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Military Spending Working Group
and Military Analysis Network

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Military Spending and New Priorities

In 1993 the Clinton Administration conducted what it called a "Bottom Up Review" of military spending and force structure. Theoretically, national strategy and military requirements were to be used to determine budget and force levels. But, as actually carried out, the Review was a Procrustean top-down exercise, in which strategy and requirements were tailored to justify current spending levels. So it is no surprise that, in less than a year, cracks in the faulty tectonics of Bottom Up became too glaring to ignore.

Now, with the ascendancy of the Republican Party in the Congress, the debate on the military budget threatens to shift toward increasing spending levels. The Republican Contract With America calls for increasing the overall level of military spending by an unspecified amount while restoring the fire walls between the military budget and other priorities. The Contract also calls for major limitations on peace-keeping activities and resurrection of the Bush-era Missile Defense Act with an emphasis on National Missile Defense. And both House and Senate Republicans have called for increasing intelligence spending above projected Clinton Administration levels.

While conservatives rail that the military is underfunded, more thoughtful observers suggest that the assumptions driving the Review, such as fighting two nearly simultaneous Major Regional Contingencies without the assistance of allies, are unrealistically heroic. Most tellingly, it is increasingly clear that the Administration itself is no longer able to conceal its doubts about its own handiwork.

In March, Defense Secretary Bill Perry conceded "It's an entirely implausible scenario that we'd fight two wars at once." And in August, Defense Under Secretary John Deutch identified nine major weapons systems as candidates for major reductions in production and funding, in an attempt to bring requirements and budgets into closer alignment.

It must now be clear that the two-war strategy of the

Bottom Up Review is based neither on a sensible appraisal of American military needs nor on a realistic assessment of the importance of spending on military programs relative to other pressing national needs.

In the absence of either the need or willingness to fund a two-war military, the next logical step is to move expeditiously toward the "one-war" posture as it was defined in the Review. Even given the heroic assumptions of this stance, with its reliance on active duty forces and no assistance from allies, it may be possible

to meet its requirements and still realize major reductions in annual military spending. Using more realistic assumptions, such as greater reliance on National Guard/Reserve forces and recognizing the probable contributions of allies, could permit even greater savings.

The post-Cold War era presents the United States with the novel challenges and opportunities of a world in which the "hard" power of military force will increasingly be supplanted by the "soft" power of instrumentalities of influence. Given this sea change, a substantial peace dividend should already be visible on the horizon. Instead,

President Clinton proposes to spend a quarter of a trillion dollars each year on the military. This will consume nearly 3 percent of America's Gross Domestic Product, perpetuating a Federal deficit that continues to impair American economic competitiveness, to preempt productive investments and to sacrifice vital domestic programs that could dramatically enhance the quality of life for millions of Americans.

At the conclusion of all declared American wars, military spending declined to about 1 percent of GDP. If for the foreseeable future military spending were reduced to this level—about \$80 billion, it would free up a sum of money roughly equivalent to the current Federal deficit. Such substantial reductions in wasteful military spending is the most effective and highly leveraged strategy for funding the more pressing domestic priorities, if taxes are not to be raised.

Defense Budget:

1%

of GDP!

(continued from page 1)

The major hurdle is that, after decades of prosperous consolidation, the Cold War national security state and its supporting Military-Industrial Complex are deeply entrenched. And their vast resources will be fully deployed to prolong their survival.

Decades of twilight struggle have dimmed memories of times when America's landscape was not littered with garrisons and arsenals. The virtues of Cincinnatus, who returned from victory to his plow, inspired the generation of the Revolution, are now all but forgotten.

The Clinton Administration was elected to restore the competitiveness of the American economy and the well-being of the American people. In coming years it will become increasingly apparent that these goals cannot be achieved while continuing to pay for a Cold War military establishment that has outlived all rational purpose. America is faced with choosing between maintaining present levels of military spending, or some combination of continued budget deficits and curtailed domestic discretionary and entitlement spending.

At the present time, what is being passed off as a choice for the country is: compromise economic competitiveness through a burgeoning deficit or diminish the quality of life of average Americans through massive budget cuts—just to continue wasteful and obsolete military spending.

With the goal of constructing a real choice, FAS has been supporting a Military Spending Working Group. (See page 6.) This is a task force of analysts and advocates from over a dozen organizations that are committed to a reordering of US spending priorities. Electronic communications will be used extensively to develop and disseminate information. (See "Military Analysis Network" on page 7.)

FAS is also providing extensive analytical and media assistance to another group—a new coalition of organizations working on sustainable development and domestic human needs. This coalition is committed to reducing spending on intelligence to support these more pressing priorities.

Our strategy is to approach the military budget on three levels: develop a general critique of the military budget as a whole; highlight major program areas— notably military space and national intelligence— which share common features of large budgets, technical complexity and excessive secrecy; and target specific weapons systems that are unusually egregious examples of misguided policies.

The restructurings we will consider in military force posture and the reductions we will study in military spending go far beyond what is currently regarded as "politically realistic." As such, they are unlikely to be quickly embraced by the policy process. Advocacy of bold measures will, however, enhance the credibility of more modest proposals.

—John E. Pike

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Reducing Military Spending: No Time Like The Present

Now that we no longer need a vast standing military prepared to wage World War at a moment's notice, American national security interests can be defended at substantially lower cost.

Humanitarian missions require but a fraction of our present military force. Reserve forces can be mobilized in time to respond to larger regional contingencies. Even with lower force levels, the military-technical revolution promises greater lethality (at least in those situations where the technology has utility) at lower cost. And further reductions in force structure and spending levels are possible through a stringent review of service roles and missions.

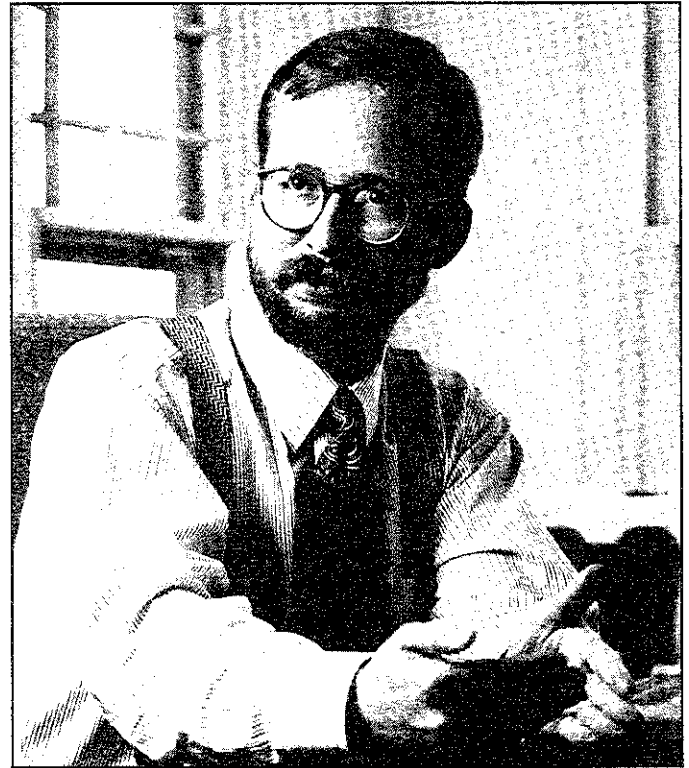
As noted military historian Martin van Creveld observed in *The Transformation of War*, "So expensive, fast, indiscriminate, big, unmaneuverable, and powerful have modern weapons become that they are steadily pushing contemporary war under the carpet, as it were; that is, into environments where those weapons do not work, and where men can therefore fight to their heart's content . . . My basic postulate is that, already today, the most powerful modern armed forces are largely irrelevant to modern war—indeed that their relevance stands in inverse proportion to their modernity."

This is not mere idle speculation. Commenting on current military conflicts, Admiral David Jeremiah, Vice Chairman of the Joint Chiefs of Staff, recently concluded that ". . . there may not be much we can do but let those wars run their course—at least with the tools we now use. If short term history is any indicator, then our lack of success in Somalia and Bosnia suggests that we're attacking the problem with the wrong set of tools . . . What we're using today doesn't seem to be working because it is applying the cold war Clausewitzian thinking to what are most likely cultural wars."

Threat Environment Affords Reassessment

An evaluation of post-Cold War military requirements must clarify the circumstances under which the United States would wish to use military force, and what types of forces will be required. The end of the Cold War has created a remarkably benign threat environment, largely eliminating the circumstances under which the great bulk of existing American military forces could be effectively used.

Over the past half century, American military forces have engaged in three levels of operations: world war, major regional contingencies, and lesser regional contingencies. During the Cold War, planning for a final showdown with the Evil Empire overshadowed the requirements for operations at lower levels. Strategy and resource allocation questions that focused on the relative emphasis to be placed on fighting a ground war in Europe versus other contingencies were an abiding feature of the period. Still, there was little reason to doubt that an American



John E. Pike

military postured against the Soviet adversary would have the resources to counter lesser foes (even if these resources were inappropriately applied, as in Vietnam).

But now the Cold War is over. The prospect of war between America and Russia is so remote that this former threat cannot be used as a basis for American military planning. Despite bumps in the road, the reform process in the former Soviet Union continues forward movement, reducing the likelihood of a reversion to an adversarial stance toward the West. And in the unlikely event of a u-turn, a hostile Russia would not pose the pervasive global ideological menace of the Soviet Union, and would require many years, if not decades, to restore the former Soviet military threat.

Nor is there any foreseeable prospect that any other country, not even China, will replicate the military, ideological and geopolitical challenges posed by the Soviet adversary.

Certainly, the ongoing modernization of the Chinese military, particularly in context with the simmering controversy over the status of Taiwan and continued conflicts over sovereignty in the South China Sea, is a source of regional anxiety. For the ponderable future, however, American relations with China are likely to be centered on such issues as textiles and tennis shoes, and human rights.

It is possible that early decades of the new century may be marked by a "clash of civilizations," as societies react to

the intrusion of post-industrial Western lifestyles and cultural norms. Iran clearly exemplifies this phenomenon, as do some of the other Islamic revivalist movements in other countries. And the reactions of other Asian societies to Western human rights campaigns, spring from similar roots.

Regional adversaries may now be *relatively* more important than during the Cold War, but they are *intrinsically* less important, absent the perceived need to counter possible Soviet advances. True, regional powers and Third World areas may become more dangerous, particularly with the proliferation of advanced conventional weapons and weapons of mass destruction. True, too, the challenges of modernization, poverty and limited resources will continue to engender conflict in these regions. But whereas many conflicts in less developed areas were exacerbated by the Cold War, they should now, in the absence of a perceived need to counter Soviet advances, prove more amenable to resolution, diminishing the likelihood or need for large scale American intervention. American strategic interests in these regions is now largely based on threats to friends and allies, who would surely aid us in their own defense.

The Bottom Up Review's focus on the operational requirements for Major Regional Contingencies ignored the fundamental Clausewitzian precondition of defining the political objectives of such campaigns. Virtually by definition, a Major Regional Contingency consists of a military operation in which the United States comes to the aid of one or more friends or allies, in order to restore a preexisting regional balance in which other states share an interest.

As for lesser contingencies, hundreds of wars were fought across the globe during the Cold War, and millions

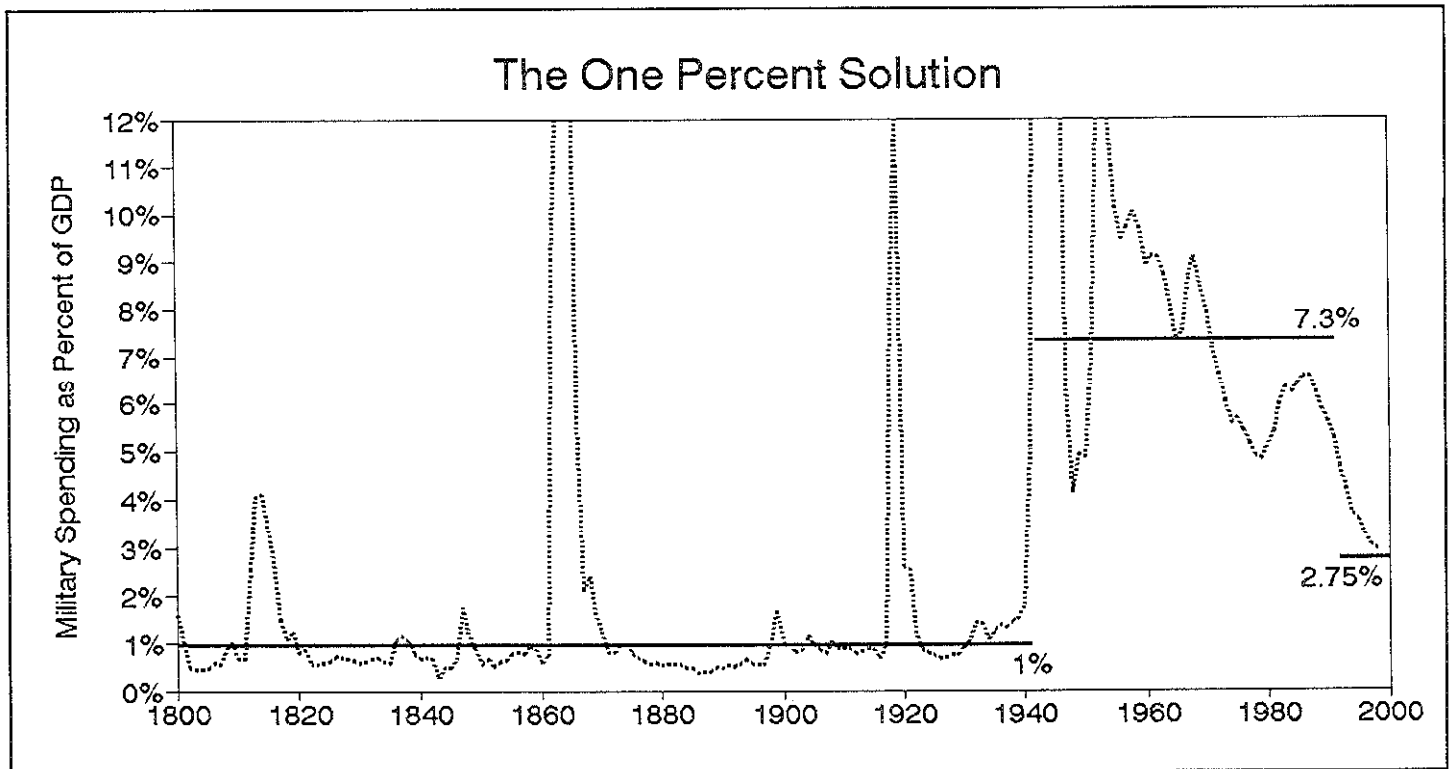
perished. But throughout this period, American military involvement was limited to those conflicts in which the hand of Moscow was perceived to be at work, or in which direct American interests, such as access to oil, were seen to be at stake.

With no contest being waged for planetary hegemony, the case for American military intervention has, in practice, proved increasingly difficult to make. Though the slaughter in the world's troubled zones may continue, the absence of identifiable geopolitical or material interests will often stay the American hand. And it is sadly true that in cases where America's commitment to preserve human rights or defend democracies has not been realized through diplomacy, there is often little long-term good that conventional military forces can do. Bombs are no solution to social problems. Armored divisions are largely irrelevant to pacification of ethnic conflict. And even though large conventional military forces may be useful for deterring other large militaries (as during the Cold War), they are largely irrelevant to nation-building.

A Revolution in Military Affairs?

Recent decades have witnessed a substantial evolution in the engines of war. It is no longer necessary or desirable to concentrate lavish firepower and masses of troops to engage an adversary. Some contend that the march of technology has led us to a military technical revolution which may mean that the US can perform at lower cost with greater flexibility—allowing the military to do more with less.

The ability to see the battlefield through the use of satellites and airborne sensors enables the key targets to be





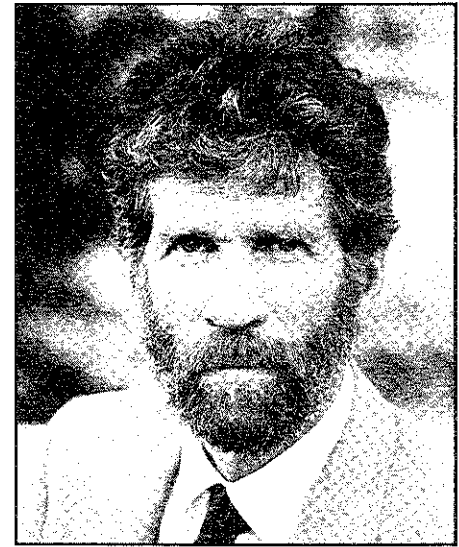
"It is time to take a hard fresh look at US security needs and the military forces required to meet them. The FAS project led by John Pike promises to detail a real and sound security agenda from the ground up. . . . Pike and the FAS, armed with common sense and reason, will be invaluable allies in the struggle for new priorities."

—**Robert L. Borosage**, Director
The Campaign for New Priorities



"A reduction in excessive military spending would free up federal resources to invest in programs targeted to low-income Americans and communities. . . . I welcome the Federation's new initiatives to reduce wasteful military spending. As this campaign continues, I look forward to closer collaboration."

—**Jennifer A. Vasiloff**, Executive
Director
Coalition on Human Needs



". . . how important your work has been to the effort I am making to form a broad coalition of sustainable development, peace and military budget, domestic human needs, and budget deficit reduction groups to cut the foreign intelligence budget. . . . Your success in penetrating that curtain [of secrecy] helps to empower us for the first time. . . ."

—**Gareth Porter**, Director
Sustainable Development Coalition, EESI

The Military Spending Working Group

Editor's Note: A half century of mobilization for total war has created a vast and powerful constituency for continuing the Cold War level of military spending. Reversing these priorities will require a concerted effort. Currently, representatives from over a dozen organizations are meeting weekly at FAS as the Military Spending Working Group. Some of the organizations are well known to our members, others may be less familiar. The following profiles and statements of purpose have been edited for space from contributions provided by seven of the organizations.

Campaign for New Priorities

The Campaign for New Priorities was formed in 1992 to engage Americans in the effort to change our national

priorities. It is a campaign to make the defense budget reflect the needs of the present, not the concerns of the past. We now face new challenges to our national security. Our economy is faltering in the face of global competition. Environmental pollution has turned from nuisance to threat. Our schools are in trouble. We are failing to make the investments vital to our national security.

This is an historic opportunity to change our priorities. Yet this change will not take place unless citizens demand it. We can maintain a strong military and still have over \$150 billion dollars a year to reinvest in this country. With a new program of investment, we can retrain soldiers and defense workers, re-tool factories and put people to work building the products we need rather than weapons we can't use.

Center for Defense Information

The Center for Defense Information was founded in 1972 to serve as an independent monitor of the military. Today, CDI is one of the leading research organizations in country analyzing military spending, policies, and weapons systems. The Center believes that strong social, economic, political and military components and a healthy environment contribute equally to the nation's security. It opposes excessive expenditures for weapons and policies that increase the danger of war.

Recent Center analyses indicate that military spending can be dramatically reduced. CDI supports significantly smaller military forces, which are appropriate to this new era with its non-military challenges and needs. It also strongly advocates that the Department of Defense divert additional resources to the enormous task of cleaning up the areas contaminated by its Cold War activities.

Council for a Livable World

The Council for a Livable World was founded in 1962 to work for nuclear disarmament. Major issues in 1994 include deep military budget reductions, a comprehensive test ban, an end to nuclear missile production, expanding the United Nations peacekeeping and assisting Russia's transition to democracy and capitalism.

Since the end of the Cold War, the Council's Education Fund has expanded its agenda to focus on broader issues such as United Nations peacekeeping and the international arms trade. Education Fund projects in 1994 include: public education campaigns on nuclear non-proliferation and UN peace operations, Target 2000—an ongoing program to cut the military budget by 50 percent, and conventional arms transfers monitoring and analysis.

Defense Budget Project

The Defense Budget Project's 1994 research priorities are driven by a sense of an urgent need for new thinking on a range of defense issues and spending options. US national security planning is taking place in a period of profound change. Indeed, for the first time in well over half a century, the world can realistically hope that an international order characterized by a stable, long-term peace can be constructed now that we have emerged from the shadows of the Cold War.

DBP has devoted substantial time and effort to assessing the Defense Department's Bottom-Up Review of US defense requirements, which was released last fall. Periodic updates on congressional budget, authorizing and appropriation activities will continue to link defense planning to tight fiscal resource limitations, drawing attention to the long-term consequences of today's decisions.

Institute for Defense and Disarmament Studies

Founded in 1979, the Institute for Defense and Disarmament Studies conducts research and education on ways to
(continued on next page)

A Military Analysis Network

Supporting the activities of the Military Spending Working Group, a growing roster of participants we currently convene each week, will be a Military Analysis Network. This network will employ emerging technological opportunities afforded collaborative intellectual undertakings by electronic mail (including "conferences" and bulletin boards), Faxcast, etc.

While our concepts are still evolving (and we welcome informed suggestions), our current plan is to begin in early 1995 implementation of a range of on-line services to support analysts and advocates alike.

One component will be an edited "electronic journal" for which we will provide quality control. The journal will include two types of analysis—items of current interest submitted by others and products generated by the Working Group. The journal will also be used for posting draft versions of analyses to provoke comment and discussion. And in another (unedited) newsgroup, contributors will be free to post any comments they wish, including items not accepted for posting in the edited journal.

A "What's New" newsletter-type journal will provide a running commentary on new background materials as they become available, particularly those from organizations working in this field, as well as "grey literature" documents acquired from other sources. An archive will include the full texts of the materials referenced in the "What's New" newsletter.

An early implementation of this initiative will consist of a briefing book on military spending issues. Reporters, Congressional staff, other analysts, and grass-roots activists will be able to download this text and have at hand ready-made rebuttals to proposals to increase military spending.

In addition, we are exploring so-called "Groupware" software capabilities which may be able to provide researchers in other localities and countries an opportunity to collectively develop analytical text documents.

FAS recently adopted the "bleeding edge" standard of communications technology for future work and has committed resources for achieving the standard. Unfortunately, this is not presently the case with all other groups who participate in the military spending initiative. For those who are unable to take advantage of the entire range of services, we will be substituting FAX-CAST for electronic communications. And we will pursue funding opportunities to bring all core participants on line.

■

minimize the risk of war, reduce the burden of military spending, and promote the growth of democratic institutions.

To provide a foundation for developing policy options that lead toward these goals, the Institute publishes global surveys of military forces and current military and arms control policies. The Institute's reference works, used by military and arms control experts worldwide, are noted for their comprehensive coverage, detail, and timeliness. The monthly *Arms Control Reporter*, published since 1982, is the leading international reference source on arms control negotiations.

National Commission for Economic Conversion & Disarmament

The National Commission for Economic Conversion and Disarmament (ECD), founded in 1988, develops non-partisan research and reports on the means for transferring military resources to civilian uses through economic conversion in order to adjust to defense reductions and disarmament initiatives. It publishes a quarterly periodical, *The New Economy*.

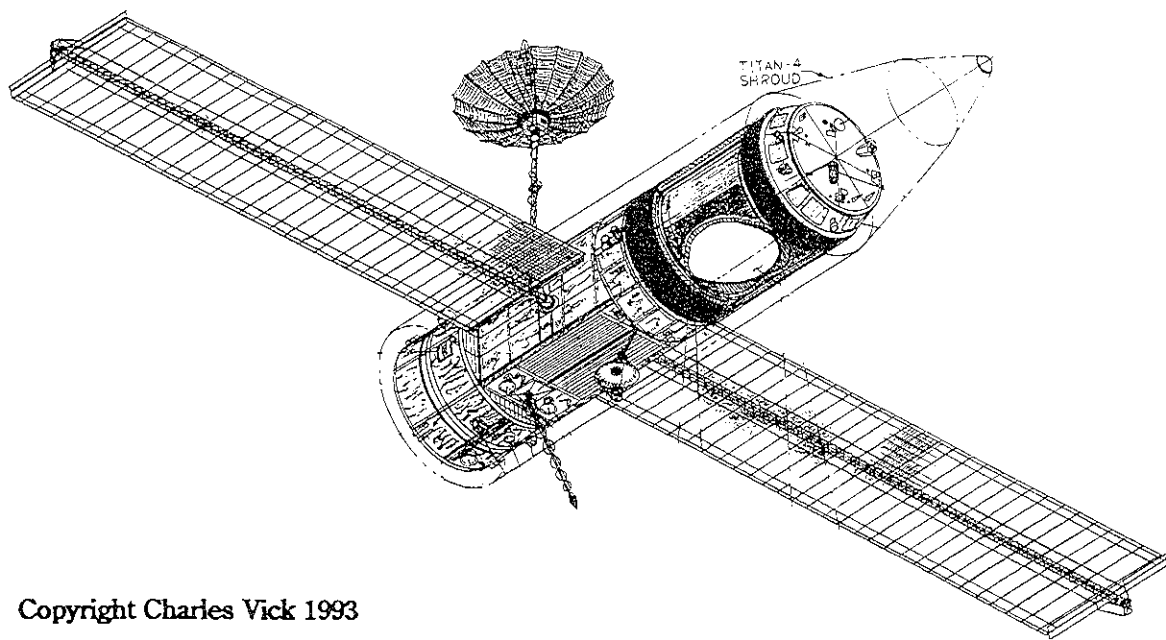
ECD has long been committed to a conversion program that would emphasize planning before the cuts occur so that when spending is reduced, workers, communities and businesses have alternatives to layoffs and economic depression. ECD believes the only responsible way to reduce

the military budget is to plan in advance for these cuts. In addition, ECD believes that some savings from defense cuts must be invested in infrastructure, civilian R&D and other productivity-enhancing investments which will create new jobs and market opportunities.

Project on Defense Alternatives

The Project on Defense Alternatives develops policy options suited to the challenges and opportunities of the post-Cold War era. Today the world is poised between a past in which nations sought to ensure their security primarily through armed deterrence and exclusive military alliances and a future in which inclusive global agencies and non-military measures can play the leading role in guaranteeing the peace. Ensuring our passage from old to new requires a positive, transitional security policy.

In the Project's perspective, the elements of such a policy would: guarantee reliable, cost-effective defense against aggression; embody a confidence-building military posture—that is, one that does not contribute to interstate tensions and arms racing; allow significant reductions in the level of armed forces and military spending; foster progress in arms control and in the gradual demilitarization of international relations; and, facilitate an increasing reliance on collective and global peacekeeping agencies and nonmilitary means of conflict prevention, containment, and resolution. □



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Spy Satellites Still Loaded for Bear *The near-tripling of NRO's budget during the 1980s financed a doubling of the number of imaging satellites in orbit. Among them are satellites that can peer through clouds and see clearly in the dark. As a result, the hundreds of images produced daily during the Cold War are dwarfed by the thousands today's systems can produce. Paradoxically, the ten-fold increase in capability has coincided with an even more dramatic decrease in collection requirements. The Soviet Union encompassed over ten times the combined area of America's current potential adversaries—Iran, Iraq and North Korea. During the Cold War satellites monitored nearly 500,000 Soviet installations, including 40,000 potential strategic targets. In Iraq there have been identified a mere 5,200 installations, of which fewer than 600 were targeted during Desert Storm.*

Defense Planning for a Changed and Still Changing World

Over the past decade, a wide variety of alternative force structures have been proposed to meet military planning requirements during the Cold War, and following its end. Some of these proposals are synopsisized below, even though no brief account can begin to do justice to the complex edifice of the Defense Department. Unfortunately, not all of these proposed alternatives provide recommendations in each category, or in a consistent fashion, but comparisons are illuminating, since each incorporates certain planning realities.

Reagan—Cold War and JCS Minimum Risk Forces

The Reagan Administration's unprecedented spend-up accepted the tradeoff between military force structure and other national priorities. Although the "Minimum Risk" force posture recommended by the Joint Chiefs of Staff called for 25 Army divisions, 22 aircraft carrier battle groups and 38 air wings, at an annual cost of over \$600 billion (in constant 1994 dollars, as are all the other budget figures in this section), the Reagan Administration was nonetheless content with more modest goals.

Bush—"After-the-Fall" Base Force

With the fall of the Berlin Wall in late 1989, the Bush Administration recognized the need to rethink the future of the American military establishment. The results of this review, conducted in 1990, were submitted to the Congress in February 1991. The Bush Base Force was intended to guide spending and force structure evolution through 1997. Not coincidentally, the cost of maintaining the Base Force would rise in subsequent years, peaking at somewhere between \$275 to \$340 billion by 2008, according to various estimates. The Base Force largely continued Cold War planning assumptions, while recognizing the diminished Soviet threat, and placed additional emphasis on coping with two simultaneous regional contingencies.

Desert Storm—A New Standard

The 1991 Desert Storm campaign against Iraq subsequently became the standard by which the force planning debate was judged. In 1992, House Armed Services Committee Chair Les Aspin produced a Chinese menu set of four alternatives to the Base Force. These options, with 1997 budget objectives which ranged from \$189 billion (Option A) to \$241 billion (Option D), consisted of a "Desert Storm equivalent" to which further incremental regional contingency capabilities were added. Option C, with a 1997 budget objective of \$220 billion, was Aspin's preferred Option.

Clinton—Bottom Up Review

In 1993 Secretary of Defense Aspin conducted a "Bottom Up Review" (BUR), which ultimately recommended a set of force and budget goals that generally resembled the Option C alternative he had previously developed in response to the Base Force. The centerpiece of the BUR

The One Percent Solution

For nearly half a century, from the morning Pearl Harbor was bombed to the day the Berlin Wall came down, American national security planning was predicated on a requirement to be able to wage World War on very short notice. This planning assumption was the basis for the creation of a very large standing military, maintained at a very high level of readiness. These large forces dictated equally large military budgets—hundreds of billions of dollars each year, averaging about 7.5% of Gross Domestic Product (GDP) over the fifty years—in stark contrast to prior American experience.

Over the 150 years prior to the Cold War, military spending averaged one percent of GDP, higher spending levels quickly dropping at the conclusion of every war. The large military establishment of the Cold War era, to which we have become accustomed, would have struck previous generations as contrary to fundamental American values. Indeed, the excessive secrecy and financial costs have proven corrosive to American society, as leaders such as Dwight Eisenhower feared.

An average of one percent over 150 years. This single simple statistic encapsulates the reality that recent levels of military spending are outside the mainstream of American historical experience, an aberration that occurred in the context of unusual geopolitical conditions which have now happily changed. ■

force structure was a requirement to respond to two nearly simultaneous Major Regional Contingencies, such as conducted in Operation Desert Storm.

\$200 Billion Alternatives

One range of alternative force structures proposed in recent years results in a steady-state Defense Department budget of slightly above \$200 billion annually (about 2.5% of GDP by the end of the decade). In September 1991 John Steinbruner of the Brookings Institution and William Kaufmann of MIT and Brookings proposed an alternative to the Base Force in *Decisions for Defense*. Taking into account the remote possibility of military conflict with the Soviet Union, and concluding that major regional contingencies such as Desert Storm were improbable (and could be met with modest forces), *Decisions* suggested an intermediate option for 2001 at \$212 billion. And in February 1992 the Center for Defense Information outlined an alternative force posture, to be implemented by 1995, that would cost slightly in excess of \$200 billion. In February 1993 the Defense Budget Project called for an average defense budget of about \$220, and the Committee for National Security also concluded that major reductions in

Alternative Force Structures

	JCS Minimum Risk 1981	Reagan 1990	Bush Base Force 1991	Clinton Bottom Up Review
ARMY				
Divisions - Active	25	18	12	10
Divisions - Guard/Reserve		10	8	8
NAVY				
Carriers	22	15+1	12+1	11+1
Surface Combatants			143-158	
Attack Submarines	140	90	74-79	45-55
Total Ships	1000	491+61	414+34	330-346
MARINES				
Divisions/Air Wings	3+1	3+1	3+1	3+1
AIR FORCE				
Tactical Wings - Active	38	24	15	13
Tactical Wings - Reserve		12	11	7
Bombers	483	228	181	184
TOTAL BUDGET				
94\$ B constant	1986 \$620	1985 \$377	1997 \$260	1999 \$287

\$200 Billion Alternatives

	CDI 1992	DBP 1993	Kaufmann Steinbruner (Intermed) 1992	CNS 1993
ARMY				
Divisions - Active	8	11	9	8
Divisions - Guard/Reserve	6	3	6	7
NAVY				
Carriers	7	10	9	9
Surface Combatants	180	115		
Attack Submarines	60	40		
Total Ships			346	350
MARINES				
Divisions/Air Wings	3+1	3+1	3+1	
AIR FORCE				
Tactical Wings - Active	10	11	18	[20]
Tactical Wings - Reserve	12	7	13	
Bombers			45	
TOTAL BUDGET				
94\$ B constant	1995 \$205	1999 \$207	2001 \$212	1999 \$263

Lower Alternatives

	Kaufmann Steinbruner (Low) 1992	Morrison/ Tsipis/ Wiesner 1993	CDI 1994	Forsberg IDDS 1992	Pike 1994
ARMY					
Divisions - Active	7	5	6	4	2
Divisions - Guard/Reserve	4	10	7		16
NAVY					
Carrier Battle Groups	6+1	5+1	6+1	3	2+1
Surface Combatants		77	183		
Attack Submarines		50	30		10+20
Total Ships	259				101+259
MARINES					
Divisions/Air Wings	3+1	2	3+1	1	1+2
AIR FORCE					
Tactical Wings - Active	15	5.5	5		2
Tactical Wings - Reserve	11	5.5	12		18
Bombers	41		80		180
TOTAL BUDGET					
94\$ B constant	2001 \$178	2000 \$170	1999 \$160	2002 \$70-86	2000 \$80

force structure were possible, though more modest savings were anticipated.

\$150 Billion Alternatives

Another group of alternatives focuses on force levels that produce a post-drawdown Defense Department budget somewhat in excess of \$150 billion annually (about 2% of GDP by the end of the decade). The Brookings *Decisions* study also suggested Low and Cooperative Security options for 2001 costing \$178 and \$155 billion, respectively.

In a 1993 booklet "Beyond the Looking Glass" (extracted in a 1994 *Scientific American* article), the MIT team of Philip Morrison, Kosta Tsipis and Jerome Wiesner concluded that a military capable of mounting a single Major Regional contingency (as well as other humanitarian and peacekeeping operations) would require a budget of approximately \$144 billion. And in June 1994 the Center for Defense Information produced a new assessment of force requirements, which came to similar conclusions.

\$75 Billion Alternatives

A third set of alternative force structures results in steady-state annual Defense Department budgets of about \$75 billion (about 1% of GDP by the end of the decade). Leading the way in fundamental rethinking of military requirements, Randall Forsberg of the Institute for Defense and Disarmament Studies this year considered the implications of implementing a cooperative security strategy, in which the Western allies and Russia would largely eliminate their forces that were formerly directed at each other. Collectively, all these countries would retain force projection capabilities equivalent to two or three Major

Regional Contingencies, though no country would possess such a capability alone. FAS is developing an analysis, which focuses on placing substantial forces in the Guard and Reserve, which reaches similar conclusions in terms of long-term funding requirements.

The One-Percent Solution: A Fit With The Facts

The Clinton Administration's proposed reductions in military spending still result in a military establishment far larger and more expensive than is needed. An orderly reduction of the military budget to pre-Cold War levels—one percent of GDP—would free resources to balance the budget and meet more pressing needs.

However, there are some military components where opportunities for reduction are less apparent. Two dozen Navstar satellites are needed to provide pinpoint global navigation to either a hundred troops performing humanitarian relief or half a million waging war. Unlike combat forces, military space systems, as well as intelligence collection and dissemination programs, cannot be scaled linearly with the threat.

There is no question that these capabilities are most critical and will become even more so to a military that requires timely warning to mobilize Guard and Reserve forces. The proper sizing of these capabilities is further complicated by their considerable technical complexity, which is often obscured by excessive secrecy. But with current spending in these areas exceeding \$40 billion each year, they deserve particularly close scrutiny, as they will constitute nearly one-fifth of the military budget presently projected by the Clinton Administration by the end of this decade.

During the Cold War, a massive standing military force—one that represented an over-reaction to the Soviets and vastly exceeded what was needed for lesser contingencies—stood ready to wage world war on very short notice. There has not been a fundamental reappraisal of active duty force needs since the end of the Cold War, but only a relatively modest force is needed to support minor contingency operations.

Defense Secretary Aspin's Bottom Up Review initially contemplated a "Win-Hold-Win" strategy, which called for quickly winning an initial Major Regional Contingency, while stabilizing a nearly simultaneous conflict of equal magnitude. This approach was abandoned when the military objected to the lower force structures it implied. But with an across-the-board "Hold-Win" strategy, quickly mobilized Air Guard and Reserve forces would immobilize an adversary (as the RAND Corporation has demonstrated) until ground forces could complete the job.

All services currently maintain Guard and Reserve units across the entire spectrum of combat and support formations. These part-time forces constitute anywhere from 10 to 100 percent of the force structure, depending on unit type. But the annual costs of Guard and Reserve forces are

a fraction, as low as 20 percent, of active duty units. A national military strategy that relies on mobilizing Guard and Reserve forces for major regional contingencies could preserve American combat potential at a fraction of the cost of current plans.

By placing most of America's military in the Guard and Reserve, the wear and tear on existing weapons can be greatly diminished, extending their useful life well into the 21st century. Even at Cold War operating tempos, the service life of B-52 bombers built in the 1950s was estimated to extend to the year 2040. Mothballing some of the Navy's ships could extend the useful service life of the existing fleet well into the 21st century.

Taken together, these initiatives would provide a military posture appropriate to the post-Cold War security environment at a fraction the cost of present plans. A preliminary analysis suggests that an annual budget of some \$80 billion would be sufficient, nearly \$200 billion less than presently projected by the Clinton Administration and a potential savings equal to the currently projected annual deficit.

—J.E.P.

□

STATEMENT FROM GARWIN ON NUCLEAR ASSURANCE FORMULATION

The September/October 1994 *Public Interest Report* opens with an editorial that urges the Administration to affirm its commitment not to use nuclear weapons against non-nuclear states. The editorial suggested as a possible statement:

A. "The United States will not use nuclear weapons against any state which has provided the U.S. with credible assurances that it is a non-nuclear weapon state except in response to the use, by such states, of other weapons of mass destruction."

I cannot support that formulation, but I can support having the President say:

B. "In our continuing effort to contribute to the security of states that forgo the acquisition of nuclear weapons, the United States affirms that it will never introduce nuclear weapons into hostilities with a non-nuclear state party to the NPT or any comparably internationally binding commitment not to acquire nuclear explosive devices."

I believe Formulation B would usefully reassert the continuing commitment of the U.S. to the non-use of nuclear

weapons against those states adhering to the NPT (and similar treaties) as non-nuclear states and would be (mildly) helpful in securing its extension.

B is a better formulation also in that it avoids the term "weapons of mass destruction," which some assert to include missiles, as well as chemical and biological weapons. And it will read better as declaratory policy in an era of massive reductions of nuclear weapons.

However, Formulation B should not be read as guaranteeing immunity, for example, in the hypothetical case of massive, effective use of biological weapons against the United States— weapons that have been banned since 1975 by the Biological Weapons Convention.

—Richard L. Garwin
Vice Chairman of FAS
Chairman of the FAS Fund

David Cassidy Letter On Heisenberg

As noted in the September/October issue, I responded energetically to criticisms of my reliance on "Heisenberg's War" by Thomas Powers by researching further Powers' position and that of a leading Powers' critic, Mark Walker. I got both Powers and Walker to approve a document I prepared (available to anyone who wishes it) summarizing their agreement and disagreement on the major relevant issues. Even though the Cassidy letter was not updated to reflect the document, it is printed below, for the record and at the urging of a Council Member. Footnotes to letter, for which we did not have space, are also available from FAS. — Jeremy J. Stone

Dear Mr. Stone,

Several colleagues have brought to my attention the July/August 1994 issue of the *F.A.S. Public Interest Report* containing your essay on the "Arrogation by Atomic Scientists of Left and Right." In addition, Esther Sparberg informs me that you tried unsuccessfully to reach me by phone. For some reason the message never reached me, for which I sincerely apologize. Since you have encouraged readers to send in their views on the subject of that newsletter, I would like now to respond belatedly to your phone call with a letter. You may publish the following in the *F.A.S. Public Interest Report* as a letter to the editor. However, if you decide to edit it, I would like to see the edited version in advance. My fax number at Hofstra University is 516-564-4296.

Your courage in examining and attempting to reach definite conclusions regarding the behavior of leading atomic scientists during the complicated period of the early nuclear age is well noted. But perhaps you have been a little too courageous. After 18 years of intensive struggle with the behavior of the German physicists before and during World War II, only now do I think that I have a reasonable sense of what happened in Germany, but even then there is still much to learn. I have also devoted considerable attention to the American and Soviet situations, but I will confine my remarks below to the areas I know best: German physics and Heisenberg in particular.

In this regard I must say that I find your essay most disturbing. This is due not only to your conclusions but especially to the way in which you appear to have reached them: you seem to have proceeded from a brief consultation of a few secondary sources that a closer look would have revealed to be far too unreliable to support such sweeping conclusions. These works have been strongly criticized by nearly everyone who has taken the time to seriously review them, not only because the conclusions in these works are inconsistent with the evidence, but also because they factually misrepresent the primary documents on which most history rests.(1) Recently, as you were perhaps not aware, Robert Jungk, whom you liberally cite, has publicly repudiated his own book, stating: "that I have contributed to the spreading of the myth of passive

resistance by the most important German physicists is due above all to my esteem for those impressive personalities which I since realized to be out of place."(2)

The book by Thomas Powers, on which you also rely, not only recapitulates Jungk's discredited thesis, but adds new misrepresentations and distortions of its own. Serious reviews of this book have pointed out issue after issue where the "shadow history" recounted by Powers conflicts with the documentary record of events. For instance, in arguing that the Germans downplayed the military potential of their research, Powers writes "Heisenberg . . . and others understood that plutonium could be used as a bomb, but their discussion of the matter with regime officials never went beyond a throwaway sentence or two."(p.448) This is patently false. As one example, Heisenberg lectured regime officials on fission in Berlin in February 1942. This lecture has been published, and it contains no less than three references to "an explosive of unimaginable power" and one to the uneven comparison between nuclear and chemical explosions. Two of the references refer prominently to what we call plutonium: the first in a paragraph all its own; the second in his concluding paragraph in which he reminds the officials that once a reactor is up and running it can be used "for the acquisition of an enormously strong explosive," which they understood to be plutonium.(3)

The front-page sidebar indicates that you intend this issue of the *F.A.S. Report* to be "a contribution to the inevitable debate of 1995 about the atomic scientists; it focuses on the morality of a tiny segment . . . who misled their fellow citizens . . ." Yet nowhere do you inform your readers that this debate has already been raging for years, that definite positions have long been staked out, and that the debate has gained new intensity with recent scholarship and especially after the recent release and publication of the long-withheld "Farm Hall Reports" on the captured German scientists.(4)

In your opening remarks you wisely pull back from judging these scientists. But, you suggest, "we can, at least, try to understand the context in which they found themselves, what they were thinking and what they were trying to do." More than one author has seriously attempted to do just that in the case of Heisenberg, but I see no indication that you have consulted any of these works. Naturally, one may not agree with the conclusions of these works, but if you had carefully consulted them you would surely have gained a much fuller appreciation of how Heisenberg and others were subverted by the world in which they lived and a much clearer understanding of how untenable the claims of Powers and Jungk really are when seen against the background of the reality of life for these scientists in Nazi Germany.

Your brief essay on Heisenberg (page 3) superbly illustrates my points above. In your sole reliance on Powers

and Jungk you extract quotations and conclusions that have been shown in the available literature to be at odds with the documentary evidence, including the Farm Hall reports. Here I will only very briefly point out the serious problems with the quoted statements in your Heisenberg essay.

1. Heisenberg's statement on "active resistance," quoted from Jungk: As indicated in several works, this statement echoes an earlier unpublished essay that Heisenberg composed in defense of Ernst von Weizaecker, who was tried and convicted in the Nuremberg trials. The published accounts of this essay all indicate that, after making the quoted assertion, Heisenberg resigns himself to a "passive resistance," to which the Jungk quote above alludes. By "passive resistance" Heisenberg meant capitulation to the regime in order to continue his work. At least one widely available analysis has indicated the serious misjudgment entailed in that position. Heisenberg's settling for "passive resistance" certainly does not justify your using this unrepresentative quote as a premise on which to base the rest of your essay.(5)

2. Your claim, derived from Powers, that the German scientists deflated the "early interest of German military officials in an atomic bomb": Anyone who has a passing familiarity with the history of German research will know that during the "early" period, from 1939 to 1942, the German scientists did everything they could to push research as rapidly as possible. The reference above to Heisenberg's February 1942 address to regime officials is one instance of several from this period.

3. The quote from April 1941, near the end of the essay, in which Heisenberg purportedly delayed research: Aside from the problem that this was a third-or fourth-hand statement, as indicated above there is no evidence of any slowing of research at that time. In fact, Heisenberg's Leipzig experiments were moving so rapidly that they achieved the first recorded neutron multiplication at about that time. During those years Heisenberg gave up his own interests in other research in order to split his weeks between the Berlin and Leipzig nuclear efforts, even to the neglect of his growing family. These are hardly the actions of a man attempting "to delay the work as much as possible."

4. The summary quotation from pp. 478-479 of the Powers book: Each of these statements is unfounded to a greater or lesser extent. Heisenberg may not have warned German authorities of an Allied bomb, but his close assistants and colleagues did—and in writing. Contrary to your and Powers' assertions, Heisenberg did seek support for an all-out effort during the early years, right up to February 1942 (as he himself recalled at Farm Hall). Powers' point is that the urgency changed thereafter. As I and several others have shown, this change in urgency was not due to Heisenberg's moral withholding of information but to other factors associated with the situation at that time. For instance, as the Farm Hall reports make abundantly clear, Heisenberg and the Germans were so convinced of their superiority that they believed that if they could not make the bomb

within a few years, then neither could the Allies.

5. Your allusion on page 6 to "Heisenberg's influence in stopping a German effort": Again, there is no evidence to support this claim. Powers relies heavily on the April 1941 message, which, as indicated in 3, does not coincide with the evidence of that period. He also refers to Heisenberg's meeting with Albert Speer in June 1942 for which we have only post-war recollections. These suggest that Heisenberg did not push for a crash program in bomb construction. But that was due, as also indicated above, to factors other than moral scruples, such as the fear of failing to build a bomb within a short period of time, the lessened need for the nuclear effort within the political and personal contexts of that period, and the worsening economic, industrial and military conditions in Germany beginning in 1942.(6)

6. The quotation from Max von Laue at the end is taken from a letter he wrote to his son during his captivity at Farm Hall. Years later von Laue strongly disavowed this statement to Paul Rosbaud, which was also recently published. In it, von Laue states that at Farm Hall "I did not hear the mention of any ethical point of view."(7) Nor was one recorded in the Farm Hall reports.

I have not attempted to address every assertion in your essay, but I think that the general conclusion is clear: your contention derived from Powers and Jungk that Heisenberg and other German scientists prevented a German atomic bomb for moral reasons is completely at odds with the evidence and with the general context of their work and lives in war-time Nazi Germany. As I have written elsewhere, my objections to the "moral sabotage theory" is not meant to imply the opposite: that Heisenberg was an evil genius bent on building atom bombs for Hitler. Rather, as I see him, he was a normal, cultured individual who was caught up in and subverted by a dreadful situation for which he was completely unprepared. My main concern is to learn from his reactions and behavior, not to judge him from the comfort of hindsight. If he and his historians are not willing to admit his human fallibility as revealed under the conditions of his times, then it is the duty of others such as ourselves to admit it for them so that we and future generations can learn and benefit from his experiences.

I would strongly suggest that the best contribution the *F.A.S. Public Interest Report* can make to the 50-year commemoration of the atom bomb is to bring to your readers' attention the many valuable lessons that we can learn from the difficult decisions and sometimes tragic human drama of scientists confronted with the awesome powers unleashed by their research. It serves little purpose to inflame an already contentious debate by promoting a false image of singularly heroic scientists whose supposed behavior has little to do with actual events.

In the meantime I would also strongly urge you to publish a full retraction or, at the least, a thorough revision of your assertions regarding German war-time research.

Sincerely yours,

David Cassidy

WIESNER, PAULING AND HIGINBOTHAM MOURNED

JEROME B. WIESNER

Jerome Wiesner, former science adviser to Presidents John F. Kennedy and Lyndon Johnson, President Emeritus of the Massachusetts Institute of Technology, and a long time sponsor of FAS died on October 21 of heart failure at the age of 79.



Jerome B. Wiesner

During World War II, he worked at the MIT Radiation Laboratory and at Los Alamos. He returned to MIT to serve as assistant professor, associate professor and, in 1950, as full professor.

Before becoming Presidential Science Adviser to Kennedy in 1961, Jerry was the staff director of the US delegation to the Geneva Conference for the Prevention of Surprise Attack and had become associated with the Pugwash Movement. He became President of MIT in 1971. And he served, to the end, as a member of the Board of the John D. and Catherine T. MacArthur Foundation.

The Federation relied upon Jerry's endorsement that FAS was "the conscience of the scientific community", an endorsement he twice renewed over the last 25 years. In 1980, he was given the FAS Public Service Award "For Past and Future Leadership".

He was always ready to help when called upon and showed his courage and tenacity in a valiant struggle back to intellectual life after a devastating stroke a few years before his death. Using a computer as an aide, he recovered and even returned to giving speeches.

Jerry Wiesner was a man who never slowed down in his work for human progress and in his invariably advanced thinking of what ought to be attempted. He was the titular leader of the arms control and disarmament movement for many years, and his loss will be long felt.

LINUS PAULING

On August 20, Linus Pauling, twice a winner of the Nobel Prize, died at 93 of cancer. He used the prestige of his first prize, for chemistry in 1954, and his stubborn unwillingness to be cowed by cold war public opinion to press for an atmospheric test ban on the testing of nuclear

Wiesner played a major role in the establishment of the Arms Control and Disarmament Agency, in the partial nuclear test ban treaty, and in the negotiation of the ABM Treaty. Inside the scientific community he was recognized as an authority on microwave theory, communication science and engineering, signal processing, and radio and radar.

During World War II, he worked at the MIT Radiation

weapons—a campaign that brought him the second prize for peace in 1962.

Pauling was a chemist's chemist. By the age of 30 he had already published 50 papers and become a full professor at the California Institute of Technology. But it was his work in the field of peace that made FAS so proud to have him as a Sponsor. Pauling stood up to Senator Joseph R. McCarthy, chairman of the Senate Permanent Subcommittee on Investigations, who accused him of having a "well nigh incredible" record of membership in Communist front organizations. At one point, in 1952, Pauling was denied a passport to travel abroad for fear he would flee to the Soviet Union—in fact, he was going to a London conference.

Pauling defended J. Robert Oppenheimer and systematically denounced the arms race. Perhaps no scientist can better lay claim to having resisted the climate of the 1950s and 60s in the service of preventing the trends toward nuclear war.

WILLIAM A. HIGINBOTHAM

William Higinbotham—first FAS Chairman, first FAS Executive Secretary and FAS official for 50 years— died on November 10 at the age of 84 from emphysema complicated by a damaged vertebra.

Willy's career, and his importance to FAS, are summarized in the plaque that is depicted on this page. In September, when Willy said he should become an "official emeritus" and might not be able to attend the 1994 annual meeting, FAS decided that the time had come to name its headquarters "Higinbotham Hall." (This was done officially on December 17.)

As he grew weaker, FAS speeded up the presentation by mailing him a replica of the plaque and informing him of our intention. The day before he died, he was able, though in an oxygen tent, to confirm by phone to FAS President

HIGINBOTHAM HALL HEADQUARTERS OF FAS

WILLIAM A. HIGINBOTHAM (1910-1994)

1945, LOS ALAMOS: FIRST CHAIRMAN OF ALAS
1946, WASHINGTON: FIRST CHAIRMAN OF FAS
1946-47: FIRST FAS EXECUTIVE SECRETARY
1945-94: FAS OFFICIAL FOR A HALF CENTURY

OUR EFFORTS TO MOVE THE PLANET
REST ON THE FULCRUM HE FASHIONED
FEDERATION OF AMERICAN SCIENTISTS (FAS)

1994

Stone that he was "well pleased" with the honor the plaque represented. The fact is, as former Chairman Robert Wilson put it, "FAS would not be in existence today, if Willy had not shepherded this organization through its first 25 years."

After getting an A.B. degree from Williams College in 1932, he did post-graduate work at Cornell until 1940, at which time he began work on radar at the MIT radiation laboratory.



In 1943, he went to Los Alamos as an engineer and rose to head the electronics group in 1944-45. By the end of the war, he was the Chairman of the Los Alamos Association of Atomic Scientists (ALAS) which became a key constituent of the early FAS.

From there Willy became, for FAS's first six months, its first Chairman. (When FAS was incorporated in the District of Columbia in February 1946, it was Willy and two secretaries who signed the Certificate of Incorporation.)

He subsequently relinquished the Chairmanship to the scientifically more senior Robert Wilson, who became FAS's first "elected" Chairman.

Thereupon Willy became the CEO or Executive Secretary for the next 18 months. In successive years, he was elected Chairman on no less than two occasions (1950 and 1965)—an unprecedented honor—and was elected to the FAS Council in 1974 and 1985, serving later on the FAS Fund Board of Trustees from 1987.

He often chaired the nominating committee, seeking new talent. And even in the 1970s and 80s, when FAS had paid full time staff, he chaired the Committee on Constitutional Revisions.

Brookhaven National Laboratory, where he worked on reactor safeguards from 1947 until his retirement, established the Higinbotham Nuclear Safeguards Library. From associate head of the electronics division he moved to senior physicist in 1968. In 1984 he "retired", but continued working as a consultant to the laboratory and as an active participant in an FAS project that assisted Brazilian physicists in pushing for civilian control of nuclear energy in that country. At his death, he was working on a biography on which he said, in a letter in July, he was "making progress slowly."

Willy was invariably cheerful, constructive, sensible and down-to-earth. His advice and judgment and his perseverance made FAS what it was in its first 25 years of existence and helped it, during the second quarter century, stay on the tracks.

Award to Carl Sagan

By vote of the FAS Executive Committee, FAS Sponsor Carl Sagan was awarded, at the celebration of his 60th birthday in Ithaca, a Benjamin Franklin medal inscribed with the commendations: "Statesman", "Philosopher" and "Inventor".

In presenting the award, an FAS spokesman asked the audience to reflect, in particular, on Sagan's work on nuclear winter and freedom in the Soviet Union while a surprisingly apposite Latin laud on the reverse side of the medal was read. In translation:

"He snatches lightning from the heavens and the scepter from the hands of tyrants"

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