA), the NASP program is a technology development and demonstration program to build and test the X-30 experimental flight vehicle.

The X-30 is being designed to take off horizontally from a conventional runway, reach hypersonic speeds of up to Mach 25, attain low earth orbit, and return to land on a conventional runway.

The NASP program was established in December 1985, after three years of initial research by the Defense Advanced Research Projects Agency



(DARPA) indicated that developing an aerospace plane was feasible. During the NASP program's current phase, from 1985 to 1990, key technologies and components are being developed and tested. If, at the end of this phase, the technologies are mature enough to warrant proceeding with the project, then the next phase between 1990 and 1994 will involve building and testing three X-30 experimental vehicles—two for flight testing and one for ground testing. Based on the results of the NASP program, a decision could be made in the mid-1990s on developing future hypersonic cruise airplanes and single-stage-to-orbit space launch vehicles. Assuming the program is successful, a prototype could be built by the late 1990s.

The greatest programmatic risk the NASP program faces is meeting its schedule. The program's goal to design, fabricate, and flight-test the X-30 by the end of fiscal year 1994 is ambitious. Although its milestones may ultimately be achievable, they may be delayed by design and integration problems, test failures, or cuts in funding.

Why is the X-30 being developed now? First of all, significant technological advances and even breakthroughs make development of the X-30 possible. Also, by the year 2000, space shuttle technology will be over 30 years old and SR-71 strategic reconnaissance aircraft technology will be about 45 years old. Future aerospace planes would probably not replace these vehicles completely, but they could have important military, commercial, and space exploration applications—from high-altitude reconnaissance to space rescue missions to high-speed passenger transportation—and would, therefore, add a crucial measure of versatility to America's fleet of aircraft and its space launch capability. Given that the development of a major new space launch system takes 15 to 20 years, work must begin now if an aerospace plane is to be operational by the first decade of the 21st century.

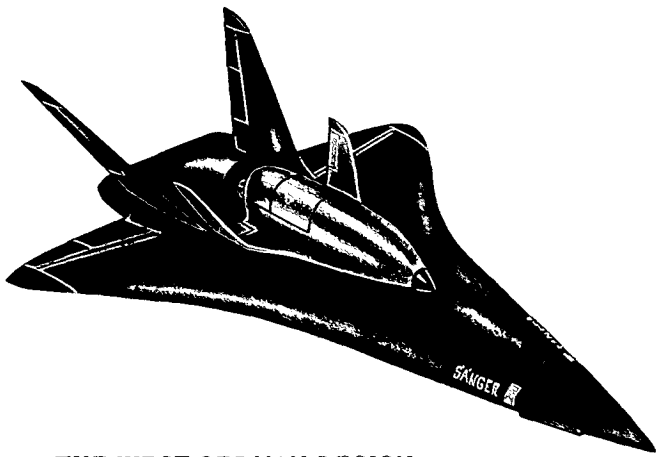
Moreover, America's principal competitors—the Europeans, Soviets, and Japanese—are developing aerospace plane concepts and reusable space launch system technologies to secure independent access to space and to reduce costs of launching payloads into orbit. The military and commercial payoffs are simply too great for the United States to relinquish its traditional technological and aeronautical leadership.

This is true despite the X-30's high sticker price. The NASP program is expected to cost more than $3.3 billion between fiscal years 1986 and 1994. Options are extra. DOD plans to ante up about $2.7 billion, or approximately 80 percent of the total costs, and NASA plans to kick in about $675 million, or around 20 percent of the total. This total does not include about $5.5 million for DARPA's initial concept study; about $500 million in NASA contributions between fiscal years 1986 and 1994 for personnel, facilities, and utility costs; and about $728 million in industry contributions between fiscal years 1986 and 1990.

The X-30 experimental vehicle

Some confusion exists about what the X-30 is—and isn't. The X-30 will not be a prototype[6] or an operational vehicle. Instead, it will be an experimental vehicle or "flying test bed" in which technologies will be demonstrated. It will not carry any passengers or operational payload. In fact, its payload will only consist of two crew members and test instrumentation. The X-30 will be smaller than future operational aerospace vehicles.

The X-30 has no operational mission or requirements. Although future operational aerospace vehicles will be based on the technologies demonstrated by the X-30, they are not themselves part of the NASP program. Finally, the X-30 is not the "Orient Express"—a term often used to describe a future commercial version of an aerospace plane.



THE WEST GERMAN DESIGN

West Germany's Sanger II Advanced European Space Transportation System is conceived as a two-stage space launch vehicle capable of horizontal takeoff and landing from European airports. The first stage is expected to be an air-breathing hypersonic aircraft; the second stage is expected to consist of either a manned passenger or an unmanned cargo vehicle. Considered a logical follow-on to the ESA Hermes Spaceplane, it is not expected to be operational before 2005.

The X-30's most important characteristic, and the one that presents the biggest technical challenge, is its single-stage-to-orbit space launch capability using air-breathing propulsion. If successful, this capability could lead to assured access to space and significantly reduce costs compared with the space shuttle and other planned launch vehicles.

For one thing, the X-30 will be reusable rather than refurbishable, like the shuttle, or expendable, like other spacecraft. Moreover, the X-30 will be easier to maintain and thus will have a quicker turnaround time than the shuttle. It will have an air-breathing propulsion system and an internal hydrogen tank that are cheaper and lighter than the shuttle's solid rocket boosters and external fuel tanks. Its weight could be as low as one-tenth that of the shuttle; it could launch a human into orbit for as little as $6,000, compared with the current $1 million cost on the shuttle.

Overall, then, a future operational aerospace plane is expected to accommodate a greater payload per pound of vehicle and per pound of fuel used than the existing shuttle. (For some missions, however, it may turn out that other vehicles are more cost-effective than an aerospace plane.)

A single-stage-to-orbit space launch vehicle could perform various tasks. NASA could use it to ferry astronauts and supplies to and from the proposed space station and to conduct space rescue missions. Several agencies and military services could use it to launch, service, repair, and retrieve satellites used for communications, surveillance, navigation, and weather monitoring. And the Air Force and the Navy could use it for high-altitude reconnaissance.

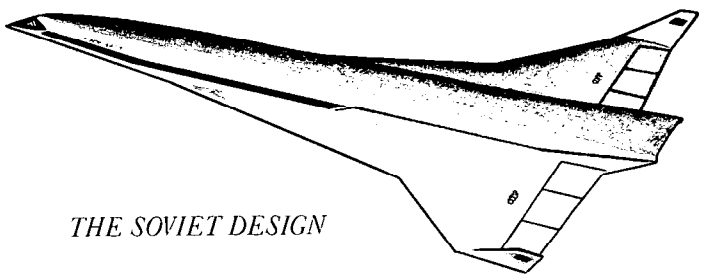
The second most important design goal is sustained hypersonic cruise capability in the atmosphere between speeds of Mach 5 and 14. Besides transporting passengers and cargo in dramatically less time than current aircraft, a future hypersonic airplane would have numerous potential military applications, such as long-range airlift, strategic bombing, interdiction, reconnaissance, surveillance, and precision targeting and weapons guidance missions.

Another key characteristic of the X-30 will be its ability to take off and land horizontally using conventional runways. This would allow flexibility in basing a future military version of a single-stage-to-orbit aerospace plane and increase its survivability by eliminating U.S. reliance on just two principal space launch complexes (Cape Canaveral in Florida and Vandenberg Air Force Base in California). Horizontal takeoff and landing capability will also permit future passenger-carrying hypersonic aircraft to operate from commercial airports.

These are just some of the possible applications envisioned at present; others will depend on the needs of particular users. Potential users of future aerospace vehicles, such as the Air Force, the Navy, the Strategic Defense Initiative Organization, NASA, and commercial aviation, will probably not identify specific missions and opera-

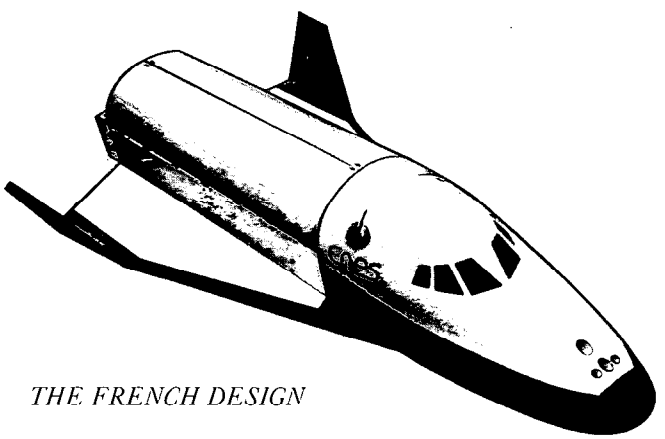
tional requirements until the X-30's capabilities have been demonstrated. A prototype vehicle probably won't resemble the X-30 experimental vehicle. The X-30 will be designed to demonstrate both hypersonic cruise and single-stage-to-orbit space launch capabilities. A prototype or operational vehicle, on the other hand, would most likely have one or the other, but not both, of these capabilities. An operational military aerospace plane would probably be developed first, followed by an operational commercial aerospace plane 10 to 15 years later.

It's worth noting that the X-30 and the operational aerospace planes that may follow it aren't likely to trigger the environmental concerns that supersonic transport planes have. For one thing, because hypersonic airplanes will fly at higher altitudes, where the air is thinner, their sonic boom is expected to be only about one-third that of a supersonic plane, such as the Concorde. Moreover, the exhaust fumes from hypersonic airplanes will consist primarily of water vapor, which, unlike those from supersonic transports, should have little or no adverse effect on the earth's ozone layer.



THE SOVIET DESIGN

The Soviet Union has conducted flight tests of sub-scale experimental aerospace vehicles and has exhibited a model of a hypersonic cruise airplane. A full-scale Soviet aerospace plane is expected to take off horizontally using rocket engines, climb into the upper atmosphere or attain low earth orbit, and land on a conventional runway.



THE FRENCH DESIGN

The European Space Agency's (ESA) Hermes Spaceplane—based on a French proposal—is being developed as a manned, reusable, shuttle-like winged reentry vehicle to be launched by the Ariane 5 rocket booster, also under development, from ESA's Kourou Space Center in French Guiana. Expected to become operational in 1999, Hermes would be used primarily to transport astronauts and supplies to the Columbus module of the planned U.S. space station.

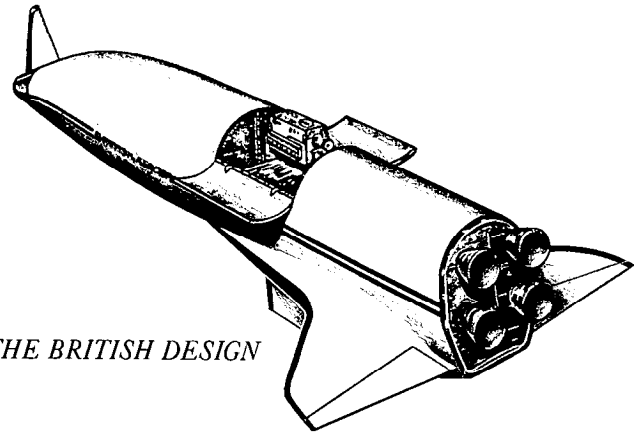
Technological innovation

The NASP program is a testing ground not only for future operational aerospace vehicles, but also for technologies now in their early phases—technologies at the cutting edge. Specifically, the NASP program consolidates and focuses U.S. research and development in hypersonic aerodynamics. In addition, the technologies that are developed will have many spinoffs and future applications that will benefit other space programs and could revolutionize aircraft development, turbo engines, and perhaps ground transportation as well. Therefore, even if the X-30 is not built, or if the NASP program does not proceed beyond flight testing of the X-30, the research conducted under the program will greatly augment current scientific knowledge and technical expertise.

The X-30 may be the most complex vehicle ever built. It is being designed to fly 10 times faster and higher than existing air-breathing aircraft. The most critical technological challenge the NASP program faces, then, is to create an air-breathing propulsion system that can operate efficiently over a range of speeds from takeoff to Mach 25. Various propulsion concepts will be integrated into this system, including low-speed propulsion options to accelerate the X-30 from takeoff up to speeds of about Mach 3; ramjets for speeds between Mach 3 and Mach 6; scramjets

between Mach 6 and Mach 25; and rocket propulsion for the X-30's final ascent into orbit, for maneuvering while in orbit, and for deorbiting.

The X-30 will also require advanced materials. It will need to be as light as possible, in order to minimize the fuel and thrust required by the engine. Its materials will also have to be able to withstand the extremely high temperatures caused by air resistance at hypersonic speeds. The temperature of the X-30's nose cone, for example, could reach a searing 5,000 degrees Fahrenheit. The materials developed to meet these conditions could also prove useful in automobile engines and supersonic aircraft.



THE BRITISH DESIGN

The British Horizontal Takeoff and Landing (HOTOL) vehicle is being designed as an unmanned single-stage-to-orbit, fully recoverable and reusable space launch vehicle to be launched by a rocket-powered wheeled trolley or sled from a conventional runway. If fully supported, an unmanned version could become operational in 1997 and a manned version in the year 2000.

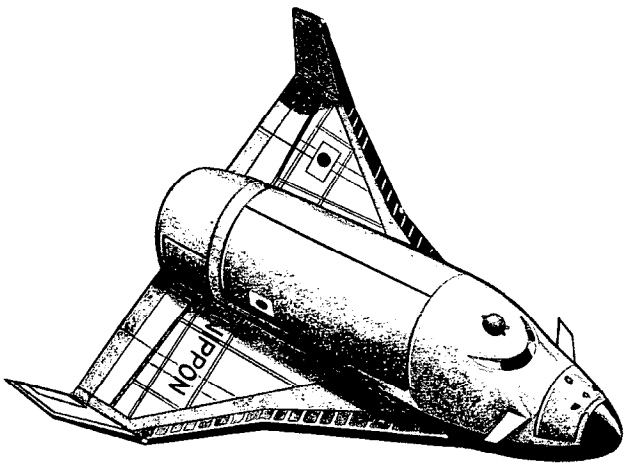
In addition to heat-resistant materials, the X-30 will require new thermal control technologies. One candidate for a coolant is liquid hydrogen, supercooled to minus 400 degrees Fahrenheit, which will also serve as the X-30's fuel. Both liquid hydrogen and slush hydrogen (a mixture of liquid and frozen hydrogen, not unlike a 7-Eleven Slurpee) are being considered for use as a fuel.

Another of the NASP program's technological innovations will involve the design of the X-30's body. The X-30 is expected to be the first vehicle whose airframe is fully integrated with the engine—one might almost say that it will be an engine with a body wrapped around it. The entire underside of the X-30's forebody, from the nose cone to the scramjet, will function as an air inlet. By compressing and channeling the incoming air, it will increase the engine's air intake and thereby improve the scramjet's performance. Similarly, the entire underside of the X-30's afterbody, from the scramjet to the tip of the tail assembly, will serve as the engine's exhaust nozzle. This too will enhance efficiency, since the engine's thrust derives partly from the pressure the exhaust exerts on the afterbody.

The NASP program is also noteworthy for its reliance on advanced computer techniques. Currently the program utilizes a significant portion of America's supercomputer capacity. In addition, the NASP program is extensively using computational fluid dynamics[7] to simulate air flows, high temperatures, and pressure contours around various design configurations of an aerospace plane and within the scramjet at high-Mach speeds. Computational fluid dynamics is also used to simulate the X-30's performance between speeds of Mach 8 and 25, where ground test facilities or capabilities do not exist and actual test data are not available.

Looking ahead

But however useful they may be, neither ground test facilities nor computer simulations can provide all the required information about the X-30's actual flight conditions. Therefore, the X-30 is being developed as a "flying test bed" to assess these new technologies at speeds between Mach 8 and 25.



THE JAPANESE DESIGN

The National Space Development Agency of Japan is conducting research and development on an unmanned, fully autonomous space transportation system known as the H-II Orbiting Plane (HOPE), as well as a future manned spaceplane. HOPE would be launched by the H-II rocket booster, also under development, from the Tanegashima Space Center in Japan. A key objective of the HOPE program is to acquire key technologies and conduct in-flight experiments for the Japanese spaceplane. HOPE is expected to be operational in the late 1990s; the spaceplane is not scheduled to be developed until the 21st century.

As we have seen, hypersonic airplanes and single-stage-to-orbit space launch vehicles that are likely to follow the NASP program will have importance for future U.S. military, commercial, and space activities. And these activities are crucial to U.S. economic strength and national security. Aeronautics has always played an essential role both in American defense capabilities and in employment, transportation, and exports. Perhaps most importantly, projects such as the NASP program stimulate high-tech innovation. Because new technology has traditionally been an area of U.S. strength, activities that contribute to it have the potential for reviving and reinforcing the nation's overall economic competitiveness—an important consideration at a time when U.S. technological and aeronautical leadership is being challenged by foreign countries' development of operational aerospace plane technologies. The National Aero-Space Plane could provide us with more than a peek at what's to come; it may be the key to unlocking the door to fast flight's fantastic future. •

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1. Hypersonic refers to a range of speed that is five times or more the speed of sound in air (761.5 miles per hour at sea level). Supersonic refers to a range of speed between about one and five times the speed of sound in air.

2. A ramjet is an air-breathing engine that compresses (or "rams") the onrushing air and slows it down to subsonic speeds. It is then burned with the fuel in the combustion chamber. Ramjets are the primary propulsion system for aircraft operating at supersonic speeds of about 2 to 5.5 times the speed of sound in air. A scramjet is an air-breathing engine in which air flows through the combustion chamber at supersonic speeds. Hydrogen is injected into the combustion chamber where it is ignited by the hot air. The exhaust is expelled through the nozzle, causing the thrust. Scramjets operate at speeds of about 4 to 25 times the speed of sound in air.

3. Mach number refers to the ratio of the speed of an object to the speed of sound in the atmosphere. An object traveling at Mach 1 is moving at the speed of sound. Because the speed of sound is a function of temperature, it varies at different altitudes.

4. A single-stage-to-orbit space launch vehicle is one that can be launched horizontally from earth into orbit without relying on booster rockets or external fuel tanks that are dropped off during flight.

5. For a more detailed and technical description of the NASP program, see the GAO report: *National Aero-Space Plane: A Technology Development and Demonstration Program to Build the X-30* (GAO/NSIAD-88-122, Apr. 27, 1988).

6. A prototype is the first full-scale and usually functional model of a new type or design of vehicle.

7. Computational fluid dynamics is the use of advanced computer programs for predicting the aerodynamics and fluid dynamics of air around flight vehicles by solving a set of mathematical equations with a high-speed digital computer. Computational fluid dynamics is used in the NASP program to improve the understanding of hypersonic flow physics and as an aerospace plane design tool.

PODIUM

Charles A. Bowsher

THE DISINVESTMENT OF GOVERNMENT

IN WASHINGTON: The James E. Webb Lecture for Excellence in Public Administration, December 1988

The annual James E. Webb Lecture is named for one of the chief founders of the National Academy of Public Administration (NAPA). Mr. Webb was formerly Director of the U.S. Bureau of the Budget, Undersecretary of State, Administrator of the National Aeronautics and Space Administration during its most successful years, and President of the American Society for Public Administration. This year's lecture was delivered by the Comptroller General at NAPA's installation of new Academy Fellows on December 2, 1988. The accompanying text was adapted from his remarks.

THE MOST PRESSING crisis facing the United States today is the federal budget deficit. For years, outside observers and government officials alike have decried the growing accumulation of red ink. But despite volumes of rhetoric, the government has yet to successfully confront the deficit. It has become a hindrance to the nation's future security and an embarrassment to the American people.

The ramifications of the budget deficit go far beyond the sheer size of the mounting accumulation of debt. Among other things:

- The budget deficit has exacerbated the trade deficit, complicated pressing foreign policy issues, and caused U.S. allies to question whether the United States can long continue to maintain its role as the economic and military leader of the Western world in the face of its growing levels of debt.

- The nation's annual debt service has become an engine driving the largest transfer of wealth in history—much of it from ordinary American taxpayers to foreign investors. Six short years ago the United States was the world's leading creditor nation. Today, it is the world's largest debtor. The situation grows worse with each passing month.

- The deficit has helped finance the longest period of peacetime economic growth in the postwar era, but at a severe cost to our children and grandchildren. Unless the country restrains itself, the debt will not only become a crushing financial burden for future generations, but may also set the stage for a massive social upheaval as interest groups come to blows over a shrinking economic pie.

- The deficit has severely hampered the ability of the Congress and the administration to deal with emerging issues that are of growing importance to the American people. These range from AIDS research and treatment to rebuilding the country's deteriorating physical infrastructure.

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These problems stemming from the deficit are relatively well known. But there is another consequence of our budget crisis that has only recently begun to emerge and that should trouble all who care about effective government. Simply put, the nation is falling behind in the investment needed to keep the most basic government programs on track.

This failure to invest sufficiently in key operations of government has a number of unpleasant consequences. First, it undercuts the government's ability to offer the American people the one thing they have every right to expect—a federal government that works well in providing services. Second, because government operations affect U.S. dealings with other nations—in trade, diplomacy, law enforcement, defense, and other areas—such a failure has international ramifications. Third, because government operations are linked with the smooth functioning of the private sector (in ways many Americans do not fully understand), the nation's business community is inevitably affected when the central operations of government do not receive adequate investment.

SIMPLY PUT, THE UNITED STATES IS FALLING BEHIND IN THE INVESTMENT NECESSARY TO KEEP THE MOST BASIC GOVERNMENT PROGRAMS ON TRACK.

By central government functions, I mean those things expected of the government of any modern industrial nation. Two categories come readily to mind:

• There are certain critical functions so basic that no nation could long exist without them. Two obvious examples are the military services, which defend national security, and the Internal Revenue Service (IRS), which collects the taxes to pay for all government operations.

• Beyond basic functions, a nation must provide those services that are critical to the functioning of a modern economy, such as regulation of financial institutions and provision for an efficient transportation system. Specific examples of these operations are the Federal Home Loan Bank Board and its subsidiary, the Federal Savings and Loan Insurance Corporation, and the Federal Aviation Administration (FAA).

The examples mentioned here—defense, the IRS, the regulators of the thrift industry, and the FAA—are broadly representative of the strains now being placed upon key federal programs, largely as a result of the deficit. Each of these four, in different ways, faces new and complex challenges. Each must adapt to meet new pressures or to fill unmet needs. Their future success will depend on how well the country invests in systems to make them run efficiently and in people to make them operate effectively. (By "systems," I mean not only computers but also such factors as management structure and regulatory administration; similarly, investment in people means, in addition to hiring more workers or increasing pay, fostering strong leadership, high morale, and a commitment to excellence and service.)

Let me take each of these four program areas in turn and discuss some of the fallout from the budget deficit on their operations.

Defense

Between 1980 and 1985, the military budget doubled. Many observers—myself included—have long argued that a large number of the problems at the Pentagon stem from a buildup that was too much, too fast. It now seems realistic to expect that billions of dollars worth of weapon systems currently on the drawing boards or in progress will have to be cut to meet the spending limits that the Congress will likely impose in coming years. Yet the most recent 5-year defense plan, drafted for fiscal year 1988, is still overloaded by at least $200 billion. Affordability, then, is the key issue in the current debate over the defense budget. The Pentagon must start making rational choices on the basis of likely resources.

THE DEBATE OVER THE DEFENSE BUDGET HAS FOCUSED ON HARDWARE, SKIRTING QUESTIONS ABOUT FLAWED MANAGEMENT SYSTEMS, ANTIQUATED PERSONNEL POLICIES, AND POOR PLANNING.

But the debate over the defense budget has focused on the hardware—tanks, ships, and planes—that claims the lion's share of defense spending, and has skirted questions about flawed management systems, antiquated personnel policies, and poor planning. For example, the country may decide that it is too expensive to build all the ships the Navy wants. But can the country afford *not to have* the management systems that would allow the Navy to design, build, test, and procure better ships with the limited resources it is allocated? I think the answer is self-evident.

Over the past several years, the General Accounting Office has identified numerous problems at the Pentagon. GAO has reported on dollars spent for unneeded inventories, on technical problems and cost overruns on major weapon systems such as the B-1B bomber and the new air-to-air missile (the AMRAAM), and on inadequacies in the testing of new weapons. All of these problems and more have their roots in management systems that do not work well.

As for personnel, defense programs must have first-rate people at all levels. For example, those who are charged with negotiating procurement contracts are clearly outgunned by the experts sent by contractors to the negotiating table. Government administrators need to increase the professionalism of the procurement work force, giving them greater prestige and compensating them accordingly. The same can be said of other elements of the Pentagon work force.

On a broader front, it makes little sense to retire military personnel at the peak of their careers, especially when the Pentagon needs highly trained people. The current policy of full retirement after 20 years of service amounts to disinvestment and should be opened for reconsideration.

Larger questions about national security need to be taken up as well. America's present defense posture is basically an extension of policies developed after World War II—an event that is nearly a half-century in the past. The nation is now approaching one of those times in its history when events force a major reevaluation of basic policy. The growing cost of defense, including the cost of overseas

commitments; a sense that U.S. allies should contribute more to their own defense; troubling questions about expensive weapons that do not work; and continuing revelations of fraud, waste, and abuse throughout the military-industrial complex are causing increasing doubts about defense policy in the Congress and among the American people.

As this debate continues, it should be recognized that quality management systems and investment in recruiting, training, and keeping good people are critical elements in carrying out any policy and in providing an affordable, first-rate defense.

The IRS

As the tax collector for the nation, the Internal Revenue Service deals with virtually every American, every year. The IRS once enjoyed a reputation for running the finest tax collection system in the world. It was emulated by other nations envious of its efficiency and of the American public's remarkable record of voluntary tax compliance. Many state and local tax codes were designed to complement the federal tax code, and local tax agencies looked to the IRS as a model for their own efforts.

THE INTERNAL REVENUE SERVICE MUST ATTRACT TOP GRADUATES IN THE ACCOUNTING, LEGAL, AND COMPUTER SCIENCE FIELDS—A DIFFICULT TASK AS FEDERAL PAY IN THESE JOBS LAGS FURTHER BEHIND THE PRIVATE SECTOR EVERY YEAR.

Today, the IRS faces a number of worrisome problems, as management and program reviews by GAO have revealed. One symptom of trouble is the fact that the IRS examined 42 percent fewer returns in 1987 than it did in 1978—a decline from 2.3 percent to 1.1 percent of filed returns. The agency estimates that taxpayers will fail to pay more than $87 billion in taxes owed in 1988, and that this amount could exceed $100 billion by 1992. Fewer audits and lax collection and enforcement fuel a belief that many taxpayers are cheating the system, inviting public cynicism about its fairness.

To improve its enforcement efforts as well as the general efficiency of the agency, the IRS must invest heavily in new automated systems, replacing those designed 20 or 30 years ago. The tax return of someone living in the Boston area, for instance, is processed locally by a very antiquated system. The data must then be sent to West Virginia, where it is entered into the central system. Finally, if a refund is due, the Treasury office in Philadelphia must be notified to process the check. Each movement in this chain involves delay and invites errors. Up-to-date automated systems are capable of far greater speed and efficiency. Designing, building, and installing new automation systems for the IRS is critical.

But better systems alone won't solve the IRS's problems; the agency must also invest in people. The IRS must attract top graduates in the accounting, legal, and computer science fields—a task that is increasingly difficult as federal pay in these jobs lags behind the private sector more every year. While all government agencies face problems in competing for qualified people, the need is especially acute at IRS, since without high-quality staff the agency will find itself at a disadvantage in dealing with lawyers and accountants from private firms. An agency that is so central to the operations of government can ill afford outdated systems and a work force that is less than the best.

The thrift industry and its regulation

Among the achievements of the New Deal was the reform of U.S. financial institutions in the wake of the 1929 stock market crash and the Great Depression. By and large, the reforms of the 1930s served the nation well for many decades, providing stability, protecting consumers, and fostering confidence.

EARLY IN THIS DECADE, THE FEDERAL HOME LOAN BANK BOARD FAILED TO INVEST IN BETTER REGULATORY SYSTEMS TO SUPERVISE A CHANGING THRIFT INDUSTRY AND IN THE SKILLED PEOPLE NEEDED TO KEEP CLOSER TABS ON INDIVIDUAL INSTITUTIONS. THIS LACK OF SUPERVISION WAS A PRESCRIPTION FOR DISASTER.

Then, a decade ago, the situation began to change. Interest rates surged, pressuring banks and the thrift industry to finance riskier but potentially more lucrative investments. Meanwhile, distinctions among financial institutions started to blur. Not only did savings and loan associations begin moving away from traditional home mortgages into areas normally reserved for commercial banking, but loopholes in regulatory law allowed others to open "non-bank" banks.

A textbook case of how things can go wrong in the regulation of the financial services industry can be found in the Federal Home Loan Bank Board and its Federal Savings and Loan Insurance Corporation (FSLIC), which insures Savings and Loan (S&L) deposits. Early in this decade, S&Ls were allowed to move into new and risky areas. "Deregulation," it was argued, would allow flexibility for thrifts to compete effectively in the new economic environment in which they found themselves.

But the Bank Board failed to invest in better regulatory systems to supervise a changing thrift industry and in the skilled people needed to keep closer tabs on individual institutions. This lack of supervision was a prescription for disaster:

poor management, risky loans, and outright fraud severely weakened the industry, especially in the Southwest, where the collapse of the oil, gas, and real estate sectors worsened the situation. More than 500 thrifts are now insolvent.

Coping with this disaster will cost billions of dollars. Conservative estimates place the cost of closing or merging insolvent S&Ls at $50 billion more than FSLIC's available resources. Some estimates place the figure as high as $100 billion or more. While healthy thrifts will pay part of the cost, the taxpayers will undoubtedly be forced to provide billions of dollars to finance the most extensive and expensive bailout in history.

Without fundamental change in the way the industry is regulated, there is little to prevent a recurrence of today's problems tomorrow. Correcting the mess that has been allowed to develop will require the industry to accept stringent standards that will be difficult for many individual S&Ls to meet. In return for a taxpayer bailout, Bank Board regulatory systems must either be greatly strengthened or replaced by a new structure.

Such a structure should put a priority on the safety and soundness of the system. The Bank Board should no longer occupy the schizophrenic position of being both an industry advocate and a regulator. A reinvigorated regulatory environment must also include a commitment to personnel, including an enlarged corps of skilled examiners capable of finding and identifying problems before they get out of hand. Implementing such an agenda will be very expensive. But this is the kind of investment the country cannot afford to put off.

Air transport and the FAA

As mentioned earlier, one of the hallmarks of a modern industrial state is an efficient, effective, and safe transportation system. There will always be a need for railways, highways, and waterways to move goods and people, but the airways epitomize the future. Sadly, America's airways have come to be associated with congestion, delay, frustration, and even fear. The truth is that the U.S. air transport system is in trouble and that the trouble comes at a time when the country can least afford it, since the demand for air travel is increasing rapidly.

> WITH AIR TRANSPORT INCREASINGLY IMPORTANT, FAILURE BY THE FEDERAL AVIATION ADMINISTRATION TO INVEST IN NEW SYSTEMS AND SKILLED PERSONNEL IS SHORT-SIGHTED AND WILL ONLY STRAIN A SYSTEM ALREADY STRETCHED NEARLY TO ITS BREAKING POINT.

Coping with this projected growth is a challenge the federal government is, so far, poorly prepared to handle. Like the IRS, the Federal Aviation Administration

faces a tremendous need for new or upgraded automated systems. In 1981, the FAA unveiled its national airspace system plan, the largest civilian technology project since the Apollo space program. Six years into the project, it is far behind schedule and is expected to cost $25 billion by the year 2000—more than double the original estimate in 1981.

Also like the IRS, the FAA must step up its investment in people. The FAA has underestimated its staffing requirements in three critical areas: air traffic controllers, aviation safety inspectors, and maintenance technicians. In addition to reliable staffing estimates, the FAA needs a clear recruitment policy and a coordinated recruitment program if it is to overcome its difficulties in attracting and retaining high-quality personnel.

While the FAA seemingly enjoys an advantage in controlling its own trust fund to finance capital improvements, the projected cost of modernization far exceeds existing reserves in that fund, and the trust fund is only of limited help in paying for the needed personnel. With air transport increasingly important to both commerce and the traveling public, failure to invest in new systems and skilled personnel is short-sighted and will only strain a system already stretched nearly to its breaking point.

A government that works

The problems described above in defense, tax collection, thrift industry regulation, and the FAA are important in and of themselves. But more important, they reflect what is becoming a pattern—the increasing difficulty of finding solutions to problems because of postponed decisions, neglect, or poor management.

Like the IRS and the FAA, the Social Security Administration has been slow to modernize outdated computer systems. Meanwhile, the nuclear weapons complex of the Department of Energy has been so neglected that solving its problems will likely cost $130 billion or more.

Essential social programs are also in danger. The nation is unable to meet the explosion of costs in federal health care programs at the same time that millions of Americans lack access to even basic health services. To cite just one example, the United States has fallen to 19th among the 20 leading industrialized nations of the world in preventing infant mortality—a shocking statistic.

The U.S. stock of public housing is so deteriorated that it will cost an estimated $20 billion to repair it. Additional billions will be needed to prevent the diversion of privately owned but publicly subsidized low-income housing to other uses.

In education, the United States is falling behind other industrialized nations in the numbers of engineers and scientists it trains; millions of young people are finding it increasingly difficult to pay for a college education; and far too many Americans are functionally illiterate, unable to cope with an increasingly technological society.

The country simply cannot continue this way without experiencing consequences the public would likely find intolerable: fewer government services, a reduced standard of living, and a growing disparity between rich and poor. Political gridlock over the deficit has fueled many of these problems by shortchanging the investment required to efficiently maintain government operations.

But the deficit can be solved. And part of that solution must include an increase in taxes to restore a starved revenue base. There is no reason that a nation as rich in resources, capital, and human talent as the United States should emulate the

poorest of third-world nations in continually living beyond its means on borrowed time and borrowed money.

The ultimate question is whether the country possesses the will and the self-discipline necessary to confront the deficit and, with it, the visible deterioration in government operations. This has always been a "can-do" nation, admired and envied by others for its resilience and optimism in meeting problems head-on. Yet now America seems hesitant and unsure of how to proceed.

NO MATTER HOW DAUNTING THE PROBLEMS WE FACE, THIS COUNTRY OFFERS THE MEANS TO PROVIDE THE KIND OF GOVERNMENT WE KNOW WE ARE CAPABLE OF PROVIDING. FINDING THE MONEY WILL NOT BE EASY, BUT THE BIGGER CHALLENGE IS TO FIND THE WILL.

At the end of World War II, the principal U.S. enemies, Germany and Japan, lay in smoldering ruins, their economies destroyed and their people demoralized. Today, both of those countries enjoy robust, healthy economies. It is true that the United States provided generous aid that assisted them immensely in regaining their economic health. But both countries also brought intense self-discipline to bear in their rise literally from the ashes of war. Meanwhile, Great Britain—a victor in that war and once the world's greatest empire—began a long, slow decline marked by economic and military retrenchment.

Such analogies can be carried too far, but they help make a basic point: America is at a crossroads. The deficit and the manner in which it is confronted may well determine the nation's future path.

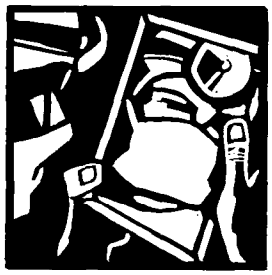
A new administration is a time for new beginnings—a time to allow the fresh eyesight of new leaders to see old problems in a different light. The "honeymoon" period enjoyed by new administrations is really an understanding on the part of the public and the Congress that new leadership should have time to pause, take stock, and set the country on a new course.

But the burden does not—and should not—fall on elected leaders alone. For those of us who honor a commitment to public service, the challenge is equally important. As managers, administrators, and regulators, we bear the responsibility for identifying problems, marshaling resources, motivating staff, and making operations work.

We know what the problems are; we need to communicate them—clearly, simply, and convincingly. We know that resources are tight; we need to make the case that we can use what is available wisely and effectively. We know that the needed human talent is there; we need to find good people, pay them competitive salaries, hold them accountable, and let them produce. We know we can make our systems work; we need to make them work better.

In the final analysis, no matter how daunting the problems we face, this country offers the means to provide the kind of government we know we are capable of providing. Finding the money will not be easy, but the bigger challenge is to find the will. Americans expect a government that works. We can ill afford to give them less. •

BOOK REVIEWS



PHYSICIANS' RITES

Melvin Konner, M.D.

BECOMING A DOCTOR: A JOURNEY OF INITIATION IN MEDICAL SCHOOL

New York: Elisabeth Sifton Books/Viking, 1987. 390 pp.

By Susan Kladiva

Melvin Konner cannot remember a time in his childhood when he did not want to be a doctor. He idolized his Uncle Bobby, a general practitioner who was trained during World War I and spent his professional life serving a poor Brooklyn community. Uncle Bobby fit the image of the family doctor of a bygone era: Making a house call in the middle of the night to deliver a baby or tend a sick child was nothing out of the ordinary for him. He had a real-life relationship with his patients—sharing their joys and feeling their pain—and found pleasure practicing medicine in a world in which the doctor's black bag "was no anachronistic symbol but a vessel of magical potions and instruments sharpened against death."

When Konner entered Harvard College in the 1960s, he fully intended to go on to study medicine. But he was soon caught up in the decade's concerns about war, hunger, and oppression; by his senior year, he had shifted course and decided to become an anthropologist.

He set out, in this discipline, to understand the flaws in human nature that produce what he characterizes as the "cancers on the human soul" that are more devastating to humanity than any physical illness. His doctoral thesis fieldwork took him to the Kalahari Desert in southern Africa, where he lived for 2 years among the !Kung San hunter-gatherers. He then returned to Harvard, where he continued to do research and teach.

Yet always lingering in the back of his mind was an unfulfilled desire to be a doctor. At age 33, he decided to go to medical school. *Becoming a Doctor* is his beautifully written account of his experiences there and what he observed about American medical education.

The book focuses on the third year of medical school, when, after two seemingly endless years of lectures and exams, students finally deal with patients in life-and-death situations. Konner believes it is the critical year when students adopt physicians' values, learning how to think, act, and make moral judgments like physicians. In the book's preface, Konner commends medical professionals for their brilliance, hard work, and dedication—unmatched, he says, by members of any other profession—and acknowledges their tremendous technical achievements. But having granted this much, he finds little else to praise, either about the doctors responsible for his clinical training or about the medical education system that produced them.

Becoming a Doctor takes the reader through the brutal third-year specialty rotations that constitute the "journey of initiation in medical school." On his first rotation, Konner drew surgery—considered to be the toughest third-year rotation of all. The night before the rotation began with 3 weeks in the emergency surgery ward, he looked forward to it with a mixture of fear and excitement, expecting that it would be "one of the most important experiences in my clinical training and one that would go a long way toward making me feel like a doctor."

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That feeling did come, as Konner learned how to talk with patients, take histories, write orders for laboratory work, assist on minor surgical procedures, suture lacerations, and move patients quickly through the system. But as Konner became immersed in the competitive world of hard-driving surgical residents, he also encountered his first disillusionment with the profession. As Konner puts it, these residents "ate determination for breakfast. They had no use for the slow, the sensitive, the theoretical, or the timid. They thrived on stress and sleeplessness, they were openly proud of their ability to take punishment, and they enjoyed making moment-to-moment, even snap decisions about matters of life and death." The surgery rotation—and the ones that followed in anesthesiology, general surgery, neurosurgery and neurology, pediatrics, obstetrics, gynecology, and internal medicine—provide the basis for Konner's strong commentary on what he believes is missing in American medical training.

One criticism focuses on the way clinical seminars are taught. While the graduate school seminars in which Konner had participated were designed to provoke thought and an exchange of views, he found that the physician-teachers conducting the clinical seminars preferred to believe there was only one right way to think and act. The constant search was for certainties—"reliable rules, unchallengeable procedures, incontrovertible facts." Those who practiced medicine within the boundaries of these certainties would be protected from blame for uncertain outcomes.

Another problem Konner sees in medical education stems from recent advances in medical science and technology. These have greatly expanded the sum of knowledge that students must absorb. He takes instructors to task for trying to convey too much information in too short a time. "As far as I can tell," he says, "really no one thinks that the mass of facts delivered by medical-school faculties can be learned." He likens the problem to the federal budget deficit: Everyone agrees it must be cut, but no one has the courage to start.

Konner also questions the role of residents. He believes they do teach students the skills to survive the clinical phase of training, but that their suitability as role models for practice afterwards is unknown. Residents are "outrageously overworked, sleep-deprived, overburdened with responsibility, bewildered by a barrage of ever changing facts, and oppressed by the medical hierarchy." He was shocked to observe that, in the residents' world, the patient is regarded as the enemy—the one who makes more work and deprives them of their desperately needed sleep, the one who is at fault when treatments don't work. This attitude, Konner believes, profoundly influences the values that medical students adopt. Even when the residents' explicit message to students is "Do as I say, not as I do," the implicit message is "Do whatever you think is right, but if you want to survive in this world you'd better be like me."

The element of medical training Konner criticizes most severely is its timing. Most of Konner's fellow medical students were much younger than he. Because clinical training is so intense that there is little physical, emotional, or intellectual energy for anything beyond surviving the experience, he envied these younger students their greater physical stamina and fewer personal responsibilities. At the same time, though, he came to believe that the training system produces technically superior but intellectually narrow physicians, lacking in empathy and alienated from their patients. As a husband and a father in his mid-thirties, Konner had seen and experienced much more of life than his classmates had. He found that he saw "everything important in medicine—nurturance, pain, fear, sex, love, loss, death—in ways subtly but significantly different from theirs."

This ability to relate to people through the common experiences of life is the essential component, he believes, in a greater concern for the social, psychological, and ethical dimensions of patient care. Such concerns were at the heart of his Uncle Bobby's style of medicine. And they were so lacking, by Konner's estimation, in the world of medical school that when he completed his studies, he abandoned medicine and returned to academia.

BEST BOMBER?

Nick Kotz

WILD BLUE YONDER: MONEY, POLITICS, AND THE B1 BOMBER

New York: Pantheon, 1988. 250 pp.

By Harry R. Finley

"It might be the best bomber ever made . . . except it can't do its job," says Frank C. Conahan, Assistant Comptroller General in GAO's National Security and International Affairs Division. Conahan is only one of the many military, industry, and other sources that Pulitzer Prize winner Nick Kotz quotes in his account of the B1 bomber. Begun in 1985, while Kotz was a professor at American University, *Wild Blue Yonder* examines a perennial centerpiece of the U.S. defense debate over the past 30 years—the question of whether to build a new strategic bomber for the U.S. Air Force. Kotz's hope is that with greater understanding of the problems that have besieged the B1, the nation can begin to bring its defense policy-making system under control.

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As Kotz sees it, "the influence of politics on national defense is so pervasive, so deeply embedded at every level, that it becomes difficult even to identify." For years, national defense programs have been buffeted back and forth not only by evolving perceptions of the Soviet threat, but by myriad special interests fighting it out in the political and economic arenas of American democracy.

The tangled and controversial history of the B1 bomber supports this view. In well researched detail, *Wild Blue Yonder* relates how the Air Force and its allies in science, industry, labor, and politics relentlessly pursued their goals, and how other groups, pursuing different goals, opposed them. Motives of patriotism, financial gain, career ambition, political aggrandizement, and institutional loyalty were often so mixed that it's not clear when the Air Force and its opponents were acting out of self-interest and when they were driven by concern for the national good. It is equally difficult, Kotz says, to measure the full effect of the military network, a web of interests stretching all the way from local chambers of commerce and union halls to huge industrial conglomerates to the Pentagon, the Congress, and the White House.

But whatever the precise impact of each level of influence, Kotz argues that the net effect of all these special interests has been to grossly distort defense priorities and to needlessly exacerbate the arms race. Self-interest intrudes into almost every aspect of a weapon system's conception, development, manufacture, and deployment. The overall well-being of the nation, as well as its defense requirements, suffers as a result. After a continuous 30-year defense buildup marked by repeated excesses, the country's military program is totally out of control.

The B1 bomber appears to be a casualty of this system. Kotz reports that in early 1987 the Congress discovered that the B1 was not all it had been cracked up to be. (Actually, it was in December 1986 that GAO personnel briefed staff of the House Committee on Armed Services about the status of the B1 program; before this, the Congress had been unaware of any problems with

the aircraft.) Some of the author's information is drawn from a February 1987 House Committee on Armed Services hearing. He also notes GAO's criticism of the Air Force for failing to inform either the Congress or top Defense Department officials about the B1's problems.

From this history of mismanagement, political influence, and self-interest, Kotz concludes that the United States needs to regain control of its defense system so that it can produce equipment that works and that protects the nation without sapping U.S. resources or bringing the world closer to Armageddon. The author believes that the country does not now have control of its defense expenditures for the following reasons:

- Too few of the people who should watch out for pitfalls do so.
- There is a lack of independent thinking, fresh ideas, and truly dispassionate advice.
- Nuclear strategy and weapons, and the consequences of their potential use, are not publicly discussed by U.S. national leaders.
- Economical alternatives to current defense programs have not been developed.
- Military leaders are loyal to service interests rather than to the nation.

In the book's conclusion, Kotz seems to ease up on his criticism when he observes that "despite these weaknesses, one could take the view that the democratic system did work in its own messy way, finally producing a new bomber, perhaps at just about the time one could be justified."

Kotz finished his book in October 1987, one year after the first squadron of 15 B1s was activated at Dyess Air Force Base in Texas. Although the 100th B1 was delivered in April 1988, the program has come under increased scrutiny with the unexpected crash of three of its $300 million aircraft and the failure of the plane's defensive avionics to meet specifications without a major redesign. Therefore, the main questions about the B1—whether it can perform its mission and, if so, at what cost—are still prominent in the public debate and, therefore, are still under review by GAO.

ESOTERICA WARS

Amitai Etzioni

THE MORAL DIMENSION: TOWARD A NEW ECONOMICS

New York: The Free Press, 1988. 314 pp.

By Allan I. Mendelowitz

In *The Moral Dimension*, sociologist Amitai Etzioni claims that neoclassical economics and its models are all wrong, and that he has developed a new science of socio-economics to replace them. His view is based on a rejection of neoclassical economics' assumptions that human beings are rational, utility-maximizing individual decision-makers. Incorrect assumptions, Etzioni says, have led to incorrect models.

The weakness here is that Etzioni has applied an incorrect measure of what makes an economic model valid. Economists do not see the value of a model in the realism of its assumptions. A valid economic model is simply one that explains and predicts well.

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An economic model is much like an airplane model used by aeronautical engineers. The model in the wind tunnel is not a "real" airplane; it is too small, it has no engines, it lacks a frame, and it is not made out of the materials that will be used in the genuine article. The model will tell the engineers very little about whether the airplane's engines will be able to propel it into the sky, or whether the wings will stay on once it gets there. But the engineers don't expect it to. Instead, what they expect of the model is a lot of useful information about aerodynamics—about one particular facet of the real plane's performance in the real world.

In much the same sense, an economic model contains assumptions that have been abstracted from the real world but do not reflect every aspect of the real world. A particular economic model, after all, has been created to isolate certain important cause-and-effect relationships. Its value lies in whether it successfully explains these relationships. The economic model's claims for usefulness are as limited and well-defined as those of the wind tunnel model: An economic model created to explain the relationship between the price of widgets and the number of widgets sold should not be expected to explain anything else.

Etzioni's attack on economic models is not directed at what economists claim to accomplish with them, but at the assumptions that underlie them. In his view, the assumptions that underlie the models are unrealistic; therefore the models must be wrong. He offers, by way of a substitute, a general theory of socioeconomics that employs what he considers to be more realistic assumptions. Central to Etzioni's model is the notion that economic models lack two considerations that are critical to a correct understanding of the world. The first is that ethics matters. The second is that collectives influence individual decision-making.

When stripped of sociophilosophical jargon, Etzioni's observations are not all that startling, and I am ready to accept them, not as a substitute for economics, but for their insights into the many things that economics does not explain—or purport to explain—well. To those who have taken economics out of the realm of social science and tried to make it a normative prescription for life, Etzioni offers a convincing rebuttal. But that isn't the purpose of his book.

If Etzioni is to prove, rather than simply argue, the worth of his new theory, he should be able to demonstrate that there is empirical content in his model. The question is: Does this new model actually *explain* anything in the real world? On this score, unfortunately, Etzioni leaves his readers high and dry. Despite his assertion that "Socioeconomics is less deductive and aspires to be closer to the data," he offers no empirical support for this approach. Instead, a disclaimer: "The purpose of the work is to suggest that the paradigm advanced here is a potentially productive one; empirical validation obviously must follow . . . . There is a division of labor between those who develop theories and those who test them."

I cannot escape the feeling that Etzioni is deeply troubled by the broad way in which theories of economics have been applied and the extensiveness of their influence on public policy—including many areas in which sociologists feel they have more to offer than economists. *The Moral Dimension* is an attempt to demolish sociology's presumptuous sister discipline and substitute an all-encompassing, sociology-based alternative. As a result, the tone of the book most closely resembles that of a medieval religious disputation. It is disheartening to endure its author's unrelenting assault on economics when his insights into decision-making and public policy would be sufficiently interesting to stand on their own.

In any event, it is unlikely that large numbers of people will read *The Moral Dimension*. I doubt there are many who will find it worth the trouble of searching for its insights. A long trek through an arcane polemic about the "utilitarian individual paradigm" versus the "deontological I & We paradigm" is not for everyone. •

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