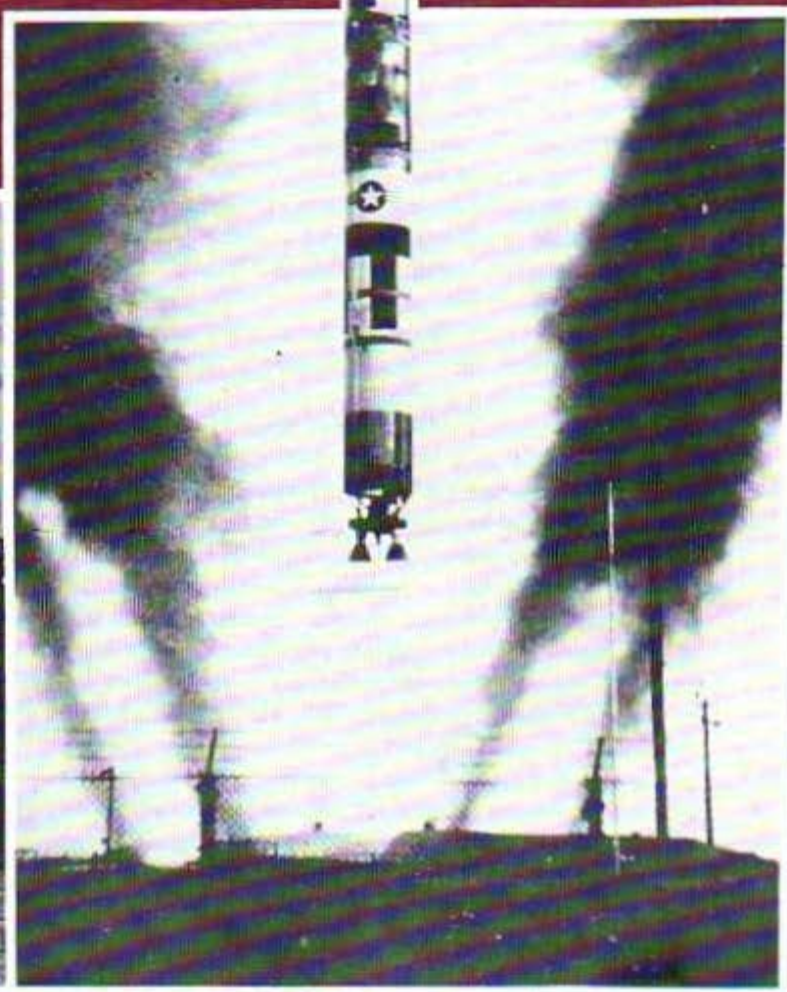


SCIENCE FOR THE PEOPLE

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Vol. 13 No. 4

MILITARISM AND SCIENCE



Laser Fusion
Space Militarism
Strategic Policy
Militarism in Academia
Biological Weapons

Challenging the Weapons Labs
Economics of "Rearming America"

about this issue

Outraged by the U.S. war in Vietnam, in a period of heightened political and social awareness, progressive scientists and technologists joined together 13 years ago to establish the organization and the magazine, *Science for the People*. Thus was launched an organized radical critique of science and technology under U.S. capitalism, an effort to demystify the work of scientists in the capitalist system, an investigation into alternative modes for scientific productive capacity, and a challenge to the basis of the imperialist state. Central to this was the role of science and technology in an increasingly militarized capitalist society. It is now a commonplace: more than half of all scientists and engineers and of all support for research and development in the U.S. are controlled by the military.

Yet surprisingly, in the last decade few *Science for the People* articles have dealt specifically with the issue of militarism — as a central source of corporate profit, as the predominant mode of scientific and technological production, and as a basis for U.S. hegemony in the world. **With this Special Issue we hope to refocus attention on the extent to which science and technology have been pressed into the military service of U.S. capitalism.**

But we hesitate. . . the subject is so enormous, its hold so tight, its presence at once too abstract and too all-encompassing to confront directly. Do we have access to the necessary information? Is the subject inappropriate for organizing? Will we be risking our careers? Can we discover the truth about the “Soviet threat”? Yet with U.S. war preparations increasing, we found that despite all reservations, no issue could be so crucial today or so important for political organizing as this one.

Several articles reveal the dominance of militarism in the U.S. and the central role science and technology play in it. “The Basic Economics of ‘Rearming America’ ” confronts the vast economic scale of militarism, and we learn of the strategies of the capitalist class — its vested interest in militarism and how science and technology fit in. Congressman Ronald Dellums, in “What Constitutes ‘Adequate’ Defense?”, condemns the despicable policies of the Reagan Administration. “Resurgent Militarism in Academia” documents the military control of scientific research and development, showing how the military operates to achieve these ends.

The “Soviet threat”, which we approached so cautiously, is attacked in several articles as a political-economic tool for expropriating labor and resources to enrich capitalist elites (see “The Basic Economics of ‘Rearming America’ ”, “What Constitutes ‘Adequate’ Defense?”, and “U.S./U.S.S.R. Strategic Policy”).

Those in power hide these realities from us. They mystify the truth and, in the name of national security, conceal the relevant facts. Given the facts, the average person *can* understand the political and technical aspects of militarism. Expert economists and policy analysts have no monopoly on knowledge and action (see “Challenging the Weapons Labs”). Were military appropriations not buried in unlikely sections of the budget (see “The Basic Economics of ‘Rearming America’ ”, “Resurgent Militarism in Academia”, and “Space Militarism”), and were military projects not masqueraded as noble civilian enterprises (see “Laser Fusion” and “Space Militarism”), the public would not be drowned in a sea of mystification. But as things are now not only are the people kept placated, but scientists and technicians are kept unaware of their participation in military-capitalist projects. When all else fails, the cloak of secrecy is donned to hide information, not from imagined adversaries, but from the workers and the public whose lives and security are threatened (see “Biological Weapons and Third World Targets”).

Science for the people means challenging militarism on many fronts. Science workers and the public need to be informed and to mobilize for the political struggle. They need to mobilize around specific technologies and research projects (e.g., “Biological Weapons”, and “Laser Fusion”). They need to mobilize in the weapons laboratories and at research centers (see “Resurgent Militarism in Academia” and “Challenging the Weapons Labs” and “Space Militarism: A Debate”). And that struggle must be carried to its final stage: a fundamental transformation of the present political-economic system.

UPCOMING ISSUES OF SCIENCE FOR THE PEOPLE

The SftP East Coast Editorial Committee is soliciting ideas, reviews, outlines for potential articles and commentaries for the Nov./Dec. issue on Computers, Automation and Work as well as the March/April issue on Racism and Science. Material should be sent to: Boston Editorial Committee, Science for the People, 897 Main St., Cambridge, MA 02139 or call (617) 547-0370 for further details.

The SftP Midwest Editorial Committee is planning a special issue on Feminist Science for July '82. They are seeking ideas, articles, reviews and commentaries. Material should be sent to: Midwest Editorial Committee, Science for the People, 4104 Michigan Union, Ann Arbor, MI 48109.

FEATURES:

Front Cover: Upper right photo of a Titan missile courtesy of the Union of Concerned Scientists; upper left photo of police guarding the Pentagon during the Women's Action in November 1980 is copyright 1980 by Ellen Shub; lower center photo of New York City by Earl Dotter/American Labor.

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news notes

MX MADNESS

This month (July) the Reagan Administration will announce its decision on the MX missile system. Whether the missile is to be deployed in a race-track maze, in modified Minuteman missile silos, in submarines along the coasts, or in a combination of these, is certainly important. Even more important is how this decision is made.

The Administration's decision will be based on a report submitted early June by an elite review committee, specially selected to provide an "objective" critique. Locked away in secrecy, this committee granted no press interviews, there was no public discussion, the working people who will pay for it and whose security will be threatened by it were not consulted. Significantly, the committee was mandated not to consider *whether* the MX missile should be deployed, but only *how* the missile should be deployed. Thus by bureaucratic sidestepping, no one is held accountable for actually deciding whether the MX missile (a counterforce weapons) should be deployed at all.

The make-up of the advisory committee is indicative of whose interests are being represented, and is perhaps best illustrated by its Chairman, Charles Townes. Townes is a respected member of the academic community, co-recipient of the Nobel Prize in 1964 for his (sometimes disputed) invention of the laser, and Professor of Physics first at Columbia, then at MIT, and finally at the University of California, Berkeley (where as University Professor he is excused from teaching duties so he may devote time to other activities). His other activities are not untypical.

Townes has established long-time service and loyalty to the Pentagon and to major defense contractors. During the 1960s he was Vice President and Director of Research for the Pentagon's Institute for Defense Analysis, in which capacity he oversaw the establishment and continued existence of the notorious Jason group. He has also served on the top-level Science Advisory Board for the Air Force, was a trustee of Rand Corporation during the Vietnam War, and is currently on the board of directors of

General Motors Corporation, a major defense contractor. All of this while also a university professor.

The decision on the MX basing mode was made by military-capitalist elites like Charles Townes. Clearly his decision, and that of other members of the committee, is determined by the political-economic relations of his class of people.

NEW WAR PLANS FOR U.S. HOSPITALS

The Department of Defense is now asking for voluntary agreement from civilian health administrators in 17 U.S. cities to allocate beds and staff to military casualties of "a future large scale war overseas" which will probably "begin and end very rapidly and produce casualties at a higher rate than any other war in history". By the end of 1981, a national capacity for 50,000 beds will be "reserved" for such casualties. While agreement is technically between hospitals and the DOD, hospitals are expected to insure participation of their own staff.

In the fall of 1980 this military plan, called the Civilian-Military Contingency Hospital System (CMCHS), was quietly endorsed by the American Medical Association, the American Hospital Association, and the Joint Commission on Accreditation of Hospitals. Not until early 1981 has the plan begun to be unveiled to a broader public and press. Still sketchy, the story has been leaked principally through materials provided hospital staff at conferences sponsored by the military. Information packets given out at these meetings have included the following: a wounded patient profile, billing procedures, bed availability estimate forms, memo of understanding agreement with DOD, map of sites for the program in the U.S., and a sample letter for hospitals to provide the DOD with hospital personnel employee profiles (age, sex, and military status). Yearly drills with the military are already planned, with West Coast hospitals among the first to be targeted.

According to the packet materials, the preparations are being made for a major conflict outside the United States where the "forward military medical units will concentrate on quickly stabilizing patients and moving the more severely wounded and sick" to U.S. hospitals. Hospitals with 150 beds would be expected to commit 50 to CMCHS, and

civilian health workers may be required to assist "sorting teams" which meet planes carrying the wounded. The plan could become operative upon declaration of a national emergency by the President.

Already health care service workers are organizing against CMCHS in general opposition to war preparations and to the "racist impact" this plan may have for minorities now seeking health services. For more information contact: Committee to Defend the People's Health, Room 24, 4170 E. Piedmont Ave., Oakland, CA 94611; or Committee Against CMCHS, 3240 21st Street, San Francisco, CA 94110.

JOBS WITH PEACE

Does the U.S. government spend too many of our tax dollars on the military? Can the country afford both guns and butter? These questions form the basis of the Jobs with Peace (JWP) campaign, a grassroots, nationwide effort to rebuild the economy by shifting funds from the military to the civilian sectors.

Basic to all JWP initiatives is the link between military and social spending. As war-making currently takes up 58% of every tax dollar, precious little money is left for human needs programs. Yet this increasingly small proportion of the budget is the sole beneficiary of the "belt-tightening" so favored by administration budgeteers.

Military spending has other harmful effects as well. Inflation is caused, since no consumer goods or services are produced, by military spending. Furthermore, while you cannot consume military goods, workers in the defense industries still demand these goods and services. A stable stock of goods must make do for all workers, driving prices up.

Partially due to Reagan's social cuts and military increases, the JWP campaign is flourishing. Next November, referenda are planned in Boston, Seattle, Pittsburgh, Milwaukee and in parts of northern California. In the South, the Southern Organizing Committee for Economic and Social Justice (SOC) vows "to put the issue of military spending as opposed to human needs in the forefront in Southern Communities" through a series of JWP-like initiatives. The Reagan administration's guns over butter policy will be receiving more and more challenges in the upcoming years.

RESURGENT MILITARISM IN ACADEMIA

by The Berkeley Study Group

The constant activity which you . . . display in your famous arsenal suggests to the studious mind a large field for investigation.

—Galileo Galilei

Thus wrote Galileo Galilei on the opening page of his work which marks the beginning of modern science, the *Two New Sciences* (1638). It is not surprising that Galileo's new science was motivated by military interest, for western science and military interests have always been entwined; what changes is the degree of entanglement. This article reviews U.S. military involvement in basic science and technology, with emphasis on how this involvement has changed over the past two decades. It is now apparent that a concerted effort is underway to strengthen the relationship, with important effects on the nature and practice of science and technology in the United States.

The first government support for science and technology — the War Department's sponsorship of the Lewis and Clark expedition in the early 1800s — arose from a desire to press scientific enterprise into the service of western expansionism. Further government involvement was similarly tied to military considerations: the National Academy of Science was chartered in 1863 to provide scientific and military advice to the government during the Civil War, the National Research Council was first formed in 1916 to mobilize scientific resources for the First World War, and the National Science Foundation followed from relations cultured during World War II.

Paralleling these developments, specific military organizations were formed to conduct and contract research and development for military interests. With the Corps of Engineers stationed at West Point, Jefferson initiated the first military academy. The Naval Observatory was created during the Civil War, the Naval Research Laboratory was founded shortly after World War I, and by 1941 the Navy established its Research

The Berkeley Study Group is composed of members of Science for the People and the University of California, Berkeley, community. This article was prepared by Ross Flewelling and Charles Schwartz.

and Development Board. An outgrowth of this Board, the Office of Research and Inventions was the first military organization empowered to fund and supervise external contracts for research. By 1946, "In recognition of its paramount importance as related to the maintenance of future naval powers and the preservation of national security," the Office of Naval Research was authorized to "plan, foster, and encourage scientific research."

Today, the primary research-contract responsibilities of the Department of Defense (DOD) are shared by the Army, the Navy, the Air Force,* and the Defense Advanced Research Projects Agency (DARPA). Together with the DOD laboratories, these agencies annually control over half a billion dollars of basic research funds. For all research and development activities the DOD currently spends about \$17 billion per year. Science and technology in the United States is geared toward federal support, and that source of support has long been dominated by the Department of Defense.

Ebb And Flow

DOD sponsored research came under heightened academic scrutiny during the Vietnam War. Spurred into militancy against scientists who worked closely with the Pentagon, critical scientists began organizing into effective political forces, such as Scientists and Engineers for Social and Political Action (which became Science for the People). At conferences and on campuses, students and co-workers challenged academic participation in military research and confronted elite scientific consultants to the Pentagon, like the notorious Jason group. Congress soon passed the Mansfield Amendment, legislation specifically designed to constrain DOD research to those projects which could demonstrate a "direct and apparent" relationship to military interests. For a time, military work was sequestered out of universities or into a more obvious relation with academic activities, thereby facilitating scrutiny of the moral and political issues at stake.

*The Army Research Office (ARO), the Office of Naval Research (ONR), The Air Force Office of Scientific Research (AFOSR).

The controversy over academic complicity in military affairs began to fade in the mid 1970s, following the defeat of the U.S. in Vietnam and the turning of many progressive people toward single issues such as nuclear power, nuclear weapons, health care, agriculture, and occupational health and safety. Federal research support began to fall in real dollars, sending researchers scrambling for funds. Meanwhile the Pentagon was concerned about the curtailment of its control over long-term research development. It was in this context that a renewal of intimacy between academia and military officials ensued, led by the Pentagon's George Gamota, Director for Research in the Office of the Under Secretary of Defense for Research and Engineering.

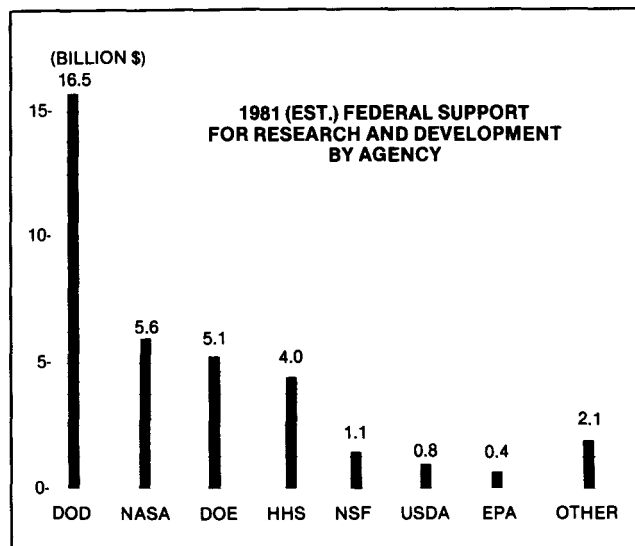
In a 1980 AAAS Symposium entitled, "How Much Does the Defense Department Advance Science?", Gamota summarized the past history and the present state:

The Department [of Defense] is proud of its relationships to the university community, a relationship that was strong and healthy up through the early sixties. In the mid-1960s and early 1970s, a number of factors caused a weakening of the working relationship that existed between the DOD and the scientific and engineering communities. We are now working to repair those relationships.¹

The revitalization of Pentagon ties to academia is forging ahead in several directions: renewed direct and indirect funding for military projects, enhanced long-term military-academic relationships and interdependencies, and nurturance of a cadre of academic consultants and special-study groups.

Defense Dollars

One of the most direct indications of increasing military involvement in science and technology is reflected in funding figures. By the mid 1970s, DOD support for basic research had fallen in constant dollars by nearly 50% from its peak 1965-66 level. Since then, however, it has steadily risen in constant dollars by about 8% per year, totaling over \$500 million for 1981. For all research and development (R&D) the statistics are even more staggering. Nearly \$17 billion, or about 10%, of the entire DOD budget for 1981 (near \$160 billion) is earmarked for R&D. The military dwarfs all other R&D recipients of federal funds, with space, health, and energy all receiving less than \$6 billion each. Not only is the Pentagon the single largest source of R&D funding, but it is also the fastest growing source, increasing by 20% from 1980 to 1981.



(Source: Office of Science and Technology Policy)

And this represents only the direct Pentagon control of R&D funds; substantial military funds are hidden within other budgets. For example, several billion dollars of the Department of Energy budget is for nuclear weapons R&D and for Navy reactor design; part of the budgets of the National Institute of Health and the Department of Health and Human Services are devoted to medical R&D for the military; the National Science Foundation shares funding with the DOD on joint research projects; and at least one third of the \$3 billion allocated this year for the space shuttle is slated for military efforts. (See "The Basic Economics of 'Rearming America'" in this issue for less conservative figures.)

At these levels, the military controls 45% directly, and well over 50% both directly and indirectly, of all federal support for research and development in the United States.

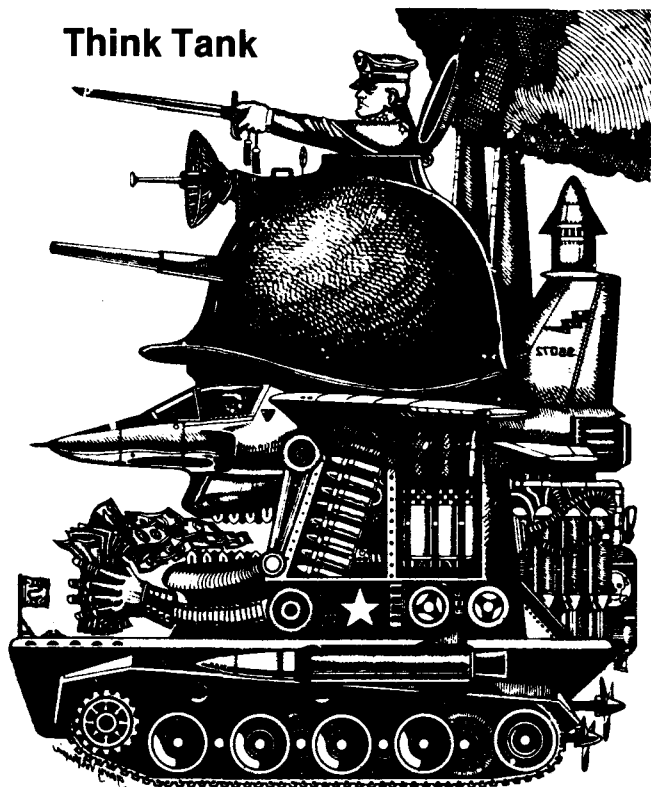
Direct Military Ties

Beginning about 1976 the Pentagon made a purposeful effort to strengthen its direct ties to academia. In the following three years, while the Pentagon's overall support of basic research increased by some 30%, its support of research in the universities increased by nearly 70%.² In June 1978, the President's science advisor, Frank Press, issued a report urging the Pentagon to expand its research program to create "a pool of research scientists in relevant fields, acquainted with DOD needs and potentially available to help on problems where technical contributions are part of the solution." The report continues, "this communication provides members of the research community with access to potential users and with an opportunity for relaxed and understanding debate about radical new concepts of

military application.”³ The panel which wrote this report was composed of major agency heads, major weapons manufacturers and top university representatives (see the box on the panel membership). They concluded,

Though the basic research program is a principal source of new knowledge, new options, new technical concepts and whole new capabilities so important for the future strength of any first order armed services, it is now substantially below the level needed to meet DOD needs and well below the full potential of the research community to provide valuable contributions. *There is now a new policy to reverse this decline and to increase the basic research budget in constant dollars over the next few years. The Panel welcomes and applauds that reversal* and believes that if properly administered it will make possible the quality and excellence essential to the research needed to maintain the strength of the United States armed forces. [emphasis added]⁴

Think Tank



In addition to funding and policy directives, the DOD has initiated new liason programs with scientists and scientific institutions to encourage research in directions of its own interest and provide assistance in framing fundable research proposals. The Navy, for example, invited researchers in May of 1974 to the Hyatt

(Continued on page 32)

Membership Science Advisor's Panel on Basic Research in the Department of Defense

- | | |
|--|---|
| Dr. J.K. Galt—Chairman
Sandia Laboratories | Gen. Samuel Phillips (Ret.)
TRW Systems, Incorporated |
| Dr. Ivan L. Bennett, Jr., M.D.
New York University
Medical Center | Professor Norman F. Ramsey
Harvard University |
| Dr. W. Dale Compton
Ford Motor Company | Dr. William P. Raney
Executive Secretary
Office of Science and
Technology Policy |
| Dr. John M. Deutch
U.S. Department of Energy | Dr. David S. Saxon
University of California |
| Dr. Robert A. Frosch
National Aeronautics and
Space Administration | Professor Jacob T. Schwartz
Courant Institute
New York University
(consultant) |
| Mr. Martin Goland
Southwest Research Institute | Professor William R. Sears
University of Arizona |
| VAdm. William J. Moran,
USN (Ret.)
Ford Aerospace and
Communication Corporation | |

This list reveals only part of the extensive interlocking relationships between the members, and their long-standing ties to the military establishment. Moran and Phillips exemplify the classical pattern of retired military officers who go to work for large military industries. Galt and Compton are vice presidents of large industries with large defense contracts (Sandia Labs is the AT&T subsidiary that develops the hardware of nuclear weapons). Goland is the president of a large think tank funded by industrial and government contracts and he has previously served on top level advisory committees for the Navy and for General Motors Corporation. The three committee members representing other Executive Branch agencies (DOE, NASA, OSTP) all have held previous high level positions within DOD: Deutch has been on the Defense Science Board and the Army's Science Advisory Panel; Frosch was Assistant Secretary of the Navy; Raney was Chief Scientist for the Office of Naval Research.

Most of the academic members of the Panel also have visible credentials for loyal service to the military establishment. Bennet (now Dean and Provost of NYU Medical Center) has been deputy directory of OSTP, member of the President's Science Advisory Committee and of the Defense Science Board, and consultant to the National Security Council. Ramsey (who is president of Universities Research Association, the consortium that operates the nation's largest high energy particle accelerator laboratory under contract from DOE) has served on top level advisory committees for DOE, Air Force, and DOD. Saxon (president of the University of California) has responsibility for the Livermore and Los Alamos nuclear weapons laboratories and, shortly after the meeting of this panel, it was announced that he had taken a well-paid position as a consultant for Ford Motor Company, which is already twice represented on this Panel and receives substantial Pentagon contracts.

WHAT CONSTITUTES “ADEQUATE” DEFENSE?

by Congressperson Ronald Dellums

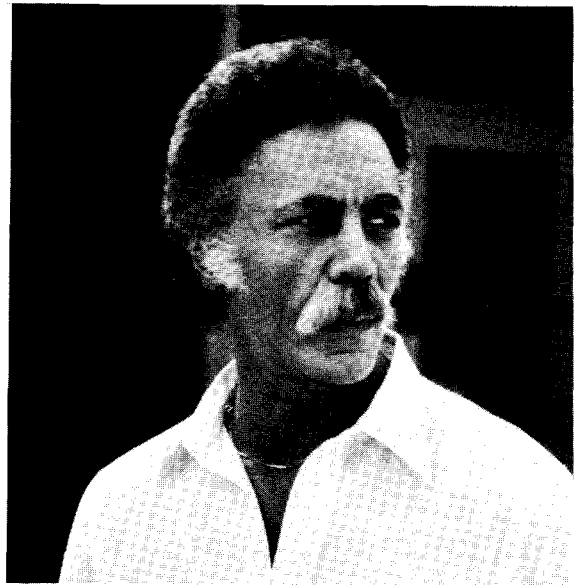
The new Administration's budget, formerly submitted to Congress on March 10th, is the most flagrant, systematic assault by government on the economic well-being of America's middle class, working poor and unemployed in this century.

This Administration has deliberately designed a spending and tax program which benefits the rich, the powerful and the corporate elite. There are no "savings". The \$48.6 billion in cuts from social service programs for the poor, the elderly, the unemployed and the handicapped will be transferred directly to the Pentagon. This is a deliberate escalation of the international arms race, on which this Administration plans to spend a minimum of \$1.3 trillion in the next five years.

On March 4th the new Secretary of Defense unveiled the Administration's military spending plans for the next five years. He hailed them as "the second half of the Administration's program to revitalize America". It is nothing less than a conscious commitment to beat our plowshares into swords.

The dollar figures are mind-boggling, but the manner in which they are to be spent is even more frightening. In 1977, when the Carter Administration assumed office with a pledge to reduce military spending by \$5-\$7 billion in its first year, the total "defense" budget was slightly less than \$100 billion. Four years later it was \$173 billion, but Mr. Carter left office asking for an increase to \$194 billion. The new Administration is determined to accelerate the pace of escalation. For the next fiscal year it wants the Carter request raised to \$226.3 billion. By 1986 it projects an annual military budget of \$367.5 billion. It proposes to spend a minimum of \$1.3 trillion in the next five years on the military function. But, with cost overruns and supplementals, that figure could easily reach \$2 trillion. Incredible! Despicable. . .

Even more ominous is their selection of spending priorities. These include a continuation of the MX missile program, the expansion of the Trident Submarine and Trident II missile program, and updated version of the manned bomber, the construction of another nuclear carrier, the expansion of theater nuclear weapons systems, the creation of rapid deployment strike forces, the possible permanent siting of American ground and air forces in the Middle East and other "hit list" trouble spots around the globe, and the resurrection of World War II naval relics for combat duty, such as the battleships *Iowa* and *New Jersey*, and the carrier *Oriskany*.



Ronald Dellums

That is quite a menu, even given the Pentagon's insatiable appetite for more - more - more. . . . However, it is time for the Pentagon planners to confront the realities of the 1980's, rather than indulge in nostalgia for the 1950's. The basic reality of the 1980's is this: the era of "Pax Americana" is past. Neither we nor the Soviet Union can bilaterally, much less unilaterally, control the world. But, we have the power, singly and together, to destroy it — many times over.

The proper military posture for Americans should be the defense of America, not the domination of the world. I support a military budget sufficient to insure our proper and *morally legitimate* foreign policy objectives. Moral and humane considerations dictate that we oppose the proposed military budget, which is ill-conceived, over-reactive and a "clear and present danger" to the constructive search for world peace.

The present triad of land-based missiles, bombers, and especially submarine-launched missiles ensure, well into the future, a virtually invulnerable capacity to destroy the Soviet Union as a functioning society.

I do support an increase in military pay and benefits as a means of retaining qualified, experienced personnel, particularly among non-commissioned officer ranks and junior officers, in addition to attracting new recruits with the potential for handling today's complex military technology. I remain unequivocally opposed to the resumption of a peacetime draft in any form.

As a senior member of the Armed Services Committee, I believe it is possible to cut at least \$27.4 billion from this year's military budget, while still preserving a more than adequate defense posture for this nation. In my judgement the triad system can be safely reduced to a diad system, through the elimination of new manned bombers and further construction of nuclear carriers. Even Admiral Stansfield Turner, former Director of the C.I.A., agrees with this assessment. In a recent article he argued against both projects, saying: "The risks to a pilot are unreasonable, and the probability of hitting the target less than with a remotely controlled system. . . like the manned bomber, the trends of technology are all making the giant aircraft carrier obsolete."

I have opposed the MX missile program since its inception, because it is the most dangerous and wasteful weapons system yet devised by the Pentagon. The estimated cost of this weapon has already risen from approximately \$35 billion to more than \$100 billion for the life of the system. The impact of air pollution and land destruction will be enormous, not only in Utah and Nevada, but wherever this weapon would be sited.

Worst of all, it is a direct incitement to an even more deadly escalation of the nuclear arms race, because of its "killer first-strike" capabilities.

Many of the same arguments can be made against the further development of the Trident II Sub missiles and theater nuclear weapons such as the Pershing II and Cruise missiles. In his final report to the Congress, former Defense Secretary Harold Brown inadvertently admitted that the U.S. already has 7000 nuclear warheads deployed throughout Europe. The security of our N.A.T.O. allies will not be enhanced by the introduction of these new weapons. If anything, they will impede the search for nuclear arms limitations and a mutual balanced reduction of forces in Europe.

The stated intention of developing a Rapid Deployment Force (RDF) and resurrecting the World War II naval relics mentioned above are demonstrative evidence that this Administration is seriously contemplating military intervention in the Third World as an integral part of the revived "Crusade against Communism. These proposals should be rejected outright, because they are a moral affront to a nation which proclaims itself as "the leader of the Free World."

Finally, the General Accounting Office has proposed \$4 billion in current program savings, procedures which I support.

At the present time our nation — and the national economy — has much more to fear from the Pentagon "big spenders" than we do from any Soviet threat, imagined or real. The struggle for sanity in our military policy must be waged — and won — if we are to survive as a free society.

Ronald V. Dellums
Member of Congress
8th District, California



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Tanks and Banks

THE BASIC ECONOMICS OF “REARMING AMERICA”

by James M. Cypher

Preying on the fears of the military intentions of the USSR, carefully nurtured for the past 30 years, the U.S. government has made increased military spending a national priority. This call to “Rearm America” needs to be critically evaluated. It is time to ask:

—Is the Soviet Threat all we have been led to believe? *Or* is it designed to whip-up patriotism and blind support among U.S. citizens for an escalating military budget and an expansionary foreign policy?

—Will increased military spending alter geopolitical tensions? *Or* will it temporarily eliminate slumping corporate profits?

—Will increased military spending actually improve the defense capability of the U.S.? *Or* will it produce more inefficiency and more of the same type of traditional weaponry which is presently held to be inadequate?

—Will science continue to be subordinated to Cold War objectives? *Or* will science work to solve the human needs and productivity crisis?

—Must we continue to repeat past mistakes? *Or* will we learn some historical lessons and find new solutions to the domestic and international economic crisis?

Both President Reagan and his Secretary of Defense, Caspar Weinberger, have proclaimed that their proposal to raise military expenditures, while slashing social spending, is part of their policy of “Rearming America”. The objective of current policy is to push for a massive military buildup much like that realized in 1950-52. The parallels with the 1950 period are amazing.

In 1950 State Department policy planners were alarmed by events which they felt signalled a shift in the international configuration of political-economic power. In August of 1949 the Soviets exploded their first A-bomb, thereby shattering the illusion of overwhelming U.S. technological military superiority.

In late 1949 pro-Soviet forces emerged victorious in the civil war in China. Then, in June 1950, the U.S. entered into war in Korea.

In the late 1970’s alarm was spread by the announcement of the U.S. government that the Soviets were “outspending” the U.S. on armaments, and would soon surpass the U.S. in overall military prowess. Then in early 1979 the U.S. lost its Iranian ally in the economically significant Middle East. Finally, in late 1979 the Soviet invasion of Afghanistan allowed cold warriors to again raise the specter of an ever-expanding Soviet Union. A similar cry had been raised over Korea. In 1949-50, then, the surface issues were the loss of the nuclear monopoly, China and Korea. In 1979-80 they were overall weaponry expenditures, Iran and Afghanistan.

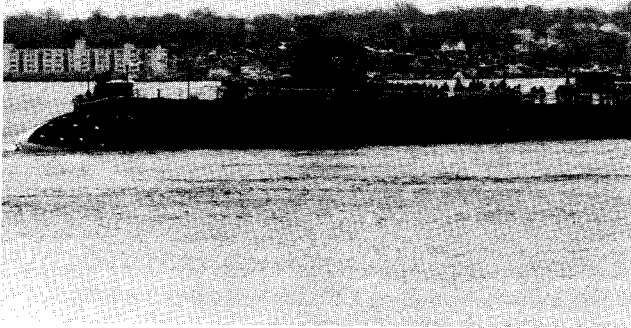
There were, of course, economic parallels too. After the postwar boom of 1947-48, the U.S. economy slowed down in 1949 and 1950. One popular view was that the U.S. was about to enter into another Great Depression. In 1979 the U.S. economy slowed and business analysts almost universally held that a serious recession was imminent.

It was within the context of political-economic crisis that in 1950 a State Department policy planner, Paul Nitze, enumerated the policy of containment militarism in a classified position paper known as National Security Council Document 68 (NSC-68). It was the adoption of the proposals of NSC-68 that led to the expenditure of over \$2 trillion for the military in the 1950-72 period. Thus it is of some significance to note Nitze’s present views as recently proclaimed in the influential journal *Foreign Affairs*: “Providing for the common defense now requires the kind of priority that it had in 1950, and it is a disservice to the American people to pretend that this can be accomplished without a major adjustment in national priorities. . . .” In NSC-68 Nitze urged that the U.S. deal with the alleged

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Soviet plan for world domination by building "offensive forces to attack the enemy and keep him off balance." The aggressiveness of NSC-68 reveals the strategic objectives of U.S. policy at that time.

In 1950 several prominent and powerful individuals created a group known as the Committee on the Present Danger (CPD) to try to convince the U.S. populace that the militarized economy and society envisioned by NSC-68 should become a reality.² Achieving success by 1952, the CPD disbanded. A second CPD was formed in 1976, again drawing on a small number of powerful policy-makers and influentials, this time to again convince the U.S. populace that it had to drop its anti-militarist sympathies to counter a growing Soviet threat. Both then and now the backdrop was one of U.S. economic crisis. Military spending, behind the veil of an external threat, was thought to be the way to transcend the crisis while restoring both U.S. dominance over the world order *and* high corporate profits.



Ellen Shub

The launching of a nuclear submarine from the General Dynamics Defense Plant in Groton, Connecticut.

The Capitalist Threat

In the present economic era of stagnation, coupled with unprecedented international competition many industries such as autos, shipbuilding, steel, electronics and aerospace have seen the domestic market falter and their rate of profit tending toward decline. It was in this historical context that military expenditures began their continued rise since mid-1979 as the "Vietnam Syndrome" was beaten back by a deluge of Cold War propaganda. The U.S. business press duly noted and championed this change of emphasis. *Business Week* (4/7/1980), for example, in the headline of one of its numerous articles on military expenditures in recent

years noted that, "Congress Goes Wild on Defense Spending"; while *Fortune* (1/26/1981) proclaimed, "Happy Days Are Here Again for Arms Makers".

In this context the case of the near bankrupt Chrysler Corporation is illuminating. While it is a widely recognized and often deplored fact that Chrysler has received two federal loan guarantees to stave-off financial disaster, Chrysler's *real* rescue via military spending is virtually unknown. Chrysler's *largest* customer is now the U.S. Army. Chrysler, long the sole maker of U.S. main battle tanks, received a lucrative contract (presently valued at \$19 billion for work through the 1980s) to build the XM-1 tank, in the mid-1970s. In design and development for several years, the company is delivering its first XM-1's in 1981 for \$600 million. For fiscal year 1982 the Reagan administration plans to jump Chrysler's order to over \$2 billion. Such huge orders should definitely save Chrysler from bankruptcy because the rate of profit on its tank contract is a whopping 78% on equity capital.³ Meanwhile, as is invariably the case, the government will get only 254 rather than 309 tanks in 1981, while the price has shot-up 380% — from an agreed contract price of \$560,000 to \$2.7 million each. (The power-train on the tanks furthermore, will fail 61% more often than allowed under original contract specifications.)

The Chrysler case illustrates four things that have become constants in the military market. First, the demand for military hardware goes up when domestic non-military sales go down — i.e., military spending is a *prop* to industry rather than a reaction to the alleged Soviet threat. *Second*, the rate of profit on military work is much higher than on domestic work. For Chrysler in 1979, when their profit rate was 78% on military work, their civilian rate of profit was *negative*. For industry as a whole over a long period of time military contract profits have averaged 56% on invested capital — i.e., over 300% higher than the average received on civilian work. *Third*, the average rate of cost overruns — i.e., the difference between what the Pentagon *agrees* to pay for military products and what it actually does pay upon contract completion, averages 300%. Chrysler's overruns, then, are "only average." *Fourth*, weapon systems normally fail to operate at contract specified levels of efficiency, and the more complex they become the more probable their failure.

The above summary of Chrysler's tank-building history can be repeated time and again. For example, the major airframe contractors, such as Boeing, Lockheed, and McDonnell Douglas experienced a 42% drop in 1980 in commercial orders of jet aircraft. As a result, Boeing has been put to work on air-launched cruise missiles, a \$3.1 billion helicopter contract, and

the avionics for the B52, while Lockheed will design the Trident II and McDonnell Douglas will build the F15 for the Air Force and the F18 for the Navy.

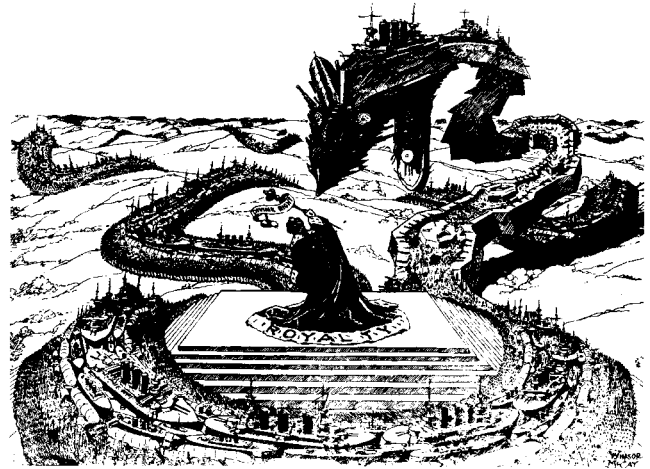
What is most interesting in the case of Chrysler and the commercial jet builders is how closely the Soviet threat parallels the industrial needs of the largest U.S. corporations. In fact, the close parallel can only be accounted for by realizing that the U.S. government is using the bogey of the Soviet threat to pinpoint outlays that will serve as an industrial *profit recovery plan*. (Or in the words of Secretary of Defense Weinberger, the arms buildup is "the second half of the administration's program to revitalize America.") Responding to the big military contract buildup from late 1979 to late 1980 corporate stock prices for firms known to be in the "electronics warfare group" jumped 100% in price while "defense issues" as a whole leaped 50% in the same time period.⁴

Any modern analysis of business cycles will stress the critical role of corporate investment in maintaining high levels of production, output and employment. The full significance of the military market is best understood in terms of its countercyclical role in sustaining corporate investment, production and employment. For example, in the second quarter of 1980 GNP fell further and faster than at any time in the entire post-WWII period. Speculation that the economic situation might duplicate that of 1929 was widespread. Then, almost as suddenly, the recession of 1980 was over. Few noted that one of the major reasons for this reversal was the huge jump of roughly \$25 billion in new military contracts issued in fiscal year 1980. (Easy bank credit extended to corporations and a rapid run up in the money supply also greatly contributed to this turnaround.) Military prime contract awards jumped 35% above 1979 levels in the critical second and third quarters of 1980, while the hard pressed manufacturing sector saw their military contracts increase 48%. Although the demand for investment goods was weak in 1980, the business press clearly recognized that the demand for such goods (particularly aircraft) was buoyed by the military market in the later half of 1980.⁵ Since the Reagan administration plans to increase military contracts by \$24 billion in fiscal year (FY) 1981 and an astonishing \$44 billion in FY 1982, a similar stimulus to industries otherwise in decline is to be anticipated.

The most important lesson to grasp concerning the rapid arms buildup in this period was that these spending increases were *not* primarily devoted to high-tech exotica such as the MX missile system. Rather they were devoted to such mundane outputs as tanks, airframes, parts and shipbuilding. After years of

stagnation, the U.S. is locked-into a massive shipbuilding program that will eventually raise the Navy's fleet from 450 ships to 700 or 800 by 1995. For the collapsed U.S. metal-manufacturing sector (autos, parts, steel, aluminum, the machine tool industry and so on) shipbuilding has to be seen as a vital economic prop. Thus, the current "rearming" program is a buildup primarily in conventional weapons and parts designed to counter the "capitalist threat" of a strike by capital, i.e., a refusal to reinvest capital in the U.S. unless the rate of profit is satisfactory.

"The Monster That Menaces Monarchy."



Los Angeles Examiner, 1914.

"Like Frankenstein the Kings of Europe have created a Being Which Now Bids Fair to Destroy Its Creators."

Manufacturing the Soviet Threat

In the aftermath of widespread exposure to the depraved depths of U.S. foreign policy revealed during the U.S. war with Vietnam a general revulsion to and intolerance for U.S. militarism known as the "Vietnam Syndrome" swept the nation. Policymakers were forced to react to massive anti-militarism sentiment, i.e., in the mid 1970's, for example, 72% of the respondents to a Harris public opinion survey felt that the government was spending too much on defense. In the new era of detente the U.S. space program languished while military expenditures expressed as a percentage of the Gross National Product fell to pre-1950 levels. Many prematurely suggested that the U.S. had left militarism permanently behind and that other ways besides militarism would be found to forge a

national consensus and solidify foreign policy. Since orthodox economists have long denied the links between the prosperity generated by the U.S. economy after WWII and the always sizable and sometimes growing (in terms of general business slowdown) military expenditures, these economists gave no attention to the economic consequences of reduced military spending.⁶

For an exceedingly brief period of time during the Vietnam period, a portion of U.S. militarism had been demystified for millions of U.S. citizens. The demystification, of course, was limited to a clear realization that U.S. government policy in Vietnam had no legitimacy. Unfortunately, critics of the war effort did not probe the taproot of militarism — the link between corporate needs and military waste. They failed to do this, first, because virtually no orthodox economists have been willing to subject the economic role of militarism to critical analysis, and second, because U.S. militarism wrapped in the veil of the Soviet Threat, has been discussed only by experts ordained by the State to carry-on such an analysis—i.e., the various defense industry associations, Pentagon planners, think-tank specialists, Sovietologists, State Department planners and members of the National Security Council.

Demystifying U.S. militarism starts with a correct understanding of the magnitude of military spending, because the taproot of militarism is economic not ideological. Military expenditures in the U.S. are usually *twice* as important to the economy as they appear in the government statistics. This is so because government figures merely account for those military contracts that must be paid in any given year. Alternatively, these budget figures for “National Defense ignore the important economic impact of contracts as they are issued to corporations. Only two, three, four or more years *after* the contract has been let does the Pentagon issue payment to the contracting corporation. Since the military “shopping cart” is weighted-down with long-term contracts (such as shipbuilding at the moment) there is serious *underreporting* of the economic impact of military spending. Only several years later, when the GNP is higher, will these contracts be paid — *although their economic impact has been felt long ago.*

Moreover, the government’s manner of reporting military expenditures (expressed as “National Defense” as a percent of GNP) draws attention away from the fact that 6.4 million U.S. workers are employed by the military either in uniform, as civilians, as military plant workers or as reserves. (In addition, perhaps as many as 825,000 workers are engaged in the \$15 billion arms export market.) Nor is there any

tendency to note that military related research employs roughly one-third of all scientists and research engineers and absorbs two-thirds of all research funds allocated by the federal government. Likewise in a new era of resource scarcity no stress is put on the fact that the military is the eighth largest user of petroleum products (in terms of nation-state rankings) and consumes more than the entire populace of India.

But this is not all. The impact of U.S. militarism is disguised by the failure to mention the following military-related outlays: Veterans’ Benefits, Space Expenditures, The Department of Energy’s budget — most of which goes for the cost of operating military reactors and making three nuclear warheads per day, International Affairs (50% at least being military) and interest on past wars (50% total interest payments). As can be seen from Table I below, in FY 1980, for example, the official figures showed that “National Defense” costs came to \$127 billion — a “mere” 5% of GNP. Properly accounted for in terms of obligations incurred by the Pentagon, i.e., the actual value of contracts and other related costs, total outlays came to \$223 billion. *This is an error factor of 78%.* (Adding in foreign arms contracts brings the error factor to 90%.)

<i>A. Acknowledged</i>			
National Defense	\$127B		
		Total	\$127*
		*As % GNP (5.2)	
<i>B. Actual</i>			
Obligations Incurred	\$154B (1980)		
Science & Space	6B (1980)		
Energy (Atomic)	6B (1980)		
Int. Affairs (50%)	5B (1980)		
Veterans' Benefits	21B (1980)		
Interest on Past War Debt	31B		
Foreign Military Contracts	(\$15)	Total	\$223B*
		*As % GNP (9.5)	
		78% Error factor	\$96B

Sources: U.S. Dept. Commerce, BCD 20,12 (December, 1980), U.S. President, *Economic Report of the President* (Washington: U.S.G.P.O., 1980).

Yet, even this is not the major component of mystification in militarism. The major component is the belief that the trillions of dollars spent since 1950 have been devoted to *defending* the U.S. and its allies. In fact, no specialists seem to be willing to attribute more than 25% of military expenditures to *defense* (i.e.,

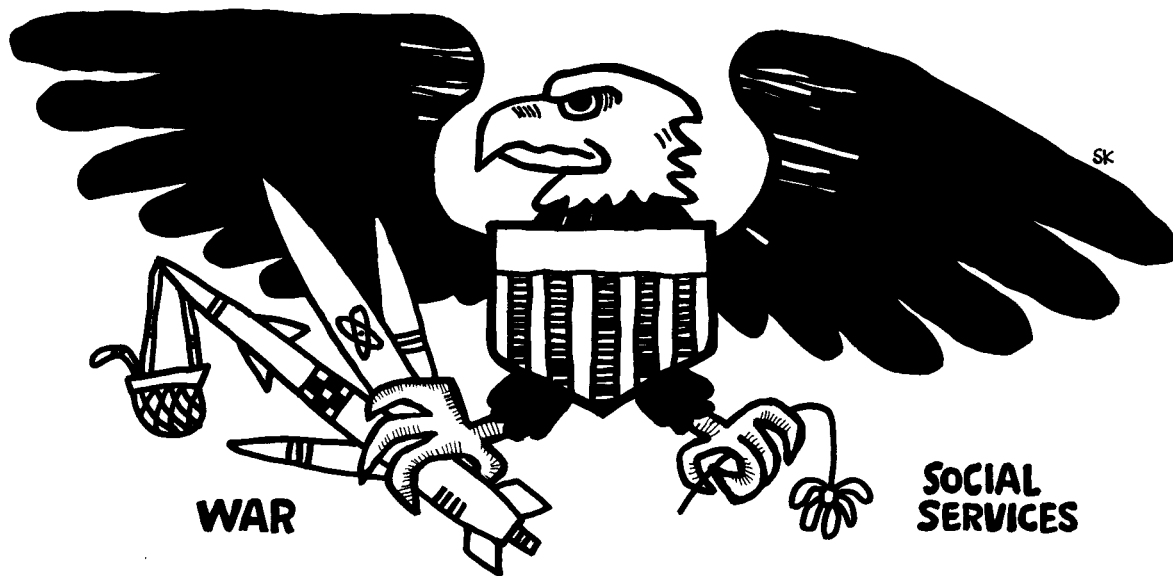
strategic weapons) however defined. Notice that the above discussion of the arms buildup of 1979 and 1980 had virtually nothing to do with nuclear deterrence. Rather, the present arms buildup is devoted to *conventional* weapons for the most part — to buoy profits and perhaps to fight in the Third World. As to *strategic defense*, economist David Calleo's study of the *Department of Defense Annual Report, 1980* shows that 15% of the budget goes for "Strategic Forces", the remainder being allocated to conventional outlays.⁷

Nonetheless, President Reagan in a speech on February 18, 1981, gravely announced that the U.S.S.R. had outspent the U.S. on arms by \$300 billion since 1970. While pledging to "get the government off the backs of the American people", Reagan was, in fact, employing the Soviet bogey to *shift* the impact of government spending away from labor-intensive social programs toward capital-intensive, high profit military contracts.

The curious genesis of the \$300 billion figure is worthy of further investigation. In the aftermath of the U.S. defeat in Vietnam the "Vietnam Syndrome" resulted in a shift in U.S. foreign policy toward detente and unofficial alliances with regional despots such as the Shah of Iran in order to maintain U.S. hegemony without directly incurring the costs. The weaknesses of this program alarmed elite policy planners who were determined that profits would be maintained at home while capital would flow freely abroad via the old system based in U.S. hegemony and U.S. militarism.

These policy planners, many of whom had been "present at the creation" and had participated in the forming and writing of the earlier mentioned NSC-68, challenged the Ford and Carter administrations' drift towards multipolarity and compromise in world affairs. In 1974 as the impact of U.S. policy in Vietnam became obvious, the bipartisan policy planning elite that had determined the direction of U.S. foreign policy (thereby empowering the U.S. State with considerable autonomy to juggle the level of military spending to fit the overall needs of the economic system) found itself unable to control policy. Initially this group sought to recement policy through then Secretary of Defense James Schlesinger who was pushing to drop detente. However, Schlesinger's intransigence resulted in his firing in November, 1975, *and* in the decision by this group of policy planners (including Paul Nitze and Leon Keyserling, the two principle authors of NSC-68) to again form a powerful elite group known as the Committee on the Present Danger (CPD).

Although the history of the CPD is too complex to recount here, this group *was* successful in driving then President Ford into a reassessment of the National Intelligence Estimate (NIE). The NIE is normally conducted by the Foreign Intelligence Advisory Board which draws on CIA data to determine the level and direction of Soviet arms outlays. The NIE has a great deal to do with the level of military expenditures requested by the executive branch from the Congress. The CPD charged that the NIE estimate of Soviet arms



Steve Karian

was too low and that there should be an "independent" analysis. Ford eventually concurred and a seven member panel comprised of four CPD members (Nitze, Foy Kohler, William Van Cleave and Richard Pipes) generated the now famous Team B report. Since the CPD's formative documents show that the objective of the group was to convince policymakers that "the principle threat to our nation . . . is the Soviet drive to dominance based upon an unparalleled military buildup" it is hardly surprising that the Team B report "discovered" a sizeable error in previous CIA estimates of Soviet outlays — i.e. the U.S.S.R. was spending 11-13% of its GNP, not 8% on arms. Multiplying this "error factor" times 10 (for the 10 year period 1970-80) Reagan's advisors came up with the uncontested figure of \$300 billion, which he claimed monetized the degree to which the Soviets had outspent the U.S.

Thus, for 1980 the Team B's method suggested that the Soviets were spending roughly \$164 billion, while the U.S. was spending "merely" \$127 billion. Although the attempt to monetize two separate military forces across two disparate cultures and economic systems is extremely complex, essentially all NIE estimates itemize Soviet forces and then calculate *how much it would cost to duplicate these forces in U.S. prices*. Although innocuous appearing on the surface, this method is fraught with danger, because no attempt is made to measure qualitative differences. When adjustment is made for the differing quality of troops, the differing efficiency of weapons, and the fact that the U.S. has weapons that the Soviets do not, it is possible to make a very crude military comparison. Such an exercise, which cannot be conducted here, suggests that the inferiority of Soviet troops (in relation to U.S. training and weapons used), the lower efficiency of Soviet weapons and the fact that the Soviets lack some 30% of the technologies that the U.S. utilizes, makes it possible to estimate in dollars a *range* of Soviet outlays of from \$73 to \$133 billion for 1980. The figure which seems most consistent with published knowledge of Soviet capabilities for 1980 is \$84 billion.⁸ Or, alternatively, U.S. outlays at \$160 billion (obligations incurred + space) are almost 200% greater than Soviet expenditures!

In 1976, with the Team B report and the combined power of the prestigious 140 members of the CPD behind them, the CPD attempted to sway President-elect Carter to stack his military policy planning appointments toward the CPD's recommendations. Failing in that endeavor the CPD set-out to divert the Carter administration from their detente-global interdependence-human rights course. In this they were successful. By late 1977 or early 1978 President Carter had moved from his campaign pledge to reduce military

spending every year, to increasing it. Furthermore, Carter in late 1977 or early 1978 issued a classified document known as Presidential Decision-18 (PD-18). PD-18 argued that the U.S. could define the Middle East as part of its "vital interest", and that the U.S. was willing to go to war with the U.S.S.R. or its allies to maintain the *status quo* in that region. This memorandum also outlined the concept of and need for a Rapid Deployment Force.⁹

PD-18 followed quite closely upon a meeting President Carter had with seven members of the CPD, a group referred to as the CPD "power structure" by the CPD's director. Pressured by the CPD and unable to prolong the tepid business expansion which started in 1977, past 1979, Carter began a sustained buildup in military expenditures in July of 1979. Thus long before the Soviet invasion of Afghanistan, Carter had moved considerably over to the CPD's position. By December 1979 (two weeks before the Afghanistan crisis) Carter revealed comprehensive long-term plans for a major military buildup to the influential Business Council at the White House. By early 1980 with his National Security Advisor wildly proclaiming that the Afghanistan crisis was "the gravest threat to world peace since WWII" Carter proclaimed PD-59, the Carter Doctrine.

Although Carter had moved from elected dove to self-proclaimed Cold Warrior in late 1978, his actions were not sufficient to satisfy the CPD. At the outset of his campaign, Ronald Reagan was advised on military matters by Team B and CPD member Richard Van Cleave and CPD member Richard Allen. In the aftermath of his election Reagan selected Allen as his National Security Advisor, (a position often considered to be the most powerful in the executive branch of the government aside from that of President). Other CPD members in the Reagan Administration include: Team B member Richard Pipes on the staff of the National Security Council, Eugene Rostow, head U.S. Arms Control and Disarmament Agency, Jean Kirkpatrick, U.S. Ambassador to the U.N., William Casey, Director C.I.A., and Ernest Lefever, nominated Assistant Secretary of State for Human Rights. In short, the CPD and, indirectly, Paul Nitze, are making U.S. military policy.

The Contradictions in the Rearming America Policy

Paul Nitze and his cohorts in the CPD are riveted on a strategy of maintaining U.S. hegemony, regardless of the economic consequences. The irony is that while

(Continued on page 40)

Cultured Killers

BIOLOGICAL WEAPONS AND THIRD WORLD TARGETS

by A. Conadera

On April 4, 1980, Elie McGee, a black security guard at the Naval Biosciences Laboratory in Oakland, California, was fired for refusing a direct order to enter the lab. His reason was that an organism being researched there was a hazard to his health. Seven months earlier he had almost died from an infection with the fungus *Coccidioides immitis*, one of several diseases being researched at the lab. McGee, who is still undergoing treatment for the debilitating disease, is suing the Navy to get his job back.

Meanwhile, hearings began in March, 1981 in San Francisco on the strange death of Edward Nevins, a pipe-fitter who had contracted a fatal case of pneumonia in 1950 while recovering from minor surgery. Nevins' heirs are suing the Army for \$11 million, claiming that his death was caused by secret biological warfare tests conducted shortly before he died.

These two incidents have refocused attention on a once hotly-debated issue both in the general public and the scientific community: biological warfare. This article will deal with that topic, and particularly with the problem raised by McGee's disease, race-specific warfare.

A Brief Backward Glance

U.S. involvement in biological warfare (BW) began in earnest during World War II. Fearing the Germans were developing biological warfare, the Army opened a facility at Fort Detrick, Maryland, specifically for biological warfare research. During the postwar years, investigations and testing at Fort Detrick flourished, nurtured by questionable U.S. intelligence reports that the U.S.S.R. had an advanced BW capability which threatened U.S. security.*

Between 1946 and 1972, over 1600 scientific papers by Fort Detrick scientists were published in the open literature.¹ In addition, the Fort Detrick facility engaged

A. Conadera is a laboratory technologist and member of East Bay Science for the People. Research materials were generously provided by Vivian Rainieri of People's World.

in research funded by the CIA, and the Department of Defense funded hundreds of BW projects at corporations and universities throughout the country. The Navy also joined the BW bandwagon; according to former Congressman Richard McCarthy in his book *The Ultimate Folly*, the Naval Biosciences Laboratory, where McGee was working when he fell ill, became "a major Navy BW center."

Funding for BW research, as with other aspects of the military budget, rose and fell in response to international events, always justified by the alleged Soviet threat. With charming candor, an Army report explains:

The Korean War spurred efforts to again develop a BW retaliatory capability based on the ominous threat of USSR involvement but there was reluctance to publicize the program.²

During the Korean War, a new plant built specifically for research on antipersonnel agents was developed at Pine Bluff, Arkansas, while growth of the Fort Detrick plant continued.

The next big increase in BW efforts came immediately following the Cuban Revolution in January, 1959. By mid-year, the Pentagon recommended a five-fold expansion of the BW program over a five-year period. The same year the Army's anticrop program, which was to grow to grotesque proportions during the Vietnam War, was revived after a two-year lull.

Biological warfare research continued until November, 1969, when a combination of pressures from the U.S. Congress, the United Nations, and the

*Dr. Marc Lappe, in *Chemical and Biological Warfare: The Science of Public Death* (Berkeley: Student Research Facility, 1969) claims that these reports were based on a complete misinterpretation of Soviet biological research. U.S. intelligence cited as BW research the numerous published Soviet investigations of such diseases as tularemia, plague, and Q fever. Lappe points out that these diseases were common in the U.S.S.R.'s rural and war-ravaged population. "Thus, what appear to us to be exotic bacteriological, viral and rickettsial agents in our BW arsenal are as common as measles and mumps in Russia." (p. 5)

American public led to a White House renunciation of the use of biological weapons. Under President Nixon's order, existing BW stocks were to be destroyed and further research confined to "defensive" purposes.

Studies, Stockpiles and Simulants

In the subsequent post-Vietnam backlash against covert activities, a combination of independent research, Senate investigations, and documents released under the Freedom of Information Act, reveal the scope of pre-1969 U.S. BW research and testing.

In 1977, the U.S. Senate called upon the Army to explain and defend all of its BW research involving human subjects. The Army's BW efforts, it was learned, were categorized into antipersonnel, antianimal, and anticrop agents. Programs labelled "offensive" consisted of basic research into "promising" BW agents, development of dispersal methods (everything from anthrax bombs to mosquitos to cloud-seeding), and stockpiling BW agents. In cold Army language,

Antipersonnel agent research covered a wide range of highly infectious pathogenic bacteria, rickettsia, viruses and fungi and extremely toxic products of bacterial origin (toxins). Research efforts were directed toward selection and preservation of the most virulent strains, establishing human dosages, enhancing storageability, and survival when released as an aerosol. *Technology for large-scale production of the most promising agents was developed.* [emphasis added]³

Similar objectives were carried out in the anticrop and antianimal research programs. In addition, "defensive" BW research was oriented towards safety, physical and medical protection, and detection systems.

One of the most controversial aspects of the Army's BW program involved testing "simulants" — substances which are similar to potential BW agents but supposedly harmless to humans. The first "large area vulnerability test" involved spraying the bacteria *Serratia marcescens* (considered a simulant of pathogenic bacteria) into shorebound winds off San Francisco Bay in 1950; this is the incident which Albert Nevins' family claims caused both his death from *Serratia* pneumonia and a small epidemic of rare *Serratia* infections in the Bay Area.⁴ Another early Fort Detrick caper involved contaminating shipping containers at Mechanicsburg, Pennsylvania with spores of the mold *Aspergillus fumigatus* (considered a *Coccidioides* simulant). The Army monitored the dispersal of the spores during and after their voyage to Norfolk, Virginia in May, 1951.⁵

The Targets

What and who are the intended targets of BW? Certainly the Department of Defense has more rapid and effective means for annihilating potential enemy troops, animals and crops. But the dispersed rural populations of most Third World countries, who make poor targets for conventional weapons, are particularly vulnerable to BW attack because of their poor public health and nutritional status and barely sufficient agriculture. The Army's report to the U.S. Senate is again illuminating: ". . . the advent of *limited war* and *small scale conflict* evoked a need for weapons which could assist in controlling conflict with minimum casualties." [emphasis added]⁶ Lappe puts it more bluntly:

CB [chemical-biological] weapons systems are currently being developed for use in wars of counter-insurgency and limited war: as such they will be used against under-developed countries.⁷

BW in the Present Time

The 1969 ban on BW warfare left intact the "defensive" aspects of the Department of Defense BW research and development. The Department of Defense, in turn, agreed to destroy all existing BW stockpiles. Did they?

In April, 1975, it was leaked that a CIA project still maintained stocks of BW agents at Fort Detrick, and a declassified Army document maintains that there were connections between the project and "specific assassination plans."⁸ An investigation at Fort Detrick uncovered stocks of shellfish toxin and cobra venom. These revelations, along with the necessarily covert nature of BW research, have created much suspicion about the status of BW activities today. Detailed evidence is difficult or impossible to get. But a close look at two other recent incidents suggests that the deadly game of BW may be very much alive in the U.S. today.

Case # 1: Offensive BW and the Cuba Connection

According to Lappe, the Army's BW research team at Fort Detrick was prepared to use a BW agent (probably Q fever) against Cuba at the time of the 1962 Missile Crisis.⁹ *Newsday*, a Long Island newspaper, in December, 1976 first broke the story of a deadly swine virus destined for Cuba in 1971, with "at least the tacit backing of the CIA." This virus caused the destruction of a half-million pigs in Cuba.

Last year, a sudden influx of refugees from Cuba to the U.S. was much ballyhooed in the U.S. press as an

indictment of socialism. But an investigative report published by *The Nation* revealed another possible explanation:

During the past two years, Cuba has seen plant blights decimate its sugar, tobacco, and coffee crops, African swine fever destroy its hog herds, and a Greek tanker foul its shellfish beds. . . this simultaneous destruction of Cuba's major foreign exchange earners and most important meat source has no parallel in Cuban history. It is a conjunction of plagues that would lead people less paranoid about the U.S. than the Cubans to wonder whether human hands had not played a role in these natural disasters — particularly as past U.S. Senate investigations have revealed that the last time African swine fever appeared in Cuba the CIA was responsible for its introduction.¹⁰

The "year of the plagues" caused considerable comment in the official Cuban press, which stopped just short of a formal accusation against the U.S. Suspicion was extremely high, however, because the new cane smut disease was specific to the country's newest and best variety of sugar cane.¹¹

The Nation's article went on to point out that this devastation to Cuba's economy and prestige occurred at a time when Washington was anxious to dissuade "several Central American and Caribbean countries" from choosing the socialist road. The proximity of U.S. bases, including the one at Guantanamo, Cuba, and the recent opening up of Cuba for U.S. tourism, provide more than ample routes for dissemination of BW agents.

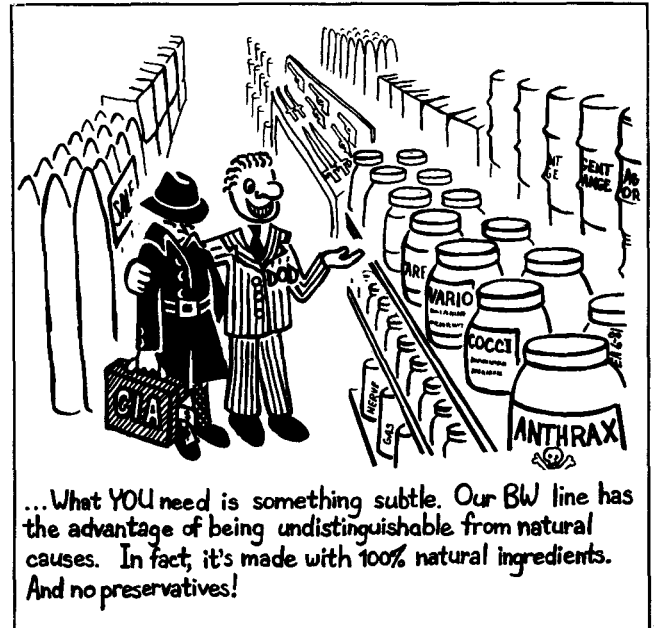
Case # 2: The Curious Case of Cocci

The Army was ordered to destroy all of its BW stockpiles in 1969. In its report to the U.S. Senate, it claimed to have destroyed stocks of the following disease organisms:

1. Anthrax,
2. Tularemia,
3. Venezuelan Equine Encephalitis,
4. *Brucella suis*,
5. *Brucella melitensis*,
6. *Salmonella typhimurium*,
7. Variola (smallpox),
8. *Mycobacterium tuberculosis*,
9. *Coccidioides immitis*.

The first six are infections native to animals which can, if introduced into the animal population, be transmitted to humans. All of these, along with the smallpox virus, have caused major epidemics with high fatality rates. Numbers eight and nine deserve some

scrutiny. Tuberculosis is a highly infectious disease in which malnutrition and crowding play a major role in morbidity rates. In addition, it is a disease to which blacks have been shown to be more susceptible than whites, even when socioeconomic differences are taken into account (in World War II, 50% of all deaths from TB were among blacks, who made up only 10% of Army personnel).



Ellen Armstrong

What about *Coccidioides immitis*, the organism which caused Elie McGee to lose his job? Known in the medical world as Valley Fever or "cocci" (pronounced *cock-see*), this obscure fungus is native to the desert and semiarid soils of central California and the Southwestern U.S., and arid areas of Mexico and Central America. Its growth requirements include hot summers, wet winters, and infrequent frost. During the dry season, cocci produces spores which, when inhaled, can cause disease. Mini-epidemics have been caused by minor disturbances in soil, as in plowing or construction.

Although the infection rate is extremely high (over 80% in endemic areas, as demonstrated by skin sensitivity tests), most victims experience a subclinical or mild flu-like episode. This is known as primary, or pulmonary, cocci. In some cases, however, the fungus in the lungs multiplies and disseminates throughout the body, infecting almost any organ system. This serious complication is secondary, or progressive cocci.

Progressive cocci has the dubious distinction of attacking nonwhite races at a much higher rate than whites. Among Caucasians who develop primary cocci,

about 1% develop the disseminated form; among Blacks in endemic areas of California and Arizona, the percentage is 20-25%.¹² These patterns of susceptibility have been found to hold true even when socioeconomic and occupational variables are taken into account. In a study of cocci spread by a dust storm to nonendemic areas of California, 11% of whites and 59% of blacks developed the disseminated form of the disease.¹³ Mexicans and Native Americans tend to be intermediate in susceptibility; Filipinos appear even more susceptible than Blacks, although data are scanty. Numerous studies, many of them conducted by the military, have borne out these statistics. Other variables, such as occupational and nutritional status, have been shown not to account for cocci's strong racial preferences.¹⁴

Once cocci has disseminated, the mortality rate is a staggering 50-60%, even with treatment. The fungus consumes its victims much as mold consumes a loaf of bread. Only one drug, Amphotericin B, has any effectiveness against the disease; but since the drug attacks cholesterol in cell membranes, it is extremely toxic and must be given slowly over a long period of time. Elie McGee is still undergoing the painful treatments with Amphotericin B.

Cocci has been part of the Department of Defense's BW arsenal from the outset. An Army report to the U.S. Senate lists three "biological field tests" involving cocci at its Dugway Proving Ground facility between 1960 and 1964, and numerous other tests were conducted using *Aspergillus fumigatus*, a cocci simulant.¹⁵¹⁶ The race-specific nature of cocci was not lost on the Department of Defense. In its report on the intentional contamination of shipping containers with *Aspergillus* spores, the Army noted:

Within this [Naval supply] system there are employed large number of laborers, including many Negroes. . . since Negroes are more susceptible to coccidioides than are whites, this fungus disease was simulated using *Aspergillus fumigatus* mutant C-2.¹⁷

Of the half-dozen significant systemic fungal diseases of humans, only cocci shows such pronounced racial specificity, and only cocci has been researched as a biological warfare agent by the DOD.

Ethnic Weapons?

Cocci, then, belongs in the murky category of possible race-specific weapons. There is also no doubt that the DOD has been very interested in developing race-specific weapons. In the past, diseases introduced into a population previously unexposed — such as

measles and influenza introduced into the Americas by Europeans — have been "ethnic weapons" for a time, until a new equilibrium between the organism and host populations has been established. But modern technology, particularly in the rapidly expanding field of genetic engineering, is making it increasingly possible to tailor the organism to the victim, or vice-versa. Ten years ago, geneticist Carl Larson reviewed the state of the art for the professional journal of the U.S. army, *Military Review*. In the article entitled "Ethnic Weapons," he writes,

Although the study of drug metabolizing enzymes is only beginning, observed variations in drug response have pointed to the possibility of great innate differences in vulnerability to chemical agents between different populations.¹⁸

The advantage of this type of warfare Larson continues, is that "forthcoming chemical agents with selective manstopping power will put into the hands of an assailant a weapon with which he cannot be attacked."

Population differences in enzyme systems, according to Larson, provide the most promising basis for "ethnic weapons." Although the extent of the DOD's research on cocci remains unknown, a report prepared by the military on the racial specificity of cocci proposes that the reason may lie in enzymes in white blood cells which are involved in the immune response.¹⁹

Offensive Versus Defensive

Why does the DOD continue to fund research on cocci twelve years after the U.S. renounced biological warfare? The question raises the issue of the fine, sometimes nonexistent, line between offensive research, which was banned, and defensive research, which is still permitted. The Naval Biosciences Laboratory was widely attacked during the Vietnam war as a BW research center; according to the Lab's Dr. Hilary Levine, however, cocci research there now is confined to developing a vaccine, which is now being tested on human volunteers in California. But we should note that a vaccine withheld from some populations and provided to others has powerful military applications; and before we rejoice at seeing cocci go the way of polio and smallpox, it is worth asking why the DOD wants a vaccine for cocci, how available it will be, and what other research might be going on.

Testimony by an Army spokesman at Senate hearings in 1977 makes the DOD's interest in vaccines plain: "A major effort of research is the development, production, and stockpiling of vaccines that can be used

by the U.S. military troops deployed anywhere in the world." The Army's anti-plague vaccine (for which the NBL did the field testing) is a case in point: the ecological damage created by the Vietnam war greatly increased the rodent population and serious outbreaks of plague began to occur; the vaccine was used for U.S. troops and "friendly forces" only. It is worth noting, also, that a safe and effective vaccine against another stockpiled BW agent, tuberculosis, is widely used in Europe and Latin America; it is not distributed in this country, where Blacks and other minority groups account for a disproportionate percentage of TB deaths. Lappe makes the claim that,

our CBW program has *never* been for the purpose of protecting the civilian population. . . it is clear that our whole approach to immunization places it in the category of an offensive BW program . . . It involves only exotic diseases of little danger to public health and pertains only to men of military age.²⁰

In addition, Lappe continues, "where we have developed vaccines against BW agents, they have been against the types we ourselves produce." Seymour Hersch, in *Chemical and Biological Warfare*, puts it this way: "in the context of biological warfare, even life-saving techniques such as immunization take on a strange aspect: immunity among one's own population and troops is a prerequisite to the initiations of disease by our own forces."²¹

Thus the exact same research can be beneficial or most sinister, depending on the uses to which it is to be put. A panel of public health experts testified to the U.S. Senate:

. . . some degree of Biological Warfare Research continues in the Department of Defense with a budget in 1975-1976 of close to \$18 million. While this research emphasizes "defensive research", the distinction between "offensive" and "defensive" is often no more than a semantic one.²²

BW and International Law

Philip Noel-Baker, a participant at the Geneva Conference of 1925 (at which the Geneva Protocol on Chemical and Biological Warfare was negotiated), recalls clearly that the intention was to prohibit "every kind of chemical or bacterial weapon that anyone could possibly devise; [for] perhaps some day a criminal lunatic might invent some devilish thing that would destroy animals and crops." The U.S. refused to sign the Protocol until 1975, but had always claimed to be bound by its spirit and opposed to first use of chemical

and biological weapons. It is impossible to reconcile this State Department claim with Defense Department reality. For instance, tear gases were banned by the Geneva Protocol, yet the U.S. used tear gas in exceedingly high concentration in Vietnam.

In our increasingly militaristic society, medical research projects, along with all other scientific endeavors, will be funded if at all, by the military. It follows that the results will be used as the military sees fit. Meanwhile, members of the public such as Nevins and McGee (and possibly the entire population of Cuba) will continue to suffer the consequences of the secret and deadly research being conducted in biological warfare. □

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A Five Year Political Struggle

CHALLENGING THE WEAPONS LABS

An Interview With The University of California Nuclear Weapons Labs Conversion Project

All of this country's nuclear weapons are developed at two huge laboratories — located at Livermore, California, and Los Alamos, New Mexico — which are operated by the University of California (UC) under contract from the Federal Department of Energy (DOE). For nearly five years these labs, along with the issues and institutions connected with them, have been the object of a concentrated political campaign organized originally by activists in the San Francisco Bay Area and then spreading throughout California and making contact with corresponding efforts in other parts of the nation.

A description and critique of the labs, their work, U.S. nuclear weapons policy, the University's role, along with proposals for change both immediate and long term, has been published elsewhere (see R. Arditti, et al. (eds.), "The University of California Operation of the Lawrence Livermore and Los Alamos Scientific Laboratories," in *Science and Liberation*, 1980; and A. Aron, "Earth Day at Livermore," *SftP* 13:3, 1981). The following is an interview with members of the UC Nuclear Weapons Labs Conversion Project.

SftP: *How did the Labs Conversion Project come into being?*

Project: The founders of the Project were a few people with some years of experience at anti-war organizing. They thought the focus on these labs was a good tactic because it provided a local handle, giving people in the nearby communities some connection to the nuclear arms business, which is usually viewed as something out of sight and far away.

They also saw the university connection as providing a provocative set of contradictions, as well as access to a number of intermediate officials who could be challenged directly — UC Regents and administrators. While participation and support for the project came from a large number of students and a few UC staff members, the core organizers came from long established peace groups (the War Resisters League, the American Friends Service Committee, etc.). Staying power provided by this relatively stable base had been essential to our progress; the other necessary ingredient has been our ability to inform, excite and mobilize a much larger number of concerned people outside of these circles.

SftP: *Your efforts have been widely publicized. How did that come about?*

Project: The media have been very responsive to our actions. Our first public event was a letter, circulated in October 1976, only a few months after our founding, asking the UC Regents to include the public in its meetings to review the University's contracts with the weapons labs. The letter was co-signed by over a hundred people and was the focus of a local TV news spot. David Saxon, President of the University, agreed to meet with us, and promised to appoint a committee "in a month or so," but indicated that he intended to push ahead with the contracts. The controversy was now public, and in January 1977, when the Project held its first demonstration calling for public participation in the review process, we got a good press response. *The Bulletin of Atomic Scientists* editorialized that we had "put a good question to the public" and were "potentially. . . something to be reckoned with."

We've also made an effort to be newsworthy and furnish the press with useful data. We have been largely successful in

getting the University to hold public meetings on the contract issue, and the press were of course interested. After one of these meetings the *San Francisco Examiner* ran a banner headline about UC scientists at Los Alamos aggressively lobbying for the development of the neutron bomb. The Weapons Project had uncovered that story.

SftP: *So you do investigations. Is that the main focus of your work?*

Project: Our main efforts are directed at mustering the research that we and others have done, and publicizing the results so that people will understand the dangers posed by the labs. During the spring of 1979, for example, we worked with Friends of the Earth to stage a large public hearing on the Draft Environmental Impact Statement for the Lawrence Livermore Laboratory (LLL). We brought in expert testimony on seismic instability of the Livermore area, on the potential hazards of plutonium leaks (and the inadequate methods used for testing for leaks), on genetic implications of nuclear power, and so on. Dr. Carl Johnson testified, Dr. John Gofman spoke, Daniel Ellsberg spoke, Charles Schwartz spoke* — each one focusing on another aspect of the dangers posed by the labs.

The original research we do is on the operation of the labs themselves. By attending virtually all meetings and reading all printed materials made available to the University's Committee, we made

*Johnson, the Director of Public Health in Jefferson County, Colorado (home of the Rocky Flats nuclear weapons plant) challenged the safety of the physical plant and the methodology for checking plutonium leaks; Gofman, ex-director of LLL's biomedical division, analyzed the threat to the genetic integrity of the population; Ellsberg spoke on the use of nuclear weapons to threaten other nations; and Schwartz, professor of physics at UC, discussed nuclear strategies.

ourselves experts on the labs' activities, and when the Committee issued its report, we issued an Alternative Report. On several occasions, we've been able to upstage UC officials by knowing their business better than they do. They testified during a UC budget review by the California Legislature's Ways and Means Committee that they have no figures for the actual cost of operating the two labs. The Project was able to produce the figures, and thereby to impress Governor Brown's top aide for Science and Technology, who complimented us on the amount of data the Project had uncovered and presented.

SftP: *What is the Governor's position on the labs?*

Project: Jerry Brown has maintained a consistent, if weak, call for ending UC's ties to the weapons labs. Lacking support on the Board of Regents for this, he moved last fall that the university set up some more rigorous oversight of the laboratories' activities and attempt to evaluate the social implications of the labs' work. President Saxon and the majority of the Board watered this plan down considerably. Apparently they are determined to do nothing more than improve the labs' "technical excellence" and provide some better public relations images. The Governor has the power to shift the majority of the Board considerably by the choice of new Regents whom he appoints each year, but he is a very opportunistic politician and we have learned to temper our belief in his fine promises with a great deal of doubt.

SftP: *What kind of leverage does the Project have to counteract the PR of the University and the labs?*

Project: Well, our actions have generated a lot of media attention; they have been publicized by the *New York Times* and other national papers, as well as by local papers and TV. For our Spring Action of 1979, when we brought out 4000 people in a rainstorm, for a protest rally at the lab — 40 miles from Berkeley — that was news. In addition, with the help of the ACLU we've made significant progress in combatting the labs' on-site propaganda, where it is distributed and broadcast. We



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successfully brought suit against LLL, which had denied us the right to place our literature at their fancy Visitors Center, and we now have use of the auditorium, provided that a lab employee requests its use. Last year the auditorium of Lawrence Livermore Laboratory was the site of an evening discussion of the arms race, with talks by economist Seymour Melman, author of *The Permanent War Economy*, and Rear Admiral Gene LaRocque of the Center for Defense Information, and also a screening of the film *War Without Winners*. Can you believe it? A public forum, at the laboratory, dealing with economic and political issues surrounding the laboratory's work!

SftP: *That's amazing. Do the Lab's officials regard you as a threat, or are the Labs so secure in their power that they consider you a minor irritant?*

Project: They sometimes have a pretty bizarre perception of us. The week before our Spring Action of 1979, we spent a lot of time out at the Lab and in the town of Livermore. A small group of religious people from our group, including two Japanese Buddhists, decided to fast. With pictures of bombed out Hiroshima and Nagasaki set before them, the two Buddhists prayed from sunrise to sunset at the Visi-

tors Center each day that week, steadily beating their ceremonial drums. At one point the head of LLL Security approached a Project member who was leafletting in the cafeteria and said, referring to the Buddhists, "We know that you know that those people have mirrors and that they are trying to blow out the central TV tube which keeps the camera on the entire grounds here. I just want you to know that if they do blow it out, we can replace it in 15 seconds." The Project member was stunned.

On the other hand, the lab has produced intelligence reports on the "anti-nuclear community," and the first of these, "Information Bulletin # 1" which came to us anonymously in the mail, indicated that they take us very seriously. Similarly, government officials in Washington consider us a serious threat. In 1979 DOE Secretary James Schlesinger (also former DOD Secretary and former AEC Chairman) announced the appointment of a special committee to study and evaluate the UC-Labs relationship from the viewpoint of the federal government's needs. This Buchsbaum Committee was stacked with former directors of the weapons labs and other top-level science administrators whose loyalty to the nuclear establishment was beyond doubt. It was not difficult for us to stir



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Project literature was widely distributed and read.

up media interest in this farce and to give the committee a true Berkeley welcome when they appeared for the required "public hearing."

SftP: *What are the Project's basic goals and strategies, and how have they changed?*

Project: In the first months of the Project we collectively arrived at three fundamental goals, with the broad intention of involving large numbers of citizens in our work. We sought to convert the weapons-related work at Livermore and Los Alamos to useful, non-polluting work, to force the University to open up a public review of its relationship to the labs, and to obtain an independent environmental review of the dangers to health and public safety posed by the plutonium and other radioactive materials at the labs.

Soon, however, it was apparent that the University was not an effective force in reforming the labs nor even in providing a forum for debating the issues. Rather, by resisting debates inside the labs, by refusing unclassified information to Project members, by resisting a feasibility study of conversion possibilities, and by allowing lab (UC) officials to use their influence to further the work of the arms race, the University gives a "mantle of legitimacy" to the

nuclear arms effort. It is this mantle of legitimacy that must be challenged. We therefore revised our statement of goals to include a call for the severance of all UC ties to the two weapons labs.

Our goals today are pretty much the same, but energy for the issues has subsided over the past six months. Several of the most active people have been taken away by family matters (babies, etc.), and several of those who saw the Conversion Project as a vehicle for organizing have grown tired of the issue and gone off in other directions. Our major effort now is outreach — to other campuses in an effort to mobilize student groups, and to communities in the San Francisco Bay Area.

SftP: *What would you say have been the main achievements of the Project to date?*

Project: The main achievements of the Project lie in the wealth of public education about the labs and the nuclear arms race which has resulted from our activities — directly, through teach-ins, literature, etc. which we and our supporters organized, and also indirectly, through the large amount of media coverage we have received. Challenging the authorities — those inside UC, those at the labs, and those sent out from Washington — has been an important

step in that it shows how the global threat of nuclear war is in part rooted in the local power structure and therefore vulnerable to local demands. Getting a fair number of elected officials (as well as a few UC Regents) to speak out in partial, or sometimes full, support of our demands is important not only in showing the legitimacy of our views to doubtful members of the public, but also in confirming to us the large latent sentiment against present nuclear policies. When six Project members staged a sit-in at the office of David Saxon, President of the University, they were arrested and charged with trespass. After a week of testimony, including two hours by Saxon, the jury deliberated and found all six defendants not guilty. One of the jurors was so impressed by the protestors that she later joined the Project.

Particular efforts have been made to get the anti-nuclear power movement more aware and active in opposition to nuclear weapons. This meant opening political dialogue with environmentalists who at first did not want to touch the hot potato of "national defense" or risk being thought slightly pink. There has been real progress in this outreach.

Obviously, we have failed to achieve any of our stated goals: to end the nuclear arms race, to convert the weapons laboratories to peaceful pursuits, to get UC out of the nuclear weapons business or even to make it take some constructive responsibility for overseeing the labs. Right now the labs are rolling in money and expanding their weapons work, thanks to Reagan, and they may even be feeling cocky at having survived the challenges (and improved their PR capabilities).

Certainly we are dissatisfied that our efforts have not led to a much larger organization and a much larger base of supporters who can be mobilized. There is plenty of work to do and there are plenty of ideas about which directions to take. This much seems fair to say: we have succeeded in bringing the "unthinkable" issue of nuclear war and the "unthinkable" possibility of people challenging the U.S. nuclear weapons establishment farther out of the closet and into local public awareness than it has been for a long time. □

Washington Warfare In Review

U.S./U.S.S.R. STRATEGIC POLICY

by Palo Alto Science for the People

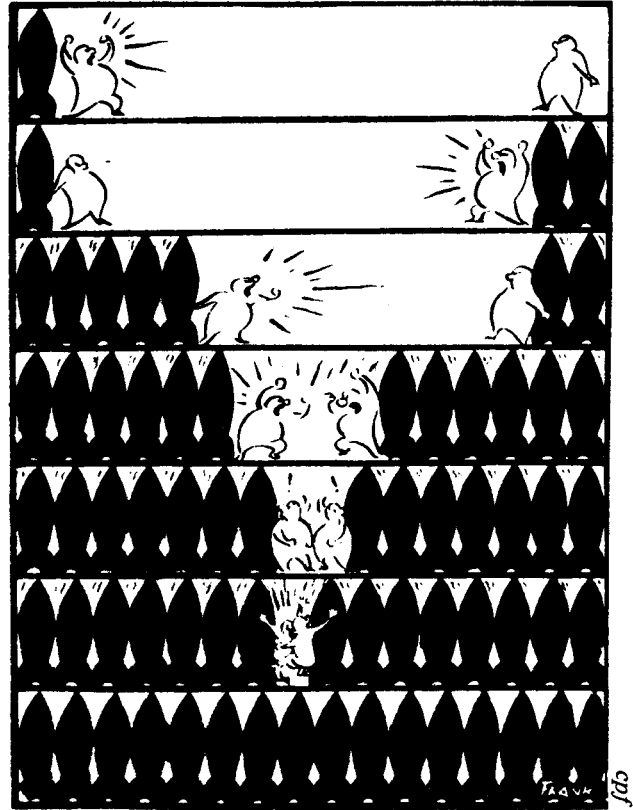
It is in Washington, rather than in Moscow, that scenarios are dreamed up for theatre wars; and it is in America that the alchemists of superkill, the clever technologists of "advantage" and of ultimate weapons, press forward "the politics of tomorrow." E.P. Thompson, "A Letter to America". — 1

Traditionally the U.S. left has been inclined to share the view of E.P. Thompson, British disarmament activist and member of European Nuclear Disarmament (END). This perception, however, presents only part of the structure and purpose of armed forces in the U.S. and U.S.S.R.

U.S. and Soviet Strategy

The central Soviet strategic priority has been fortification against a land invasion, no doubt influenced by three invasions of Russia in this century. This difference in strategy is evident in deployment of forces, indigenous airspace defense, and naval development. Only 18% of Soviet divisions are presently outside the U.S.S.R. (in Eastern Europe) whereas nearly 50% of U.S. ground forces are outside the U.S.² Soviet airspace is heavily defended — 5000 radar stations, 2600 fighter interceptors, and 12,000 highly accurate anti-aircraft missiles — while the U.S. air defense has about 1% of its Soviet counterpart.³ Finally, the Soviets have no real attack aircraft carriers whereas the U.S. has thirteen (stationed in the Pacific, Atlantic, and recently, in the Carribean).

The absence of a carrier fleet makes the Soviet role as an interventionist superpower questionable, lacking mobile air defense for their invading forces. Even the Soviet military forces that could be used for interventionist purposes far from its borders — air transport, amphibious lifts, naval infantry (Marines), airborne troops — are smaller than comparable U.S. forces, i.e., scaled to meet the needs of securing the Soviet perimeter.



By comparison, military forces in the United States are being prepared to fight "one and a half" wars: a major war in Europe against the Warsaw Pact and small "confrontational" wars in the Third World. For the latter purpose, flexible and rapidly mobilized forces are needed for quick invasion and occupation. The development of the Rapid Deployment Force therefore represents a continued shift in U.S. policy from Soviet nuclear confrontation to counter-insurgency. Even in the early 1960s, President Kennedy declared that the next world war would not be a major confrontation in Europe, but a series of limited conflicts to meet the mounting armed struggles in the

The Palo Alto SftP chapter regards the problem of militarism as the most urgent political issue of the next few years. It plans to follow developments in this topic and make further contributions to the magazine. Contact with other chapters/persons on this issue is welcomed.

Third World.⁴ Conventional military capabilities in the U.S. were built up during and after Vietnam. Under Nixon, multi-billion dollar strategic airlifts, sealifts (floating arsenals which would marry up with troops flown in on jet transporters) and "instant airpower" (prefabricated mobile air bases) were added to our military capabilities.⁵

Context of U.S. Strategy

Despite military-industrial complex propaganda, the current massive U.S. military buildup is not based on a real necessity to compete with, or neutralize, a *direct* Soviet military threat to the U.S. or any perceived U.S. interests. Rather, a key aim of U.S. military strategy is "to assure from an unstable Third World the raw materials on which its economic well being, domestic stability, and political cohesion have come to depend."⁶ Oil has been cited as the most strategic of commodities. According to Senator Gary Hart: "As was once said of the Balkans, the nations of the Gulf tend to produce more history than they can consume locally. Our need for effective, fast-reacting American military forces to defend our vital Gulf interest is obvious."⁷

Containment and Massive Retaliation

Historically the arms race, stepped-up militarization of the economy and pervasiveness of "national security" myths date from the immediate post-World War II period.

The foreign policy goal of containment — prevention of further Soviet influence in Europe and Asia — shaped U.S. military strategy in the late 1940s and early 1950s. At the outset, in 1949, NATO incorporated nuclear weapons as "technological equalizers" to a large Soviet land army. Failure of the U.S. to defeat North Korean ground forces prompted Eisenhower to order that all U.S. security interests be defended by forces supplied with nuclear weapons. The doctrine that emerged, "massive retaliation," was outlined by John Foster Dulles in 1954: The U.S. reserved the right to use nuclear weapons to defeat aggression at times and places of its own choosing.⁸ Theoretically, even a local movement with socialist overtones could be defined as Communist aggression and, under this policy, lead to a chain of military actions culminating in World War III. To carry out the threat, the U.S. established a ring of military bases in countries surrounding the U.S.S.R. — today's forward base system.

The Soviets responded by building a sizable nuclear arsenal. By the mid 1950s, they also had strategic bombing capability against both European and U.S.

cities. By the late 1950s, the era of the Intercontinental Ballistic Missiles (ICBMs) had begun.

Wall Street's role in this arms buildup cycle cannot be discounted. In the United States, military Keynesianism or "the idea that high levels of military spending do not damage the economy but indeed stimulate it" gained prominence in academic centers.⁹ Some economists at that time even blamed the 1953-54 recession on a 20% reduction in defense spending after the Korean War. (For another view, see Cypher article in this issue.) In the mid 1950s, the Committee of Economic Development, a national organization of leading businessmen, suggested that defense spending could "safely" rise to 15% of the Gross National Product.¹⁰ Clearly, the interests of the military contractors were also served by high defense spending. The plan of contractors, bankers, and militarists, was to keep capitalism, in its monopoly form, rolling with a massive military program.

The MAD Doctrine

The U.S. doctrine of massive retaliation had to be modified by the late 1950s as the U.S.S.R. achieved retaliatory capability. The doctrine that emerged was "MAD" (Mutually Assured Destruction): the maintenance of a retaliatory capacity secure enough to survive an enemy's first strike and then cause unacceptable damage to industrial and urban centers. Throughout the 1960s, this balance of terror — Mutually Assured Destruction — was sold as the primary preventor of a nuclear holocaust.

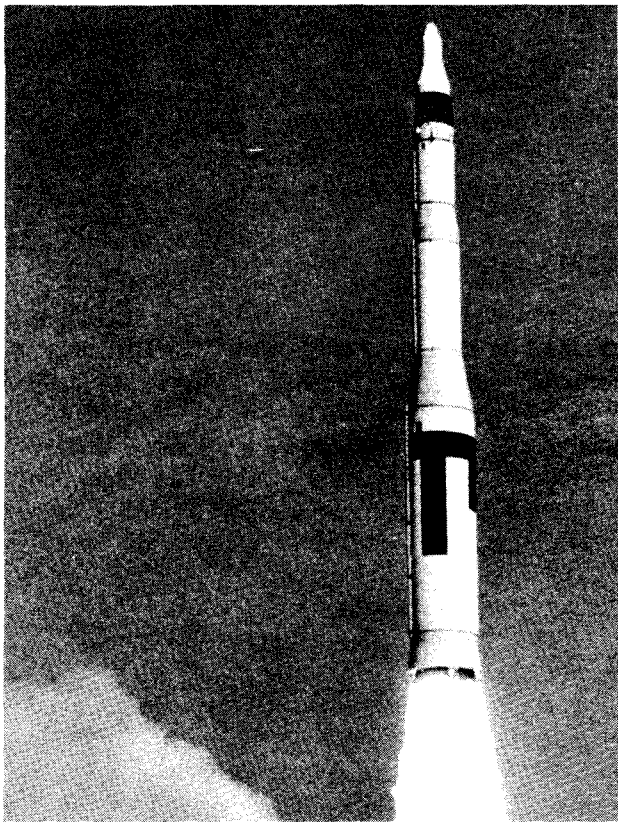
Intent on maintaining nuclear superiority, U.S. defense planners called a diplomatic strategy into play. If for no other reason than to gain political leverage through a symbolic show of strength, the U.S. sought to negotiate a stable structure of peace — detente — contingent on continued U.S. superiority. Thus, with both military and diplomatic objectives in mind, SALT I was signed, freezing the superpower missile inventories. A critical clause in SALT I exempted qualitatively new nuclear weapons, and in this area the U.S. had a 5-10 year lead over the Soviets.¹¹

Countervalue Becomes Counterforce

All previous U.S. strategic targeting was based on the concept of countervalue. This says we aim at the enemy's urban centers and industries in order to destroy their society. But this was to change.

One of the new technological developments exempted from SALT I, enhanced missile targeting accuracy, became the foundation of a new military targeting strategy. Defense Secretary Schlesinger in 1974

announced that the U.S. would no longer be deterred by threat of Soviet retaliation.* Henceforth, the U.S. would selectively target the Soviet deterrent, i.e., missile sites. This "counterforce strategy" was to proceed in two stages: (1) retargeting from Soviet civilian to military sites and (2) development of weapons capable of striking hardened** Soviet missile silos and underground command centers. Counterforce scenarios raise the spectre of nuclear war by exposing the opponent's deterrent forces to new vulnerabilities, inviting a "launch it or lose it" response in a crisis.



Minuteman II

*Schlesinger reasoned: in the "worst case scenario", the Soviets launch a limited first strike and destroy a significant part of U.S. retaliatory deterrent. The U.S. President can now either launch remaining U.S. missiles at Soviet cities inviting a devastating Soviet second strike against U.S. cities, or do nothing and forfeit the war. Thus, the U.S. needed a limited first strike capability against Soviet missiles to deter such an attack, i.e., the ability to pursue a course between holocaust and surrender. However, counterforce doesn't really enhance the U.S. deterrent since a limited nuclear exchange would cause many millions of casualties on both sides and thus almost inevitably trigger all-out retaliation. The underlying aim of counterforce appears rather to be to afford the U.S. leadership political leverage over the Soviets by having a more threatening nuclear arsenal, enhancing Washington's bargaining position in general, not just in a nuclear crisis.

**reinforced military sites utilizing specialized construction materials and architectures.

Counterforce weapons, however, cannot be clearly limited to deterrence; they can also be used for a first strike. Several technological developments assembled around the concept of counterforce (but lending themselves to a first strike capability) proceeded after Schlesinger's announcement: highly accurate Maneuverable Reentry Vehicle (MARV) missiles, the mobile MX missile, cruise missiles (virtually invisible to radar), stellar inertial guidance systems (SIGS), and others.

The pace of this counterforce thrust was temporarily slowed down when Carter's Presidential Directive 18 (1978) outlined a less antagonistic U.S. military posture for the fiscal year. The objectives were: (1) an arms limitation treaty (SALT II) with the Soviets which would curtail, but not stop, the production of expensive, capital intensive ICBMs and (2) expansion of conventional forces for rapid strikes in the Mideast and other trouble spots, as well as meeting military commitments for NATO.

These objectives were short lived. The right wing mobilized against SALT II, their constituency economically intertwined with southern and western U.S. high technology military/space industries. These politicians launched a successful drive against SALT II and pressed for development of a first strike technology. In line with their theory of Soviet expansionism, they seized upon growing Soviet influence in Africa and elsewhere, and generally concurred with the Central Intelligence Agency's 1976 "Team B" Report: the Soviet Union since 1962 has embarked on a "policy of building forces for a preemptive first-strike against the U.S. ICBMs."¹² They reasoned that the MAD doctrine was thus rendered obsolete. Similar arguments, sold by the Pentagon, not only formed nuclear policy but also served to cover-up the provocative U.S. role in the arms race. However, as activist and ex-defense engineer Bob Aldridge points out,

While the U.S. is ahead now and rapidly approaching a first strike capability... there is no available evidence that the U.S.S.R. has the combined missile lethality, antisubmarine warfare potential, ballistic missile defense, or space warfare technology to attain a disabling first strike before the end of this century.¹³

Recent Developments

The rightward shift in U.S. leadership makes an ideological tool of the Soviet Union as a threat to U.S. "vital interests". The fact that Soviet aid benefits those Third World governments resistant to U.S. economic and political domination further fuels an interventionist U.S. military posture, which now includes a spectrum of

coercive moves against the U.S.S.R. "Linkage" of arms control agreements to U.S. desired changes in Soviet foreign activities, continuing buildup of arms, the threat of a U.S.-Sino-Japanese military alliance, programs for deploying new "counterforce" nuclear weapons (such as the new generation of intermediate range missiles for deployment in Europe) suggest just a few possible coercive moves in the new militaristic climate. Meanwhile, the U.S. defense budget is soaring as recommendations for military procurement place increasing emphasis on offense.

U.S. military preparations reflect current geopolitical instability and developing Third World nationalism. All scales of battle are now being planned: "low threat" conflicts with poorly armed guerrilla armies, conflicts with heavily armed forces such as Syria or Iraq, and conflicts with Soviet expeditionary forces. Furthermore, while the political leadership claims it seeks negotiated settlements, the threshold for intervention has been lowered with the new capabilities for rapid mobile strikes, i.e., before political opposition can be mobilized. The threshold for nuclear war has been lowered due to the intention of U.S. planners to resort to the ultimate "big stick" of counterforce nuclear strategy.

For these reasons, we urge our members and readers to step up their involvement in the movement against U.S. militarism. Given ominous turns in the arms race, growth of the right, and the very dangerous posture of U.S. foreign policy, linking with other groups — here and abroad — in this struggle is absolutely essential. □

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Beams, Bombs and Bunco

LASER FUSION: IMAGE AND REALITY OF A MILITARY PROGRAM

by Ross Flewelling

Laser-driven fusion is one approach to a long term solution to the world's energy supply problems, based on a virtually inexhaustible fuel source, deuterium from water. —C. Martin Stickley, *Physics Today*, May 1978

A laser fusion apparatus. . . [will give] us a capability of exceeding by many orders of magnitude any other weapons simulation facility which exists or is projected for the 1980's. —C. Martin Stickley, Congressional hearing for FY78

Advocates of any new military technology must sell their idea to a reluctant public which must bear its cost and consequence, an accountable Congress which must authorize its expense, and the scientists and technicians whose lives will be involved in its development. Laser fusion is such a technology. Before scientists and the public this billion dollar project is sold as a watershed of scientific exploration with the potential of solving the world's energy problems. It is sold to Congress as a vast new energy program when such is the fad in Washington. But laser fusion has always been, and remains, primarily a military program. Such subterfuge is part of what scientific and technological development is all about in the United States.

Its Military Mission

The first demonstration of an artificial *fusion* reaction was the detonation of the Super (hydrogen) bomb, Mike I, in 1952 on the island of Elugelab in the South Pacific Eniwetok Atoll. Edward Teller, Enrico Fermi and James Tuck were among the leading scientists at Los Alamos who were soon thinking of a controlled fusion machine. To begin the study, Tuck, an Englishman, usurped funds from another program at M.I.T. housed in the Hood Building. The scuttlebutt was that Tuck was robbing Hood: the secret project to develop a controlled fusion reactor was thus named Project Sherwood.

Almost immediately after the invention of the laser in 1960, the first conception of *laser-induced* fusion arose at Los Alamos and Lawrence Livermore Laboratories. A secret military program began at the Lawrence Livermore Laboratory in 1963, with all information relevant to the project classified. By 1968 it

became clear that Soviet and French laser research was more vigorous and more advanced than that in the United States. As a response, the U.S. increased funding by a factor of ten, and by 1971 certain aspects of laser fusion science and technology were declassified to spur research.

By 1976 the Energy Research and Development Administration (ERDA; now the Department of Energy) listed for Congress the applications of laser fusion "in the expected order of possible accomplishment":

- X-ray and neutron sources;
- Weapons effects, vulnerability, and hardening;
- Radiography for nuclear weapon and component designs;
- Laboratory weapon development tools;
- Materials testing for thermonuclear power systems;
- Civilian power materials production;
- Military energy sources;
- Civilian electrical power production.¹

The following year, applications to nuclear weapons were made quite explicit with the listing of four general military applications:

- Provide support for underground tests,
- Potential for large-scale weapon effects simulation,
- Allows modeling of atmospheric nuclear explosions,
- Provides unique capability for modeling of nuclear weapons physics.²

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FUSION TECHNOLOGY

In the process of *fission*, large nuclei such as uranium and plutonium are split apart to release the tremendous energy stored in the nuclear mass. Fission is thus an energy source for nuclear reactors, for the earliest nuclear weapons, and for the triggers of present thermonuclear (fusion) weapons. In *fusion*, small nuclei like hydrogen, helium, and their isotopes, are fused into larger structures, also thereby releasing energy — in fact, releasing tremendously more energy than possible from fission. Fusion provides the source of energy for the Sun and also for thermonuclear weapons. There is now a massive program underway to harness fusion energy in a controlled reactor.

Two basic methods for controlling fusion reactions are currently being pursued. One is to contain the enormous energy produced in specially designed magnetic fields — a magnetic bottle. The other is to explode minute pellets of light elements (mainly deuterium) with a brief, powerful pulse of energy. This later method, called “inertial confinement fusion,” uses lasers or particle beams to deliver sufficient energy into a microscopic volume to ignite the fusion reaction. (The accompanying article is relevant to either the laser or particle beam ignition schemes.)

Because deuterium is a favored fusion fuel, and since it is extractable from water, the notion that fusion energy is based on a virtually inexhaustible fuel source — sea water — is often put forth. This assessment is only partially true, and it further diverts attention from many other crucial features of fusion power. The cost of extracting deuterium from water must be considered, and tritium will also be necessary for the fusion fuel. Tritium, however, is not naturally available. It can be produced from lithium and a neutron source, such as the fusion reactor itself, but lithium is in limited supply. Furthermore, the technological feasibility of a controlled fusion reaction has yet to be demonstrated, and if it is, massive reactors exceeding the size, complexity, and costs of present fission reactors will be required. A fusion reactor will generate huge fluxes of energetic neutrons which will produce radioactive debris, create structural weakening of reactor components, and provide a means for production of weapons-grade fissionable material. Overall, the cost of electricity from a fusion reactor will probably be at least as expensive as electricity from present fission power plants. (For one critical review of fusion power see J. Holdren, *Science*, April 14, 1978, p. 168.) Fusion power is not a panacea solution to the energy predicament.

This same technology has important military applications. Laser and particle beam apparatus, used to ignite the nuclear fuel, are already useful to the military as weapons themselves. Furthermore, miniature fusion explosions will emit characteristic X-ray and neutron fluxes which can be used for testing thermonuclear explosions on materials and on electrical and mechanical systems. This military capability will be realized long before a commercial power plant would be practicable. Indeed, *glass* laser systems such as the enormous SHIVA/NOVA complex at the Lawrence Livermore weapons laboratory are now known to be technologically infeasible as the basis for commercial energy production.

Laser fusion is, and will increasingly become, essential to national security interests, for laser fusion studies provide the best model of X-ray and neutron spectra like those characteristic of thermonuclear weapons and they provide a unique environment in which to study the effects of weapon-like temperatures and densities on materials and components. Indeed, in the event of a comprehensive test ban treaty, laser fusion could provide the only means for testing new science and technology relating to thermonuclear explosions. As ERDA officials described it,

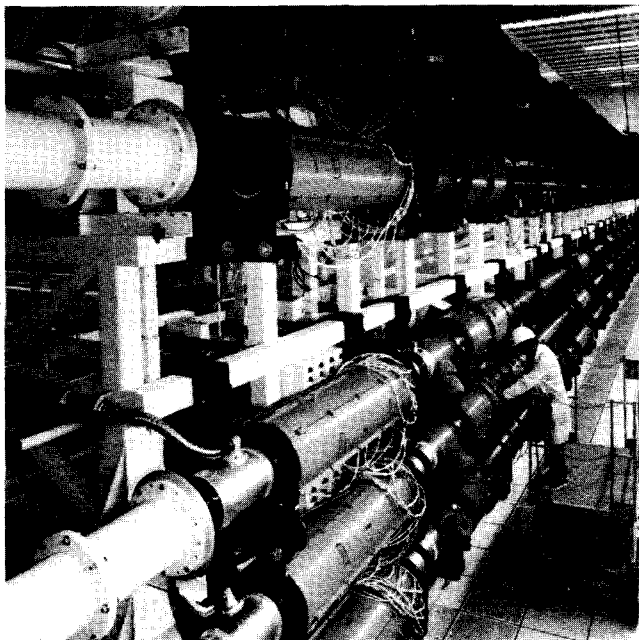
An inertial confinement fusion device would reproduce on a laboratory scale much of the fundamental physics and if sufficiently large, many of the radiation data for weapons technology development... Laser development for fusion research has recently reached the power levels and control of beam-target interactions needed to produce data that assist weapons design activities.³

Its Public Image

Unclassified research sponsored by the Department of Energy finds its science workers through open advertising and its results are published in accessible journals. For laser fusion, one might expect to find articles on the subject in such journals as *Laser Focus*, the general trade magazine on lasers, or *The Atom*, the laboratory magazine of the Los Alamos weapons laboratory where much of the work is done. One might also look for information on the subject in journals whose principle subscribers are practicing physicists, engineers, and technically educated readers — in *The Bulletin of Atomic Scientists*, for instance, or *Science*, or *Scientific American*, or *Nature*, or *New Scientist*. Indeed, if one were reading all of these journals beginning at the time when laser fusion research was declassified, one would have found in a decade of reading some twenty articles of three or more pages on the technology of laser fusion. Eighty percent of these articles made some mention of the applications of laser fusion technology, and in all, 32 different uses were named. Yet for all this discussion of a technology that had been created by the military and directed from its earliest days toward military ends, not one reference can be found in any of these articles as to the military applications of laser fusion.

Science workers and technically educated readers alike could peruse the journals to inform themselves on this new technology and conclude that the hundreds of millions in tax dollars would be peacefully and wisely spent. *The Bulletin of Atomic Scientists* (October, 1971) hailed laser fusion as “an almost ideal answer to

our future energy needs," while *Fortune* (May, 1974) described it as "the ultimate solution to the world's energy problems." *Science* (November 1, 1974) touted it as a "virtually inexhaustible energy source, for which the fuels are of negligible cost (compared to fossil fuels), are universally available, and are obtainable with small environmental impact," and further that laser fusion "is almost ideally compatible with the crucial issue of achieving a stable physical and political environment." More recently, two Los Alamos Laboratory scientists presented a paper at the 1980 American Association for the Advancement of Science Annual Meeting entitled, "Laser Fusion — A Potential Inexhaustible Energy Source."



Lawrence Livermore Laboratories

Six of the 20 arms of the Shiva laser, the world's most powerful, at the Lawrence Livermore Laboratory.

Science workers who were reluctant to get involved with war-related research could read the professional literature and come away from it secure that laser fusion was non-belligose, non-polluting and much applauded endeavor. Similarly, interested taxpayers could feel comforted that a panacea for the world energy crisis had at last been found and the DOE was putting its money in the right place. For all anyone knew, the military had no part in the past or future of laser fusion.

Selling Militarism

The military mission of laser fusion is rarely apparent in public and professional discussions of the technology. But is this deception? After all, the military applications were discussed in Congressional hearings.

But congressional hearings are not the source of most people's public or scientific information, nor therefore do they provide a basis for public discussions. Furthermore, in at least one instance, military representatives were found trying to sell laser fusion to Congress as an energy program. Testifying before the House Appropriations Committee in 1974, two representatives from the Department of Military Application responded to questions from Congressman Davis:

Mr. Davis. The other day in our discussions here, I believe we were told that up until this point, at least, the laser program had been entirely military oriented.

General Graves. Yes.

Mr. Davis. Then your justification refers to continuing emphasis on civilian power applications. How do you reconcile that? . . .

General Graves. The entire program had been funded as a military program up through the current year, and that was \$34 million in fiscal year 1974. . . . The program is going from \$34 to \$44 million; \$2 million of that is considered escalation on the \$34 million, and \$8 million is considered growth beyond escalation, and that is put on the civilian side. . . .

Mr. Greer. You will not find this split between military and civilian in the budget. It will come out of one program. . . . We carry the whole \$44 million line as an energy program in the table we provided the committee because of its potential future application. [emphasis added]⁴

The new energy side of laser fusion amounted to only 18% of the total budget, yet the entire program was carried as an energy item. In subsequent years, funds have been requested on intermingled energy and military goals; but military goals are the short-term reality, while energy goals remain a distant and unlikely possibility.

In 1975, a "News and Comment" item appeared in *Science* discussing the military side of laser fusion. In it, Major General Edward Giller (then chief of national security for ERDA) revealed what was really going on with laser fusion:

People go around town saying this is an energy program, but that's something that came along only after energy research got popular. . . . What we're doing now, developing basic laser technology, is equally applicable to military and civilian aspects. But really, this is a military program and it always has been. . . .⁵

Military technologies are typically researched and developed in only a few weapons laboratories with close connections to large corporations. At present, about

80% of laser fusion research is performed at three weapons laboratories (the two government labs — Los Alamos Scientific Laboratory and Lawrence Livermore Laboratory — and the private Sandia Laboratory, an ATT&T subsidiary). About 10% is done by one private corporation, KMS Fusion, and the rest is done at other federal labs and at the University of Rochester. The research is highly centralized and closely tied to corporate interests. In Congressional hearings one can sometimes learn of the happy union between corporation executives and the generals:

Senator Montoya. Don't you feel sort of wedded to those who have contracts with you because of expertise which they are acquiring on a year-by-year basis?

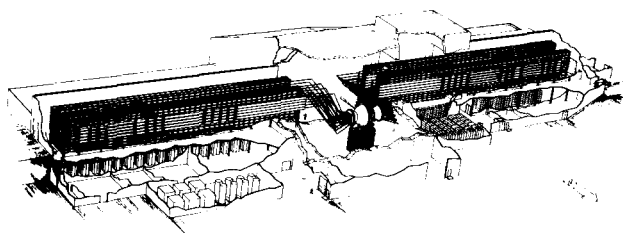
General Graves. We certainly do feel that as long as they are doing good work, we will be continuing that work.

Senator Montoya. Have you terminated any contracts because of lack of production?

General Graves. No; we have not.⁶

Such centralization of research constrains public access and delimits what information about the technology and its applications will be disseminated. This too is part of the selling of militarism.

Lawrence Livermore Laboratories



Artist's conception of the \$200 million Nova laser complex, the left half of which is expected to be completed in the mid-1980s. Note the people to scale.

Between the Broken Glass

Considering that the manifold uses of laser fusion have been largely known ever since the subject was declassified in 1971, the merchants of this technology cannot be simply accused of keeping the truth secret. It is clear, though, that neither have they made any effort to provide the general public or the scientific reader with sufficient information for making an intelligent decision about the worthiness of a large-scale laser fusion program. Information that might have been published in *Science* or *Laser Focus* or *Scientific American*, detailing the military, as well as the civilian, applications of laser

fusion, is instead published only in the *Congressional Record*. A public document, yes, but hardly the source to which one would expect to turn for an understanding of the principles and applications of laser fusion.

The opening quotations by laser fusion advocate Martin Stickley are a paradigm of the situation: before the public he tells one story, while speaking to those in power he tells quite a different story. What does this discrepancy between the public image of laser fusion and the actual planned application of the technology really signify? There is every reason to believe that, as with laser fusion, the public image of science and technology will be manipulated to serve the interests of military and corporate elites, and not necessarily reflect the real agenda nor the real interests being served. In order to challenge such realities, the image must be shattered. □

UPDATE

As this article is going to press, *Science* (May 1, 1981) reports that Congress has, for the first time, decreased funding for laser fusion, apparently because it has failed to achieve its stated goals. *Science* verifies that military applications are the underpinning of the project, and that laser fusion technology is ill-suited for commercial power production. Notably, unlike previous years, the principal hearing this year was entirely classified with no part open to the public. In this author's opinion the funding was cut this year because it is now clear to Congress that the glass SHIVA/NOVA laser complex at Livermore has reduced capability of igniting a fusion reaction, and therefore is more limited in its ability to model thermonuclear explosions for military studies. (However, a top Livermore official reviewing this article emphasized that the Livermore program is going strong, that it has recently achieved new breakthroughs that invalidate this later assessment, but the explanation for this is classified.) Its lack of suitability for commercial energy production has long been known. However, particle beams and other types of laser systems are still being pursued for military application.

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Militarism in Academia

(Continued from page 7)

Regency Hotel in San Francisco as part of a new University Laser Research Program:

To assist in acquainting as many university and faculty members as possible with these support opportunities, a colloquium will be held. . . to describe in some detail the areas of ARPA's research interest and to set forth examples of university-type research programs which have successfully contributed to ARPA's mission. After the colloquium, ONR and ARPA representatives will be available for informal discussions regarding possible research proposals.⁵

In the summer of 1979 the DOD launched a new major effort of this kind, with a series of twelve bimonthly research symposia held at the National Academy of Sciences.

Indirect Military Ties

The Pentagon fosters dependency in less direct ways as well, including funding of military projects through other federal agencies, supporting long-term interagency joint projects, and maintaining academic consultants. The President's Science Advisory panel was careful to point out in its report, "In some areas activities of other agencies may remove much of the financial burden from the DOD (for example, much of the support of advances in medical knowledge may be funded by HEW) . . ." In addition to the Department of Energy's primary responsibility for nuclear weapon R&D and Navy reactor design, many other ostensibly civilian DOE programs have a strong military component, such as the development of synthetic fuels and inertial fusion apparatus (see the "Laser Fusion" article in this issue). The National Science Foundation is presently engaged in joint programs with the DOD in integrated circuit research and development. These are merely some examples of what military representatives refer to as "the strong bonds and cooperative relationships that exist between the DOD and other federal agencies concerned with the advancement of science."⁶

A major Pentagon emphasis is on nurturing relations with prominent research institutions and leading research scientists. "Obviously, we also work very hard in trying to place our bets on the best people in their fields," Gamota has said. He also points out that over the past decade, 20 North Americans who received the Nobel prize did their prize-winning work while supported by the Pentagon.

One of the largest and strongest military-academic joint programs has been in electronics. As far back as 1945 the DOD initiated the Joint Services Electronics Program (JSEP) with a mission going beyond new re-

search and development, to create centers of research that would depend upon and fully involve the military:

The Idea of JSEP grew up within the DOD and academia to help keep the channel of communication between them open and to continue to use their scientific ingenuity for defense. *The premise was to build up large university graduate centers around skilled researchers who not only were working on the frontiers of science but were also cognizant of the defense needs of the nation. . .* The hallmark and focal point, however, for all JSEP programs has always been and will continue to be a dedicated researcher who also has the rare talents *to be able to perceive DOD needs* and to manage an active ongoing research program. At present, in JSEP we have 14 programs in 13 schools. [emphasis added]⁷

The academic-military relationship in electronics has continued to the present. According to the *New York Times* in May 1980,

Already, major universities that were once the seats of the antiwar movement, such as Cornell, M.I.T., Stanford and the University of California at Berkeley, are elbowing one another to get a piece of the \$200 million that Congress recently authorized the Pentagon to spend over the next five years for its very-high-speed integrated circuits program.⁸

Seeking "to closely tie the resultant products to high-priority military system requirements," the Pentagon continued to court the universities, and those responsible for the universities make sure they remain competitively attractive. For example, in January of this year California Governor Jerry Brown proposed that \$2.5 million of public funds be spent to upgrade the microelectronics research facility at U.C. Berkeley. Here was a way to prepare the facility for new federal funds: a \$8.9 million grant from the National Science Foundation given only as part of a *joint* research project with a \$7.9 million contract from the Defense Advanced Research Projects Agency.

Elite DOD Consultants

The Pentagon uses the services of a variety of scientific and technological consultants, recruited largely from the academic community. "In some sense one can tell much about the status of an institution by the collegial associations of its staff," reports Alan Berman, Director of Research at the Naval Research Laboratory. "Typically at NRL at any given time we have about 200 tenured university faculty members who are spending their sabbatical leaves with us or their summer vacations."⁹

Dozens of advisory committees have been established by the Pentagon to bring the best academic and industrial talent to focus on both immediate and long-range problems of interest to the military. Compatibility with the aims of the DOD is a requirement for membership, as is technical expertise; such membership is a vital part of the career plan for those who aspire to leadership in the technical and academic professions. Only after advisors have shown their worthiness in lower level advisory committees may they be advanced to the more powerful bodies: the Scientific Advisory Boards for the Army, Navy, and Air Force; and the Defense Science Board. Other science advisory panels that select reliable academic scientists to study various military problems are frequently set up by the DOE, the National Academy of Sciences, and the White House Office of Science and Technology Policy. One of the oldest and most notorious of such groups is Jason.

An elite group made up mostly of academic physicists, Jason provides consulting services for the Pentagon. Membership is by invitation, and participants meet during the summer to critique DOD projects. While much of their work is kept under wraps, the Pentagon Papers revealed their role in the creation and promotion of the "electronic battlefield" strategy in Vietnam.¹⁰ Although the group fell into disrepute by the early 1970s, owing to its involvement in the Vietnam War, there are indications that recruitment of young scientists has increased recently and membership is again growing.

Much of Jason's recent work has been on new technologies of strategic nuclear weaponry and anti-submarine warfare. As the activities of long-time participant Richard Garwin illustrate, Jason members use the Pentagon to publicize their own ideas, meanwhile endorsing all the basic premises and goals of the military. Garwin has been travelling around the country the past few years with a typical Jason-like analysis of the MX missile system. First he picks away at all the flaws in the land-based system to demonstrate that it is wasteful and ill-conceived; then he goes into a showman's song and dance about *his* system — instead of having the missiles scrambled within a railroad maze, he proposes that they be deployed in miniature submarines throughout coastal waters. Liberal Jason members explain how this is a "better" system for arms control because it is ultimately more stabilizing. Yet Garwin points out that new NAVSTAR guidance systems will make his sub-launched missiles just as accurate (i.e., effective as counterforce weapons) as the land-based MX. Thus scientists who view themselves as good liberals see their work as a moderating force within the DOD, while the Pentagon uses them for its own purposes.

Restraining The Military

Attempts at curbing military involvement in scientific and technological development have met with limited success. The Mansfield Amendment, passed into law as part of military procurement authorization for 1970, was a specific piece of legislation designed to limit the breadth and depth of DOD involvement in basic research. Today the Mansfield Amendment is ignored. Its transformation over the last decade shows how reforms can be whittled away and ultimately forgotten as political conditions change.

In its original form the amendment stated, "None of the funds authorized to be appropriated by this Act may be used to carry out any research project or study unless such project or study has a direct and apparent relationship to be a specific military function or operation." This requirement of DOD funding had a significant, immediate impact on Pentagon support of basic research, forcing the DOD to perform much more of its work in-house. DOD was required to justify its funding and specify the purposes for the work, while researchers could not dodge the fact that by law their research had a "direct and apparent" relationship to the work of the Pentagon.

When the full impact of this legislation was realized it was quickly replaced with something more manageable. In subsequent legislation the phrase "a direct and apparent relationship" was replaced with "in the opinion of the Secretary of Defense, a potential relationship." Even then, Pentagon support of research was curtailed in the early 1970s. However, President Carter's March 1979 message to Congress and Secretary of Defense Harold Brown's May 1979 policy memorandum gave a new interpretation to the term 'potential relationship', emphasizing that basic research was an important element of national security and of long-term interest to DOD. Within this interpretation *all* research may be considered potentially useful to the military and therefore fundable within the "confines" of the Mansfield Amendment.¹¹

By 1980 Gamota could safely say,

There is absolutely nothing in the act which touches upon the loss of ability of the Defense Department to support basic research. The act only infers that as a mission agency DOD should support work that has a potential relationship to its mission. And, since its mission is very broad, only the availability of funding and the level of interest of the agencies determines the spectrum of research support possible within the context of the DOD mission. Let me emphasize something that is very important, because as I travel through the country and talk to academic people the first ques-

tion I get is, Well, hasn't the Mansfield amendment stopped you from supporting basic research? And the answer is, No, absolutely not.¹²

Challenging Militarism

Resurgent militarism in academia pervades the fundamental character of science and technology in the United States. The purpose of Pentagon cultivation is now apparent. Entire institutions and research programs, lineages of teachers and students, and even such subtleties as researcher interest and expertise, all have become inculcated into the military mind-set. The purpose of the Joint Services Electronics Program, "to built up large university graduate centers around skilled researchers. . . cognizant of defense needs" and "able to perceive DOD needs," has succeeded. Thus not only do scientists help to develop technologies of destruction and terrorism, but they have vested interests in preparing, planning and waging war. The vitality of their own research becomes tied to the vitality of the military and its perpetual drive for more and better.

The Pentagon fosters dependency by providing an entire career package: monetary rewards are provided through funding of research programs and large consultant fees; career advancement is facilitated by DOD-sponsored workshops and DOD-based collegial relations; and status is enhanced by selective participation on advisory panels and access to classified information. In these ways the military mind-set becomes a way of life and self-identification.¹³

Direct attacks on this career package and on the military mind-set resulted in retrenchment of academic-military relations during the later part of the Vietnam War. The Mansfield Amendment, for example, cut away at the economic base by constraining funding, and diminished status by clearly identifying DOD support with military purpose. Public, student, and peer censure of researchers working alongside DOD, lowered the status of such work, and politicized some people about the real interests DOD research serves. For example, the Jason group had a hard time recruiting new members for much of the 1970s, and some of the more liberal members stopped participating.

As the effectiveness of the Mansfield Amendment was whittled away and as direct political challenges faded away, the militarists could and did set to work again, bringing us back to where we are today. The Vietnam War experience reveals how the fight should be renewed. The Pentagon's economic control of science and technology, the career base in the military, the status of military identification — each must be challenged in public and in the workplace. And basic to all of this, the

military mind-set, which means the political-economic context of militarism in the U.S., must also be challenged.

Finally, the failure of previous reforms to hold back the resurgence of militarism indicates that these challenges are not enough. It is also essential to continue the battle to its natural conclusion: a substantive transformation of the political-economic relations of science and technology in the United States.

The most effective way to mount such challenges is to organize politically across the boundaries between scientists and nonscientists, as well as between those inside and outside the universities. In some ways the present political climate of the nation — as exemplified by Reagan priorities and his apparent popularity — makes this a difficult uphill battle; but these same policies, with their heightened push towards war and their economic squeeze on all outside the military-industrial sector, help to fertilize the soil from which this opposition can grow. □

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SPACE MILITARISM: A DEBATE

The Space Arms Race—Military Seizure Of Our Future

by Jim Heaphy

Space exploration offers potentially the most profound and revolutionary new possibilities for the future of humanity. This was understood over 50 years ago by a handful of scientists, including John Desmond Bernal, the noted British crystallographer and Marxist philosopher of science. Bernal clearly realized that technological advance has a social impact far greater than the simple economic results of increased productivity. And to Bernal, technology which would take human society literally off the planet would have especially revolutionary results. He was an enthusiastic advocate of spaceflight who foresaw a future in which people lived and worked in cities in orbit.

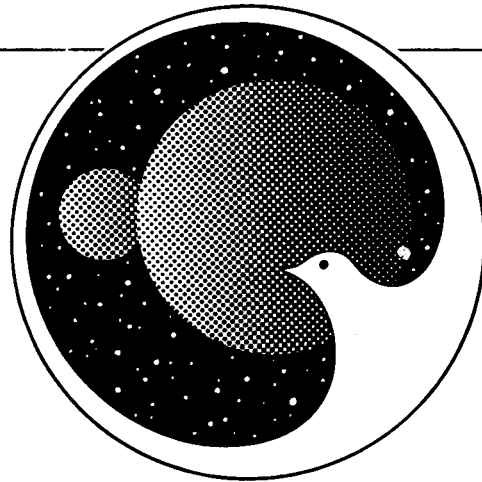
Bernal was a lifelong opponent of militarism who urged scientists to examine the connections between their research and the real needs of society. He demanded the highest of ethical standards from all scientists, and insisted that there was no "pure" research, divorced from society and class relations. Today, space colonies very much like those envisioned by Bernal are in vogue, (although Bernal would have despised the connotations of the term "colony"), and a thoroughly studied design for a space settlement is known as a Bernal Sphere.

The technology of space exploration is also the technology of the ICBM. It was U.S.-Soviet rivalry that spawned the space age, and it is the upsurge in hostility between the two countries that fuels a new arms race in outer space that threatens to upset the nuclear standoff in the 80s.

At the time that J.D. Bernal was first speculating on the future of space exploration, the scientific and engineering understanding required to make the feat a reality was only just emerging. Konstantin Tsiolkovsky in Russia, Willy Ley and Wernher von Braun in Germany and Robert Goddard in the United States and dozens of their friends and colleagues looked to the stars and began planning how to get out there.

The rocketry fanatics had only a single sponsor to turn to — the military. In Nazi Germany, especially, they found all the support they needed. The idealistic

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CITIZENS FOR SPACE DEMILITARIZATION

There is only one national organization dedicated to a progressive analysis of space exploration and the space arms race — the San Francisco-based Citizens For Space Demilitarization (CFSD). Founded in the summer of 1979 by a dozen advocates of peaceful uses of space technology who were increasingly concerned about the dominance of space programs by military goals, CFSD has grown to 100 members across the United States. CFSD has sponsored public meetings in several major cities to publicize the space arms race, and the growing opposition to it. CFSD's membership includes professors, students, aerospace workers and technicians, and writers, editors, and publishers working in the aerospace press. A sprinkling of anti-nuclear, environmental and anti-war activists rounds out the roster. The group publishes the bi-monthly *Space For All People*, which is always full of articles analyzing military space systems and the politics of the space program, as well as an internal Membership Bulletin.

CFSD strives to establish working relationships with the increasingly-popular pro-space organizations, as well as with major groups opposing the arms race in general. The group's programmatic emphasis is support of arms control treaties, especially those to ban anti-satellite weapons and space laser weapons, and support of peaceful space exploration and development, especially projects involving international cooperation.

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Verein fur Raumschiffahrt (Space Travel Society) of the Weimar period provided many Peenemunde rocket scientists when the Nazis took power. Although the V-2 rockets had virtually no practical military value in World War II, it was quite clear by the end of the war that military rocketry was the wave of the future. The Americans and the Soviets eagerly snatched up the German rocket scientists and quickly put them to work. Both sides realized that the rocket seemed the ideal mate for the atomic bomb which had devastated Hiroshima and Nagasaki.

The 1957 Soviet Sputnik beeping in the sky provoked near-panic in U.S. government circles, and an instantaneous and massive space effort began. The specter of Soviet atomic bombs whirling around 100 miles above our heads was more than could be tolerated. At first, it seemed that the nuclear arms race would move directly out into space, as the Soviets tested a Fractional Orbital Bombardment System and the U.S. Air Force began development of the SATellite INTerceptor (SAINT) program to destroy enemy spacecraft.

Both nations found it advantageous, though, to downplay the space arms race in the early 60s, and emphasize scientific space exploration for national prestige. The accomplishments of the civilian space programs of the next two decades were a credit to both nations. Planetary exploration by automated spacecraft brought a Golden Age to astronomy. Weather satellites allow poor fishermen of tropical archipelagoes to hear accurate hurricane forecasts.

International law emerged which called for outer space to be used for peaceful purposes. Numerous United Nations resolutions attested to the international desire to keep militarism out of space. In 1963, the Nuclear Test Ban Treaty was signed, which applied to nuclear explosions in outer space. In 1967, the Outer Space Treaty was signed by 87 nations which banned nuclear weapons and weapons of mass destruction from outer space. The 1972 Anti-Ballistic Missile (ABM) Treaty specifically banned the development, testing and deployment of space-based ABM systems.

Although all the talk was peaceful, both sides continued low-key military space programs. The U.S. Air Force fought hard but unsuccessfully for two manned military space projects — Dyna Soar, a reusable space plane that was the theoretical ancestor of the Space Shuttle, and the Manned Orbiting Laboratory (MOL). Several groups of military astronaut-trainees were selected for MOL, some of whom later became NASA astronauts. But the war in Vietnam devoured too

many military resources, and the project was scrapped in 1967, the same year the Outer Space Treaty was signed.

Reconnaissance satellites provided the first clear military payoff in space, though. Military communications satellites and navigation satellites followed, including some powered by thermocouples heated by sizeable chunks of plutonium. (In 1964, a military satellite powered by the SNAP 9A Radioisotope Thermoelectric Generator (RTG) was lost at launch, and burned up on re-entry. This single incident accounted for the majority of plutonium 238 pollution in the atmosphere and about 5% of all plutonium isotope fallout of the last 30 years.)

Over the last 20 years, the military has increasingly relied on space-based systems as integral parts of its nuclear war fighting capability. The Navstar Global Positioning satellite system, for example, will provide navigational control to an accuracy of 10 meters to military vehicles including ICBMs, bombers and cruise missiles, facilitating a nuclear first strike capability against "hard" targets, such as missile silos. The Satellite Data System spacecraft operate in highly-elliptical orbits above the North Pole the majority of the time, where they can communicate with bombers on the great circle route to the Soviet Union. American and Soviet radar ocean reconnaissance satellites monitor critical enemy fleet movements, providing key strategic intelligence. Electronic "ferret" satellites eavesdrop on the opposition.

Inexorable military logic has categorized all of these satellites as targets in their own right, leading to development of new generations of anti-satellite (ASAT) weapons. The current Soviet version is an intercept satellite which would explode near its target, destroying it with shrapnel. The American ASAT is a 20 ft. long missile launched from a high-altitude F-15 fighter jet. The non-explosive warhead homes in on the target with an infra-red sensor, destroying it by direct impact. The Soviets have conducted numerous ASAT tests recently, while the \$3 billion U.S. system is in advanced development, and is approaching space tests.

The Space Shuttle, a unique spacecraft capable of a wide variety of missions, has been heralded as the start of a new era in space exploration. The Reagan administration, however, seems certain to exploit it to speed the arms race to space. Reagan budget cuts will eliminate U.S. participation in the International Solar-Polar Mission, end the peaceful National Oceanic Satellite System, and preclude any U.S. mission to Halley's Comet. Scientific missions such as Venus Orbiting Imaging Radar and the Gamma Ray Observatory will

be long delayed. Spacelab missions planned on a cooperative basis with the European Space Agency have been cut from one a month to only one or two a year in the mid-80s.

The hot new proposal for the Space Shuttle is laser battle stations — anti-ballistic missile systems in space. High-energy laser research has made enormous progress in the last five years, and aerospace companies like Boeing, Lockheed, TRW, Martin Marietta, and Hughes are spending tens of millions of dollars to design laser weapons to fit in the payload bay of the Space Shuttle. Hawkish Republican Senators led by Malcolm Wallop of Wyoming, Jake Garn of Utah, and ex-astronaut Harrison Schmitt of New Mexico favor plans to ring the Earth with 18 five-megawatt carbon dioxide chemical fueled laser ABM satellites. This plan would require some 50 Space Shuttle flights, requiring cancellation of quite a few “frivolous” scientific space missions.

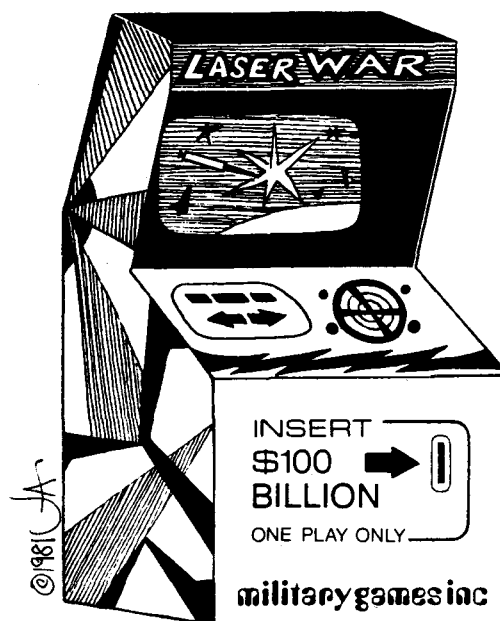
In the past few months, successful initial tests of an extremely powerful X-ray laser pumped by the output of a nuclear explosion have taken place at the Nevada underground nuclear test site. Project Dauphin, the nuke laser plan, is managed by the University of California's Lawrence Livermore Laboratories for the Department of Energy. Defense planners are contemplating rapid deployment of these compact nuclear lasers in space to destroy Soviet missiles. Defense Secretary Caspar Weinberger has aided the process by openly criticizing and calling for a re-evaluation of the 1972 ABM Treaty which bans deployment of destabilizing ABM systems in space.

At the historical moment when the means to take a momentous evolutionary step off our home planet are first becoming available to us, the militarists are seizing the tools by which we can positively shape our very future. This is truly an issue which can affect the course of history for millenia.

A Science For The People Critique

Citizens For Space Demilitarization (CFSD) has amassed evidence revealing the militaristic usurpation of space science and technology which might otherwise serve the interests of the greater good. Several more points must be added to emphasize the importance of this issue. U.S. government support for space militarization is massive — over \$7 billion a year¹ — with involvement going back to the very beginnings of space technology: “The campaign to militarize space was led in Congress in the late 1950s by then-Senate Majority Leader Lyndon Johnson. By 1960, only three years after

Sputnik, the United States was well on its way toward using space for strategic purposes. . . .”² Current U.S. space missions are apparently taken very seriously by the Soviet Union. A week before the first U.S. space shuttle was launched, the Soviet news agency Tass



stated that the Pentagon “is intensively preparing for using outer space for military purposes. . . . It is a question not of some ordinary measures to improve U.S. air defense, but of turning outer space into an arena of battle for America's dominance on Earth.”³ This pronouncement was substantiated within a few days when the Pentagon asked President Reagan and Congress for a military space station in permanent orbit.

Also missing from the CFSD article is an analysis of the deep military and corporate involvement in and control of space science and technology. It must not be underemphasized that the early rocketeers such as Wernher von Braun and Robert Goddard mentioned in the article were engaged in the creation of weapons of mass destruction. Robert Goddard led research during WWI on tube-launched rockets that became the bazookas of WWII, and he developed jet-assisted take off and variable thrust rockets for military aircraft in WWII. In Germany, Wernher von Braun led the development of the V-2 rocket, the first long-range ballistic missile, of which 4000 were launched against Allied targets in the last months of the war killing nearly 3000 people in London alone. Such applications of their work and their general complicity with military purposes cannot be condoned or skimmed over by reference to their possible good intentions.

Military interest and control go back to the beginning of space technology. The Pentagon's Defense Advanced Research Projects Agency has been interested in satellite warfare for several decades, probably as early as 1959, although a news blackout of military satellites was ordered by the Pentagon in 1962, thus masking much of DOD space activities then, as now.⁴ And according to a front page *New York Times* article entitled "Military Planners View the Shuttle as Way to Open Space for Warfare", "Almost from the first planning and investment in the shuttle program a decade ago it was widely recognized on Capitol Hill that the major long-range benefits would be from military applications."⁵ It is not a simple case of a good civilian program gone bad; military control has been an underpinning from the very beginning.

Much the same thing can be said for corporate involvement. The major business interests are not from mining or manufacturing firms, they are from the weapons and spacecraft firms: Rockwell, Boeing, McDonnell Douglas, TRW. Corporations are interested in near-term, dependable profits, not in long-range exploratory possibilities enmeshed in the shifting political and economic sands.⁶

Even if business interests in space were for industrial development, as perhaps with the proposed Solar Power Satellite, who will be in control and whose interests will be served? CFSD began its article referring to the "revolutionary new possibilities" offered by space exploration. In what sense revolutionary? Perhaps only in the same sense as the automobile: something which has had a huge technical impact, with much social fallout, but which leaves the political-economic system intact while only serving to concentrate power further. Space industry will necessarily be capital intensive, highly centralized, and structurally and functionally quite distant from public scrutiny. The industrialization of space under the present economic and political structure of the United States will be a further solidification of present conditions: serving the profit interests of those in power at the expense and suffering of working people.

Will international cooperation and diplomatic efforts constrain this situation, as implied in the article? We think it may help some, but it will ultimately lose out to the more powerful forces of economic and political dynamics. According to the Center for Defense Information headed-up by Rear Admiral Gene LaRocque, "The race to militarize space is rapidly outpacing the modest diplomatic efforts to control it."¹ SALT-I has often been analyzed as having little impact because it was agreed to only when the accepted constraints were a *fait accompli*. Even if this were not the

case, all it takes is one president such as Ronald Reagan who, with one stroke, is prepared to abandon the SALT-II treaty and the seven years of negotiations that went into it.

Although we can agree with CFSD that space offers tremendous potential for scientific and technological development, we maintain that as long as the political and economic structure of our society is designed to divert such development to serve military and corporate interests, we must challenge it long before we could support it. We encourage CFSD in their efforts to challenge military and corporate control of space, but we maintain that support of technological development of space must be preceded by a fundamental transformation of our present economic and political institutions.

There is a strong constituency for space exploration and development, ranging from Star Trek fans to aerospace professionals. These people are presently focussed on the technical and speculative aspects of space. But CFSD recognizes the overpowering political forces at work. Military planners presently find space of central importance in their schemes; consequently, civilian and visionary projects are brushed aside with head-spinning speed. How can CFSD and SftP organize our natural constituency, make it aware of the dangers of the military monopolization of space, deepen the political understanding of the space-oriented public, and mobilize it to take action?

In short, we are questioning the strategy necessary for a progressive pro-space movement.

—East Bay Science for the People

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Citizens For Space Demilitarization Replies

East Bay Science for the People cannot seem to make up its mind what it thinks about Citizens For Space Demilitarization. On one hand, SftP says that "CFSD has amassed evidence revealing the militaristic usurpation of space science and technology. . ." and that "CFSD recognizes the overpowering political forces at work." The same critique, however, accuses

CFSD of condoning and skimming over the complicity of German and American rocket scientists in aiding military projects, and states that "an analysis of the deep military and corporate involvement in and control of space science and technology" is "missing from the CFSD article."

CFSD does not claim that its analysis of the space militarization issue is the definitive and comprehensive one. We welcome, for example, the additional information included in the SftP critique which buttresses our contention that the space arms race is a vital issue deserving greatly increased attention in the 80s. We do object, however, to comments which imply that we have misrepresented the history of the relationship between rocketry and space science, and the military. We pointed out that the German rocket scientists collaborated with the Nazis on the V-2 project at Peenemunde. To also point out that the V-2 rockets had virtually no practical military value in WWII, which is true, does not challenge the judgement that rocketry was dominated by the military very early in its history, or belittle the memory of the thousands of civilians killed by the V-2 rockets in England.

We do not condone involvement in the V-2 project in any way, and oppose the macabre sentimentality concerning the V-2 still present in some U.S. aerospace circles. We doubt, however, whether bazookas or jet-assisted takeoff for aircraft can truly be considered "weapons of mass destruction," since that term is properly reserved for nuclear, chemical and biological weapons and other systems suited to the indiscriminate slaughter of civilian populations. We do not disagree in any way with SftP's statements about the early interest of the military in rocketry.

There is much that is "missing" in an article of this length, but we did mention the early development of the SAINT anti-satellite weapon. The military has been actively planning for the destruction of satellites since several years before the first satellite was launched. The United States maintained an active anti-satellite system based in the South Pacific using nuclear weapons until 1975.

SftP says, "It is not a simple case of a good civilian program gone bad; military control has been an underpinning from the very beginning." CFSD feels that it is more useful to look at space developments as an inter-related series of programs, rather than as a single, monolithic program which is judged either "good" or "bad." This approach allows CFSD to enthusiastically support projects like the U.S.-Soviet Apollo-Soyuz flight and the planned International Solar-Polar Mission, which rely on international cooperation to promote peace and achieve valid scientific goals.

We realize, however, that international cooperation and arms control treaties are not the entire answer, and we share SftP's concern that space development will continue to be dominated by corporate interests. We mentioned the drive by several major aerospace corporations to convince the Pentagon to deploy laser battle stations in space. Our publication, *Space For All People*, has consistently cast a critical eye on corporate plans for space development. We will continue to do so.

Our strategy is evolving as our organization grows and develops. But we know the basic outlines. CFSD directs its organizing to the space constituency and to the progressive, anti-militarist movement. We advocate military conversion and democratic control of the economy. We are proud to count in our ranks growing numbers of aerospace workers and professionals, academics and students in the space sciences, and enthusiastic advocates of peaceful space exploration and development for the benefit of humanity. For progressives to say to aerospace workers, "Since the military is so heavily involved in space, we must oppose peaceful scientific space missions as well as military adventures," is guaranteed to alienate those workers, and constitutes a kind of negative purism that says, "We're against everything until the millenium." We feel that the conversion strategy calls for the use of the productive capacity of the technologically sophisticated aerospace industry for peaceful uses, and we feel that space exploration has an appropriate place in such a program. Humanity is capable of grappling with many tasks at once. We strongly believe that economic justice and increased utilization of outer space are both on the human agenda in this decade.

Our primary focus is on the political and social effects of the immediate, practical applications of space technology. But we also have a vision of the future which justifies our opinion that the *potential* of space exploration is revolutionary. It probably won't be much more significant than the impact of the auto industry on society if the economic system remains unchanged. But we want space to be explored, industrialized, and settled in the next several hundred years by a human species which governs itself in a democratic and just fashion. We believe that humanity's move out into space is very much an imperative for the future, just as is the struggle for justice and peace for everyone. Economic collapse or nuclear destruction are real possibilities, but we are committed to organizing for a positive future.

We have appreciated the opportunity to open a debate on space with SftP, and we urge anyone intrigued by space exploration or concerned about the arms race in space to continue the debate by writing us. □

“Rearming America”

(Continued from page 15)

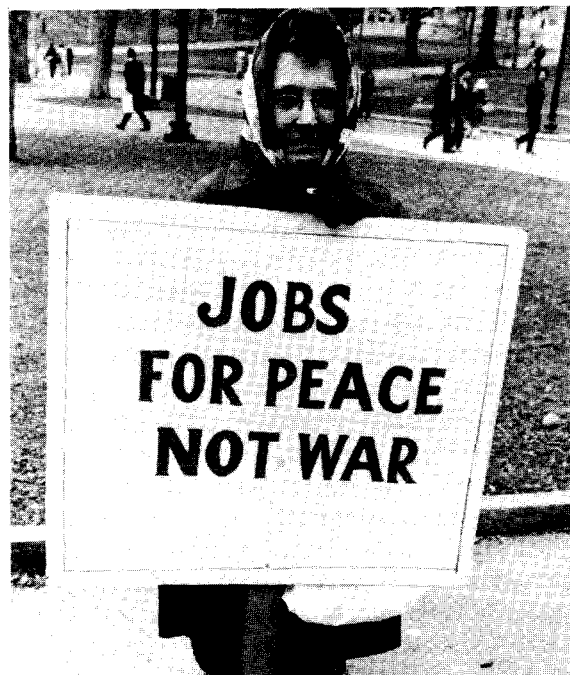
they are serious about the “Soviet Threat” and may well be searching for “offensive forces to attack the enemy”, to the U.S. corporations that provide the tools of trade to the Pentagon the name of the game is profit not performance. The current military buildup, like earlier ones, reveals that policy planners such as Nitze have had their greatest success only when, as in the 1948-50 and the 1978-80 period, the sluggishness of the economy and the lack of any national plan by the business community leads to the blending of strategic Cold War considerations with the bolstering of profit margins for business. The results have always tended to be either scandalous, laughable or pathetic, depending on one’s perspective. Whether it be WWI, WWII, the high Cold War years or the present buildup, U.S. corporations have always used the military buildup to raise their profit margins by whatever means possible.

Thus, in WWI, a scandal broke when it was learned that U.S. steel corporations had sold thin substandard steel to the Navy for its ships. A recent parallel case is that of the multibillion dollar Trident submarine program, where the Navy has accused General Dynamics (the number one military contracting firm) of placing faulty steel in as many as 126,000 separate locations in the first Trident sub, the Ohio (which will cost over \$1.2 billion). Similar malfeasance has been found in another shipbuilding case with Litton Industries (the sixth ranked contractor) accused of billing some of its losses on commercial work to the Navy via a complex scheme of accounting subterfuge spread over an eight year period.

All of this, however, seems mild in comparison with the findings of defense analyst Franklin Spinney, a civilian in the Department of Defense’s Programs Analysis and Evaluation Division. The startling conclusion of the well-documented Spinney Report is that the more complex weapons systems become, the less likely they are to be operational. Spinney points out that modern fighter planes are so complex that some operate only 35% of the time. (Earlier planes were operational 60-66% of the time.) Worse yet, each new “improved” plane is much more costly than the last and *less* capable of meeting its proscribed efficiency standards.¹⁰ Spinney’s report continues a rather long and dismal tradition demonstrating that the military establishment has been bamboozled by the military contracting corporations. Actually, given the structure of the military market — i.e., that the companies involved basically *control* the high-profit marketing process, such results make sense.

Militarism and the Productivity Crisis

Increasingly inefficient weapons do not, however, make sense in a stagnating, inflating economy caught in a productivity crisis. The shift toward conventional weapons on the one hand, and toward aerospace exotica on the other, is sure to push the U.S. economy deeper into the quagmire of stagflation. In the 1940s and 1950s a host of new technologies that either lowered costs or created demand for new products were “spun-off” from military research. Examples would include the revolution in petrochemical products, the jet engine, the computer and the modern electronics industry. Since the



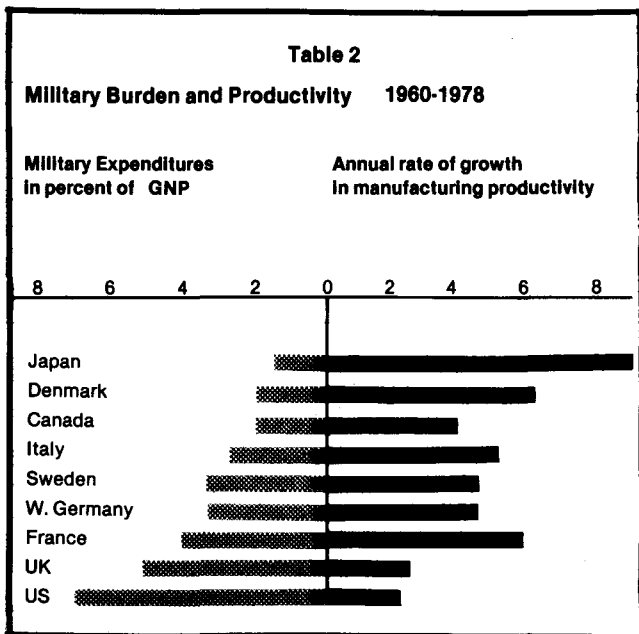
Ellen Shub

late 1960s when the space program underwrote the basic technology for the microelectronic revolution, military spinoffs have been minimal both in relation to the amounts spent on military research and development and in relation to the economy as a whole. Presently, there is no reason to expect sizeable spinoffs from either the conventional weapons or exotica, because R & D now concentrates on highly exotic products with little marketable potential.

The current buildup, then, promises to (1) inflate profits, (2) increase incomes for the twelve or more million workers whose jobs are sustained, directly and indirectly by military spending, (3) push up prices even higher as these workers try to buy goods from firms schooled in the art of pass-through pricing, (4) raise prices on military products thereby raising *further* the demands by the CPD to raise military expenditures, (5) make foreign manufactured goods even cheaper as U.S. corporations neglect even further their industrial base to

pursue easy military profits, (6) thereby leading to balance of payments crises as the inflation draws-in cheaper imports, (7) absorb even more research scientists and scientific funding thereby lowering civilian technological advances below what might be achieved. (Table II below illuminates this final point.)

Furthermore, as the *mix* of government spending is shifted from social services to military outlays the employment effect of government spending goes *down*. That is, military spending is capital-intensive, social spending is labor-intensive.¹¹ Thus, Paul Nitze and the CPD will manage to make a poor situation worse for millions of people while raising profit margins for a few and buoying up the GNP figure by raising the level of *unproductive expenditures* within it.



Source: Ruth Leger, *World Military and Social Expenditures, 1980* (Leesburg, Virginia, 1980).

Simply put, the 1950s are not the 1980s and the U.S. economy can no longer afford the burden of the hegemonial power. What was learned in 1950 has to be unlearned in the 1980s. Unlike the 1950s, the U.S. must compete in a internationalized economic setting where its closest competitors equal or more often exceed the U.S. in technological capabilities. In the 1950s the U.S. could withstand the inflationary effects of military spending. Today such inflation will lead to rising imports, declining exports and a declining dollar. Drawing research scientists and engineers into military work will insure that the U.S. economy falls further behind its competitors, thereby raising the unemployment rate and deepening the productivity crisis. Yet the dismal tendency to go back to the policies

of NSC-68 rather than forward to some type of humane economic planning lends great weight to the notion that when history repeats itself it does so the first time as *tragedy*, the second as *farce*. □

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8. This is a complex calculation that cannot be detailed here. For some background see: Franklin D. Holzman, "Is There a Soviet-U.S. Military Spending Gap?" *Challenge* (Sept./Oct. 1980) and Center for Defense Information, *Soviet Geopolitical Momentum: Myth or Menace?* *The Defense Monitor* (January, 1980).
9. Louis Kraar, "Yes, the Administration Does Have a Defense Policy" *Fortune* (June 18, 1978).
10. Franklin Spinney, "Defense Facts of Life" Programs Analysis and Evaluation Division Staff Paper, DOD (December 5, 1980).
11. Shifting the mix will result in 14,000 to 30,000 jobs lost per billion dollars shifted, or 420,000 to 900,000 due to President Reagan's projected shifts in FY 1982. See Marion Anderson, *The Empty Pork Barrel* (Lansing, Michigan: PIRGIM, 1978) p. 2.

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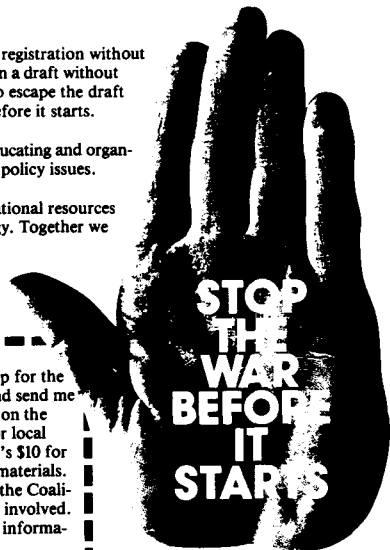
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Technology, Planning, And Self-Reliant Development: A Latin American View, Francisco R. Sagasti, Praeger Publishers (383 Madison Avenue; New York, NY 10017), 1979, 176 pp., \$15.00 hardback. Focuses on industrial technology and on policies for developing an autonomous scientific and technological capacity.

Integration Of Science And Technology With Development: Caribbean And Latin American Problems In The Context Of The U.N. Conference On Science And Technology For Development, D. Babatunde Thomas and Miguel S. Wionczek, Editors, Pergamon Press (Maxwell House, Fairview Park; Elmsford, NY 10523), 1979, 275 pp., \$9.95 hardback. A useful collection of twenty articles.

"Ecology, Job Safety, Health Problems" is the special issue title of the Winter 1981 issue of *Cubatimes*. \$2.00/issue, \$8.00/year. Cuba Resource Center (11 John Street, Rm 506; New York, NY 10038).

SCIENCE AND LITERATURE

Readings In Goethean Science, Johann Wolfgang von Goethe and Rudolf Steiner, compiled and edited by Linda S. Jolly and Herbert H. Koepf, Bio-Dynamic Farming and Gardening Association (P.O. Box 253; Wyoming, RI 02898), 1978, 62 pp., \$4.20.

Scientific Romances Of H.G. Wells, Stephen Gill, Vesta Publications (P.O. Box 1641; Cornwall, Ontario K6H 5V6 CANADA), 1977, 159 pp., \$5.00.

TECHNOLOGY AND VALUES

Technology And Values In American Civilization: A Guide To Information Sources, edited by Stephen H. Cutcliffe, Gale Research Company (Book Tower; Detroit, MI 48226), 1980, 704 pp., \$32.00 hardcover. A guide to materials documenting the effect of American values on attitudes toward technology as well as technology's impact on the formation of those values.

ENERGY POLITICS

Nuclear Power And Political Surveillance, Center for National Security Studies (122 Maryland Ave., NE; Washington, DC 20002), 1980, \$3.50. Details dozens of cases of improper government and private interference with lawful political dissent on nuclear power issues.

Powerline: The First Battle Of America's Energy War, Barry M. Casper and Paul David Wellstone, University of Massachusetts Press (P.O. Box 429; Amherst, MA 01004), 1981, 314 pp., \$7.95 paperback. This book describes the protest of Minnesota farmers against a high voltage powerline. It warns that U.S. energy policies and rural America are on a collision course.

AFRICA

Health Situation In South Africa Today, Dr. Aziza Sedat, Center Against Apartheid (Department of Political and Security Council Affairs; U.N. Building; New York, NY 10017), 1980, 30 pp., free. This paper was submitted to the International Seminar on Women and Apartheid. The Seminar was organized by the Non-Governmental Sub-Committee on Racism, Racial Discrimination, Apartheid and Decolonization, in co-operation with the Special Committee Against Apartheid.

Bulletin Of The Regional Office For Science And Technology For Africa, Chief Olu Ibukun, Editor, UNESCO (P.O. Box 30592; Nairobi, Kenya AFRICA), quarterly, free.

SCIENCE AND POLITICS

Science At The White House: A Political Liability, Edward J. Burger Jr., Johns Hopkins University Press (Baltimore, Maryland 21218), 1980, 180 pp., \$14.95 hardback. This book takes a critical look at the role of science advisers to the President and recounts the many conflicts that occurred as science and politics converged.

The Occult Technology Of Power, Anonymous, Alpine Enterprises (P.O. Box 766; Dearborn, MI 48121), 1974, 56 pp., \$8.95 hardcover. An interesting, somewhat humorous, introduction to the secrets of maintaining political power in the modern world. Written from a right-libertarian perspective.

ENVIRONMENT

Dams And Other Disasters: A Century Of The Army Corps Of Engineers In Civil Works, Arthur E. Morgan, Porter Sargent Publisher (11 Beacon Street; Boston, MA 02108), 1971, 422 pp., \$7.50 hardback. An expose of the failings of the Army Corps of Engineers and a firm statement against the continuance of its "regime" in public and environmental improvement.

The Reserve Mining Controversy: Science, Technology, And Environmental Quality, Robert V. Bartlett, Indiana University Press (Tenth & Morton Streets; Bloomington, IN 47401), 1980, 293 pp., \$17.50 hardback. The case of the Reserve Mining Company dumping tailings from its processing of low grade ore is broader than the issue of the pollution of Lake Superior. It spotlights the conflict between environmentalists, industrialists, politicians, and the public interest.

Circle Of Poison: Pesticides And People In A Hungry World, David Weir & Mark Schapiro, Institute for Food & Development Policy (2588 Mission Street; San Francisco, CA 94110), 1981, 101 pp., \$3.95 paperback. It documents a worldwide scandal: the international marketing of restricted pesticides that leave a globe-circling trail of sickness and death.

HEALTH

Health Care In Crisis: Essays On Health Services Under Capitalism, Marlene Dixon and Thomas Bodenheimer, Synthesis Publications (P.O. Box 40099; San Francisco, CA 94140), 1980, \$3.00 paperback. A collection of essays written from the perspective of Marxist class analysis.

Federal Policy And American Indian Health Needs: The Role Of Consumers In A National Health Program, Report of the Sixth National Conference on Indian Health, Association on American Indian Affairs (432 Park Avenue South; New York, NY 10016), 1974, 30 pp., \$1.00. This is a summary of a two-day conference.

CORRECTION

The photograph on page 9 of May/June 1981 *SftP* was donated by Nine to Five not Ann Arbor SftP.

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