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SCIENCE AGAINST THE PEOPLE

BERKELEY SESPA

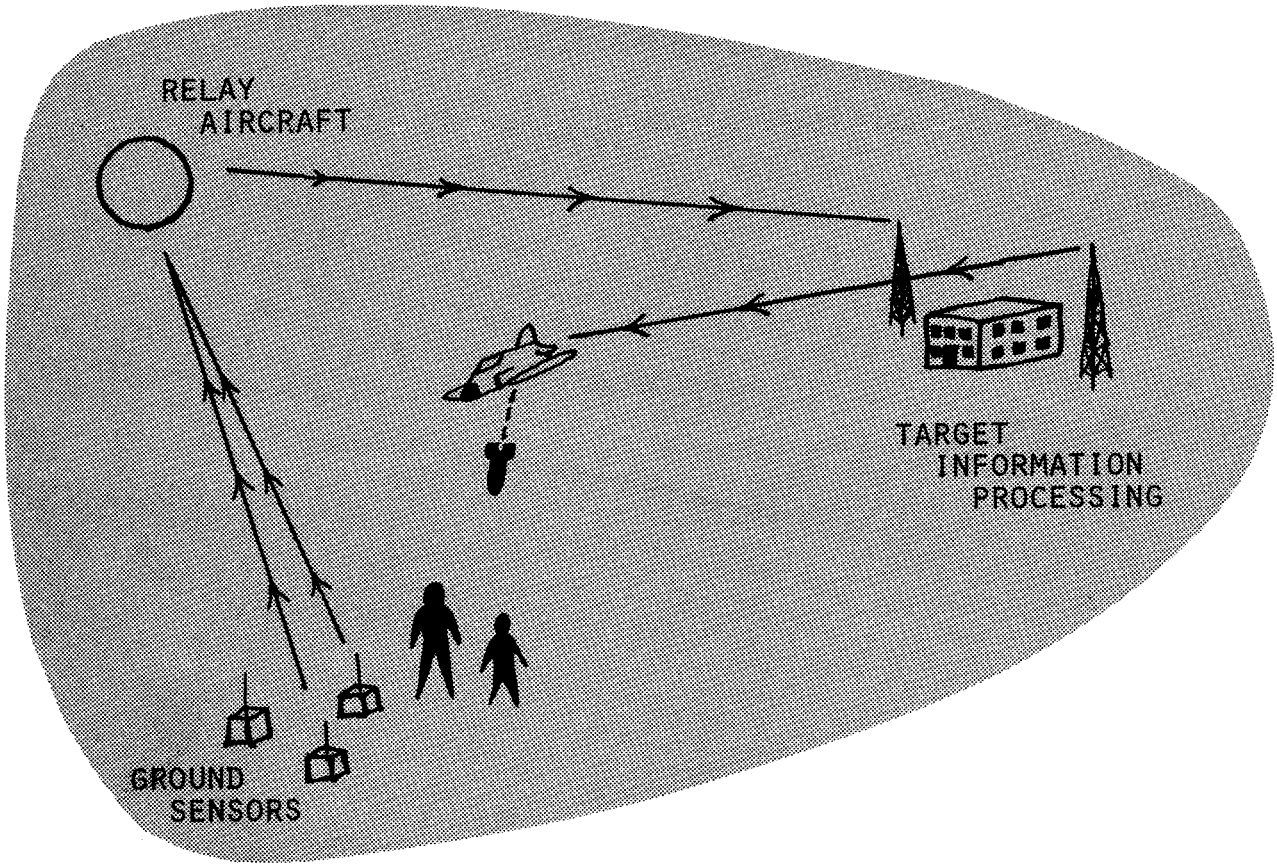
THE STORY OF JASON - THE ELITE GROUP OF ACADEMIC SCIENTISTS WHO, AS TECHNICAL CONSULTANTS TO THE PENTAGON, HAVE DEVELOPED THE LATEST WEAPON AGAINST PEOPLES' LIBERATION STRUGGLES: "AUTOMATED WARFARE"

PHYSICISTS HAVE CONSISTENTLY UNDERPLAYED THE MAJOR EXTENT TO WHICH THEIR SUBJECT IS RESPONSIBLE FOR THE MODERN HORRORS OF WAR. THE POST-BOMB GENERATIONS HAVE A DRAMATICALLY CHANGED ATTITUDE TO THE WORLD IN DIRECT CONSEQUENCE OF WHAT, EVEN 27 YEARS AFTER, REMAINS A TERRIFYING SWORD OF DAMACLES. A THREAT, MOREOVER, WHOSE FEARFUL REALITY IS IN NO SENSE DIMINISHED BY LESSER TECHNOLOGICAL EVILS. IT WAS PHYSICISTS WHO PRODUCED LASER BOMBING; IT WAS PHYSICISTS WHO INVENTED THE ELECTRONIC BATTLEFIELD; IT WAS PHYSICISTS WHO DEVISED PLASTIC ANTI-PERSONNEL BOMBS, "GRAVEL", "SPIDER MINES", "DAISY CUTTERS" - AND A PLETHORA OF OTHER PERVERSIONS. WHY SHOULDN'T THE PUBLIC DISTRUST THEM AS A RACE? THEY DO LITTLE TO PURGE THEIR OWN RANKS OF THE MONSTERS WHO CONTRIVE SUCH APPALLING INHUMANITIES.

--Peter Stubbs, Editor of NEW SCIENTIST, in NEW SCIENTIST, August 24, 1972.

SCIENCE AGAINST THE PEOPLE

THE STORY OF JASON



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Some abbreviations used:

IDA ... Institute for Defense Analyses
PSAC ... President's Science Advisory Committee
DCPG ... Defense Communications Project Group
(later called DSPG)
ARPA ... Advanced Research Projects Agency
(an arm of the DOD)
DOD ... Department of Defense
U.C. ... University of California

Introduction

In June of this year, a world-famous American scientist was chased out of the Collège de France by a group of young French scientists who were outraged at his contributions to the Vietnam War. Dr. Murray Gell-Mann, a Nobel Prize-winning physicist from Cal Tech, had come to Paris to lecture on the theory of elementary particles, but the audience which met him wanted to ask about his work for the Pentagon, through his participation in the Jason group. Gell-Mann's response to this challenge was, "I am not free to answer."

At an international symposium on physics held in Trieste in September, five Jason physicists (Professors Wigner, Wheeler, Townes, Weinberg, and Montroll) were confronted by 300 persons who denounced them as war criminals. The only response by the five came from Professor Wigner, who said, "I am flattered by your accusations. They are compliments for me." When the meeting was moved to a suburb, 100 riot police were called on to block the protesters. (Le Monde, 9/30/72).

At a summer school on the history of physics, held at Varenna, Italy, in August, there was circulated a Statement on Vietnam, saying, in part:

THE OPERATIONAL USE OF SCIENTIFIC KNOWLEDGE IN THE INDOCHINA WAR IS OF PARTICULAR CONCERN TO US...OUR DISCUSSIONS HAVE CONVINCED US THAT IT IS NO LONGER POSSIBLE TO SEPARATE OUR ATTITUDES ON THESE ISSUES FROM OUR PROFESSIONAL ACTIVITIES. THIS IS WHY WE EXPRESS, AS SCIENTISTS AND IN THE PUBLICATIONS AND INSTITUTIONS OF SCIENCE, OUR CONDEMNATION OF THOSE COLLEAGUES WHO HAVE WILLINGLY INVOLVED THEMSELVES IN THE WAGING OF THIS WAR: WE ASK THAT THESE ISSUES SHOULD BE HONESTLY FACED WITHIN THE SCIENTIFIC COMMUNITY, WHEREVER IT MEETS.

The Jason group was specifically cited in this statement for their contribution to the technology of the war. This statement was signed by almost all (about sixty) of the participating scientists -- mostly Europeans, and some of them were men of considerable prestige. This same statement was circulated for signatures at a large physics meeting in the United States in September (the high-energy conference at the National Accelerator Laboratory). Only 21 scientists signed out of over 700; and most of the signers were European.

Can American scientists evade these issues? We feel that we make up a community of shared work and common understanding -- students, teachers, and researchers. Can it be a matter of indifference to us that some members of the community -- even some of its leaders -- serve a military adventure that most of us regard as criminal?

The overall involvement of scientists with government is an enormous subject. The issue is posed perhaps most sharply by the Jason group, an elite panel within the Institute for Defense Analyses (IDA). The President's Science Advisory Committee (PSAC), which works directly for the President, is still more select than Jason and presumably more influential. But in Jason, we see long-range strategic advice to the Department of Defense associated with the symbols of academic science. The forty-odd members of Jason include some of the very best known physicists in America,

working at the most prestigious universities. While maintaining their public personalities as esteemed professors, they have been quietly helping the Department of Defense with -- with what? They are "not free to answer."

The first aim of this study is to assemble some of the story of this classified work. An especially significant contribution of Jason to the Vietnam War was revealed in the Pentagon Papers. In a 1966 report, a Jason group drew up general outlines for a system of sensors, communications links, aircraft, mines and bombs intended to stop transport of soldiers and supplies into South Vietnam. This system, adapted and expanded by the Pentagon, has become what is now known as the automated battlefield. It has made possible the policy of minimizing American casualties while continuing to devastate Indochina and its people through technological warfare; it has made possible Nixon's plan to prosecute the war indefinitely or until he can achieve "peace with honor;" it is being readied for other, future wars.

Thus, everyone concerned with anti-democratic forces in our society should be vitally interested in the nature of Jason and its activities. In this report, we present the best information available to us on this important issue.

In addition to tracing the consequences of this one Jason project, we will give a few indications, from the meager unclassified material available, of the wide range of Jason's still-secret work.

The second chapter summarizes rather fully several Jason members' own account of their own experiences and attitude in this work. The bulk of this chapter is based on personal interviews conducted in 1972.

Finally, we offer an analysis of the issues raised, and suggest some proposals for action.

While this report focuses on the activities of the Jason group, Jason is by no means an isolated or unique phenomena. This case-study of Jason serves to illustrate the nature of relationships which exist generally between elite academic scientists and government, military and business agencies. These relationships facilitate the routine implementation of policy decisions of sweeping social consequences without the knowledge or consent of the people or their elected representatives.

Chapter 1.
The Story Of Jason

THE ORIGIN OF JASON

At the end of World War II many of the country's leading scientists, who had been involved in such war research as the atomic bomb and radar, left full-time government work and returned to the college campuses. The military, of course, did not want to lose all this valuable talent. In addition to its own "in-house" laboratories, the Defense Department sought to establish ongoing consulting liason with first-rate scientists.

At first this service was obtained through the RAND corporation and some scientific advisory committees attached directly to the Pentagon; some scientists also consulted for industrial corporations working on defense contracts. The industrial consulting jobs paid extremely well, but the scientists involved felt that they were not close enough to the center of power to influence policy decisions. On the other hand, scientists in Washington often felt restricted by the particular government agency they consulted for and also found the government consulting fee scales to be very low. Therefore, the idea of a new, independent research and consulting organization arose: this was the Institute for Defense Analyses, IDA. Set up nominally as a private, non-profit corporation, IDA worked on the basis of contracts with the Pentagon for particular research problems of interest to the military. IDA could determine its own salary scales and it hoped to attract high calibre scientists with the promise of considerable "freedom" in their choice of problem to be worked on. A group of the very brightest young scientists was recruited into a sub-group of IDA called Jason. The whole success of this enterprise depended upon establishing it as a mark of highest prestige to be invited into this elite group.

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JASON
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IDA'S COLD-WAR IDEOLOGY

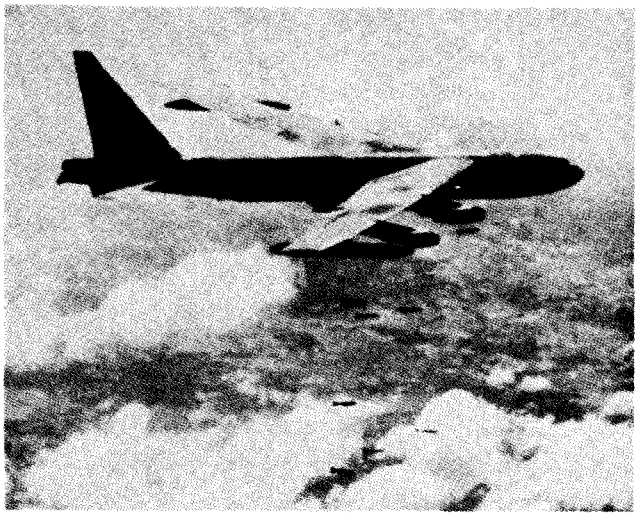
The original political-philosophical outlook of IDA and Jason was boldly stated in terms of cold-war ideology. Their literature of ten years ago told of the creation of IDA as arising from "the inescapable realization that International Communism is imperialistic in nature and that its goal is no less than world domination." Then, noting that "the real war was American science versus Soviet science", IDA traced its birth to the fact that "the government, specifically the Department of Defense, in an attempt to strengthen its application of the scientific method toward the solution of broad problems of military policy and strategy, sought some machinery by which it could reach more effectively into the reservoir of technological talent in the nation's scientific community."

JASON AND THE "MCNAMARA FENCE"

The most detailed public account of Jason's contribution to the Vietnam War is contained in the Pentagon Papers: the 1966 Jason summer study which gave birth

to a new form of technological warfare, now known as the automated, or electronic, battlefield. The situation leading up to this report is as follows.

Even while campaigning for reelection on a "peace" platform in 1964, Lyndon Johnson was accepting plans from his military advisors for increased levels of fighting in Vietnam. Early in 1965 he launched the program of sustained bombing against North Vietnam: Operation Rolling Thunder. After more than a year of this campaign, there was a growing opposition to the war among the American public, and there was also disillusionment within some parts of the government over the failure of the bombing to achieve its military objectives.



Early in 1966, a clique of Harvard-MIT scientists with high level connections in Washington persuaded Defense Secretary Robert McNamara to sponsor a special study on "technical possibilities in relation to our military operations in Vietnam." With this prompting, McNamara formally requested the scientists to look into the feasibility of "a fence across the infiltration trails, warning systems, reconnaissance (especially night) methods, night vision devices, defoliation techniques and area denial weapons."

This special scientific study group was assembled under the auspices of the Jason Division of IDA; the group of 47 scientists represented "the cream of the scholarly community in technical fields"... "a group of America's most distinquished scientists, men who had helped the Government produce many of its most advanced technical weapons systems since the end of the Second World War, men who were not identified with the vocal academic criticism of the Administration's Vietnam policy." This Jason study group met during the summer of 1966, starting off with a series of briefings by high officials from the Pentagon, the Central Intelligence Agency, the State Department and the White House. They were given access to secret materials.

The Jason report, given to McNamara at the beginning of September, was in four parts:"1. The Effects of US Bombing in North Vietnam; 2. Viet Cong/North Vietnam Army Logistics and Manpower; 3. An Air Supported Anti-Infiltration Barrier; and 4. Summary of Results, Conclusions and Recommendations." This report was regarded as particularly "sensitive" and the only persons to receive copies, outside of McNamara, were General Wheeler and Mr. Rostow. The writers of the Pentagon Papers evaluated this Jason report as exerting "a powerful and perhaps decisive influence in McNamara's mind," concerning future US policies in Vietnam.

As the New York Times's presentation of the Pentagon Papers summarizes--

"Their [the Jason Summer Study's] report evaluating the results of the Rolling Thunder campaign began:

"'As of July 1966, the U.S. bombing of North Vietnam had had no measurable direct effect on

Hanoi's ability to mount and support military operations in the South at the current level.'

"They then pointed out the reasons that they felt North Vietnam could not be hurt by bombing: It was primarily a subsistence agricultural country with little industry and a primitive but flexible transport system, and most of its weapons and supplies came from abroad.

"These factors, the scientists said, made it 'quite unlikely' that an expanded bombing campaign would 'prevent Hanoi from infiltrating men into the South at the present or a higher rate.'

" In conclusion, the Pentagon study says, the scientists addressed the assumption behind the bombing program -- that damage inflicted on a country reduces its will to continue fighting. The scientists criticized this assumption, the study says, by denying that it is possible to measure the relationship.

"'It must be concluded', the scientists said, 'that there is currently no adequate basis for predicting the levels of U.S. military effort that would be required to achieve the stated objectives -- indeed, there is no firm basis for determining if there is any feasible level of effort that would achieve these objectives.'"

The Gravel Edition of the Pentagon Papers continues (p. 120):

Having submitted a stinging condemnation of the bombing, the Study Group was under some obligation to offer constructive alternatives and this they did, seizing, not surprisingly, on the very idea McNamara had suggested—the anti-infiltration barrier. The product of their summer's work was a reasonably detailed proposal for a multisystem barrier across the DMZ and the Laotian panhandle that would make extensive use of recently innovated mines and sensors. The central portion of their recommendation follows:

> The barrier would have two somewhat different parts, one designed against foot traffic and one against vehicles. The preferred location for the anti-foot-traffic barrier is in the region along the southern edge of the DMZ to the Laotian border and then north of Tchepone to the vicinity of Muong Sen, extending about 100 by 20 kilometers. This area is virtually unpopulated, and the terrain is quite rugged, containing mostly V-shaped valleys in which the opportunity for alternate trails appears lower than it is elsewhere in the system. The location of choice for the anti-vehicle part of the system is the area, about 100 by 40 kilometers, now covered by Operation Cricket. In this area the road network tends to be more constricted than elsewhere, and there appears to be a smaller area available for new roads. An alternative location for the anti-personnel system is north of the DMZ to the Laotian border and then north along the crest of the mountains dividing Laos from North Vietnam. It is less desirable economically and militarily because of its greater length, greater distance from U.S. bases, and greater proximity to potential North Vietnamese counter-efforts.
>
> The air-supported barrier would, if necessary, be supplemented by a manned "fence" connecting the eastern end of the barrier to the sea.
>
> The construction of the air-supported barrier could be initiated using currently available or nearly available components, with some necessary modifications, and could perhaps be installed by a year or so from go-ahead. However, we anticipate that the North Vietnamese would learn to cope with a barrier built this way after some period of time which we cannot estimate, but which we fear may be short. Weapons and sensors which can make a much more effective barrier, only some of which are now under development, are not likely to be available in less than 18 months to 2 years. Even these, it must be expected, will eventually be overcome by the North Vietnamese, so that further improvements in weaponry will be necessary. Thus we envisage a dynamic "battle of the barrier," in which the barrier is repeatedly improved and strengthened by the introduction of new components, and which will hopefully permit us to keep the North Vietnamese off balance by continually posing new problems for them.
>
> This barrier is in concept not very different from what has already been suggested elsewhere; the new aspects are: the very large scale of area denial, especially mine fields kilometers deep rather than the conventional 100–200 meters; the very large numbers and persistent employment of weapons, sensors, and aircraft sorties in the barrier area; and the emphasis on rapid and carefully planned incorporation of more effective weapons and sensors into the system.
>
> The system that could be available in a year or so would, in our conception, contain [sic] the following components:
>
> —Gravel mines (both self-sterilizing for harassment and non-sterilizing for area denial).
> —Possibly, "button bomblets" developed by Picatinny Arsenal, to augment the range of the sensors against foot traffic.*
> —SADEYE/BLU-26B clusters, for attacks on area-type targets of uncertain locations.
> —Acoustic detectors, based on improvements of the "Acoustic Sonobuoys" currently under test by the Navy.
> —P-2V patrol aircraft, equipped for acoustic sensor monitoring, Gravel dispensing, vectoring strike aircraft, and infrared detection of campfires in bivouac areas.
> —Gravel Dispensing Aircraft (A-1's, or possibly C-123's)
> —Strike Aircraft
> —Photo-reconnaissance Aircraft
> —Photo Interpreters
> —(Possibly) ground teams to plant mines and sensors, gather information, and selectively harass traffic on foot trails.
>
> The anti-troop infiltration system (which would also function against supply porters) would operate as follows. There would be a constantly renewed mine field of nonsterilizing Gravel (and possibly button bomblets), distributed in patterns covering interconnected valleys and slopes (suitable for alternate trails) over the entire barrier region. The actual mined area would encompass the equivalent of a strip about 100 by 5 kilometers. There would also be a pattern of acoustic detectors to listen for mine explosions indicating an attempted penetration. The mine field is intended to deny opening of alternate routes for troop infiltrators and should be emplaced first. On the trails and bivouacs currently used, from which mines may—we tentatively assume—be cleared without great difficulty, a more dense pattern of sensors would be designed to locate groups of infiltrators. Air strikes using Gravel and SADEYES would then be called against these targets. The sensor patterns would be monitored 24 hours a day by patrol aircraft. The struck areas would be reseeded with new mines.
>
> The anti-vehicle system would consist of acoustic detectors distributed every mile or so along all truckable roads in the interdicted area, monitored 24 hours a day by patrol aircraft, with vectored strike aircraft using SADEYE to respond to signals that trucks or truck convoys are moving. The patrol aircraft would distribute self-sterilizing Gravel over parts of the road net at dusk. The self-sterilization feature is needed so that road-watching and mine-planting teams could be used in this area. Photo-reconnaissance aircraft would cover the entire area each few days to look for the development of new truckable roads, to see if the transport of supplies is being switched to porters, and to identify any other change in the infiltration system. It may also be desirable to use ground teams to plant larger anti-truck mines along the roads, as an interim measure pending the development of effective air-dropped anti-vehicle mines.

The cost of such a system (both parts) has been estimated to be about $800 million per year, of which by far the major fraction is spent for Gravel and SADEYES. The key requirements would be (all numbers are approximate because of assumptions which had to be made regarding degradation of system components in field use, and regarding the magnitude of infiltration): 20 million Gravel mines per month; possibly 25 million button bomblets per month; 10,000 SADEYE-BLU-26B clusters* per month; 1600 acoustic sensors per month (assuming presently employed batteries with 2-week life), plus 68 appropriately equipped P-2V patrol aircraft; a fleet of about 50 A-1's or 20 C-123's for Gravel dispensing (1400 A-1 sorties or 600 C-123 sorties per month); 500 strike sorties per month (F-4C equivalent); and sufficient photo-reconnaissance sorties, depending on the aircraft, to cover 2500 square miles each week, with an appropriate team of photo interpreters. Even to make this system work, there would be required experimentation and further development for foliage penetration, moisture resistance, and proper dispersion of Gravel; development of a better acoustic sensor than currently exists (especially in an attempt to eliminate the need for button bomblets); aircraft modifications; possible modifications in BLU-26B fuzing; and refinement of strike-navigation tactics.

For the future, rapid development of new mines (such as tripwire, smaller and more effectively camouflaged Gravel, and various other kinds of mines), as well as still better sensor/information processing systems will be essential.

Thus, not only had this distinguished array of American technologists endorsed the barrier idea McNamara had asked them to consider, they had provided the Secretary with an attractive, well-thought-out and highly detailed proposal as a real alternative to further escalation of the ineffective air war against North Vietnam. But, true to their scientific orientations, the study group members could not conclude their work without examining the kinds of counter-measures the North Vietnamese might take to circumvent the Barrier. Thus, they reasoned:

> Assuming that surprise is not thrown away, countermeasures will of course still be found, but they may take some time to bring into operation. The most effective countermeasures we can anticipate are mine sweeping; provision of shelter against SADEYE strikes and Gravel dispersion; spoofing of sensors to deceive the system or decoy aircraft into ambushes, and in general a considerable step-up of North Vietnamese anti-aircraft capability along the road net. Counter-countermeasures must be an integral part of the system development.
>
> Apart from the tactical countermeasures against the barrier itself, one has to consider strategic alternatives available to the North Vietnamese in case the barrier is successful. Among these are: a move into the Mekong Plain; infiltration from the sea either directly to SVN or through Cambodia; and movement down the Mekong from Thakhek (held by the Pathet Lao-North Vietnamese) into Cambodia.
>
> Finally, it will be difficult for us to find out how effective the barrier is in the absence of clearly visible North Vietnamese responses, such as end runs through the Mekong plain. Because of supplies already stored in the pipeline, and because of the general shakiness of our quantitative estimates of either supply or troop infiltration, it is likely to be some time before the effect of even a wholly successful barrier becomes noticeable. A greatly stepped-up intelligence effort is called for, including continued road-watch activity in the areas of the motorable roads, and patrol and reconnaissance activity south of the anti-personnel barrier.

This, then, was the new option introduced into the Vietnam discussions in Washington at the beginning of September.

Their work completed, the Jason Group met with McNamara and McNaughton in Washington on August 30 and presented their conclusions and recommendations. McNamara was apparently strongly and favorably impressed with the work of the Summer Study because he and McNaughton flew to Massachusetts on September 6 to meet with members of the Study again for more detailed discussions. Even before going to Massachusetts, however, McNamara had asked General Wheeler to bring the proposal up with the Chiefs and to request field comment. After having asked CINCPAC for an evaluation, Wheeler sent McNamara the preliminary reactions of the Chiefs. They agreed with the Secretary's suggestion to establish a project manager (General Starbird) in DDR&E, but expressed concern that, "the very substantial funds required for the barrier system would be obtained from current Service resources thereby affecting adversely important current programs."

The conservatism of the military hierarchy was overcome by McNamara's enthusiasm. The new project, given the deliberately vague name of Defense Communications Planning Group (DCPG), was set up under the Director of Defense Research and Engineering (DDR&E).

Military r&d chief Foster:

The Director of Defense Research and Engineering since 1965 has been Dr. John S. Foster, Jr., PhD in physics from Berkeley, and director of UC Livermore Lab 1961-65. The directors of DCPG (later re-named Defense Special Projects Group) have been--

1966-68: Lt. Gen. (Army) Alfred D. Starbird; he later was put in charge of the ABM project.

1968-70: Lt. Gen. (Air Force) John D. Lavelle; he was later the commander in Indochina held responsible for "unauthorized" air raids over North Vietnam.

1970--: Maj. Gen. John R. Deane, Jr., who gave extensive testimony to the Senate hearings on the electronic battlefield.

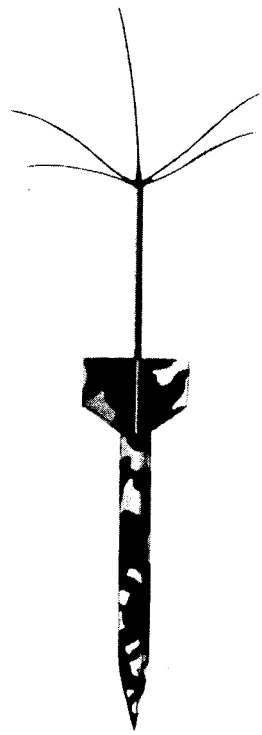
Under DCPG the development of the electronic battlefield has been rapid. The details have been mostly secret, but we can piece together bits from such sources as Congressional hearings (particularly the Report of the Electronic Battlefield Sub-

INFORMATION DISTRIBUTED BY THE NORTH VIETNAMESE (1969) DESCRIBING ONE TYPE OF CLUSTER BOMB USED BY THE U.S. THE JASON (1966) REPORT CALLED FOR INTENSIVE USE OF SUCH ANTI-PERSONNEL WEAPONS FOR "AREA DENIAL" PURPOSES.

committee of the Preparedness Investigating Subcommittee of the Committee on Armed Services, U.S. Senate, 92nd Congress first session, Government Printing Office, Washington, 1971).

Within a year and a half (late 1967), one part of the anti-infiltration scheme was in operation in much the form proposed by Jason. This was IGLOO WHITE, the air-supported anti-vehicle system extending into Laos from South Vietnam.

In the latest version of this system which has been released, acoustic and seismic sensors are strewn by F-4 jet planes. Each sensor has its own transmitter. A patrol plane (now often an unmanned "drone" YQU-22B) picks up signals from sensors over a wide area and relays them to Infiltration Surveillance Center. This is an IBM 360/50 computer installation in Nakon Phanom, Thailand, where summaries of the sensor data are prepared for planning strikes by bombers. The computer output may be presented in sophisticated forms such as oscilloscope display on a map. Computers also are involved in the choice of ordnance and allocation of targets to specific planes. Pilots ordinarily never see their targets, and indeed it is intended to replace manned bombers by unmanned drones. (Electronic Battlefield Report, p. 9; Michael Klare, War Without End, pp. 185-187; George L. Weiss, "The Air Force's Secret Electronic War", Military Aviation, 1971.) Both sensors and bombs have been provided with new camouflages, as recommended by Jason; here is a seismic detector whose antenna masquerades as a forest plant.



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THE MCNAMARA FENCE ADAPTED TO ENDLESS WARFARE

At the same time that the vision of the Jason study was being brought to reality, it was expanding and ramifying. Far from substituting for general bombardment of populations, the new weapons and the new method of automated intelligence and tactics became welcome reinforcements to everything the military was doing.

The ramifications began as early as February 1968. The NLF's general offensive at Tet had taken many towns and military posts, and the U.S. Marine stronghold at Khesanh was under sustained heavy attack. For several days there was a persistent rumor that the U.S. might be preparing to use tactical nuclear weapons. This rumor was based on a brief visit to Vietnam by a team of American civilian scientists with experience in military technology. The White House vehemently denied that it was considering any use of nuclear weapons, and the Pentagon said the scientists' trip was "to assist in the appraisal" of new non-nuclear weapons; there was speculation in Washington that the role of the group was related to the use of electronic devices to impede the infiltration of North Vietnamese into the South. (See New York Times, 2/11/68, p. 70.) Two of the people in this group of scientists were Richard Garwin and Henry Kendall, physicists in the Jason Division. The other two appear to have been technical experts from the Pentagon and the electronics industry.

The new sensors were judged a useful adjunct of ground troop operations. Hand-emplaced acoustic and seismic sensors became standard equipment for U.S. ground forces in Vietnam, according to Gen. Deane's testimony.

The once-dubious military seized on automation as the cure for the crisis of its conventional war. If the U.S. Army in Vietnam was "in a state approaching collapse" (Armed Forces Journal, 6/7/71) and the U.S. public was impatient for Nixon to proceed with troop withdrawals, then it was just the moment to turn over as much as possible of the surveillance to electronic devices and as much as possible of the shooting to remote-controlled bombers.

If, moreover, the U.S. and its allies had failed to "win hearts and minds" of the Vietnamese rural population, then weapons which made the countryside unhabitable became more acceptable. This strategy of "generating refugees" was described admirably by Professor Samuel Huntington in 1968:

"In an absentminded way the United States in Vietnam may well have stumbled upon the answer to 'wars of national liberation'. The effective response lies neither in the quest for a conventional military victory, nor in esoteric doctrines and gimmicks of counter-insurgency warfare. It is instead forced-draft urbanization and modernization which rapidly brings the country in question out of the phase in which a rural revolutionary movement can succeed." (Foreign Affairs, July, 1968, p. 655.)

Not only does the uprooting of the people from their productive resources undercut a prime motive force of revolution in underdeveloped countries, agrarian reform; but the forced concentration of millions of refugees into cities sets the stage for the development of an infant capitalist econ-

AND NOW A WORD FROM THE SPONSORS:

"WHATEVER THE OUTCOME OF THE WAR, AMERICA HAS EMBARKED ON A CAREER OF IMPERIALISM IN WORLD AFFAIRS AND IN EVERY OTHER ASPECT OF HER LIFE"
--VIRGIL JORDAN, PRESIDENT OF NATIONAL INDUSTRIAL CONFERENCE BOARD TO THE INVESTMENT BANKERS ASSOCIATION, DECEMBER, 1940

"HERE IN VENEZUELA YOU HAVE THE RIGHT TO DO WHAT YOU LIKE WITH YOUR CAPITAL. THE RIGHT IS DEARER TO ME THAN ALL THE POLITICAL RIGHTS IN THE WORLD."
--A U.S. BUSINESSMAN QUOTED IN TIME MAGAZINE, SEPTEMBER 21, 1952

"BUSINESSMEN ARE INCREASINGLY DECIDING THAT MARKETS ABROAD, NOT THOSE IN THIS COUNTRY, OFFER THE BIGGEST POTENTIAL FOR FUTURE GROWTH. THE FEELING GROWS THAT THE U.S. MARKET, WHILE HUGE, IS SATURATED."
--U.S. NEWS AND WORLD REPORT, JUNE, 1964

"YOU'RE IN A SATURATED MARKET HERE IN THE U.S., WHERE NEW PRODUCTS ARE THE ONLY ANSWER TO GROWTH. ABROAD THERE ARE MILLIONS OF PEOPLE EACH YEAR WHO REACH THE STATE IN THEIR CULTURAL, SOCIAL AND ECONOMIC DEVELOPMENT WHERE THEY BUY SOAP, TOOTHPASTE, AND OTHER THINGS WE SELL."
--OFFICIAL OF COLGATE PALMOLIVE, QUOTED IN U.S. NEWS AND WORLD REPORT, JUNE, 1964

"THE BEST THINKERS ON THE SUBJECT IN BUSINESS AND GOVERNMENT AGREE THAT MAGNIFICENT BUSINESS OPPORTUNITIES AWAIT IN VIETNAM, THAILAND, LAOS, INDONESIA, MALAYSIA AND SINGAPORE. AS THE SITUATION IN VIETNAM IMPROVES THEY EXPECT THE FLOW OF BUSINESS TO DOUBLE, TRIPLE, AND QUADRUPLE...VIETNAM IS WITHOUT A DOUBT ONE OF THE PRIME INVESTMENT POINTS FOR SOUTHEAST ASIA."
--NATION'S BUSINESS, FEBRUARY, 1968

omy, dependent, of course, on U.S. corporations.

The population of Saigon, which has swelled from 300,000 to over 3 million people, is being overwhelmed by this type of development, including CocaCola, prostitution, and inflation.

Automated warfare also has attractive domestic economic consequences. To maintain a large ground force in some foreign territory means an outflow of American capital, which is harmful to the U.S. economic position in relation to other industrialized nations. It also means unemployment for American workers. On the other hand, if the military dollar is spent for the production of equipment -- airplanes, electronics, munitions -- then the domestic economy is given a boost. (In the latter case military spending is still a profound inflationary pressure.)

Reliance on automation has come to dominate the thinking of some of the generals, not only about Vietnam, but about all future wars, as well.

In a remarkable address on October 14, 1969, then Chief of Staff Gen. W.C. Westmoreland gave the first public report on the development of the electronic battlefield. After reviewing the success of the new methods of locating an enemy "naturally elusive and cunning in his use of dense jungle for concealment" in Vietnam, and explicitly giving credit to the scientists' contributions to this success, he rhapsodized over the vistas before us:

"Comparing the past few years of progress with a forecast of the future produces one conclusion: we are on the threshold of an entirely new battlefield concept. ...

"On the battlefield of the future, enemy forces will be located, tracked and targeted almost instantaneously through the use of data links, computer assisted intelligence evaluation, and automated fire control. With first round kill probabilities approaching certainty, and with surveillance devices that can continually track the enemy, the need for large forces to fix the opposition physically will be less important...

"Today, machines and technology are permitting economy of manpower on the battlefield, as indeed they are in the factory. But the future offers more possibilities for economy. I am confident the American people expect this country to take full advantage of technology -- to welcome and applaud the developments that will replace wherever possible the man with the machine."

Notice the broadening of scope to other theaters of war in this testimony of Dr. John S. Foster, Jr. (Hearings before Senate Armed Services Committee, 5/14/69, p. 1853):

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES

UNITED STATES SENATE

NINETY-FIRST CONGRESS

FIRST SESSION

ON

S. 1192, S. 2407, and S. 2546

Senator SMITH. On page 1–17 of your statement you speak of battlefield sensors that have revolutionized land combat. Do you believe these sensor barriers will be useful anywhere outside of Southeast Asia? I would be interested to know what you think about them being used in Europe.

Dr. FOSTER. Yes, I have thought about this matter a great deal, Senator Smith, and I believe these sensors are applicable to other areas. Let me just indicate very quickly the types of things that are being accomplished in Southeast Asia.

Soldiers on the ground carry these sensors to particular places on trails where they suspect that the enemy will pass. They bury them there. They then retire to some nearby observation point, protected by trenches and behind sandbags, where they wait for enemy movements. When they hear the enemy come through those sensor fields they signal to our artillery, by telephone line, and artillery rounds are fired and fall on the enemy. They can hear the enemy screaming and yelling, and they then wait for the next intrusion.

This system has been so effective, and there is more detail in the back of my statement, that there has been no case where the enemy has successfully come through a sensor field. In most instances, by the use of this technique, the enemy has been forced to abandon those approaches and use others. It is a very, very successful system, whether it is delivered by air or by foot soldiers on the ground.

With regard to Europe, the kind of things one could do there would be to utilize aircraft to seed sensors in forested areas. Immediately after that, ground commanders would know whether or not there are enemy soldiers, trucks, or tanks in these large forested areas.

He will constantly know this because the entire area would be mined with these sensors. The enemy will not be able to move tanks in Europe over large areas without making so much acoustical noise that these sensors would detect the movement. Either seismic or acoustic types of sensors can be used.

This enthusiasm for the wide application of the new concepts led to a change in plans. In 1970 Gen. Lavelle, then director of DCPG, had told Congressmen that he expected it to be closed out the following year, since its initial mission -- to prove that the instrumented battlefield was a workable system -- had been completed. However, when Gen. Deane, DCPG's new director, appeared before the Committee the following year, he told a different story. The Secretary of Defense had decided not to abolish DCPG but to give it a new mission. Under the new name of Defense Special Projects Group (DSPG), his organization was to focus on "expanding the sensor technology to provide the world-wide capability in both tactical combat applications and

installation security." Also included in Gen. Deane's request for funds from the Congress were one or more special development projects of "high priority." The details of these high-priority projects have been deleted from the public testimony. One of these special projects seems to be an unmanned aerial platform for observation and fire-control [aiming and firing of weapons] using lasers, television, and other advanced electronic means; another seems to deal with making this or some other sensor system work in some special location or environment, which is secret.

Congressman Whitten of the House Appropriations Committee was unhappy about this new mission for DSPG and questioned Gen. Deane about it (Hearings, 6/4/71):

"Last year, my recollection is that you told the Congress you were planning to phase this operation out, and Congress agreed to phasing it out. Instead you have change the name, enlarged it, and now the world is your playground. You are going to take on the world and do this around the world. Where is the support for any such expansion as this? ...

"General Deane: ... When I arrived in this organization last July, the plan was to phase it out, sir. A number of people prevailed upon Dr. Foster to reconsider that decision.

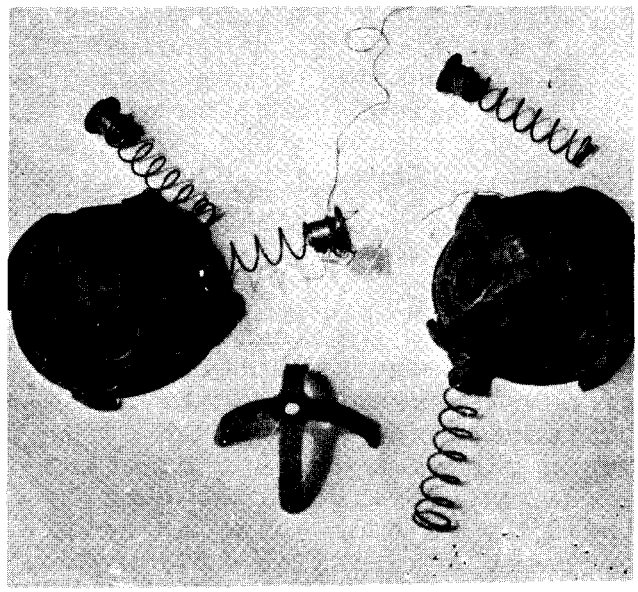
"Mr. Whitten: Do you have the names of those people? We would like to know who they are and find out if they are within their rights. I don't know if they stand in a better position than the folks who have to sign your checks. Who were they?

"General Deane: They were people who were members of the Scientific Advisory Committee of the DSPG, sir.

"Mr. Whitten: Could you give us some of their names for the record?

"General Deane: Dr. Garwin, Dr. Slichter, Dr. Caldwell, Dr. Buchsbaum, Dr. Lewis, and Mr. Deitchman."

Three of these names appear on the Jason membership list: Garwin, Caldwell, and Lewis. (Harold Lewis is the chairman of Jason.) Three names -- Garwin, Slichter, Buchsbaum -- appear on a list of PSAC members. Sy Deitchman is identified by Foster, in other testimony, as one of the originators of the idea of the instrumented battlefield. Solomon Buchsbaum is an executive for Bell Labs and a former vice-president of Sandia Corporation, a major weapons developer. Charles Slichter is a physics professor at the University of Illinois



A SPIDER MINE, DEVELOPED FOLLOWING JASON'S 1966 RECOMMENDATION.

Thus we are drawn to conclude that the clique of top-level scientific advisors were instrumental not only in initiating the electronic battlefield ideas (1966), not only in helping the implementation of the system in Vietnam (1968), but also in extending this new warfare system to a world-wide capability (1970).

The overall picture is not one of a sudden miraculous cure of a specific American military crisis. New devices have been adopted in many cases reluctantly; and they have not always worked very well; and the NLF has met ingenuity with ingenuity, as Jason foresaw, sometimes quickly nullifying a technological marvel with a homely organic countermeasure (for example, an open pail of urine left in the forest smells like a platoon of Viet Cong to a helicopter-borne "people-sniffer"). (See Jack Anderson's column of July 10, 1970; interviews with U.S. soldiers quoted by Ann Rosenberg in The Technological Warlords, 1971.) Even IGLOO WHITE did not seem so infallible after the North Vietnamese went on the offensive in the spring of 1972, using tanks and other heavy equipment within South Vietnam. (San Francisco Chronicle, 9/16/72, p. 10; Electronics, 9/11/72, p. 49.)

The picture is, rather, one of continual involvement of U.S. science in the proliferation of new weapons. A former Berkeley professor, now a director of a major research lab and a member of Jason, once remarked that there is no such thing as an experiment that fails; if you do not get the results you wanted on the first program, take what you have learned and use it as the basis for a new, larger research proposal.

The technological wing of the military-industrial complex does not necessarily win wars. We have seen that it certainly can help prolong them. Each new gadget can be used as an excuse for a new escalation -- as the laser-guided "smart bomb" (though it had seen combat use before) was presented as one of the justifications for the most recent bombing escalation in North Vietnam. (New York Times, 5/24/72)

The impressive and expensive technological arsenal does transfer the burden of the U.S. military effort from men to machines, as General Westmoreland said. The other side, which already had a near-monopoly on public support in Indochina, has also a near-monopoly on traditional military virtues; and, of course, on casualties. If a sensor can't tell the difference between soldiers and civilians, (Klare, War Without End, p. 173; Congressional Record, 3/23/71, p. s3621), the air-strike that it brings forth may still kill someone, and is sure to contribute to the destruction of the countryside.

Today Indochina, tomorrow the world! The new technology has already contributed to the capture of Che Guevara in Bolivia, and we have seen that it is considered adaptable to use in other theaters. The Army gives sensor system research "number two priority, following only the Vietnam war." (Klare, War Without End, p. 205.) Such is the key position occupied by the scientific weapon-makers.

OTHER JASON ACTIVITIES

We have concentrated on the electronic battlefield because it is an especially clear instance of Jason's intervention contributing decisively to the prolongation of the Indochina war.

Hints of what is hidden appear in annual reports published by IDA (from copies supplied by New York Regional Anti-war Faculty and Students):

1965 Report: areas of Jason interest..."counterinsurgency, including the problem of personnel detection."

1966 Report: "Increased Government attention to such problems as counterinsurgency, insurrection, and infiltration led to the suggestion that Jason members might be able to provide fresh insights into problems that are not entirely in the realm of physical science."

1967 Report: "Jason's work during 1966 related primarily to two of the larger current issues of national security: (1) antiballistic missile (ABM) systems for the United States; and (2) the war in Vietnam." ..."Jason continued work on technical problems of counterinsurgency warfare and system studies with relevance to Vietnam."

1970 Report: In 1969 IDA established an Office of Civil Programs to supervise its work in the "civil sector". Mr. Seymour J. Deitchman was appointed Director of this new office. (Deitchman has already been identified as deeply involved in the electronic battlefield development; and he was also identified, by Foster in earlier Congressional testimony, as director of ARPA's Project Agile, the organization which conducts world-wide counter-insurgency research. Thus, we may draw some parallel between IDA's expected role in the domestic civil sector and the well-known "civilian programs" executed by the United States in Vietnam.)

In some of these reports we can find listed titles of a few Jason research papers that seem to be relevant to Vietnam:

"A Study of Data Related to Viet Cong/ North Vietnamese Army Logistics and Manpower" (1966)

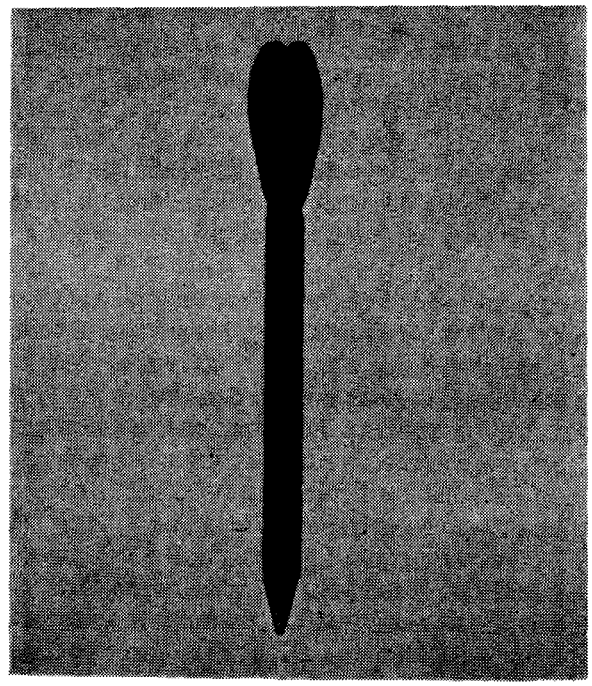
"Explosively Produced Flechettes" (1966)*

"Interdiction of Trucks from the Air at Night" (1966)

"Air Sown Mines for Specialized Purposes" (1967)

"Manned Barrier Systems -- A Preliminary Study" (1967)

Some studies with suggestive titles were: "Project SEESAW", "REDEYE Countermeasures", and "The M.A.D. Report" (1967)



*The flechette, or 'nail bomb', contains several hundred 1-inch barbed nails in each 3-inch bomblet. It is designed to enter the body, shredding muscles and body organs as it passes through the body.

A list of IDA (unclassified) seminars includes the following provocative titles:

"The Electronic Soldier; Concepts For The Future Infantryman" (1969)

"Operations of the D.C. Executive Command Center During the Inauguration Weekend" (1969)

"The Value of Life In Combat Risk Situations" (1969)

"Crime and Its Correction In D.C." (1969)

"Insurgency Patterns In India Today" (1969)

Since most Jason work is highly classified, and it is customary to keep secret the titles and even the very existence of most highly classified reports, we can conclude that this information represents only the tip of the iceberg.

IDA's current recruiting brochure lists many technical areas of activity. Included are--

Tactical Systems, Strategic Systems, Sea Warfare, Weapons Effects, Missile Defense, Strategic Offensive and Defensive Systems, Military Force Application Studies, Economic Analysis, Strategic Missile Survivability and Penetration, Nuclear Effects, Regional Security Studies, Political-Military Analyses, Government Organization and Crisis Management, Advanced Sensors, Climate Modification, Laser Technology, Advanced Avionics, ...

These topics cover applications of advanced technology to several areas of interest to military-government interests. These may be categorized as--

Strategic War (nuclear war, presumably with Russia);

Tactical or Limited War (such as Vietnam today);

Police Actions Abroad (counter-insurgency at lower levels);

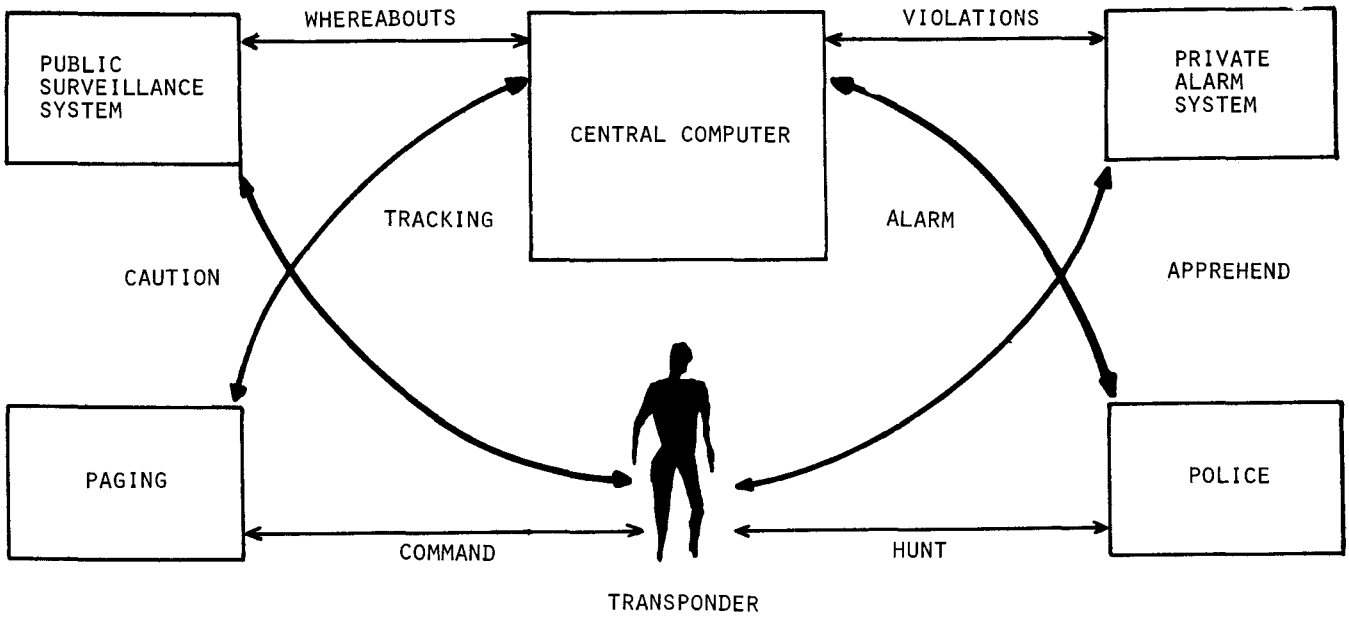
Domestic Policing, Surveillance and Control Methods;

Economic, Political and Social Analyses of domestic or foreign situations.

One of the distant branches of the sensor development has been described by Joseph A. Meyer, a computer specialist working for the National Security Agency and funded by the Department of Defense ("Crime Deterrence Transponder Systems", IEEE Transactions AES-7 no. 1, January 1971):

"A transponder surveillance system is based on three ideas. First, parolees, bailees, or recidivists will each carry a small radio transponder, which cannot be removed, as a condition of their release. This transponder will emit a radio signal which gives a positive and unique identification. Second, a network of surveillance transceivers will interrogate transponders in a neighborhood. Third, a real-time computer will receive the transponder reports, update location and tracking inventories for each subscriber, and control the surveillance process. Every subscriber must be accounted for at all times. ... For urban areas, a mesh of transceivers would scan the streets, communicating with central computers to provide a public surveillance network."

Meyer goes on to discuss special problems: Harlem -- "a high crime area"; group actions and large-scale confrontations; juveniles; etc.



TRANSPONDER SURVEILLANCE COMMAND SYSTEM

Among the references cited by Meyer to back up his ideas are several IDA reports.

Jason people have often stressed that Jason does non-military as well as military work, mentioning studies on air traffic control and the SST. However, since they will not tell us about current military projects there is no fair way for us to assess the balance.

The following assessment was given in 1969 in a magazine interview by Dr. Alexander H. Flax, then IDA's vice-president for research and presently president of IDA: "'We don't expect to divert the forces of IDA into civilian projects. That would be inappropriate.' Nor will the think tank cultivate more basic research. 'That is not IDA's cup of tea,' said Flax...'I doubt this year if funding from other than DOD will get up to $1 million,' said Flax. The Institute's overall budget is about $13 million a year. 'Probably, in the future, we'll have greater flexibility in seeking out new horizons,' Flax added. But those horizons do not presently encompass a time when civilian work will outweigh IDA's military commitment." (Scientific Research, 8/18/69, p. 29 ff.)

In the fall of 1971, Professor Watson gave a seminar in Berkeley (at the Rad Lab) on the results of the Jason summer study project that he had just finished working on. This was an overall review of the national research and development work in the field of lasers. Watson reviewed for his audience the academic and industrial areas of interest in laser research covered in the unclassified part of the Jason report. His figures indicated, however, that of the government's $100 million annual outlay for laser work 90% was directed to military projects. Watson could not discuss the military part of Jason's report because it is all classified.

According to IDA's 1970 report, 90 % of their government income comes from the Department of Defense.

Chapter 2.
Jason People

Jason people are "insiders". They have access to secret information from many government offices and they expect their advice to be at least seriously considered, if not followed, by top-level policy-makers. Those who engage in criticism of government policies without the benefit of such inside access are termed "outsiders". SESPA people are outsiders, along with plenty of other people.

When a debate arises between insiders and outsiders, invariably the argument is used that only the insiders know the true facts and that therefore the outsiders' positions should not be taken seriously.

In our efforts to learn as much as possible about the work of Jason, we have not only gone over various published sources of information, but we also personally interviewed as many Jason people as we could find locally. What we learned was hardly anything new and concrete about Jason projects (the interviewees were very secretive about anything that might conceivably be classified information), but a great deal about the attitudes and perspectives these men hold toward their service to the government and the military.

In May, June and July, 1972, several Berkeley SESPA people arranged interviews with U.C. physics Professors Kenneth Watson and Charles Townes, molecular biology and physics Professor Donald Glaser, and Princeton physics Professor Marvin Goldberger, who was visiting in Berkeley; Professor Luis Alvarez (Berkeley physics) would not agree to a meeting but did engage in some individual conversations; Stanford physics Professor Sidney Drell was confronted with some questions during an October visit to this campus. The following is a summary of these encounters.

KENNETH WATSON
(Professor of Physics, UC, Berkeley)

Watson was one of the group that founded Jason in 1959. At first they were thinking of forming their own private consulting company, but they finally decided to let IDA be their business manager; this avoided the problem of profits (taxes). There is usually a 6-week summer study session and then a couple of long weekend meetings during the school year. Government people come and outline problems they would like Jason to solve. Most of the work is for the Defense Department. The purpose of Jason is to supply purely technical information for the government; it is non-political. Jason has never taken a position on any subject, as an organization: We are just a group of individuals.

When asked what projects Jason had worked on, he would consistently refuse to comment on any specifics, because of official secrecy of their work. He would even refuse to comment on those things about Jason which have already appeared in public (through the Pentagon Papers).

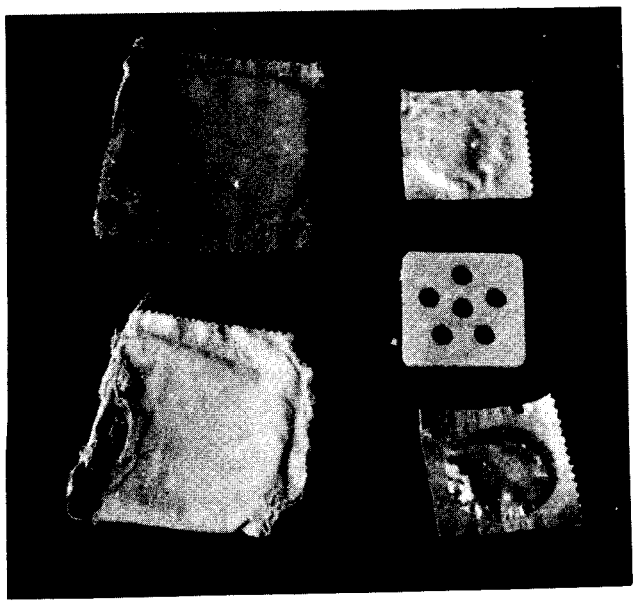
As to his personal attitude about the military, he said that since it is an $80 billion budget he couldn't make a blanket statement. When pressed to give some averaged evaluation, he said, "If I felt very strongly against [the military], I wouldn't

be in Jason. It's a thousand-dimensional space. It's much more complicated than to give a simple answer to such a complicated question."

At a faculty meeting during the time of the Cambodian invasion, 1970, Watson was heard to comment, "Why is everyone getting so upset about such a little war?"

It is generally believed that Watson is heavily involved in military-related outside consulting work beyond Jason, but no detailed information on this is available.

During our interview he said that there was often a close continuity between the problems he worked on for Jason and the pure research he carried out in the University; and he pointed out that therefore there was often no clear-cut separation between the time he spent on one thing and the time he spent on the other.



JASON RECOMMENDED "RAPID DEVELOPMENT OF ... MORE EFFECTIVELY CAMOUFLAGED GRAVEL" MINES. THIS IS AN EARLY VERSION OF THE GRAVEL MINE SHOWING ITS INNER PARTS.

CHARLES TOWNES
(Professor of Physics, UC, Berkeley. Nobel Prize, 1964, for work leading to invention of the maser and the laser.)

Townes is undoubtedly the most involved and the most influential of the science advisers we have spoken with. In addition to his original and continuing association with Jason and IDA, he has served on PSAC and on special advisory committees for the President, has consulted for the AEC and the State Department, planned NASA policy, and helps direct affairs of the National Academy of Sciences. He also accepted a position as chairman of a new top-level science advisory committee for General Motors Corporation.

As vice-president for research of IDA, Townes helped set up the entire IDA service, as well as its Jason division. He felt that the in-group of scientists who had been influential in the government during World War II were getting rather old and some new blood was needed; so Jason was formed, with some of the country's best young physicists, in the expectation that they could have an influence from inside the government.

In an earlier discussion, Townes described the government science advising business generally. He said that there was a good deal of incest, in that people with the most experience would be re-used; and there was a practise of bringing younger people into subsidiary committees where they could learn by experience how to handle things, then gradually move up if their performance was found satisfactory. He listed the criteria as: talent, objectivity and willingness to work; it is also basic that the adviser accept the idea that he works privately for the agency or the person whom he is advising, complete secrecy is required even though the scientific recommendations given are often not followed. He stated that the human element -- the personal relations between the adviser and the advisee -- is very important to the success of the advising process; yet he continually stressed that the advising was strictly objective, non-political, and related only to technical evaluations. He measured the success of IDA and Jason by the fact that several of its people were advanced to serve on PSAC.

Regarding Jason's major work on questions of strategic weapons, Townes saw their role as working effectively between the two rivals: the Defense Department and the State Department. Defense, concerned primarily with the security of the U.S., was usually in favor of more weapons; State, concerned with keeping other countries happy, was more interested in arms control. Jason's job was to transfer information between the two while making both parties feel that you were helpful to them.

Townes was involved in Vietnam war issues more through PSAC than through Jason. He claims that the Jason 1966 report recommending an end to the bombing of North Vietnam was not followed by the Administration because it had certain flaws -- some of the statements in that report came "from the depth of the heart" rather than from objective analysis. PSAC later did another study of this same problem and was more careful in its evaluation of the effectiveness of the bombing. Their report was delivered to President Johnson just a few months before the bombing was stopped (1968). When asked what he thought about Nixon's present bombing campaign in North Vietnam, Townes replied that the situation is different now and he is not in close touch with all the facts. His personal feeling is that he is against the bombing, but he would not make a public statement against Nixon's bombing policy because he is not well informed technically.

Philosophizing broadly, Townes said he thought the world would be better off if we didn't have military establishments; but, since this is not the way the world is, since we don't like to be kicked around, we do need a military.

Townes spoke about his feelings regarding the use of laser-guided bombs in Vietnam. His original research led to the invention of the laser, although he states that he has not had anything to do with laser-guided bombs. He would like to see the U.S. get out of Vietnam or arrange a truce. But this has not happened, and one has to accept the fact that a bombing policy is in effect. Laser-guided bombs allow one to pinpoint on the target rather than scattering bombs all over the countryside. Thus, although

it is a difficult decision, Townes felt that laser-guided bombs were a good and humane contribution.

In his office, on campus, Townes has a heavy steel file cabinet with a dial-combination safe lock. The nameplate reads, "General Services Administration Approved Security Container, Mosler". Another sticker reads, "Institute for Defense Analyses - IDA #1998; P.O. 14425". Another notice on the safe asks that anyone discovering this cabinet to be open should immediately contact Townes, giving his home address and phone number. Townes told us he thinks it is important to have a classified safe here on campus so that he can work with classified documents. In this way, he explained, the University makes useful contributions to the government.

DONALD GLASER
(Professor of Physics and Molecular Biology, UC, Berkeley. Nobel Prize, 1960, for the invention of the bubble chamber.)

Glaser joined Jason about 1960; there were ten or fifteen members at that time, and he was recruited by Ken Watson. He joined because he wanted to be more effective in helping the government; also, through IDA they could be paid higher consulting fees than the government was allowed to pay directly. An important motivation for scientists participating in Jason was the view that the Pentagon was often irresponsible in proposing large new weapons systems that would be very wasteful of money and/or would escalate the arms race, and Jason could hope to argue convincingly against such programs. Jason had extremely high levels of clearance to government information: Top Secret is a low level of clearance.

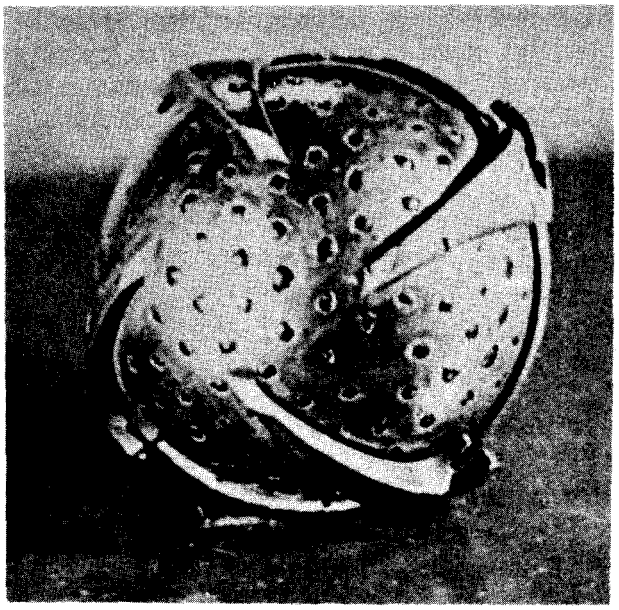
Among Jason members there were a variety of political points of view, and one could also see considerable changes in individual political outlooks over the years, according to Glaser. He admits that politics was not a small and incidental part of their considerations, and at various stages social and political scientists, economists, and others joined the conversations in an attempt to balance as many of the recognized factors in decision-making as they could deal with.

Glaser himself took part in the Jason 1966 summer study analysing the effectiveness of the U.S. bombing in North Vietnam. Their report, which recommended a halt in the bombing, was greeted with favor by McNamara, but President Johnson did not follow that advice. In such cases when Jason's advice was not taken, Glaser explained, the government felt that "non-technical factors" deserved overriding consideration. In a more relaxed moment he expressed his feeling, "I now think it was a con job -- they used us technically but didn't listen to us." Since that time (1966), Glaser stated, he has not participated in Jason activities, but he has not officially resigned because he would like to maintain his security clearance in case he should want to return to government service.

His general evaluation of his Jason work is as follows: Smart scientists make better weapons than dumb ones. If you prune out some bad projects, you definitely help the government: Jason was able to help both the military and civilian parts of the government. Regarding the political implications of helping the military, Glaser felt that the military has a legitimate role and it is better

if that role is done well. He is not in favor of enormous nuclear overkill but he is in favor of effective weapons serving purposes such as those in World War II, the defense of western Europe after that war, blocking nuclear missiles from Cuba, and supplying fighter planes to Israel. He disagrees with U.S. policies in Vietnam and in Greece but overall he supports the idea that the U.S. carries a responsibility for development of much of the world.

His current scientific research is in bacterial genetics. This could very well lead to some form of biological warfare but you can't foresee the applications of science. You need the government to control this. Certainly science can be used for dangerous purposes. On the whole, as Glaser saw it, our society is successful, people don't want revolution. And it is necessary that we constantly improve our weapons to be prepared to defend ourselves against the next Hitler. When asked if the next Hitler might arise in America, he expressed confidence that it would more likely be in China or Russia.



ANTIPERSONNEL FRAGMENTATION BOMB

MARVIN GOLDBERGER
(Professor of Physics,
Princeton University)

Goldberger was chairman of Jason's steering committee from 1959 through 1966. He was appointed to PSAC in 1965 and his last full-time participation with Jason was the summer study of 1967. He is at present not a member but is an Advisor to the steering committee. While chairman, he had a major responsibility for choosing topics of Jason summer study programs, including the 1966 study and report on the Vietnam war. Jason had been concerned about the war in Southeast Asia for a number of years and had an informal study group during the summer of 1964. Prior to 1966, however, there was no actual involvement in specific war-related areas. By mid-1965, Goldberger himself was becoming disillusioned about the U.S. involvement in the war. In early 1966, the steering committee decided that Jason should become involved more deeply and joined forces with the "Charles River Gang" (Kaysen, Kistiakowsky, Wiesner and Zacharias) who had independently proposed an involvement by the scientific community. The combined group met for three weeks briefing on the war at Wellesley and two major study areas were identified: (1) An analysis of the effectiveness of the bombing

of North Vietnam, and (2) The feasibility of construction of an anti-infiltration barrier, an idea originally suggested by Roger Fisher. It was this latter topic that was pursued by the true Jason group at Santa Barbara. The whole effort was attributed to Jason, but this is incorrect.

Goldberger regarded the barrier project as a serious attempt to end U.S. involvement in Vietnam. The bombing campaign was a failure and a military victory by ground forces was impossible. By this time, Goldberger regarded the U.S. role in the war as completely immoral and was trying in some realistic way to work towards U.S. withdrawal.

With regard to the part of the study dealing with the air war, Goldberger stated that the conclusions reached were obvious at the outset. It simply was an ineffective method, militarily, of achieving the military objective of cutting off the flow of men and materiel. The problem was the reluctance on the part of the military to give it up. Even if it contributed 1 or 2% effectiveness to the total war effort, the military saw it as worthwhile.

Goldberger saw the barrier idea as something that could be substituted for the air war which would drastically reduce civilian casualties and which might lower the overall temperature of the war. McNamara like the idea and in the wake of the Jason report, set up a large project in the Pentagon to develop and implement it. The current electronic battlefield is a much more sophisticated evolution from the Jason barrier concept. The original Jason outline used only "state of the art" devices consisting of existing mines, sensors, and anti-truck, anti-personnel weapons designed to be deployed in the shortest possible time. The idea was to block the truck supply routes and to make travel over the Ho Chi Minh trail system sufficiently hazardous to slow down infiltration.

Goldberger and others hoped that the barrier, if successful, would lead to some sort of reasonable resolution of the war. This might take various forms, one of which would have been the withdrawal of U.S. ground forces either totally or into enclaves around the populated areas but disengaged from offensive actions with a reduction of the fighting to a level that it would be reported only on page 34 of the New York Times. That is, barring a political solution, the war might just peter out.

With regard to the Jason group more generally, Goldberger feels that overall it is a good thing. Since it is unfortunately necessary for the U.S. to maintain a defense establishment to deter strategic wars, we should have the benefit of the best technical advice. In addition, it is valuable to have an impartial critical group familiar with defense problems to counterbalance technically absurd military proposals. Jason members are and have been the most effective and vocal opponents of the Safeguard ABM system and their credentials have made their opposition credible. (However, when asked about their failure to stop the U.S. deployment of MIRV - the multiple warhead nuclear missile - Goldberger said, "It (our advising) is a one percent effect; we're not very important.") The group is currently involved in projects on behalf of the Arms Control and Disarmament Agency as well as in many other unclassified

civilian activities (such as air traffic control).

Goldberger is currently not working for the government except as a consultant to the Arms Control and Disarmament Agency. He and many others would probably be willing (and in some cases anxious) to return to Washington if McGovern were elected. He said that working at high levels of the government is "very seductive" in many ways. But it is often much harder to try to work constructively within the system than to be an outside critic. Good people are needed for both jobs.

LUIS ALVAREZ
(Professor of Physics, U.C. Berkeley; Nobel Prize, 1968, for contributions to elementary particle physics)

Alvarez has repeatedly refused to meet with SESPA people to discuss his involvement with Jason, although he has engaged in conversations with three of us individually. He states that his position in Jason is as one of the eight-man group of "Jason Advisors", along with Herbert York, W.K.H. Panofsky and Marvin Goldberger. Alvarez feels that Jason is a young man's organization and he can help it best by keeping in touch with their activities and offering advice based upon his World War II experiences.

He has acknowledged his contribution to the development of "star-light viewing devices" that have been widely used by the U.S. military in Vietnam. As a member of a government advisory committee in the early sixties, he urged the government to push the development of this technology because he saw that it would be an important weapon to use against guerrilla soldiers, who often use the night-time darkness to cover their movements.

President Nixon has recently appointed Alvarez to serve on PSAC.

When SESPA started compiling its material on Jason for this publication, we wrote to each of the above five Jason professors, saying, "Enclosed is a draft version of our summary of discussions that were held with you. We invite you to comment on this draft; and we would be interested in any additions or corrections that you think should be made to this draft."

From Professors Alvarez, Glaser and Goldberger we received cooperative replies; and a number of their comments have been incorporated into the final versions we have presented.

From Professor Watson, we have received the following letter (dated October 10, 1972):

"This is in reply to your request for comments on your SESPA report following our conversation. This report contains several misrepresentations and/or quotations out of context. More significantly, it violates the conditions under which I agreed to meet with SESPA, which were that I would listen and you people would talk.

You do not have my permission to issue this report of our conversation.

Sincerely yours,

Kenneth M. Watson"

From Professor Townes, we received the following letter (dated October 6, 1972):

"I am replying to your note of September 29 enclosing a statement which you say is a summary of discussions held with me and you are considering publishing. The whole statement is so different in fact and in meaning from my information and from views I expressed that I find it difficult to see how it can be adequately corrected. Relatively few sentences in the statement are free of some substantial error or misrepresentation. You do not have my permission to publish such a misrepresentation. In addition to ethical issues, a publication of this type would raise serious questions of damage to academic freedom and of libel.

Sincerely,

Charles H. Townes"

Many SESPA members were delighted with this response. ("Great. If he wants to sue us for libel, then we can get more discussion of this whole business in open court.") However, in an attempt at accommodation, a second letter was sent to these professors, urging them to point out in detail any portions of our material which they thought were inaccurate. Townes' reply was a reiteration of his earlier position: condemning the entire piece and "strongly request(ing)" that we do not attribute these views and statements to him; but he did not cite even one example of anything in our summary that he objected to. Watson has not replied at all.

MURRAY GELL-MANN
(Professor of Physics at Cal. Tech. Gell-Mann is presently a member of PSAC. Nobel Prize, 1969, for contributions to the theory of elementary particles.)

In 1970, the Student Mobilization Committee published a set of secret minutes it had obtained on a 1967 Jason seminar on problems of counter-insurgency. The regular Jasonite participating was Dr. Murray Gell-Mann and the main thrust was to find ways of getting social scientists usefully involved in solving problems of interest to the military. Selected quotes:

"Gell-Mann: Can we find out what effect increasing police density or ear cutting, or other negatives have on villager attitudes?"

"The assembled experts also occasionally strayed to the subject of whether a Jason social science (SS) division was necessary or

possible." ..."A Jason S.S. group could focus on domestic as well as foreign countries. M. Gell-Mann suggested a focus on third (world) countries."...

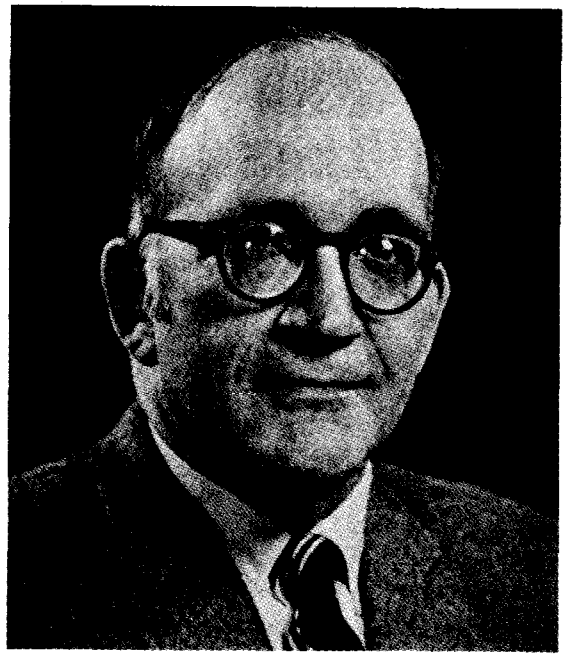
"Gell-Mann: The Jason idea has these advantages:

1) Jasons have a choice of problems.
2) The government has the use of their time.
3) They choose their own colleagues.
4) They can affiliate with agencies more readily.
5) The Jason prestige helps corruption and makes S.S. available to necessary tasks."

"Gell-Mann: There are appeals: congenial group, money, interesting problems -- like the existence of Thai communists."

Gell-Mann has recently become involved in the ecology movement: "We can see a need for humane rationality and, in some cases, an opportunity for scientists to participate..." (Physics Today, May, 1971). One question put to Gell-Mann in his Paris confrontation was: "How could he be interested in the preservation of the American countryside from pollution by highways, without worrying about some 20 million bomb craters that pit the Vietnamese earth?" (Le Monde, 6/15/72).

There is a story, widely circulated among physicists, that at some time several years ago Gell-Mann made a personal visit to Vietnam to study U.S. military problems there first-hand.



SIDNEY DRELL
(Professor of Physics at Stanford, and Deputy Director of Stanford's Linear Accelerator.)

On October 2, 1972, Drell visited Berkeley and gave a physics lecture at the Radiation Laboratory. Several SESPA people wanted to question him about his Jason work and, after his planned lecture, he stayed to defend his work for the government. The Daily Californian reported the discussion with SESPA as follows:

"SESPA: I am very concerned with the role of science and its effect on warfare. Science helps the warfare. Science helps the war go on. How do you feel about the structure of science and the Vietnam War? Do you contribute to the electronic battlefield?

Drell: The organization I work for - Jason - is accused of this and that. Jason is a very secretive organization. I know very little about it. Since I've been in Washington, I've seen the government do things I like and things I dislike. We need to have critics not just on the outside, but on the inside too.

SESPA: What do you work on exactly?

Drell: I don't feel obligated to tell you. Look at the record though. If one has any confidence in one's government, one must do something, I think.

SESPA: There's a problem though: there is no record of what you do in Jason. Oh, excuse me, there is about a one percent record.

It's nice to say, Sid (Drell), that the responsibility rests with the President, but that's not all true. We have to ask about our scientists who advise the President (about the Vietnam War).

Drell: There's a system in which all scientists are involved: some are on the outside; some are on the inside. I am on the inside, and you and other scientists are on the outside. I like this system of critics in and out of the government.

SESPA: Explain why you feel you must support Nixon.

Drell: Mr. Nixon is our President, and I will do anything, within reason, to support him. Take, for example, the SALT talks.

SESPA: The SALT talks aren't really the point. When you say 'support the President' does that mean you'd kill Vietnamese?

Drell: Oh, Charley, why don't you debate someone else? I thought this would be serious."

Earlier, we told of the 1968 trip of Garwin and Kendall (two Jason people) to Vietnam, apparently to work on the implementation of the electronic battlefield system. A private source has informed us that Kendall, upon his return from that trip, stopped off at Stanford and had a long discussion with Drell on these problems. (Drell at this time was on PSAC.) SESPA asked Drell to comment on this report. He would neither confirm nor deny that he had met with Kendall on that occasion. He stated only that he had conferred many times with Kendall on many topics. When pressed to be more specific, Drell finally admitted that he was "not totally ignorant" of the episode in question, but he refused to talk to SESPA about it.

While Gell-Mann was being confronted by young scientists in Paris last summer over his Jason work, Drell had similar experiences in Rome and in Corsica. As reported in Physics Today (Oct. 1972, p. 63), "Drell was asked to denounce his participation in Jason and to condemn publicly 'American war crimes.' Drell refused, offering instead to discuss Jason with the students any time after giving his first physics lecture. This offer was rejected, and then Drell asked those who wanted him to start lecturing to stand. Only about five students rose, and Maurice Levy, director of the institute, said that if Drell could not talk the school would terminate." And so it did.

The current Chairman of the Jason group is Professor Harold Lewis, Professor of Physics at U.C. Santa Barbara. On September 28, 1972, SESPA wrote to Dr. Lewis asking if he could supply an up-to-date list of the people who are part of the Jason group. The best previous source we had was a list of Jason members (43) published in 1970 by NACLA, and we asked Lewis if he would at least indicate what corrections should be applied to up-date that information. His reply follows:

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO — SANTA BARBARA • SANTA CRUZ

DEPARTMENT OF PHYSICS
SANTA BARBARA, CALIFORNIA 93106

October 4, 1972

Dr. Charles Schwartz
Department of Physics
University of California
Berkeley, California 94720

Dear Charlie:

Were it not that hard experience has taught me the consequences of the release of people's names, I would have no objection whatever to correcting your list (the number of correct names on it exceeds the number of incorrect ones, but the preponderance is by no means overwhelming). Unfortunately, however, SESPA has compiled a miserable record, especially in New York, in its disregard for both truth and for minimal standards of human decency. When the personal harassment of individuals reaches the point at which a family receives anonymous phone calls threatening the lives of the children, I think that you and other honest people ought to seriously consider the Pandora's box you have opened by giving this harassment some legitimacy. You have no monopoly on outrage about the war in Vietnam, and history shows us what happens to a movement when it provides a haven for thugs. Gresham's law is applicable.

SESPA often asks people whether they are concerned about the uses to which their work will be put, and I ask you the same question with regard to lists of names.

I really regret having to write such a negative letter, because I know that you and I could discuss the issues (fewer than you probably think) on which we differ in substance. The world has been making grudging and halting progress toward peace, and SESPA is more of a hindrance than a help.

Best regards,

H. W. Lewis

HWL:cs

Our response to Lewis' refusal to make public the membership of Jason is reproduced below:

SCIENTISTS AND ENGINEERS
FOR SOCIAL AND POLITICAL
ACTION
P.O. BOX 4161
BERKELEY, CALIFORNIA

November 30, 1972

Dr. H. W. Lewis
Department of Physics
University of California
Santa Barbara, California 93106

Dear Dr. Lewis,

As justification for refusing to help us up-date our list of Jason members, you cite alleged phone threats against a physicist whom SESPA had exposed. We find it absurd to compare these actions on the part of a few frustrated and powerless people to the bombing, burning, maiming and killing of millions of Asian people, which has been deliberately facilitated by the privileged Jason scientists who hide behind a veil of "scientific objectivity" and military secrecy.

You ask us to think about the consequences of making the work of Jason public knowledge. This we have done. SESPA is in favor of democracy; of public officials, including science advisors, who can be held accountable and responsible for their actions by the American public, whom they supposedly serve. A prerequisite for this is an informed and alert populace. Our aim, then, in publishing this information, is to aid in the process of accountability through normal political channels.

SESPA does not advocate threats against individuals. On the contrary, it is the arrogant and anti-democratic withholding of knowledge and power from citizens which may frustrate some to the point of desperate acts.

As for your comments on the prospects for world peace, the facts are clear. SESPA and SESPA members have been leaders in the active opposition to the war in South-East Asia, and the policies which engendered that war. In stark contrast, Jason scientists have been instrumental in providing the genocidal technology required for prosecuting the un-ending war in South-East Asia. While many of them, today, publicly profess to be against the war, they continue to contribute their scientific talents to the military.

In the last analysis, the difference between you and ourselves is a basic political difference. You seem to believe that world peace can be brought about only by the secretive manipulations of Nixon, Kissinger and Jason scientists. We believe that it is the right, and indeed, the obligation, of the American people, working with the people of other nations, to bring about peace and justice in the world.

Science For The People

Martin Brown Charles Schwartz
for SESPA

JASON

Columbia University

Norman Christ
Henry Foley
*Richard Garwin**
Leon Lederman
Malvin Ruderman

Stanford University

*Sidney Drell**
*Wolfgang Panofsky**
Allen Peterson

Calif. Institute of Technology

*Murray Gell-Mann**
Frederick Zachariasen
George Zweig

M. I. T.

Henry Kendall
Steven Weinberg

University of Chicago

Robert Gomer
S. Courtnay Wright

Harvard University

*George Kistiakowsky**

New York University

Joseph Keller

Rockefeller University

Kenneth Case

University of Rochester

Elliott Montroll

National Bureau of Standards

*Lewis Branscomb**

NASA, Houston

Joseph Chamberlain

RAND

Robert Lelevier

MEMBERS

Princeton University and Institute for Advanced Studies

Roger Dashen *Freeman Dyson*
*Val Fitch** *Edward Frieman*
Sam Treiman *John Wheeler*
Eugene Wigner
*Marvin Goldberger**

U.C. Berkeley

*Luis Alvarez**
Donald Glaser
*Charles Townes**
Kenneth Watson

U.C. Santa Barbara

David Caldwell
Harold Lewis

U.C. Santa Cruz

Matthew Sands

U.C. San Diego

Norman Kroll
William Nierenberg
Walter Munk
*Herbert York**

(* *indicates someone who has also served on PSAC*)

Basic source: List of Jason members published in "The University-Military-Police Complex: A Directory and Related Documents", published, 1970, by the North American Congress on Latin America, Inc., NACLA, P.O. Box 226, Berkeley, Ca. 94701. We have updated the locations of several people and added two names (Christ and Lederman: given in PHYSICS TODAY, 10/72, p. 63). Four names have been removed from the 1970 list: one person (Christofilos) is deceased; three persons (Bjorken, Blankenbecler and Salpeter) are no longer members, according to private information we have received.

EXTRACURRICULAR ACTIVITIES

A number of Jason scientists also involve themselves in the interaction of science with politics through non-governmental organizations. Drell, Goldberger, Glaser and Townes are all leading figures in the Federation of American Scientists (FAS), a 26-year old group of liberal, establishment scientists which tries to influence government policies on weapons development through Congressional lobbying.

In a recent mailing, FAS Chairman Goldberger asks scientists to "join with us in asking the Administration for a full accounting of past and present Executive Branch actions" concerning work on weather-modification in Vietnam and elsewhere. We can wholeheartedly agree with Goldberger that, "American pioneering in the use of weather modification as a weapon of war is, all in all, an intolerable misuse of science." SESPA would ask FAS whether they also judge American pioneering in the use of the automated battlefield to be an intolerable misuse of science, and whether the many former (and current) Jason and PSAC people in the FAS should be expected to cooperate in a "full disclosure" of these and other weapons they have studied for the military.

Certainly not all Jasons agree with FAS politics. Kenneth Watson was identified (by Senator Fulbright during Senate subcommittee hearings in 1969) as a member of the right-wing American Security Council.

Mostly, the work, and even the existence, of Jason has been shielded from public view. Most scientists who know of their colleagues' association with Jason take an attitude of "each is free to do as he pleases." The first student protest against IDA occurred in 1967, at Princeton University, which hosts IDA's communications research facility. Since that time, the SMC publication (1970) and the Pentagon Papers (1971) have done much to increase our awareness of Jason's work.

Since last spring, the SESPA group at Columbia University in New York has been conducting a campaign around the five Columbia physics faculty members who work for Jason. SESPA has picketed and distributed informational leaflets not only at the campus physics building but also at the homes of some of the individual professors.

On April 24, 1972, a group including professors from twenty colleges and universities in the New York area joined with SESPA people and other Columbia students and supporters to occupy the physics building at Columbia for four days. This non-violent act of civil disobedience was "a protest against the intensification of the air war in Indochina and the participation of physics professors at Columbia in the activities of the Jason Division of I.D.A." (Physics Today, cited above; see also SESPA magazine Science for the People, Sept. 1972, p. 36.)

KILLED, WOUNDED, AND REFUGEED UNDER JOHNSON (1964-1968)	MONTHLY CIVILIAN TOLL UNDER JOHNSON (1964-1968)
5,655,300	95,000
KILLED, WOUNDED, AND REFUGEED UNDER NIXON (1969-Aug., 1971)	MONTHLY CIVILIAN TOLL UNDER NIXON (1969-Aug., 1971)
4,100,000+	130,000

Chapter 3.
Why They Do It

There is nothing new about great scientists working at new weapons: Archimedes, Leonardo, Kelvin all served their princely masters well in warfare. In our time this service has become endemic, with regiments of scientists in every advanced nation working at new generations of weapons. And it should not be thought that these scientists work only at the instigation of the military; quite the contrary, the most novel weapons can not be anticipated by non-scientists and are often resisted by a conservative majority of career soldiers. The atom bomb, the hydrogen bomb, intercontinental missiles, nuclear submarines, chemical and biological agents, the automated battlefield -- all of these had, and needed, first-rate scientists to champion them, not just to supply them to the Pentagon's order.

It is tempting to classify scientists, as other people concerned with political and military affairs, according to the labels Hawk and Dove. Indeed there are a number of scientists who show extreme xenophobia or bellicose anti-communism, and may fairly be called hawks. Such was the late John von Neumann, and such, of course, is Edward Teller. But doves have been responsible for some of the most lethal innovations in modern warfare. One thinks of the gentle and socially conscious J. Robert Oppenheimer.

Many of the Jason people fall in the second group. Some of them will speak clearly against the Vietnam war; a number of them have done so publicly. Some of them have given Congressional testimony critical of some Pentagon project. Some of them have done good work on some environmental problems. They are all creative scientists and often admired teachers. In the interviews they commonly expressed concern about working for the good of humanity, and hope that Jason gave them a way to do so.

We detect several main types of justification for their work for the Pentagon.

1. THE MODEST COVER-UP: Jason's work must be harmless because the government so often does not follow their advice.

This argument is belied by (for one) Dr. John Foster, the chief scientist for the Department of Defense, in testimony before the Senate Armed Services Committee, May 14, 1969 (p. 1782).

"I hope you will not be misled by those who suggest that DOD's academic research represents a sort of 'sandbox for scholars,' irrelevant to Defense missions, unproductive technically, and, worst of all, inimical to the best interests of universities. The facts are quite different, and the historical record shows how authentically important academic research has been in serving national security.

"How have universities assisted in preserving the national security? It is not just the significant research results that have been produced, nor just the advanced training of thousands of students in technical areas central to defense, nor even the ability of scarce specialists who consult with you

and us on the Nation's most critical defense problems. It is more fundamental. It is the great national advantage we possess because we are able to bring together essentially independent and well-informed people -- from government, industry, and universities -- over long periods for voluntary work on our tough problems. This is the core of our capacity for technical superiority."

Although many liberal academic scientists, even government advisers, find themselves opposed to Dr. Foster on numerous issues, they understand and cultivate his crucial role in maintaining a high level of government support for academic research. The quid-pro-quo by which "independent" academic scientists serve the federal government and the government generously pays for the kind of abstract research that the scientists enjoy conducting on their campuses is relatively subtle and indirect. This benevolent arrangement is implied in Foster's testimony (this is what that word "independent" boils down to); it is more frankly spelled out in this letter, dated February 26, 1964, from the Army Office of Research and Development to the chairman of the Department of Physics at Columbia University (copy supplied by N.Y. Regional Anti-War Faculty and Students):

"Any outright statement as to our ability to support specific work at the University is, of course, not possible. Nevertheless, the possibility exists that from time to time we may be able to directly support an effort or to assist the University in getting support from other Army agencies. To this extent then the assistance we request need not be a unilateral arrangement."

The modest writing off of Jason's war advising does not carry conviction. Granted that Jason members' advice is not always followed, still it is clear that it is highly valued and it is sometimes followed, with far-reaching consequences; and it is even clearer that it is intended to be followed.

A more realistic defense of scientific consulting through Jason is

2. THE COUNTERBALANCE THEORY, which in its more extreme form might be called the boring-from-within theory. Jason people claim to moderate the excesses of the military by providing a liberal outlook, and by their independent perspective, free of vested interest in projects proposed by particular government agencies.

One aspect of this concerns the few occasions on which these informed "insiders" take issue publicly with some government policy. Most often mentioned are the names of Bethe, Garwin, York and Panofsky who were prominent in the public debate over the ABM (anti-ballistic missile system) in 1968-69.

The case of Richard Garwin is particularly interesting in this

Jason's 1966 plan for Vietnam: "20 million Gravel mines per month; possibly 25 million button bomblets per month; 10,000 SADEYE-BLU-26B clusters per month; 1600 acoustic sensors per month," along with assorted aircraft to mine, monitor and attack over an area of many hundreds of square miles.

connection. At age 44, he is one of the younger stars of the government scientific advisory system, having extensive service with Jason and PSAC while a professor of physics at Columbia University and director of the affiliated IBM Watson Laboratory. Alvarez described Garwin as one of the brightest and most knowledgeable people in the advising business, an opinion which seems to be widely shared. Several Jasons have pointed out that Garwin was appointed to a second term on PSAC even after he had published (with Bethe) the famous article in Scientific American which publicly criticized the Pentagon's plans for the ABM system. This is offered as proof that Jason and PSAC people retain their independence.

A second story about Garwin concerns the SST (super-sonic transport airplane). Apparently, he knew of a secret PSAC report which was critical of the government's plans for the SST; by leaking information to some Congressmen, Garwin eventually forced the White House to release the report.

What interests us particularly about Garwin is the fact that it was his name which came up most consistently in our research on the development of the automated battlefield. Garwin was placed on Jason's steering committee in 1967; he was the leader of the 1968 (Tet) scientist group visiting Vietnam, and he was later identified as one of the members of the scientific advisory committee to the DCPG (1970).

On the basis of this meagre evidence alone we could conclude that Garwin's secret service for the Pentagon and for the White House has been so rewarding to them that they are willing to tolerate his occasional public deviations.

In any case, the "insider" style of criticism appears to be limited to means rather than ends. There is no evidence that Jasons advised, say, that the U.S. start abiding by the Geneva Agreement of 1954, or even that it abstain from any of the cruelest excesses of the war. Jason's counsel to stop the bombing of the North was on the basis that it wasn't working, not on the basis that it was better for Vietnamese to live than to die. The objectives of the military effort were not open to question in the mind of the Pentagon, who was paying for the advice. Jason seems to have accepted this definition of the bargain. Not whether to suppress guerrillas in Thailand, but only how.

Indeed, many scientists argue that their professional role is to answer scientific questions, and only as citizens can they influence policy. Though the Jason scientists did not rely on this argument, it is more in tune with the "neutral technician" role they seem to take: using their objectivity and perspective on the military endeavor, not to influence what it is doing, but to help the military do whatever it is doing better.

Now we see a still more convincing explanation for working in Jason:

3. THE EFFECTIVENESS THEORY

The government should act on the basis of the best available information. If Jason didn't offer scientific advice, someone else, less competent, would. "Smart scientists make better weapons than dumb ones."

Now there is no doubt that both the scientific excellence of these top advisors and their relative objectivity can help the earnest McNamaras and their generals to accomplish their ob-

jectives better. If we agree, and many of the Jasons do, that those objectives have been noxious, then this would seem a strange reason to justify their service to them! More explanation is required.

3A. THE PLEA OF IGNORANCE, or, we didn't know it was loaded. Perhaps Jason members assumed through the early years of their involvement that the American presence in Vietnam was benign? After all, politics is not their field. Indeed, in some of them, we detect a certain alacrity to excuse (even exaggerate?) their own political naivete.

This seems a mere pose -- and one which they do not sustain, for at other moments they concede that politics is of the essence. By 1966, they had available to them the writings of Jean Lacouture, Bernard Fall, and David Halberstam, as the rest of us did, and in addition they had all the secret reports which we could see only in tendentiously censored versions. They could get the true story of Ngo Dinh Diem's installation in power, of his Strategic Hamlet program, of his overthrow, of the activities of the CIA -- things which the public learned only later, after much effort.

We may agree that Jason politics were somewhat weak, in that knowing what was going on in Indochina they abetted it. But it would be embarrassing for these highly skilled scientists, with access to so much information, to claim that their politics are so weak that they did not know what was going on in Indochina!

There is no need for us to belabor the plea of ignorance because they do not make much of it. Even Donald Glaser, who is not pleased with the use the government made of his Jason work in 1966 and does not report having done any since, seems perfectly sanguine about offering his services to the Pentagon in the future and taking his chances on the consequences.

This is an instance of

3B. THE POSITIVE-INTEGRAL THEORY. This concedes that something went awry somehow in Vietnam but maintains that this is more than offset by all the good the U.S. military is doing elsewhere -- in Europe and the Mid-East, maybe, or in deterring the Soviet Union, or even (some would say) in Taiwan. Or if you can't manage to cite enough good it's doing now, then throw in the good it may do in the future.

Thus Charles Schwartz describes the underlying assumptions when he worked at IDA (1962):

"Basically the assumptions boiled down to something like this: war is bad and nuclear war is terrible; the U.S. is the major force for good in the world; and communism -- either in the form of Soviet power plays or in the form of scattered guerrilla movements -- represents the major force for evil. Thus all questions of overall purpose were assumed answered."

Now we do not agree that the Vietnam war is a unique lapse from a generally constructive U.S. policy. We do not find the Yankee dollar so much less imperialistic in Latin America than in the Far East; we do not see that much less corruption in Chiang Kai-shek's government than in Ngo Dinh Diem's; we do not see any reason to expect Nixon to fight his next war any more altruistically or mercifully than the one in Indochina (though he will certainly try to fight it more successfully).

But even if the Jason doves regard the Vietnam war as an aberration, their appeal to the positive-integral theory puts them in a peculiar position. It is as if they witnessed inexcusable police brutality, and instead of exposing it, joined in the crime, on the grounds that other policemen somewhere else were helping nice old ladies across the street. Non sequitur!

To help the government do evil more effectively is not a way to induce it to do good.

Above all, to arm the government for counter-insurgency does not strengthen it for defense of liberty. Counter-insurgency research is by definition research on how to support unpopular regimes, on how to subject lightly armed populations to the will of heavily armed minorities. True, popular regimes may need defending in some future war, but the techniques that will be needed will be techniques of defending civilians, not of bombing and "resettling" them. Techniques developed perhaps by the North Vietnamese -- not by Jason.

We are left with a depressing conclusion. The liberal physicist has no basis at all to think he is doing any good by his eager service to the war machine.

Maybe he doesn't care.

J. Robert Oppenheimer described this amorality frankly: "...when you see something that is technically sweet you go ahead and do it and you argue about what to do about it only after you have had your technical success. That is the way it was with the atomic bomb. I do not think anybody opposed making it." The context is relevant: Oppenheimer was pleading innocent to the charge of having applied moral standards when he later opposed the thermonuclear bomb! But his self-analysis seems incomplete, for he must have had "technically sweet" alternatives open to him in 1939 -- say, astrophysics. If it was not a moral, social objective which made the Manhattan Project seem more important, what then?

It seems clear that it was power. The confirmation that one can raise one's hand and make a city appear -- or make a city disappear, and that is likely to be easier. In short, there is one plausible motive for the Jason dove:

4. BEING WHERE THE ACTION IS. The Kissinger complex. He is attracted by the secrecy, by feeling close to the real center of power, by the gratification of having been admitted, by the size of the appropriations being discussed, by the sense of urgency, by the thrill of making history.

Chapter 4.

Accountability

One comment heard from several Jason people was that they were men deeply concerned over the possibility of their talents being used for harmful ends. This concern was usually phrased in terms such as, "I have to make the decision, according to my own conscience, of whether I should continue to consult for the government."

This seems to us to be a wholly inadequate way to put the question. A person's conscience is not formed in a vacuum but needs to be responsive to the opinions and desires (and the rights) of others in the community; yet this needed dialogue is prevented from taking place because of the adherence to the secrecy rules of the military. More important, however, in refuting this criterion of "personal conscience" is the fact that the work done by these scientific advisors has major impact on policies that spell life or death for people all over the world. In such circumstances, a posture of "I will decide what is best" is enormously arrogant.

In contrast to the Jason's criterion of "private conscience" we propose that their work should be evaluated through a process of public accountability. As scientists, these men have taken the fruits of all science - past and current - to use in their secret designs for the military establishment: thus they should stand accountable to all scientists. As professors at the universities (which most of the Jasons are) these men have taken the credentials of esteem and achievement from the entire academic community to propel themselves into their positions of influence with the government: thus they should stand accountable to all teachers, students and researchers who comprise the academic corpus. And finally, as the results of their work are critical in determining policies of this nation, and those policies are often of vital significance to people across the globe, these men must stand accountable before all citizens of America and all people of the world.

An issue which arises in any campus controversy of this type is the appeal to academic freedom. When students try to stop, interfere with, or even question too closely, some university function (class, lecture, research project) that has a connection to some political controversy - they are accused of violating the academic freedom of those who scheduled the activity in question. Such squabbles over "time, place and manner" often obscure the desired debate over the political substance. In the same way, our assertion that professors are answerable to the community for their Jason work may be obscured by charges that we want to restrict their academic freedom to engage in research of their choice.

Indeed, the cry of "academic freedom" has already been raised by Professor Townes in his letter asking us not to publish the summary of our discussions with him. Townes does not explain what aspect of academic freedom he sees as relevant to this situation. It would appear, however, that he is claiming the right, under academic freedom, to keep his Jason, and other, outside consulting activities a secret from the public view. In fact, it is academic privilege which Professor Townes

so staunchly defends. Special privilege, claimed by the professor but not offered to the graduate student. The freedom of the big shot to do whatever he pleases without concern to his obligations to the University or anybody else. Are we to expect that a professor's secret, paid, highly political work will have no effect, even covert or unconscious, on the "objective" knowledge he imparts in the classroom? Can students evaluate classroom presentations from highly respected experts without knowing what they are paid for on the side?

This issue of outside consulting by university faculty goes beyond the immediate issue of Jason. The universities abound with faculty who consult, not only for the military, but for many governmental agencies and private corporations as well; consulting which takes time away from legitimate academic pursuits while adding significantly to the personal income of the consultant professor.

"Academic freedom" cannot be a legitimate excuse for not revealing the full scope of one's outside consulting activities - the point of academic freedom was originally to protect the powerless and sometimes unpopular scholar from the tyranny of the establishment. Professor Townes, and his like, have no right to use this tradition to conceal the establishment's secrecy and their choice in selling out to it.

Clearly we can not depend on the institutions of establishment science to correct the abuses of consulting privilege. On the contrary, a committee of the American Association for the Advancement of Science recommended the following "cannon of ethics for applied scientists and technicians":

"Absolute secrecy where patients and industrial advantages are concerned; discretion in diplomatic matters where secrecy is essential during preliminary negotiations so that the negotiators are free to change their minds; security in matters of defense; confidentiality towards clients and patients; and loyalty to employing institutions where institutional aims are at stake." (emphasis added).

(Science, Vol 163, 1969, p. 787)

With a few notable exceptions (such as radiation physicists John Gofman and Arthur Tamplin), it is clear that academic consultants will not spontaneously become accountable and responsible to the public. It is up to those of us in the scientific and academic community, and in the general public, who see the dangers of unbridled academic privilege to bring about academic accountability by our own initiative.

Chapter 5.
Conclusion

In summary, we have seen that Jason scientists not only drew up the original plans for the automated battlefield in Vietnam, they also pointed the way for the future refinements of the system, continued to write study reports on particular aspects, made some personal visits to the field of battle to observe implementation of the scheme, and persisted in encouraging the military to expand its development of this new kind of warfare capability for worldwide use in the future.

(One thing we can be certain of: what we have presented in this booklet is only a small part of the whole story of scientists' complicity with the military. There is undoubtedly more secret work on the Vietnam war that Jason has carried out which has been kept from outside view; there is more than Vietnam that Jason works on for the military; and there is more than just the Jason group through which academic scientists work for war.)

(Most of the Jasons we spoke with would rather talk, and boast, of their contributions toward peace through work on arms control - concerning strategic nuclear bombs, missiles and submarines vis-a-vis the Soviet Union. Some have pointed with pride to the nuclear test ban treaty and the recent SALT agreement. A full discussion of these issues is outside the scope of this booklet but it should just be noted here that the arms race has yet to be stopped and the Nixon policy - peace through strength - calls for new escalations in the technology of strategic armaments; and we may expect scientists of the Jason calibre have been and will be instrumental in helping the Pentagon get the "best" new weaponry that this country can produce.)

The overall result of Jason's, and other government scientists' contributions to the Vietnam war may be summarized as follows. Science has not won the war for the U.S., but it has been essential in preventing, or at least in postponing, a defeat for the U.S. aims in Indochina. (At this writing, it is unclear whether the "peace" which was announced to be "at hand" just before the Presidential election will prove to be a reality or a fraud.) Certainly, for the people of Indochina, the new style of American warfare, relying on high technologies and enormous firepower, has exacted a very painful price for their resistance to Nixon-America's idea of peace with honor.

It is also clear that the new military capabilities developed in Vietnam - automated devices to locate, track and, when desired, to destroy any object - will be available for use in the future. These devices, and their refinements, will stand as a potent threat to liberation movements abroad and at home.

If we were reading a Greek tragedy, we might say that the Jason scientists cannot be blamed for the monsters they have created, they are merely fulfilling the destiny laid out by Orwell in his prophetic book, 1984. But, being alive now, in the midst of this story, we would rather act than weep.

WHAT CAN WE DO?

The European scientists and students who confronted Gell-Mann, Drell and the other Jasons last

summer asked that these men acknowledge their contributions to the U.S. war effort in Vietnam and asked them to denounce this continuing criminal war.

From us - American citizens, American scientists, American students and teachers - the demands upon these of our own colleagues should be no less. We have a right, indeed a duty, to demand from the Jasons full accountability for their service to the military.

Just what this accounting should encompass and just what political processes should be employed to attain this end is something that needs to be widely discussed. The first step should be to circulate the information in this booklet so that the people on each campus can confront the Jason-types who reside or visit in their midst. The second step should be to undertake intensive research in order to uncover the full extent of outside consulting by faculty; then the people in each location can decide the best ways for them to move on these issues. We will present, below, a few of our own thoughts on this subject.

1. Many of us, like the authors of this booklet, are already convinced that the U.S. military establishment, as it is now, constitutes the dominant force for death, destruction and the suppression of popular movements for liberation throughout the capitalist ruled world. What we say to the Jason scientists is, Cease all your services for the Pentagon; repudiate the U.S. militaristic policies and the corruptions of science in that service; reveal whatever inside information you have about the military. Ellsberg did.

Those scientists who continue to work actively in support of imperialistic and warlike policies must be viewed, in some sense, as our enemies; we shall oppose them politically, as we have opposed Lyndon Johnson, Richard Nixon and their many henchmen, both in and out of uniform, who have been their willing agents in prosecuting the war.

2. To members of the scientific profession as a whole, we speak as follows. Silence, acquiescence, laissez-faire attitudes towards the military involvements of a few scientists cannot be a sufficient reply to the questions of social responsibility in science. If we are to maintain our own hopes that science can really amount to more good than evil, if we are to keep - or to regain - the respect of the non-scientific public, then we must take some actions to offset the desecrations that our profession has incurred through the Vietnam atrocity. We call on all scientists to follow, not the highest bidder or the biggest dealer, but the worthiest uses of science and technology. The call for a more humane re-orientation of scientific efforts has been heard before; perhaps the story of Jason, because it is such a clear and odious example of the misuse of science, can serve as a pivot for a new turning. We ask all our fellow scientists to adopt these minimum habits:

(a) Gather, and publicize information on the misuses of science;

(b) Reject the rule of secrecy, insist on public accountability for all scientific endeavors;

(c) Maintain dialogue on these issues with your colleagues, both in and out of government service, and do not shy from letting the Jason-types know what you think of them and their work.

3. To the general academic community we ask the questions:

- What do you think about professors who consult for warmaking?
- for profit-making?
- for power-making?
- for status-making?
- Is it even known how much outside consulting is done by your local faculty "apparatchiks"?
- What special outside interests do they consult for?
- What justifications can there be for maintaining secrecy about either the extent or the substance of this consulting work?
- Isn't it paradoxical to allow secret military consulting by faculty members on campuses where secret military research projects are outlawed?
- When faculty members, such as Jason people, consult outside the university, whose interests do they serve?
  - Their own?
  - The university's?
  - Their employers?

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For on-going publication of many related topics, actions and analyses,

see

"Science for the People," bimonthly magazine of SESPA, 9 Walden Street, Jamaica Plain, Mass. 02130. (Contains a list of SESPA groups throughout the country.)

also, "Spark," published semi-annually by the Committee for Social Responsibility in Engineering, 475 Riverside Drive, New York City 10027.

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Future information about Jason, and related developments, may be communicated through "Science for the People Magazine"; the SESPA groups in Berkeley and New York (Columbia U.); NYRAWFAS, c/o HDC, 156 Fifth Avenue, Room 523, New York, N.Y. 10010; Minneapolis Collective, Science for Vietnam, 1507 University Avenue, SE, Minneapolis, MN 55414; Collectif Intersyndical Universitaire d'Orsay "Vietnam - Laos - Cambodge", Batiment 211, 91 Orsay, France.

PROFESSOR HANS BETHE OF CORNELL UNIVERSITY WROTE TO THE PHYSICISTS AT THE TRIESTE MEETING, DEFENDING HIS JASON FRIENDS FROM WHAT HE FELT WERE SOME INACCURATE STATEMENTS THAT HAD BEEN CIRCULATED ABOUT JASON'S WORK FOR THE VIETNAM WAR. THE FOLLOWING REPLY WAS WRITTEN BY THE YOUNG FRENCH PHYSICIST, DANIEL SCHIFF, OF THE UNIVERSITY OF PARIS LABORATORY AT ORSAY.

Dear Professor Bethe,

I have read your letter adressed to Bruno Vitale, and distributed to all the participants to the Symposium at Trieste, and after reading it I was wondering whether we are not progressively losing any sense of reality: imagine a discussion on the chemists who advised the Nazis as to which gas to use in the gas-chambers, and people starting to distinguish between those who worked on "cyclon A" and those who worked on "cyclon B"...

It seems that, concerning the overwhelming atrocity of the sufferings imposed on the Vietnamese by the US bombs, we are no longer horrified: it may be that we have been given so many figures, so many technical details that we can no longer think about the human beings on which all these bombs fall. Or is it, as Chomsky puts it in "American Power and the New Mandarins", that we have become totally immune to the sufferings of others?

You inform Vitale that Jason has never worked on plastic fragmentation bombs. Is this really relevant? Should one not rather be appalled by scientists recommending that be dropped on the Vietnamese "10000 SADEYE-BLU-26B clusters" (i.e. steel fragmentation bombs) per month (Pentagon Papers, Gravel edition, vol.IV, page 122)?

To quote Chomsky again: "By entering into the area of argument and counterargument, of technical feasibility and tactics, of footnotes and citations, by accepting the presumption of legitimacy of debate on certain issues, one has already lost one's humanity." Perhaps moral statements of that kind can awaken us, could have helped awaken the physicists at Trieste, more than the technical informations contained in your letter.

Sincerely yours, Daniel Schiff

Daniel SCHIFF

READ WHAT SOME OF AMERICA'S LEADING SCIENTISTS HAVE SAID ABOUT SESPA'S RESEARCH INTO THE WORKINGS OF JASON:

"SESPA HAS COMPILED A MISERABLE RECORD, ESPECIALLY IN NEW YORK, IN ITS DISREGARD FOR BOTH TRUTH AND FOR MINIMAL STANDARDS OF HUMAN DECENCY...YOU HAVE NO MONOPOLY ON OUTRAGE ABOUT THE WAR IN VIETNAM, AND HISTORY SHOWS US WHAT HAPPENS TO A MOVEMENT WHEN IT PROVIDES A HAVEN FOR THUGS." -- Professor Harold Lewis, Chairman of Jason, University of California, Santa Barbara

"THIS REPORT CONTAINS SEVERAL MISREPRESENTATIONS AND/OR QUOTATIONS OUT OF CONTEXT. MORE SIGNIFICANTLY, IT VIOLATES THE CONDITIONS UNDER WHICH I AGREED TO MEET WITH SESPA, WHICH WERE THAT I WOULD LISTEN AND YOU PEOPLE WOULD TALK." -- Professor Kenneth Watson, University of California, Berkeley

"RELATIVELY FEW SENTENCES IN THE STATEMENT (SUMMARIZING THE INTERVIEW WITH SESPA) ARE FREE OF SOME SUBSTANTIAL ERROR OR MISREPRESENTATION. YOU DO NOT HAVE MY PERMISSION TO PUBLISH SUCH A MISREPRESENTATION. IN ADDITION TO ETHICAL ISSUES, A PUBLICATION OF THIS TYPE WOULD RAISE SERIOUS QUESTIONS OF DAMAGE TO ACADEMIC FREEDOM AND OF LIBEL." -- Professor Charles Townes, University of California, Berkeley