SCIENCE FOR THE PEOPLE

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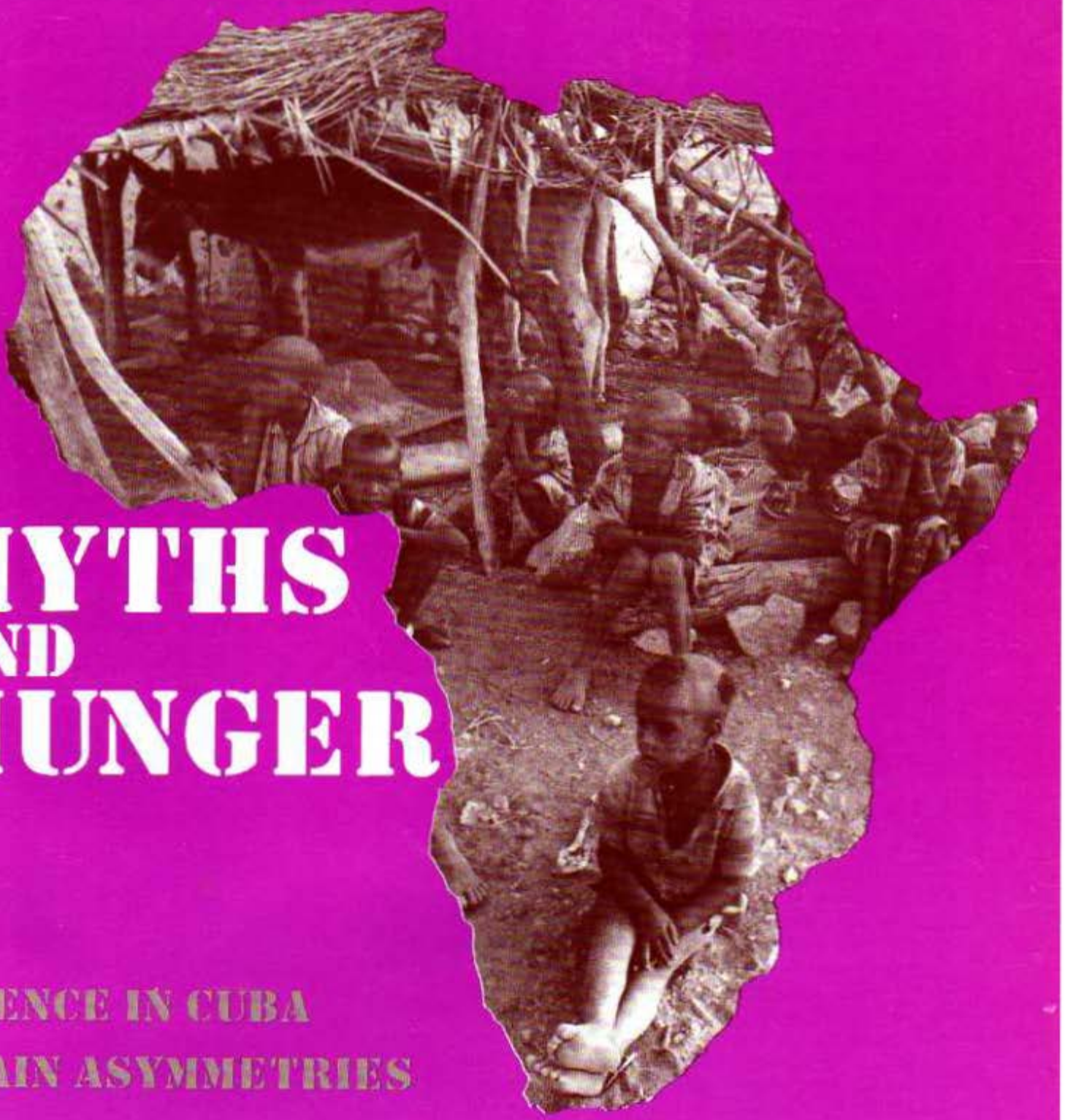

MYTHS AND HUNGER

SCIENCE IN CUBA

BRAIN ASYMMETRIES

STAR WARS AND SPACE CONTROL

Preview

Production of the September/October issue sees us at summer's end, struggling to get through another season of financial crisis. An almost all-volunteer publication like ours is continually cursed with marginal resources, which decrease even further throughout the summer and into the fall. While we're not starving, we are facing cutbacks that hurt.

Other political bimonthlies have staffs of four or more, with interns, freelancers and volunteers filling out their underpaid and overextended ranks. We're back down to a staff of two and a small core of members—who oversee business, office and non-magazine activities (since we're also an activist organization), promotion, circulation, distribution, fundraising, advertising, editing, design and magazine production. Phwew. Considering the size of our magazine and the diversity of our activities, Science for the People is the most understaffed magazine that we know of. Which wouldn't be so catastrophic if member involvement and reader support were filling the void. That's why we're asking you to become more involved.

Do you regularly read periodicals that cover science and technology? Keep SftP in mind, and send us your clippings. We're always looking for resources, brief reviews, newsnotes, article ideas, opinions, interviews, international news and grassroots reports.

Our subscription rates and bookstore sales cover only a small fraction of our costs. We're trying to increase paid advertising, but you can imagine how difficult ad sales are for a small magazine that's not too fond of corporations. We're still aiming for solvency through subscriptions, and you can definitely help in that arena.

The gift subscription cards that are stapled inside this issue should give you some incentive. We want to add 2,000 new subscribers this year, and we're willing to cut our new subscriber revenues to do that. Our renewal rate is so good that we think most of our new subscribers will stay with us. So that makes the offer worthwhile in the long run. Will you give us a chance by giving SftP to your friends, loved ones and libraries?

We're planning some special issues that might make you want to get involved. "Who's Environment? Industrial Control and Third World Hazards" is the focus of our next issue. The March/April 1986 issue will report on science alternatives in work, education, health, research and publishing.

SftP's Science for Nicaragua committee is planning a tour to Nicaragua in December or January. Our goal is to build stronger networks for science teaching and technical aid between the US and Nicaragua. If you're interested in learning more, and possibly joining the tour, contact the SftP office.

One final tribute: this is Seth Shulman's last issue as editor. After three years of doing everything at SftP, and then inventing systems to get everything that was left done, Seth will finally be doing what he wants to do. He's remaining on the editorial committee, because those are the only terms we agreed on to let him out of the office. Thank you, Seth.

SCIENCE FOR THE PEOPLE

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SCIENCE FOR THE PEOPLE

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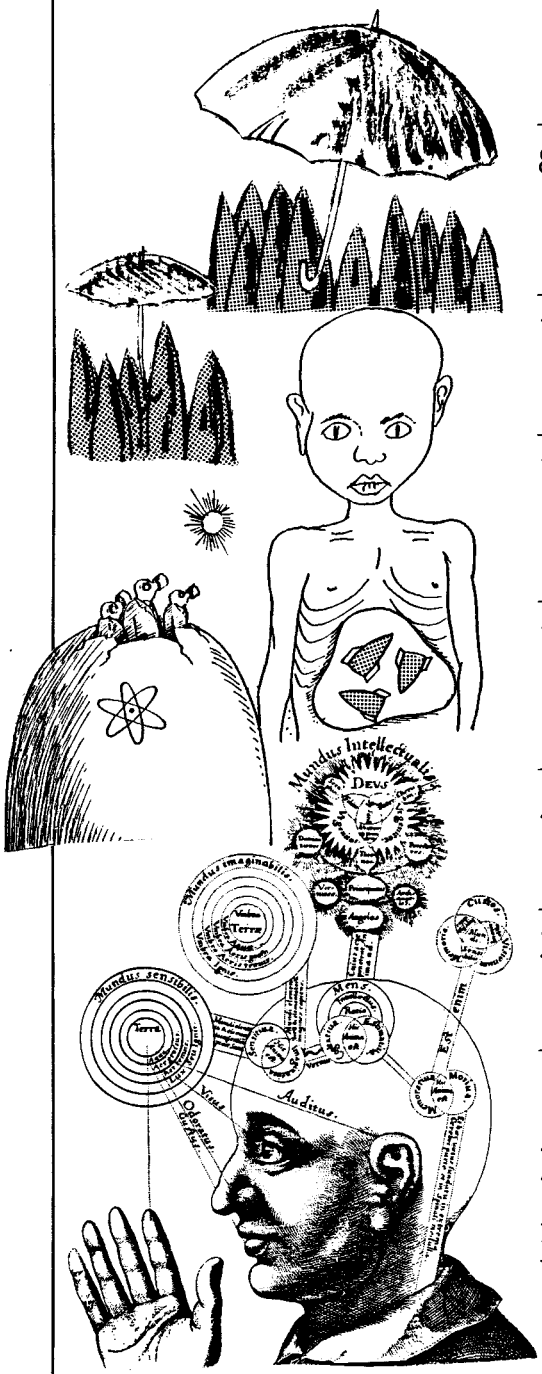

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Newsnotes

Cambridge's War of Nerves

In the fall of 1982, residents of Cambridge, MA asked their city council to investigate reports that the neighboring R&D firm Arthur D. Little (ADL) had just completed a research laboratory to conduct tests with chemical agents. A science advisory committee composed of scientists, professionals, and community representatives appointed by the council found that, although the quantity of chemical warfare agents used in ADL's new Levins Laboratory was small, the hazard posed by the chemicals defied common sense notions of safety.

The committee discovered that the toxicity of some of the chemicals used by ADL was six micrograms per kilogram, meaning that one hundredth of a drop could kill 50% of the adults who inhaled it. They also found that if a worst-case accident occurred on a warm summer evening when patrons were arriving at the adjoining disco and bowling alley, and spectators were watching a softball game at the nearby field, 25 to 40 persons could be killed.

When the Cambridge City Health Commissioner adopted a regulation to prohibit the use of nerve and blister agents in Cambridge, ADL filed a complaint in Massachusetts Superior Court and received a temporary restraining order on the ban, allowing their testing to continue during court proceedings. The Toxic Alert, a neighborhood group opposed to ADL's work, rallied public support for the ban on chemical warfare research.

This summer, after ADL appealed an adverse decision from the lower court, the Cambridge law was upheld in the Massachusetts Supreme Judicial Court. They found the law valid and enforceable, and denied ADL's contention that the federal government can preempt local regulation of chemical warfare agents. ADL now says that it will not appeal the decision to the U.S. Supreme Court, but if they do the decision could be a landmark.

Similar controversies are brewing in other parts of the country where chemical warfare research laboratories have recently been built. In Gaithersburg, Maryland, residents discovered that Geomet Technologies, a local R&D firm, was conducting research with nerve agents only one hundred yards away from the local elementary school. As a result of pressure from the Concerned Citizens for a Healthful Environment, authorities asked Geomet to update its analysis of potential hazards. According to a Concerned Citizen's spokesperson, the state may prohibit Geomet's research if the analysis shows that a significant risk exists.

In both Cambridge and Gaithersburg, citizens quickly realized that the Department of Defense has no regulations governing location of private chemical warfare R&D laboratories. Representative Michael Barnes (D-MD), whose district includes the Geomet facility, recently offered an amendment to the defense authorization bill for FY86 requiring the Secretary of Defense to report to the Senate and House Armed Services Committees on current policies concerning the siting criteria used to evaluate the safety of laboratories testing chemical agents. While the Army may respond to the amendment, which passed unanimously in the House, with a reply that they have no such standards, some observers think that they may attempt to cut their losses by taking the request as an invitation to develop criteria. While citizens in Cambridge and Gaithersburg aren't holding their breath, some believe that they may have injured the $400 million chemical warfare research industry.

—Dan Grossman

adapted from an upcoming article in Technology Review

EPA vs Army

As some of you may already know, a federal district court judge issued a permanent injunction against the U.S. Army biological weapons test laboratory that we reported on in our "Decoding Biotechnology" issue (*SftP* Vol. 17, No. 3).

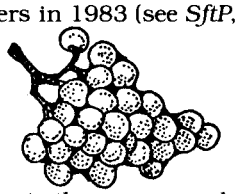
This decision holds the line—for now—on some of the most dangerous military work in biotechnology. According to a clip from the Oakland, California *Tribune* by Charles Piller, who also wrote the SftP story, "Such a lab could have violated the 1972 biological and toxic weapons treaty, which prohibits production and stockpiling of biological arms, except in extremely small amounts for defensive research.

"Stalling a funded Army construction project is unusual in itself. But the ruling has a truly remarkable twist. Green [the presiding judge] decided that the Army's environmental assessment failed to fulfill requirements of the National Environmental Protection Act. A domestic environmental law, therefore, has preserved adherence to an international arms treaty."

Farmworkers Support UFW

The United Farm Workers of America (UFW) called a boycott this year of table grapes in California. They are hoping to gain public support for farmworkers' rights by pressuring growers to negotiate contracts with the UFW.

In the nine years since the enactment of the California Agricultural Relations Act, only half of the elections for union representation on farms resulted in new contracts. This absence of contracts does not indicate a lack of support for the UFW. A survey of farmworkers in the San Juaquin valley last year showed that they wholeheartedly endorse the farm labor movement, and the UFW in particular. These findings concur with a similar survey done by the same researchers, Ken Barger and Ernesto Reza, of midwestern farmworkers in 1983 (see *SftP*, Vol. 16, No. 6).



According to the survey, conducted by the Department of Anthropology at Indiana University in Indianapolis and the National Farmworker Ministry, 83% of the respondents think that the UFW's efforts have improved farmworkers' lives. Workers on UFW-contracted ranches enjoyed a greater sense of job security, better health care, and more stability in their lives than workers on nonunion ranches. They also tended to have longer marriages and a higher rate of literacy.

The survey contained a section allowing unstructured responses, giving a glimpse at how farmworkers evaluate their hard lives. Most farmworkers have large families and live far below the poverty level. Many respondents complained of maltreatment by their bosses. Some felt pushed too hard on the job, with breaks severely reduced and sometimes altogether denied. Others said they had been threatened by their bosses that they would be laid off if they did not do exactly as told. Overall, the anecdotal picture painted by farmworkers was that of slaves.

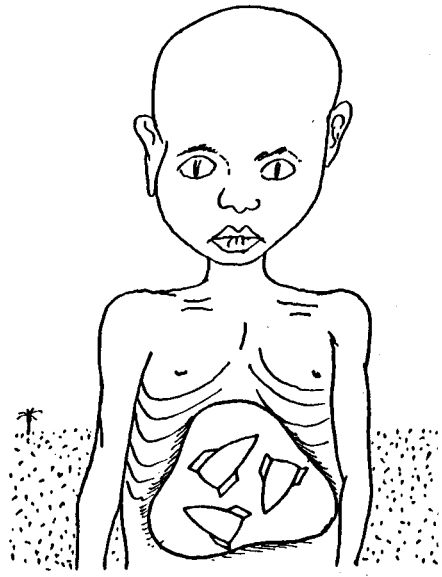
With all of the expressed farmworker support of the UFW, why then has it been unable to forge new contracts? The union has had to constantly fight the growers themselves, who negotiate with the UFW in bad faith. Growers use illicit methods to circumvent the intent of the law.

The union charges that the growers have tied up successful union elections in legal technicalities and reorganized under different names in order to bypass election results. Much as the Reagan administration manipulates the federal regulatory agencies in favor of business, the union feels that California's Deukmajian administration uses the Agricultural Relations Board to support the growers rather than to guarantee farmworkers' rights.

Babies and Bullets

A report in the medical journal *The Lancet* links infant death rates with military spending. Dr. Steffie Woolhandler of Boston University School of Public Health and Dr. David Himmelstein of Harvard Medical School studied infant mortality, military spending, and many other economic and social variables in 141 countries. They found a strong and consistent pattern of high infant mortality in countries with high military spending.

Woolhandler and Himmelstein speculate that arms spending may cause infant fatalities by diverting resources from health care, social programs, and the civilian economy while propping up authoritarian regimes. They conclude that two million infant deaths each year are associated with worldwide arms spending. The recent poor record on infant mortality in the U.S. may in part be due to massive increases in military spending under the Reagan administration.



Valerry

Ronnie Robs Again

The good news: $45.7 million in increased funding has been proposed to combat AIDS, including $22 million for public education, as we called for in "The Politics of AIDS" (*SftP* Vol. 16, No. 6). The bad news: in all-too-typical Reagan administration fashion, the money is to be stolen from the coffers of other programs, including the Indian Health Service.

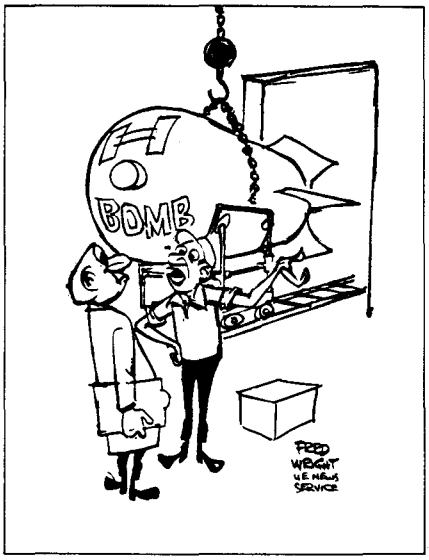
While members of the gay community and others have applauded the funding increase, most stand firmly against the funding diversion. Ron Najman of the National Gay Task Force (NGTF) called the redirection of funds "an assault on Native Americans."

Both the NGTF and the AIDS Action Council oppose the diversion of funds on principle. Jeff Levi, director of political and governmental affairs for NGTF, called the plan "robbing Peter to pay Paul." Nonetheless, Levi called the proposed funding increase "the beginning of a serious attempt to address the AIDS crisis," and said that the NGTF will ask the Congressional appropriations committees to allocate new funds instead of redirecting money needed by other programs.

—information from Gay Community News

Newsnotes

Work Without War



"So what if we don't finish it today . . .
Will the world be worse off for it?"

When Rebecca Lance and Andrew Hasenfeld surveyed undergraduate physics majors at the University of California, Berkeley, they uncovered some fairly heartening results. Of those who had worked in military-related jobs, 60% of the respondents stated they were either "disturbed" (45%) or "very disturbed" (15%) by the experience. Of those who had held only nonmilitary jobs, 41% stated that they would never accept military-related work, and only 3% indicated that they would take on such work without reservations.

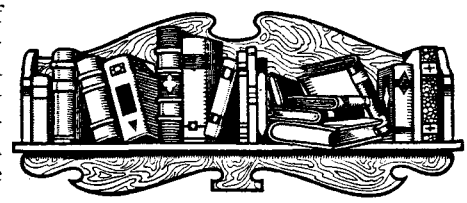
These statistics indicate a surprising amount of concern by physics students about their fields in these times of military expansion and reputed student apathy. Yet perhaps even more revealing than the numbers themselves were the written repies requested in the second part of the survey. A few excerpts are taken below:

"I think one should carefully research a job before taking it. If information is limited, questions avoided, and the focus of the project area narrow, I would be very suspicious. I could not morally condone working on projects whose direct and major purpose was weapons or destabilization techniques. This is simply an ethical choice I would make."

"Since I am an electrical engineer, my main worry is not ending up in a job making warheads, for which the choices are more cut and dried. Instead, I fear that I may end up making some satellite communications system for AT&T and having my work then also used in military satellites. It would then be more difficult for me to determine my complicity in defense research. If a silicon chip I make is used by Atari and by McDonnell Douglas, where is the line drawn?"

Calling for more dialogue, and more information made available to students on the types of jobs available in different academic specialities and their implications, the students who conducted the survey stated: "Such information could prove invaluable in helping students make decisions and in preventing them from committing themselves to a future in which conflicts may arise between economic necessity and moral/political beliefs. It is the hope of the survey-takers that all physics, engineering, and mathematics departments, upon realizing that their students are concerned, will make an effort to provide their students with such information, as responsibility dictates they should."

Professors Wanted



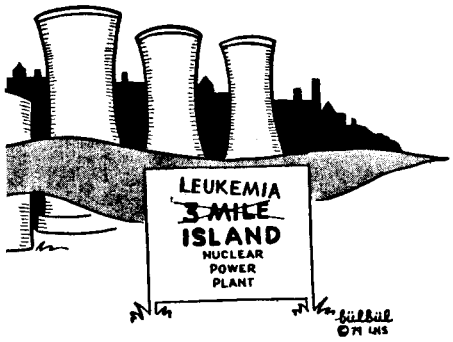
Robert Van Buskirk, a member of SftP's Science for Nicaragua Committee, spent a week in Nicaragua this summer meeting with Nicaraguan contacts from three universities and the Nicaraguan National Council on Higher Education. Science professors are in short supply, and our Nicaraguan contacts have urged SftP to seek teaching applicants in specialized fields.

Recruitment is underway for the March-December 1986 academic year for scientists supportive of the Nicaraguan revolution who are willing to teach their specialties in Spanish, under rugged and sometimes exasperating conditions. Subsistence salaries are available for most positions.

At the National Autonomous University of Nicaragua (UNAN) in Leon, professors are needed to teach biophysics, functional analysis, vegetative ecology and computer science. The National University of Engineering (UNI) in Managua seeks specialists in electrical engineering, chemical engineering, mechanical engineering and computer engineering. The UNAN campus in Managua still needs professors in forestry, plant pathology, livestock development, solid state physics, statistical modeling, computer mathematics, geophysics and medicine.

Application information needed by the Nicaraguan higher education council includes an academic curriculum vita, a statement explaining why you want to teach in Nicaragua, course material you're qualified to teach, Spanish competency and familiarity with Nicaragua, and terms and length of available teaching time. Science for the People will send completed application packages to the appropriate agencies and universities in Nicaragua by November.

Help is needed throughout the US to promote the science teaching project, recruit and interview applicants, fundraise, and collect educational materials that have been requested by science programs in Nicaragua. Contact SftP's Science for Nicaragua committee if you're interested in participating.



Still Paying for TMI

The cost of cleaning up Three Mile Island 2 nuclear power plant near Harrisburg, PA will total approximately one billion dollars. This phenomenal sum is actually $300 million more than the original cost of building the entire plant.

It should not come as too much of a surprise that ratepayers in Pennsylvania will be footing a major portion of the bill. What may come as somewhat more of a surprise, however, is that ratepayers around the country will also be sharing the costs. In addition to the $246 million that will be thrust flatly upon the shoulders of PA ratepayers, nuclear utilities throughout the U.S. will pay $153 million, with the U.S. Department of Energy chipping in $38 million. Whether you live in California, Texas, or Maine, you too may be paying for TMI 2 cleanup costs through payments to your utility and the portion of your taxes that go to the DOE.

Meanwhile, the court case continues regarding the Nuclear Regulatory Commission's decision to attempt to reopen TMI 1. While the citizens' group Three Mile Island Alert got an immediate injunction against the NRC ruling, a decision is expected any time. A spokesperson from TMI Alert told SftP that no matter what the outcome of the case the decision will undoubtedly be appealed, and may well end up in the Supreme Court. Citizens in Harrisburg are determined not to let the same mistake happen again.

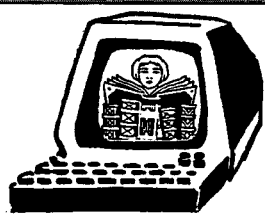
—information from the Waste Paper

Studying VDTs

Dr. Irving Selikoff, of the Mount Sinai School of Medicine in New York, will direct the first prospective epidemiological study of the reproductive risks associated with VDT work.

The Service Employees International Union (SEIU) and 9to5, the National Association of Working Women, will collaborate with the project, as reported in the Update section of SftP's last issue. Ten to twelve thousand women volunteers will be asked to complete questionnaires on work patterns, medical histories and lifestyles.

Data collection alone for this immense study will take three years, and another year is being allotted for analysis. At a press conference announcing the study, Selikoff stated, "Clusters of problem pregnancies have been identified in VDT-intensive offices and questions have been rasied as to whether exposure to the nonionizing radiation emitted by VDTs is involved." The study will attempt to gain greater insight into these questions.



Meanwhile, Sentinel Bio-Tech of Hyannis, MA has developed a VDT shield that reportedly reduces by 98% the amount of low-frequency electromagnetic radiation emitted by VDTs. The company has begun to market the product for around $200. A spokesperson for the Computers and Business Equipment Manufacturers Association cavalierly objects to VDT shields, claiming that people will be misled by "companies advertising that they have a screen that blocks radiation, as if there were any harmful radiation."

As far as this computer operator is concerned, I would just as soon have the option of purchasing a radiation shield—at least until the results of the Mount Sinai study are released. Let's just hope the price comes down.

Leap Seconds

Are you perpetually running late? If so, perhaps you might find some consolation in the fact that—at least for the past few years—so is the Earth.

Back in the good old days before 1955, when life was simple, and human-made clocks were not as accurate as the period of the Earth's rotation, astronomers told time by the regular and predictable movements of the Moon and the planets.

Not so since the introduction of atomic clocks, however. Since 1972 the powers that be have regulated our clocks according to an "atomic second" derived from one of the frequencies at which cesium atoms vibrate. This highly accurate time-telling system only serves to highlight the variation in the Earth's period of rotation, which makes up the length of the day.

Because of fluctuations due to the tides and motions in the atmosphere and even within the Earth itself, for the past 13 years we have been adding a "leap second" every year (on either June 30 or December 31) to give the Earth that extra second to catch up.

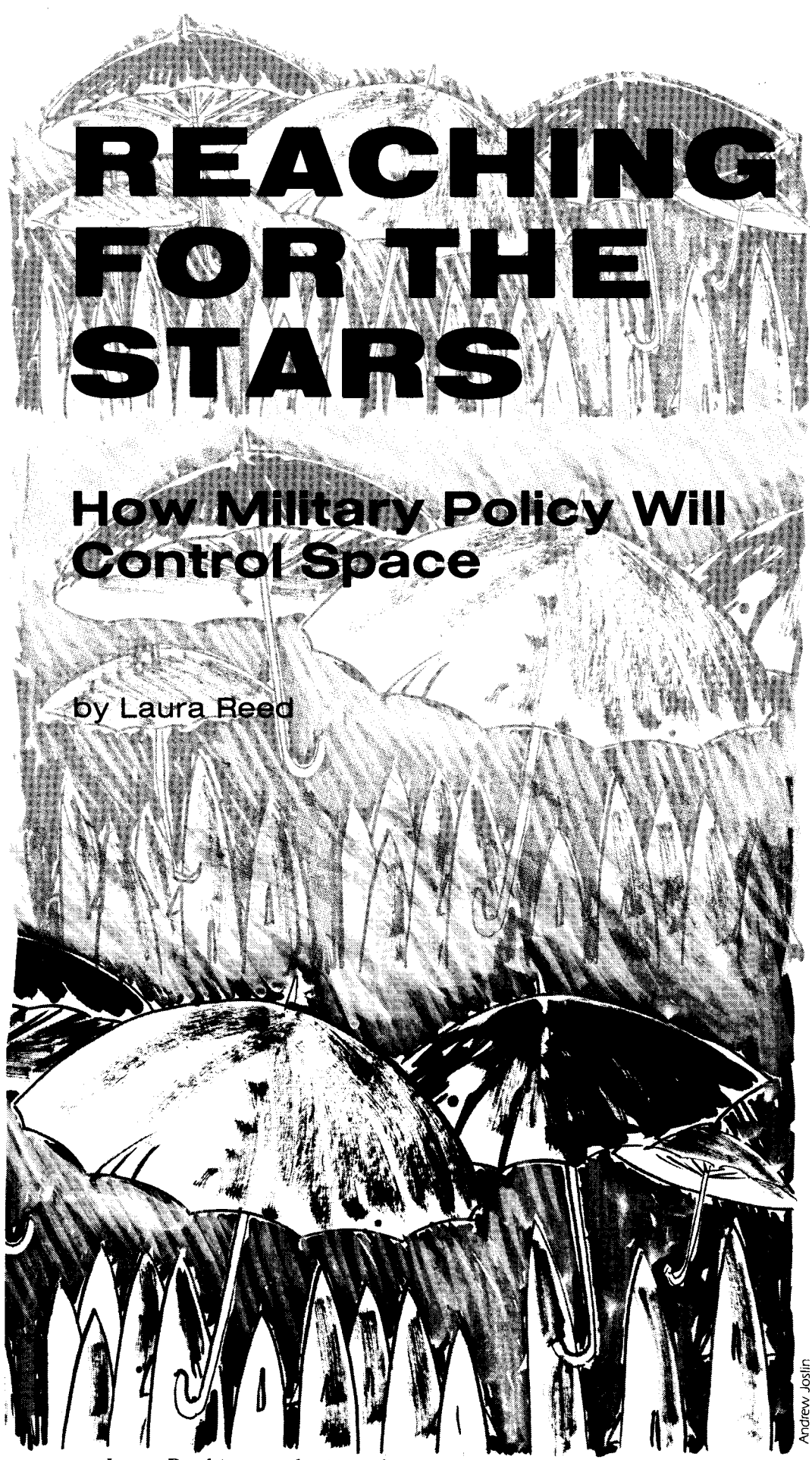
But, according to astronomers, this year's extra second may be the last for a while. To make matters even more complicated, we may even be losing a second per year by the end of this century. Then, with the Earth rotating ahead of schedule, even if we're on time, we'll all be early—by a few microseconds, at least. And what, may we ask, was so wrong with telling time by the Earth's rotation anyway?

—information from New Scientist

REACHING FOR THE STARS

How Military Policy Will Control Space

by Laura Reed



Andrew Joslin

Laura Reed is a graduate student in the Arms Control and Defense Studies program at MIT, and a member of SftP.

The Air Force is readying itself for a dramatic expansion of its strategic mission in outer space. Deep in the heart of Cheyenne Mountain, Colorado Springs, at NORAD (North American Air Defense) and its adjacent facilities, work is underway to institutionalize a plan for which supposedly only research funds have been allotted. As can be seen in the formation of a new Unified Space Command and the brand new $1.15 billion Consolidated Space Operations Center, the Air Force is eager for the increased clout that the Reagan Administration's Star Wars plan promises.

The new Space Command, located at the recently completed Falcon Air Force Station, 15 miles east of Colorado Springs, will oversee and manage the day-to-day operations of the upcoming generation of military space systems that will be deployed in the late 1980s and early 1990s. Because of this, the military elite in the Air Force are hard at work planning for their new role, for a time when notification of a ballistic missile attack will spark an immediate counterattack by a "defensive shield" that will track and target incoming missiles travelling at 15,000 miles per hour.

This new push for defense against ballistic missiles is now known as the Strategic Defense Initiative (SDI), more popularly referred to as Star Wars.[1] Although ostensibly still a research program, the U.S. plans over the next five years to pour about $26 billion into a program with the goal of developing a "defensive shield" above the earth, based on a system of satellites, lasers, directed-energy weapons and interceptor weapons that will destroy incoming missiles.

Given the current political climate, it seems to matter little that work has not gone beyond the drawing board stage of elementary research and speculation, nor that SDI threatens the flagrant violation of no less than two and probably four international treaties—the Outer Space Treaty, the Anti-Ballistic Missile Treaty, the Non-Proliferation Treaty, and the Limited Test Ban Treaty.[2] Perhaps most startling, it does not even seem to matter that the plan is proceeding without any concrete understanding of what it is intended to accomplish or what countermeasures might be taken by the Soviet Union in response to such a system. What has become increasingly clear though, is that even while it is still on the drawing board, the program has already become incorporated into military and civilian policy with frightening implications in a wide range of areas.

Institutionalization of Star Wars

One sign of the institutionalization of Star Wars can be seen in Colorado Springs itself—home of a number of Air Force bases and facilities, including the Air Force Academy. A current construction boom is raging as high technology firms have been buying up land in anticipation of a swell in SDI contracts. In less than five years, the land values of this arid grazing area have skyrocketed, as high technology and weapons firms have bought up adjacent acres, raising worries by the military that land that they had intended to buy in the coming years is now out of their price range.

The primary mission of the U.S. Space command is, among other things, to "ensure a close interface between research and development activities for space systems."[3] To aid this effort, the Commander of the Air Force Systems Command's Space Division also serves as the Vice Commander of Space Command. The proximity of commercial military contractors is but one dimension of this close relationship between the research and development community.

Within the Unified Space Command, planners are now working to "operationalize" Star Wars or incorporate it into the mission and structure of the Air Force. The looming domination of SDI research in Air Force planning can be seen in the changing scheduling of shuttle flights. While sold to the public on the grounds of the peaceful exploration of outer space (See for example "The Military History of the U.S. Space Shuttle," *SftP* Vol. 15, No. 3), DOD payloads will dominate future shuttle flights. Several SDI experiments have been pushed up to 1986 and the shuttle will be used for SDI tests involving tracking and targeting missiles in 1987, two years earlier than originally planned.[4] NASA has announced that it will sell the Air Force one third of all shuttle flights, according to NASA administrator James Beggs.[5] Of a total of 24 shuttle flights per year, SDI experimental flights will go up to 10 per year by 1996, squeezing out civilian commercial payloads which will be totally cancelled by 1996 as a direct result.[6]

Throughout the government, as well, a major shift in policy can be seen, gearing up for the anticipated changes Star Wars will bring to our domestic and foreign policy. Less than two years after the deployment of a new generation of nuclear weapons in Europe (the Pershing II and Cruise missile) justified on the grounds of the need to uphold deterrence, the State Department is now in the awkward position of trying to gain European support for SDI on the grounds of the immorality of deterrence. The U.S. is now working to gain NATO support and foreign corporate interest—especially potential partners willing to foot the bill for some of the exorbitant costs of deployment, projected to reach the trillion-dollar mark. In another governmental office, the Federal Emergency Management Agency (FEMA) has shelved plans for evacuation of cities in a nuclear war on the grounds that protection of the population has already been relegated to SDI.[7]

And this is just the tip of the iceberg—SDI offers more than just a glimmer of profits in the distant future. SDI amounts to a fundamental redirection of work done by an increasing number of scientists and engineers due to the growing chunk of federal grants to university research labs for SDI projects—virtually the only area where federal research money has expanded. More than $600 million is slated for SDI grants to American universities in the next 5 years and the government has already received more than 1,000 proposals for research money.[8]

A study published in May by the Council on Economic Priorities forecasts that SDI research could make up as much as 4.5 percent of U.S. research and development funds in 1986, more than doubling the 1984 level of 2.2 percent. The study states that "In a market projected to be tight, the Strategic Defense Initiative will take up a significant portion of the growth in scientific, engineering, and technical personnel" with the Defense Department taking up a third of all new engineers and SDI alone requiring more than 12 percent of the Defense Department's total.[9] Beyond the obvious drain on research efforts in other areas that might contribute to the alleviation of many social problems, the program also raises the issue of secrecy and the threat of classifying research findings. Already, the administration has attempted to limit the exchange of information and ideas related to SDI research at international conferences.

The History of SDI

SDI was dropped into the lap of the military when President Reagan unexpectedly called for the program in a speech on March 23, 1983. While the Pentagon is still reeling from this direct challenge to the hallowed notions of deterrence and strategic policy, it has jumped at the opportunity to shape the President's vague directive in accordance with its own preferred programs.

Although research in this area has been underway for the past 17 years, President Reagan's executive order to expand efforts pushed SDI to the fore of weapons' development and sparked a dizzying array of research and experimentation in some of the more exotic technologies that might become part of a future system. Given the "buy now, pay later" attitude of the government in funding military weapons programs (research costs are only a fraction of the total cost of actually deploying a weapons system), the military does not intend to miss this rare opportunity to capitalize on such easy money and widespread support. In fact, conservative groups such as the Heritage Foundation are attempting to "frontload" funding for future research so that enough money is put into SDI by 1989 so that it cannot be cancelled after the next Presidential election.[10]

While most Americans recognized the hypocrisy of naming the latest advance in the destructive line—the MX missile—the "peace keeper", in the

The Strategic Defense Initiative threatens the flagrant violation of no less than two and probably four international treaties.

Star Wars amounts to a fundamental redirection of scientific research, due to the growing chunk of federal grants to university labs for SDI projects.

Andrew Joslin

case of SDI, Senator Kennedy's mocking description of the program as "Star Wars" has ironically become its affectionate nickname, capturing the public's imagination and support in a gross deception of its actual function and intent.

Awareness But No Debate

Star Wars may have sparked more public awareness than any other weapons program has at a comparably formative stage in its existence. Yet, what is so disturbing is the absence of any real choice for the American public. An enormous step in escalating the arms race has been made with virtually no debate of its worth or objectives apart from technical considerations of its feasibility. Instead, the public is now being offered a narrow choice among slightly varying levels of funding, for different land or space-based technologies, packaged in an impressive public relations campaign that has employed the idealistic fantasy-world imagery of sci-fi adventure to mask the destructive mission and aim of the program.

President Reagan has justified the program on the grounds that "the human spirit must be capable of rising above dealing with other nations and human beings by threatening their existence."[11] Carefully infusing the program with such charged rhetoric as "making nuclear weapons impotent and obsolete," and "escaping the nuclear nightmare by going from deterrence based on offense or the threat of retaliation to deterrence resting on defense or the security of protection,"[12] the administration is waging a careful campaign to justify the militarization of space—now the new military high ground—under the guise of the long-term idealistic goal of making people secure from nuclear attack.

Yet there is obviously a disturbing discontinuity between the way the program is being described to the public and the way it will be implemented. There is no serious work being done on the part of the military to protect populations—this has already been discredited as technically impossible by military generals and scientists alike.[13] A recent White House pamphlet on SDI carefully ignores protection of the population, stating instead that "providing a better, more stable basis for enhanced deterrence is the central purpose of the SDI program."[14] This translates into a system designed to protect military targets—missile silos and command and control centers. Such a system could only contribute to improving U.S. first strike capability, or the ability to threaten the Soviet Union with a successful first attack, knocking out the vast majority of its strategic forces while using the SDI system to protect the U.S. from the small number that might survive an initial attack.

While the administration has repeatedly denied that the program is being used as a cover for improving the U.S. first strike capability (or the ability to successfully destroy Soviet missile sites and strategic targets in an initial attack) it is just this extended view of deterrence that is being promoted. Despite earlier statements asserting that any deployed system must provide "thoroughly reliable and total" missile defense, Caspar Weinberger has modified his views to now advocate quite a different vision. Weinberger reported in his FY 1986 Secretary of Defense Report to Congress that just this enhanced deterrent capability, now sanitized in the jargon of "interim BMD deployment," is possible. "We all recognized from the outset that a complete system, or combination of systems, of strategic defense could not be deployed overnight. There could well be a transitional period when some defenses would be deployed and operating before others might be ready." It is just the destabilizing nature of this partial operational capability that has been used by Weinberger to attack efforts to significantly reduce the number of offensive nuclear weapons on the grounds that it would be "destabilizing."

As Frank von Hippel, a physicist at Princeton and head of the Federation of American Scientists, has recently stated,

> Whether or not any Star Wars system was intended to serve only defensive purposes, the other side would not see it as such. And, in fact, such a system makes much more sense as an adjunct to a first-strike capability than as a shield from a first strike. Because of its inevitable vulnerability, a Star Wars-type system would be fairly easy to neutralize at the beginning of a highly orchestrated first strike. But, in the face of a disorganized retaliatory strike by an unprepared victim of a surprise attack, it might be more effective. The Star Wars system would therefore tend to destabilize the balance of terror by increasing the advantages of a first strike.[15]

Goals of the System

One of the most disturbing facts is that the range of debate has already narrowed to secondary issues, excluding the fundamentally important question of what the realistic aim and value of the program might be. As was recently addressed in congressional testimony, SDI is "not an optional program at the margin of the defense effort. It's central. The one and one-fifth percent of the budget that it requires for the coming fiscal year will build the very core of our long-term policy for reducing the risk of nuclear war."[16]

While there is little disagreement over the desire to move away from our current nuclear predicament, SDI's primary weakness lies in mistaken

priorities: the program seeks a military solution to not only a military, but more importantly, a political problem through technological innovation. Such an approach ignores the fatally flawed nature of a program that sets out to achieve long-term military goals that are in fundamental opposition to U.S. stated political goals, not to mention existing strategic policy. Furthermore, these goals have been set out in a vacuum, without adequate consideration of how the Soviet Union will respond to a potential threat to their land-based missiles.

As the debate is now framed, the rationale for SDI falters in its conflicting objectives of 1) strengthening deterrence, or the threat of nuclear retaliation by improving warfighting capabilities, and 2) eliminating deterrence, or the threat of nuclear attack. These two goals point to an inherent contradiction in the aims of the program on the part of key policymakers. While it should be obvious that a plan for eliminating the threat of nuclear attack can never be achieved by a program that works to achieve a foolproof threat of nuclear retaliation, it is just this double-speak that is being sold to the public. Proponents of SDI claim that interim systems will both bolster deterrence, and contribute to the long-term goal of a defensive shield.

Some claim that much of the confusion can be attributed to the inevitable process of crystallizing a complex and ambitious program, yet these competing aims go beyond the problem of a lack of consensus and uncertainty over the feasibility of the proposed technology. In the heat of the ongoing public debate, what is all too often lost is the value of identifying the critical assumptions concerning the problem that SDI addresses and the primary obstacles that need to be overcome in order to meet the stated objective of an effective ballistic missile defense (BMD).

At the outset, President Reagan called on the scientific community "to give us a means of rendering these nuclear weapons impotent and obsolete." Proponents of SDI have argued that the ultimate goal of a 100% effective defensive shield is to dismantle the current policy of deterrence, or the immorality of a doctrine that threatens the existence of another nation or people. While Reagan's overarching goal is invulnerability, it is important to recognize that SDI focuses solely on defense against ballistic missiles and, most importantly, that the military recognizes that Reagan's long-term goal is technically impossible. As a result, research is being directed at what is euphemistically being called 'interim deployment plans' that are a rehash of previously rejected BMD plans. The system is now intended primarily to protect missile fields and then as both sides reduce their offensive missiles, to protect cities also.[17] This is nothing else than the same old proposal for ballistic missile defense that was raised in the 1960s and after several years of research, development and debate, trashed because of its poor performance, enormous cost, and dangerous implications for U.S. security if the Soviet Union pursued the same course.

"Technical" Problems

The potential feasibility of Ballistic Missile Defense (BMD) has spawned a wealth of technical assessments of the technologies necessary to meet the stated objective of an invulnerable shield. By far, the expert scientific community has been overwhelmingly negative about the prospects for such a defense. A technical assessment of SDI, sponsored by the Office of Technology Assessment argues that SDI poses such difficulties that:

> The prospect that emerging "Star Wars" technologies, when further developed, will provide a perfect or near-perfect defense system, literally removing from the hands of the Soviet Union the ability to do mortal damage to the United States with nuclear weapons, is so remote that it should not serve as the basis of public expectation or national policy about ballistic missile defense (BMD).[18]

Despite administration and Pentagon efforts to suppress it due to its unflattering conclusions, this report is widely acknowledged as an even-handed and relatively optimistic assessment of the overwhelming technical obstacles and staggering cost of such a system.

Apart from the problematic nature of developing the technology necessary for such a program, there is the even more difficult issue of creating a system that is not vulnerable to attack. Even moderate Soviet efforts to counter a U.S. BMD system are virtually assured to severely diminish its effectiveness. A study by the Union of Concerned Scientists of space-based missile defense listed the following countermeasures that employ existing weapons and technology that could easily overwhelm or counter a future BMD system: offensive missiles that could get around a space-based BMD, such as submarine-launched cruise missiles that cannot be intercepted from space; fitting new ICBM's with more powerful engines so that the boosters would burn out both quickly and inside the atmosphere; cheap decoy ICBMs that would overwhelm boost-phase interceptors; space mines and weapons that could destroy the very delicate and vulnerable space stations; and many other easily developed countermeasures that would virtually assure an unacceptable level of "leakage" in the defensive shield.[19] And the Pentagon knows this. Even General James Abrahamson, head of SDI, re-

The Federal Emergency Management Agency has shelved plans for evacuation of cities in a nuclear war on the grounds that protection of the population has already been relegated to SDI.

Andrew Joslin

Conservative groups are attempting to frontload funding for future research by 1989, so that SDI cannot be cancelled after the next presidential election.

Andrew Joslin

cently warned the Senate Armed Services Committee that the high frontier defense might drive the USSR toward the deployment of more missiles and the development of countermeasures that would undermine its effectiveness.[20]

But beyond disagreement over its feasibility, what is striking is the general consensus over the role of military technologies as the primary means to remedy this threat to U.S. security. While there has been an outpouring of literature and analysis of the technical feasibility as well as the pros and cons of such a research effort, there has not been similar attention paid to how a comparable concentration of resources and research talent in the political sphere or other areas might enhance security and improve the prospects for a secure peace.

Unstated Goals

What only a year ago seemed to be a very long-term research program with testing and deployment estimated in the distant future of the late 1990s now looms much closer on the horizon. In February, General Abrahamson told the U.S. House Armed Services defense policy subcommittee that a "compelling case" for SDI can be made within five years on the basis of "convincing laboratory tests." He said he can present "a complex case. No question about it, particularly regarding the defense of populations" although not "a perfect case" because of ABM treaty limitations. Abrahamson addressed the fact that when pure research reaches the point of development, problems with the ABM treaty would arise.[21]

A 1985 government-sponsored study of SDI by a group of generally pro-BMD experts, known as the Hoffman report, concluded the following:

> The assessment in this study of the utility of intermediate systems is necessarily tentative... Nevertheless, it indicates that, given a reasonable degree of success in our R&D [research and development] efforts, intermediate systems can strengthen deterrence. They will greatly complicate Soviet attack plans and reduce Soviet confidence in a successful outcome... Even U.S. defenses of limited capability can deny Soviet planners confidence in their ability to destroy a sufficient set of military targets to satisfy enemy objectives, thereby strengthening deterrence. Intermediate defenses can also reduce damage if conflict occurs. The combined effects of these intermediate capabilities could help to reassure our allies about the credibility of our guarantees.[22]

In both this official report and other literature in favor of SDI, one finds a disturbing degree of inconsistency and deception underlying the advocacy of a program aimed at bolstering deterrence through increasing the threat and uncertainty on either side in order to ultimately remove this threat to our survival in the distant future. It is just this inconsistency among the short, intermediate and long-term goals that points out the irrationality of such different objectives.

New technologies might change the linear direction or substance of the debate, but they cannot change the fundamental uncertainty and mistrust that serve to fuel tensions between the superpowers. The U.S. will still be faced with the central question of how to deal with the Soviet Union—to address mutual differences and promote common interests. Perhaps the biggest problem now is that the technical experts have channelled the debate into esoteric discussions of exotic technologies, serving to exclude thoughtful input. Yet what is at the core of this scientific program is the basic question of how to best navigate U.S. domestic and foreign policy to promote peace and the public welfare in the future. When framed in this way, there is clearly a disproportionate emphasis on new space technologies that offer little hope of addressing the problems we now face on earth.

NOTES

1. BMD (Ballistic Missile Defense) is the most common of several acronyms used to designate defense against nuclear ballistic missiles. In the 1950s and 1960s these defenses were called anti-ballistic missile (ABM) systems, but this expression "fell out of favor after the debate over and eventual rejection of the Sentinel and Safeguard ABM systems in the late 1960s and early 1970s." More recently, the expression Defense Against Ballistic Missiles (DABM) has been used, while the Reagan Administration has adopted the term the Strategic Defense Initiative (SDI). Cited by Ashton Carter, "Directed Energy Missile Defense in Space: Background Paper," Office of Technology Assessment, April 1984, p.3.

2. See for example, Thomas Longstreth, John Pike, and John Rhinelander, *The Impact of U.S. and Soviet Ballistic Missile Defense Programs on the ABM Treaty*," a report for the National Campaign to Save the ABM Treaty, March 1985. See also, Eldon Greenberg, esq., "Non-Proliferation Treaty Prohibitions on the Transfer and Development of Nuclear Explosive-based Defensive Weapons," a legal report on pro-

Einstein Would Be Proud

Versions of the petition reprinted below have circulated at at least five universities in the U.S., as organized opposition to Star Wars mounts in academia.

STATEMENT ON STAR WARS

The Congress is at present considering a massive expansion of the Strategic Defense Initiative (Star Wars Program). It seems likely that large amounts of money will soon be made available for scientific research under the program. University-based scientists are already being invited to apply for funding under this program.

We believe that the Star Wars Program is technically dubious and politically unwise. Anti-ballistic missile defense of sufficient reliability to defend the population of the United States against a Soviet first strike is not technically feasible in the forseeable future. A system of more limited capability will only serve to escalate the arms race by encouraging development of both additional offensive overkill and an all-out competition in anti-ballistic missile weapons. The program will make arms-control negotiation even more difficult than it is at present. The program is a step toward precisely the type of weapons and strategy most likely to trigger a nuclear holocaust.

For these reasons, we believe that the Star Wars Program represents, not an advance toward genuine security, but rather a major step backwards. Accordingly, as working scientists, **we will not apply for or accept support from the Strategic Defense Initiative Organization**, *which funds Star Wars research. We encourage other scientists and technical personnel to join us in this refusal. We hope, together, to persuade the public and Congress not to support this deeply misguided, dangerous, and enormously expensive program.*

At the University of Illinois, Urbana, where the petition originated, it has already garnered signatures of 52 of the 72 faculty members in the physics department, 85 post-docs and graduate students, and two Nobel laureates, John Bardeen and Linus Pauling. Those interested in circulating the petition should contact John Kogut, Dept. of Physics, 263 Loomis Lab or Mike Weissman, Dept. of Physics, 159 Loomis Lab, University of Illinois, Urbana, IL 61801.

In addition to the many concerns voiced about the goals and feasibility of Star Wars, two broader, central issues are also raised. One is that the extent of the funding for the project—$600 million over the next five years—will flood several fields and lure scientists away from other more worthy projects. This vast redirection of entire arenas of scientific endeavor for military purposes has many, both within and outside of academia, rising up in protest.

The other major issue centers around the fact that Star Wars research will undoubtedly be classified. Most universities in the U.S. have refused to carry out classified research. And yet, many feel that this established policy may be threatened by the Star Wars plan. At Stanford University, for example, classified research was banned as of 1970. But the issue at Stanford heated up recently when the Pentagon announced that a newly-formed "consortium" of universities and research institutes would receive $9 million to begin work on a supercomputer that would run missiles developed as part of the Star Wars program. Two of the universities involved—Stanford and California Institute of Technology—both have policies against undertaking such research.

As academia mobilizes we must all try to educate ourselves about the implications of this latest escalation of the arms race now, while we can still stop it.

hibitions on the transfer of any nuclear explosive-based defensive weapon to any other country per the terms of the Non-Proliferation Treaty, Commissioned by Greenpeace International, June 25, 1985.

3. NORAD Fact Sheet, Public Affairs Office, Peterson AFB, May 10, 1985.

4. Associated Press in *The New York Times, February 20, 1985.*

5. *Associated Press in The New York Times*, February 27, 1985.

6. Air Force Briefing by Major Sandy Mangold, June 27, 1985.

7. Andrew Gallagher of United Press International in the *Washington Post*, March 4, 1985. Peter Dyke, publisher of *The Front Line* also said in an interview that "Protection of the population seems now to have been relegated, whether consciously or not, to the highly controversial Strategic Defense Initiative", cited in *The Arms Control Reporter.*

8. David Sanger in *The New York Times*, July 22, 1985.

9. Report of the Council on Economic Priorities, cited in Matthew Rothschild and Keenan Peck, "Star Wars: The Final Solution," *The Progressive*, July 1985.

10. In stating the objective of its 1984 BMD and arms control project, a Heritage Foundation memo stated that "The project aims at keeping the BMD program alive in 1984 and to make it impossible to turn off by 1989."... "A primary objective is to force a drastic reorientation of arms control debate in such a way as to make it politically risky for BMD opponents to invoke alleged "arms control arguments" against an early-IOC—or any other—BMD system. In fact, the project should unambiguously seek to recapture the term "arms control" and all of the idealistic images and language attached to this term."

11. State Department, "Geneva and Beyond New Arms Control Negotiations", Current Policy No. 647, Jan. 15, 1985.

12. Leslie Gelb in *The New York Times*, March 13, 1985.

13. Ashton Carter, op. cit.

14. White House Pamphlet, "The President's Strategic Defense Initiative," January 1985.

15. Frank von Hippel, "Attacks on Star Wars Critics a Diversion," *Bulletin of the Atomic Scientists*, April 1985.

16. Fred Ikle, Undersecretary of Defense for Policy, in testimony to the Senate Armed Services subcommittee on strategic and theater nuclear forces on February 20, 1985, cited by Bill Keller in *The New York Times*, February 22, 1985. DOD is now carrying out a review to "update nuclear employment plans and guidance over the transition from offense to defense in the 1990s," conducted by Fred Ikle. Richard Halloran in *The New York Times*, May 29, 1985.

17. Fred Ikle, ibid.

18. Ashton Carter, op. cit.

19. John Tirman, ed., *The Fallacy of Star Wars*, Vintage Books, NY, 1983, p. 42-3.

20. Broad in *The New York Times*, January 25, 1985.

21. David Ottaway in the *Washington Post*, February 28, 1985.

22. Fred Hoffman, Chair, et. al., "Ballistic Missile Defenses and U.S. National Security: Summary Report," DOD, October 1983, p.2.

WHY ARE AFRICANS DYING?

Dan Connell/Grassroots International

by Dan Connell

Eight months after the launching of perhaps the most ambitious and expensive international rescue effort the world has ever seen, many of us have more questions than answers about the African famine. Where did this crisis come from? Why didn't we know about it until now? Is our money helping—are things getting better?

Dan Connell is Executive Director of Grassroots International.

The sad truth is that the African famine is worsening. In some cases aid is exacerbating the situation by creating refugees instead of putting people back to work; by circumventing local institutions instead of empowering Africans; by focusing on relief instead of rehabilitation and development; and by ducking the underlying economic, social, and political causes of the crisis instead of meeting them head on.

Drought is a cyclical phenomenon in Africa. The harsh climate is not solely—or even primarily—responsible for the spiraling death rates and the massive human displacement now ravaging this resource-rich continent. Africans are paying the human cost of decades of economic dependence, social inequality, and political manipulation which, if not soon countered, can only lead to more suffering and more serious tragedy.

The Problem

Close to a century of colonial domination left Africa with distorted local economies geared toward the export of their abundant natural resources. Arbitrary state boundaries divided whole peoples and haphazardly merged others. Fragile polities emerged where narrowly-based elites, often representing ethnic minorities, were placed in control of new countries by the departing European powers.

Cold War politics dictated aid policies designed to cement government-to-government alliances based upon arms transfers and showcase development schemes. This helped to entrench inequalities while obstructing democratic change.

The upshot was a cycle of impoverishment far more deadly than the periodic shifts in climate. The best lands were used for the production of crops for export and for servicing the burgeoning urban centers. Peasant farmers and nomadic pastoralists were pushed onto marginal lands where overgrazing and intensive farming led to erosion and desert development.

Unequal rates of exchange and the growth of market economies created a debt spiral that affected rural dwellers and entire countries in much the same way—reserves diminished, gaps between rich and poor increased, and whole populations began to live on the brink of survival.

These trends produced a recipe for both large-scale human disasters and for social crises. With the sudden rise in oil prices and the onset of runaway inflation in the mid-1970s, most African countries began a rapid slide toward bankruptcy. Debts swelled out of control, world prices for African exports declined and the cost of manufactured goods rose.

This squeeze has been met by creditor countries in the West with an international version of "Reaganomics": in order to reschedule payments, the International Monetary Fund (the banker of last resort) imposes austerity measures on debtor countries that include slashes in subsidies to the poor, higher food prices, and sharp currency devaluations, among other measures.

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MYTHS OF AFRICAN HUNGER

Chris Carter/Grassroots International

by Kevin Danaher

We have all seen the images of emaciated Africans huddled in emergency feeding camps. After ignoring hunger in Africa for many years, the mass media have recently focused much attention on Africa's food problems.

Kevin Danaher works with the Institute for Food and Development Policy. This article appeared in their newsletter, Food First.

Clearly, many Africans are suffering. According to the Secretary General of the United Nations, "five million African children die and another five million are crippled for life every year because of malnutrition and hunger."[1] Unfortunately, while focusing needed attention on hunger in Africa, the news media have reinforced various myths about why so much hunger exists. These myths keep us from addressing the real causes of hunger.

Myth One: Drought is the main cause of famine in Africa.

The current drought in Africa helped intensify hunger, but poverty is the real cause of famine. It is only the chronically impoverished who die from drought. And Africa's impoverishment has been several hundred years in the making.

As European countries colonized Africa, they disrupted African farming and herding systems that for centuries Africans had adapted to changing environmental conditions. Ecologically balanced food systems were undermined; the best agricultural lands were seized for growing coffee, sugar cane, cocoa, and other export crops that would benefit Europe. Private and government investment went into developing these cash crops, while food production for the poor majority was neglected.

Colonial cash cropping ravaged the soil, reducing large areas to desert and semidesert. Millions of acres of brush and trees were cleared, robbing the soil of organic replenishment. Export crops such as cotton, peanuts, and tobacco absorbed large amounts of nutrients from the soil. After each year's harvest the soil was left bare and unprotected.[2]

Seizing the best land for export agriculture not only degraded the environment; it also impoverished the peasants, forcing many to either work on the plantations or crowd into the cities seeking employment. This gave the plantations and other commerical interests a large labor force that could be paid low wages, thus ensuring high profits.

Poor rainfall is troublesome for farmers throughout the world. It pushes people into famine, however, where farmers and pastoralists have been made vulnerable by economic and political structures that impoverish the many while enriching the few.

Myth Two: African hunger is caused by overpopulation.

Compared to other continents, Africa is not densely populated. Ever since the slave trade ripped millions of Africans from their homeland, many areas have suffered from not having enough people to develop Africa's abundant natural resources.

Only about one-fourth of Africa's potentially arable land is now under cultivation.[3] Two-thirds of the remaining arable land in the world is in sub-Saharan Africa.[4] A study by the United Nations Food and Agriculture Organization found that even with current low levels of farm technology, Africa could support a population 2.7 times greater than its population in 1975.[5]

Chris Carter/Grassroots International

It is true that Africa's population growth rate is higher than any other continent. But having large families is a logical response to the conditions under which most Africans live. On the small family farms that produce most of Africa's food, the most important factor of production is family labor. The high birth rate is a response by parents to this need for farm labor.

A woman in Burkina Faso (formerly Upper Volta) reported: "It takes me four hours every day to fetch water, and another four hours to collect firewood. Then there are the cattle to care for. I need children to help with the chores. They can also work for other people, and eventually earn and contribute to our income."[6]

With the world's highest rate of death for children aged 0-4, African mothers must give birth to three children to ensure the survival of two.[7] This is not to say the question of family size is always answered "the more the better." For some mothers the burden of raising another child under difficult circumstances outweighs the eventual benefits of another laborer in the family.

Data from all over the world proves that the surest way to lower birth rates is by raising living standards.[8] If African parents were assured their children would survive, they would not need to have so many. If parents could earn enough from their own labor, and were assured of support in old age, they would see it in their own interest to limit their number of children.

The key problem is not too many people, it is too much inequality.

Myth Three: African governments bear the main responsibility for declining food production.

To lay all the blame on African governments is to imply that they alone control the destiny of their countries. The forces that have institutionalized hunger in Africa are made up of African elites, multinational corporations, western governments, and international agencies. Together they form an "antifarmer coalition" whose lifestyle and interests are very different from those of Africa's rural majority.

Over the years this antifarmer coalition implemented policies that undermined food crops. Prices paid to farmers for food crops were kept artificially low, thus providing cheap food to people in the cities. This reduced the likelihood of urban unrest and allowed urban employers to pay lower wages, but it also stifled incentive for increased food production.[9]

The antifarmer coalition directs most agricultural assistance to cash crops, mainly benefiting large commercial interests. For example, between 1975 and 1980 the countries along the Sahara Desert's southern border received $7.45 billion from international aid agencies such as the World Bank. But even though nearly all the region's food production comes from rainfed agriculture, only eight percent of the aid went to rainfed crops.[10] The bulk of the aid further expanded export production.

The peasants are too dispersed, poor, and unorganized to wield much political clout. The fact that policymaking is dominated by men, while most food is produced by women, also helps explain the low priority given to food crops. The antifarmer coalition directs most agricultural training and development assistance to men.

But food production can be increased, as recent developments in Zimbabwe show. After years of guerrilla war against a white minority's government, Zimbabwe achieved independence in 1980. Since then the government of Robert Mugabe has raised the price paid for food crops, and has given small farmers credit so they can purchase seeds, fertilizer, and tools. Though these programs do not reach all the peasant farmers in need, they have led to a massive increase in food production. This year, despite three years of drought, small farmers will not only feed their families, but will also market eleven times more corn than ever before.[11]

Africa is a diverse continent with over 50 governments ranging from blatantly antifarmer to those genuinely trying to help the poor majority. But in every nation it can be said that only when the majority gain control of their country's resources will we see an end to policies that systematically impoverish people, leaving them vulnerable to natural disasters.

Africa is trapped in a cycle of impoverishment far more deadly than the periodic shifts in climate.

As long as East-West competition for influence fosters an African arms race, surpluses that do accrue may be wasted on weapons of war.

Myth Four: The "free market" holds the solution to Africa's food problems.

Most people fail to realize that the world market is Africa's worst enemy. Most African countries are dependent on exporting minerals and agricultural products. World market prices for these raw materials tend to stagnate or decline over time. But the prices of manufactured imports tend to ratchet upward. By 1982 a full year's worth of African exports could pay for only 27 days worth of the continent's imports.[12]

The deterioration in Africa's terms of trade means that most African governments are forced to spend more in the world market than they earn. They have filled the gap by borrowing.

The indebtedness of many African nations has now reached crisis proportions: of all governments failing to repay their foreign loans on time between 1975 and 1983, nearly half were African governments.[13] The International Monetary Fund is forcing many governments to implement austerity measures (e.g. eliminating food subsidies and social services) in order to get new loans.

The world financial system is a greater cause of hunger in Africa than is the drought. If African governments were not so deeply in debt, they could buy food on the world market. They would not be forced to wait for unreliable shipments of donated food while millions go hungry.

Markets allocate food according to monetary wealth, not nutritional need. The six large corporations that control nearly 85 percent of world grain shipments are concerned with profits, not malnutrition. Thus we are confronted with the cruel irony that world grain reserves are at their highest level in history, while famine stalks the African continent.[14]

Typically, the small farmer is victimized by private speculators. These traders buy up the food crop at harvest time when plentiful supplies push down prices. Later in the year, during what they call the "hungry" season, small farmers run out of savings and are forced to borrow at usurious interest rates from local merchants just to survive until the next harvest.

Even when the overall supplies are adequate, markets dominated by wealthy speculators work against the majority. "The 1982 rains were poor in many parts of the Sahel, but private traders had large stocks of millet available throughout the year. But by June and July, Oxfam field staff were reporting that the poorer villagers were all telling the same story: they did not have the money to buy grain at the traders' high prices."[15]

The Reagan administration claims that economic progress will be achieved if African governments refrain from intervening in markets. But the problem is not that African governments intervene in the marketplace, rather it is the way they intervene: against the interests of the poor majority, in favor of the rich and powerful.

Markets can be tamed to serve the interests of the majority. But this can only be achieved by governments genuinely committed to the poor.

Myth Five: U.S. foreign aid is helping Africa's hungry.

Although it is essential to help people in need, we must remember that food aid, at best, only treats the symptoms of poverty, not its causes.

Food aid can undermine local food production by flooding local markets and depressing food prices. It can also create dependencies on foreign aid or be used by recipient governments to manipulate the poor. During a recent fact-finding trip to the Horn of Africa, Food First cofounder Joseph Collins saw the Ethiopian government using food as a weapon, withholding it from people for political reasons.

As we point out in our book, *Aid As Obstacle*, most food aid from the U.S. government is not even intended for the hungry. It is purchased by foreign governments, using money loaned by the United States. These governments then sell the food on the open market, which means the poor do not benefit.

The concentration of U.S. aid on only a few countries shows that its objectives are strategic rather than humanitarian. Of all U.S. aid to Arica, two-thirds goes to just one country, Egypt. Of U.S. aid

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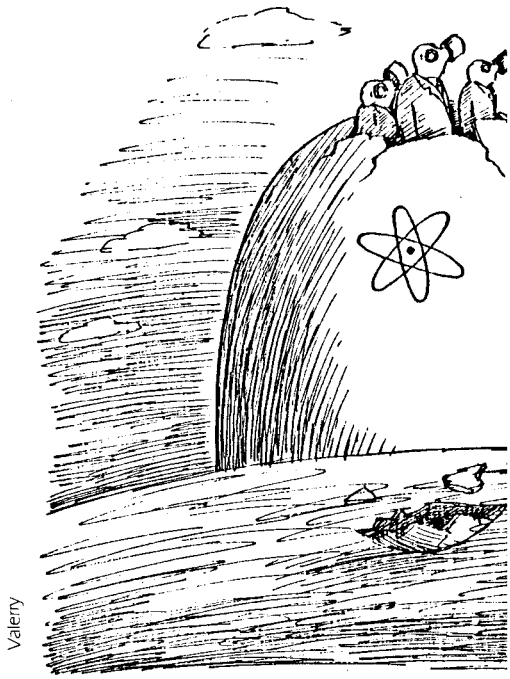
FIGHTING ⚛ RADI

in Fernald, Ohio

by Scott Schneider


Valery

Exposure to radiation is a fact of life for members of Local 2380 in Fernald, Ohio. They are the maintenance workers at the National Lead of Ohio's (NLO) Feed Materials Production Center.

Here uranium ore is reprocessed into metal ingots for use as nuclear power plant fuel or in nuclear weapons. The plant, 18 miles northwest of Cincinnati, has been in operation for over 30 years but only recently became the center of a storm of controversy. In December 1984, the company announced that during the previous three months, over 375 pounds of uranium had escaped from the bag house filtration system into the atmosphere. Water tested from wells nearby had radiation levels 36 times higher than normal. The Department of Energy (DOE), which owns the facility and leases it to NLO, launched an investigation which uncovered some alarming information.

The ventilation system at the plant collects much of the uranium dust created by the work process and transports it to the bag house where 56 20-foot-tall bags filter out the dust before releasing emissions to be vented up the stacks. In September 1984, the bag house underwent major servicing since many of the old bags that were installed were worn out. The new replacement bags that were installed were too short. In addition, since they were made of wool, they shrank due to exposure to the hot humid air from the furnaces. And the rubber seals supplied to the workers for installation were the wrong size.

The result was several torn or dislodged bags which were allowing emissions up the stacks. When the radiation alarms went off in November, signaling the emissions, management, annoyed at the constant alarms and not trusting the accuracy of the monitors, turned down the alarm's sensitivity so it wouldn't go off as much.

The releases and the subsequent media attention galvanized local residents who formed Fernald Residents for Environmental Safety and Health—FRESH. Governor Celeste, Congressman Luken, and Senator Glenn have all begun their own investigations of the problem and Congressional hearings were held in Ohio last April. The DOE investigation downplayed the problem by saying that the releases were much lower than they were in the past.

During the past 30 years, over 100 tons (200,000 pounds) of uranium have been released into the air, 74 tons into the water supply, and another 337 tons is missing and unaccounted for. The DOE compared last year, when approximately 700 pounds were released, with 1955, when over 25,000 pounds were released, including 37 major releases of over 100 pounds each. They also discovered that about 527,000 tons of low-level radioactive waste is stored at the plant site and about one half million gallons of waste-water, containing about 1,600 pounds of uranium, is dumped into the river each year.

In the last 30 years, over 100 tons of uranium have been released into the air, 74 tons into the water supply, and another 337 tons is missing.

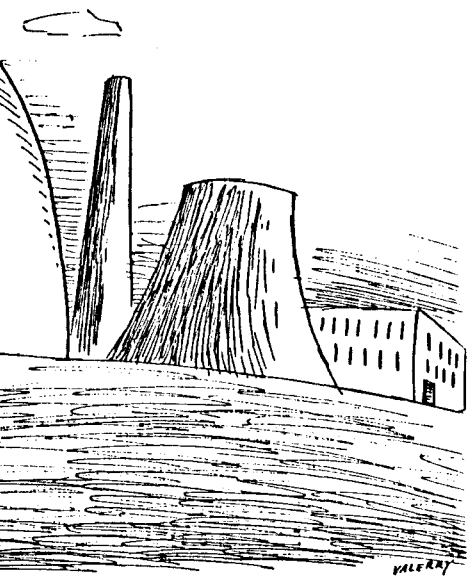
Part of the problem lies in the fact that, under the Reagan administration, this aging facility has had new demands placed upon it without sufficient money being spent for modernization of the safety and dust collection system. After a peak period—in 1956, almost 2,900 workers operated the plant and in 1960, over 22 million pounds of uranium were processed—production declined throughout the 1960s and 1970s. In 1979, only 538 people worked at the plant and production was down to about 2.5 million pounds.

Then, in 1981, the new administration came in with a program to revitalize the nuclear power industry and the nuclear weapons program. This created great demands for nuclear materials, and in four years the workforce at the plant doubled and the production output tripled. The stress this increase added to the plant facilities undoubtedly contributed to recent radioactive releases.

With all the media attention to the environmental releases, exposure to workers in the plant has virtually been ignored. But, as with most health hazards, exposure to the workers is much greater than to the public. Bob Schwab is president of Millwright Local 2380 and also newly elected chair of the Fernald Atomic Trades and Labor Council's Health and Safety Committee. The Council represents the 15 locals at the plant and is affiliated with the Metal Trades Department at the AFL-CIO. Schwab has been on the union's health and safety committee for 15 of his 18 years at the plant. Until recently, however, the union's complaints about unsafe conditions got no response from the company.

Scott Schneider is an occupational safety and health representative for the Carpenter's Union and a former staffperson of Science for the People. This article is reprinted from The Carpenter *magazine.*

ATION ⚛ HAZARDS



Most of the plant, for example, is contaminated above the rafters and on ledges with radioactive dust that rains down on the workers. For several years the committee has been trying to get the company to do a high-level cleaning of the plant. Just this spring, the union negotiated a new classification to get that job done.

The Millwrights have some of the dirtiest jobs in the plant—cleaning up spills, doing maintenance on equipment, and working on the dust collection system. On Labor Day weekend last year, Schwab and his members were working on the system replacing the filter bags. Although they told the company repeatedly that the bags would not work, they were ignored, resulting in the emissions last fall. Currently only two of the 56 bags have monitor alarms to warn of releases of uranium to the environment.

Finally, after over 30 years and because of all the media attention, NLO has made a commitment to renovate the bag house and to install monitors on all 56 bags systems. Previously, as a result of unoperating monitors, bags would routinely rip and go unrepaired for days.

In the past, when the safety committee raised complaints and management would not listen, the committee could file a complaint with the Department of Energy in Oak Ridge, Tennessee, and a DOE investigator would come out for an inspection. Management would always act concerned and impressed, but every investigation was settled in favor of the company: the union never won a complaint.

Under the OSH Act of 1970, DOE facilities such as Fernald are exempt from OSHA inspections and regulations. The DOE writes and enforces its own internal regulations. No outside or independent authority oversees them. A classic case of the fox guarding the chicken coop.

One other reason these problems have taken so long to correct has been the threat of company reprisals. Workers at the Fernald plant must have a security clearance to work there due to the risk of terrorists using the uranium to make weapons or disrupt the plant. Consequently, workers were not allowed to discuss any plant-related matters outside the plant. Any complaints about conditions could lead to the loss of security clearance, and the resultant loss of a job.

Intense media coverage about releases to the community and groundwater contamination led the company to hold a community meeting last December. Workers who attended the meeting heard the company misrepresent conditions at the plant but could not speak out for fear of reprisals. As a result of all the recent press and congressional concern, the company and DOE have been forced into signing a no reprisal policy so workers are now free to discuss these matters without losing their jobs.

During the last three months of 1984, 375 pounds of uranium escaped from the bag house filtration system into the atmosphere.

To respond to these problems, workers from 10 DOE facilities around the country have formed a coalition known as the National Atomic Labor Health and Safety Conference to work together for safety and health improvements at the plants. This May, at one of their first meetings in Oak Ridge, workers got shared stories about the conditions at their plants and learned how DOE has implemented policies on an experimental basis at other facilities.

The big question is what is the long-term effect of these exposures on the health of the workers. In their search for more information, purely through perseverance, the workers discovered a DOE study done last year of 4,101 Fernald employees who worked at the plant between 1952 and 1983. The study showed high rates of gastrointestinal (stomach and colon) cancer, a 2-1/2 to 5-times-greater-than-normal incidence of lung disease (fibrosis, emphysema), and that 15-20% of the workforce had filed compensation claims for lung disease-related disability. Workers at the plant are wondering whether these study results will underestimate the problem. They want an independent investigation by another agency.

To meet this goal, one of the workers' major victories so far has been to get the National Institute for Occupational Safety and Health (NIOSH) access to the plant and to all the workers' exposure and medical records. The unions requested a complete NIOSH Health Hazard Evaluation (HHE) of the plant four years ago and the DOE has finally, again because of all the media pressure, agreed to the NIOSH evaluation. Legislation introduced by Senator Glenn (Senate Bill S525) and Congressman Wirth (House Bill H1287) into Congress this spring aims to transfer authority for research on the health effects of radiation to workers permanently from DOE to NIOSH.

The union is currently in contract negotiations. Their priority is to get better safety language in their contract. They want to negotiate the right to red tag a job or refuse unsafe work until a safety committee member investigates.

National Lead of Ohio has been the contractor running the Fernald facility for over 30 years. Their contract ends in October 1985. In the past it would have been renewed automatically. This year DOE let it be known they would accept other bids. NLO did not even bid for renewal. They want out. The union hopes that the next contractor has more of a commitment to safety and the union will no doubt be watching them closely. As Bob Schwab has stated, "If it's handled properly, the job can be done safely." He and his members mean to see that it is. ★

CUBA REPORT

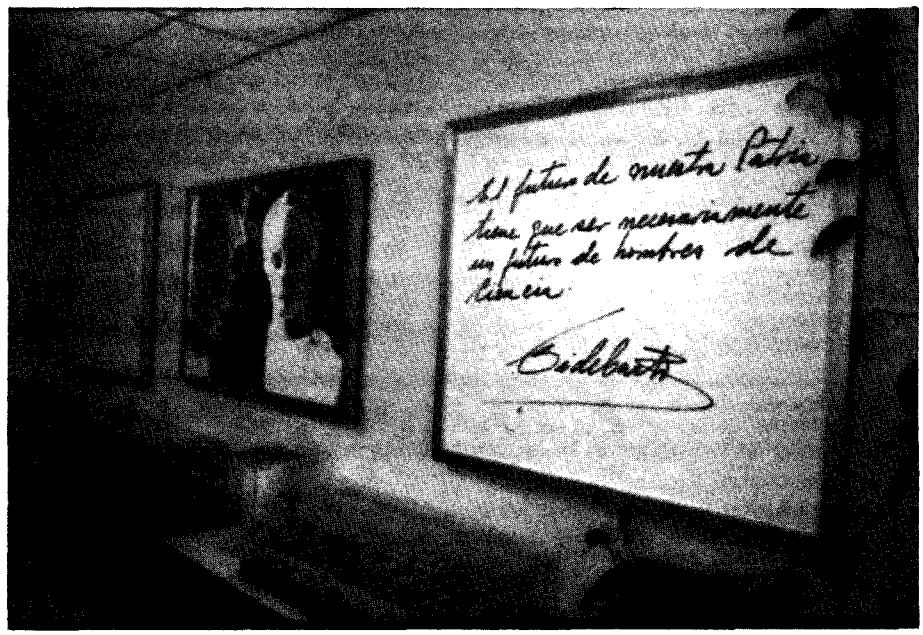
Science and Society Are Inseparable

by Jon Beckwith

Twenty-seven years ago, Carlos Lopez was told by his father that he could not attend high school since he must sell Lotto tickets and ice cream on the street in order to help his family survive. The family had only enough money for one meal a day. Today Lopez is a genetic engineer working as a researcher at one of the most high-powered scientific institutes in Cuba.

Before the revolution, Ramon Estaban, who would be considered black in the United States, had no hope of achieving a position even remotely close to his current status. Today, Estaban is head of the research group of which Lopez is a member.[1]

The experiences of these two men symbolize many of the achievements of the Cuban revolution which so impressed me on my recent first visit. My wife, Barbara, and I were invited to spend 10 days in Cuba. I spent much of my time visiting scientific institutes,



"The future of our country must of necessity be the future of men of science."

Jon Beckwith is a genetics professor and researcher at Harvard Medical School. He is active in SftP's Sociobiology Study Group, and serves as outreach coordinator for Science for the People.

giving lectures on molecular genetics and consulting with those biologists whose research was close to mine. Barbara visited schools, talked with writers and the Cuban Women's Federation and interviewed a Cuban poet, Nancy Morejon. At our request, we both had an opportunity to talk with someone from the Poder Popular (People's Power) organization and with neigborhood members of a Committee for the Defense of the Revolution. We were able to walk around Havana on our own and to talk with people on the streets or in bars. Furthermore, while we didn't have the time, it is possible to rent a car or to travel by bus or train in Cuba.

I returned from Cuba with conflicting feelings about what I had seen. On the one hand, I was much more impressed than I expected with the advances Cuba has made and the spirit of the people. On the other hand, certain aspects of the closed nature of Cuban society and other social policies were disturbing. I would like here to focus on the progress the Cubans have made, particularly in science, but I will also point out those features of the Cuban social system which, to my mind, need improvement. Barbara and I have tried to fill out our impressions by readings we have done of books and articles written by Cubans and others both for and against the current government and by talking to others who have visited Cuba recently.

Modern Biology in Cuba

Cuba appears to have made striking progress in its recent plunge into biotechnology. Robert Ubell, in his *Nature* article,[2] describes this progress in some detail and illuminates the current structure of Cuban science. My impressions are very much the same as his. They were strongly reinforced by my intensive discussions with researchers at the CIB (Centro de Investigaciones Biologicas), an institute built in 1981 to promote the application of the new technologies, such as recombinant DNA and monoclonal antibodies, to the needs of Cuban and other third world societies.

The research at this institute is focused on the production of interferon. Interferon has been touted in the United States, particularly by some of the new genetic engineering firms, as a cure for cancer. While this potential of interferon is still up in the air, it does seem that it can be used to treat certain viral diseases. The researchers at CIB, who have been producing interferon from tissue culture for a couple of years, claim that they have used it against more diseases than any other country. In particular, they claim success in treatment of planters' warts (also reported in this country), laryngeal papilloma (debilitating throat growths), and in alleviation of the symptoms of dengue fever (the Cubans suffered an epidemic of dengue several years ago, which they are convinced was spread by the CIA), hepatitis and others.

In addition, the group led by Estaban is doing genetic engineering with both bacteria and yeast to get them to act as factories for interferon. This is an area being pursued by many biotechnology firms and laboratories around the world. This group is interested not only in producing interferon more cheaply, but also in training large numbers of scientists in these new technologies. Next year, a new and larger institute will be opened where those who have been trained will extend these technologies to the production of vaccines for animals and humans and to plant genetic research.

What impressed me the most in my talks with scientists at this institute, both with groups and individuals, was their enthusiasm and motivation for their work. I have visited many institutes and universities in the U.S. and elsewhere and had similar talks with scientists. Usually, you will meet a few who are highly motivated and others who are just doing their job or have even lost interest. But with the research groups I visited in Cuba there was an extraordinary uniformity of interest level. I was told that researchers often worked for 16 hours a day. As far as I could tell this was true, as we often returned to our guest house near the institute around midnight only to find most of the lights on and most of the cars still in the institute's parking lot.[3]

A corollary of this enthusiasm for research was an intensity of interest and curiosity in keeping up with all the latest developments in the relevant fields. While this is made particularly difficult because of the U.S. embargo, researchers at the CIB were, in fact, amazingly *au courant*, sophisticated and creative in the field of genetic engineering. One group at the institute was making synthetic oligonucleotides (small pieces of DNA) for Estaban's interferon cloning work. They were manipulating gene cloning vectors in some of the same creative ways I have seen done in laboratories in the U.S., and developing their own computer programs for analyzing DNA and protein sequences. The questions asked at my lectures were similar to ones I would get in the U.S.

Scientists in Cuba have trained in a number of foreign countries. Some had been in the Soviet Union and East Germany, others in France and Finland and a few had spent short periods in U.S. laboratories, although it can be very hard to get a visa from the U.S. government.

Cubans view the intense critical attitude which goes on in scientific discussions in U.S. laboratories as a model for themselves.

My own sense of the source of these scientists' enthusiasm was their commitment and belief in the system. Some, as I have mentioned, benefitted enormously from the changes wrought by the revolution. Others can point with pride to some of the achievements already made in medicine and agriculture, and anticipate that they too will contribute to the welfare of their people. In addition, the government[4] has decided to make a significant financial commitment to this field and has purchased costly equipment and supplies from such countries as Japan, Sweden and Germany. I saw at this institute the newest model high pressure liquid chromatography apparatus, quite an expensive unit. One scientist said to me that theirs was a poor country, yet they had decided to spend unusual amounts of money in this area. Therefore, he felt obligated to work hard.

Essentially all the researchers I interacted with were doing work which was applied, or close to it. However, they distinguish between three types of research—pure, basic and applied. Pure research—work on problems with no clear relevance to its applications to society's needs—is not being done in Cuba.

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An example of basic research was given to me by a scientist at another institute. His group was interested in how to best utilize productively the fairly substantial remains of sugar cane after the sugar has been extracted. There has been some progress in attempts to convert it to fuel. His group is studying bacteria and fungi which can degrade this residue in the hopes that these organisms will be useful for their purposes. At this point, much of their work is "basic" characterization of the organisms (their metabolism, etc.), with this ultimate goal in mind.

One point of view of Cuban scientists I was not prepared for was their enthusiasm for science as it is done in the United States. They view the intense critical attitude which goes on during scientific discussions in U.S. laboratories as a model for themselves. I was at first surprised by these comments, as I find this attitude can often be personally destructive to people. But my impression was that this isn't the kind of approach that the Cubans would take to fostering a critical attitude. They are much less impressed by European science. This position extends even to the issue of job security. One scientist told me that Cubans saw the model of the European institute, where individuals get tenured positions at a very early age (often late in their graduate career), as stultifying. Cuba could not afford, particularly in such an expensive and important field, to have people who were not able to be productive in this area. Of course, since nearly everyone is employed in Cuba, a person who was not doing well at such an institute would have no problem getting another job.

"We simply don't think about color here."

The Embargo

Despite the impressive advances made in the level of scientific sophistication and achievement in Cuba, the policies of the United States still interfere significantly with the doing of science. First, there is the pervasive effect of the U.S. economic embargo. The embargo prevents, in principle, anything made in the United States from being sold to Cuba. This not only means scientific equipment made by U.S. manufacturers, but also any piece of equipment assembled anywhere which has U.S.-made parts in it. This, of course, means that most often Cubans must pay considerably higher prices for such scientific hardware. Much of the equipment at the CIB came from Japan.

Until recently, the Cubans had been obtaining restriction enzymes and certain radioactive chemicals (both essential components of biotechnological research) from West German branches of U.S. firms. However, as a result of pressure on the parent companies resulting from the more hostile attitude of the Reagan administration toward Cuba, these supplies were suddenly halted. The penalty for violation of the embargo, which could be visited on these companies (or on people who travel "illegally" to Cuba), is a $50,000 fine and 10 years in prison!

Scientific journals from the United States are also hard to come by. Since they cannot be purchased from their source, they must be ordered from European distributors at a considerably higher cost. This has forced the Cubans to be selective about which journals they buy, thus limitng their access to information from scientific circles in the U.S. Furthermore, they cannot obtain any of the computer programs which are in wide use in this country, nor are they allowed access to the DNA sequence data bank which is extensively utilized here.

Finally, the stronger enforcement of the economic embargo and its recent application even to U.S. tourists visiting Cuba has dramatically reduced the flow of U.S. visitors. During the relaxation of hostility in the Carter years, about 100,000 U.S. tourists went to Cuba. That has stopped. Only journalists, those doing research (sociologists, historians and others) or those invited and paid for by the Cuban government can, in principle, visit Cuba from this country. While this aspect of the embargo has not been enforced, its proclamation has had a chilling effect on travel to Cuba. Today, Cuba's major source of tourism are the daily planeloads of Canadians who fly from Montreal to Havana.

Another aspect of U.S. policy which interferes with progress in science was brought home to me by a conversation with Estaban. He lamented, "We are making real progress. If only they would leave us alone and let us get on with building our society. When there are military scares such as last fall, it means that we all have to mobilize. It detracts from our progress and from our economy." Every time the rhetoric of the U.S. government starts heating up towards Cuba, the Cubans, rightfully in my opinion, fear an attack or invasion. Such an atmosphere existed during periods of 1984 and earlier when Alexander Haig was Secretary of State. Each time this happens, the Cubans mobilize their population into training in anticipation of an attack.

In a way, the constant threat of U.S. intervention and its vehement opposition to the Cuban system has had a unifying effect on the people. This, coupled with the fact that most of the dissidents have left the country (Cuba has lost about 10% of its population to the United States), results in a people who, by most accounts, are strongly supportive of their government. This factor may make a strong contribution to the motivation and enthusiasm I saw among Cuban scientists.

Progress in Cuba

In addition to scientific progress, there are other areas of Cuban society where the progress made seems impressive, particularly compared to other countries of Latin America. These are:

Health Care. All hospitalization and health care, except for prescription medicines, is free. While there are disparities in the quality of care in different provinces, overall statistics show an extraordinary improvement. The expansion in its health budget from 21 million pesos[5] before the revolution to 668 million today has resulted in the elimination of typical diseases of third world countries. The major killers are heart disease and cancer. Infant mortality, last year, was 15 per 1000 births, compared to 60 per 1000 before the revolution and 12 per 1000 in the United States. The average life span is about the same as in the U.S. While about 3,000 of its 6,000 doctors fled the country in the early years, Cuba now has over 20,000 doctors and is continually increasing that number.

Education. Immediately after the revolution, education from first grade through University was made free. Lopez had wanted to be an engineer before his father was forced to take him out of school under the Batista regime. He remembers often crying at night when he realized he would not achieve his goal. After the revolution, despite his ambition, Lopez volunteered to go off to the countryside for a year to teach an entire farm family to read. He was participating in the famous literacy campaign which has led to the current 97.5% rate of literacy. The Cuban government has gone beyond literacy, however. After having won their "battle for the sixth grade" in 1980, they are now trying to insure that every adult has the equivalent of a ninth grade education.

Food. While there is not a great diversity of food in Cuba, no one goes hungry. For many years, rationing was the rule, to insure equitable distribution. However, an upturn in the economy over the last few years, and increases in production of essential and non-essential foodstuffs (such as coffee) has reduced dramatically the number of rationed goods. While Cubans may not be able to eat red meat every day, they can eat either eggs, fish or meat.[6]

The Racial Situation. A striking feature of Cuban social life is the mixing of people of different skin color. In bars, restaurants, on the beach or on the streets, we observed that social groups were more often than not mixed. While there are some aspects of the history of Cuba which made this mixing easier, the pre-revolutionary society was racist. Beaches were segregated and blacks could not expect to enter the professions. It is clear that today there are blacks (such as Estaban) who have found no barriers and have risen to high positions. In fact, Estaban complained about a recent article in *Nature* magazine about science in Cuba which referred to him (as I have) as black. "We simply don't think about color here." People of all hues are seen at the scientific institutes. As far as we could judge from our observations and discussions with people, racist attitudes have been tremendously reduced and may exist mainly among the older pre-revolutionary generation. I suspect that this change results, in no small part, from the equality of economic status produced by the revolution as well as the strong anti-racist ideology of the government.

Problems

There are aspects of Cuban society which were disturbing to us. First, there is a very limited access to varied points of view. While Miami radio and often Miami television can be received in Cuba, the printed media available is restricted mainly to Cuban and Russian magazines and newspapers. Bookstores have a very limited supply of Western literature. The newspapers themselves tend to have articles which are often exhortatory and have a fair degree of political rhetoric. There is very little in the way of clash of ideas. While complaints and criticisms against individual bureaucrats or about details of the system are common, very little broader criticism of societal policy is available. As far as we could tell, there are currently no publications available from Cuban writers or poets who are critical of the system.

From our limited observations of education, it appears to us that the texts in all subjects (even mathematics) are highly ideological and present "truths" rather than stimulate creative thinking through the conflict of ideas. While one can often see similar problems in U.S. education, still we admire most in our educational system those schools which present students with differing points of view and allow them to form their own opinions.

A facet of Cuban society with both positive and negative sides to it are the Committees for the Defense of the Revolution. These committees organize neighborhoods, and about 80% of the Cuban population is involved in them. Their role in keeping Cubans vigilant against possible invasion is clearly important. These committees also play a social role—for instance, organizing neighborhood birthdays or parties for those entering military service. At the same time, they act as the eyes of the society by watching out

Cubans, both men and women, appear to believe that men are incapable (presumably biologically) of taking care of children.

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for shirkers, children not attending school or individuals with anti-government positions. For those who are not strong supporters of the system, the CDRs can be an oppressive force. They are often cited by refugees as one of their reasons for leaving Cuba. Members of the CDR will defend this role, saying that Cuba is a poor country, struggling to develop and faced with the constant threat of U.S. intervention. They will say that Cuba cannot afford people not working and opposition to government policies. People who are not supporters of the current government can also suffer in terms of benefits that they receive.

Some might argue that given the threat from the United States, these policies and institutions are necessary. However, in the long run, the continuation of these policies, to my mind, can only be destructive to a society.

Another problem, which I believe is independent of the nature of the political system, is the famed Latin machismo. Women have made great advances in Cuba since the revolution. They have advanced substantially in terms of entry into the professions. In science, it appeared to me that about 50% of the researchers were women. In the CIB, none of the group leaders were women. But in the Microbiology section of the Animal Health Institute, several group heads were women. I asked about women in mathematics, since that has been a controversy in the U.S. over the last several years. I described how there had been a lot of publicity for a study from Johns Hopkins University which purported to show that women were genetically inferior to men in math ability.[7] They laughed. It was the kind of argument that seemed ridiculous to them. Of 7500 university graduates in mathematics and the natural sciences this year, 4600 will be women.

And yet Cubans, both men and women, appear to believe that men are incapable (presumably biologically) of taking care of very young children. Day care centers are staffed only by women. There are very good maternity leave policies and day care facilities. Men in Cuba are required to work. While Cuban women are encouraged to work, there is no such requirement.

A family law passed several years ago requires that men and women share housework equally. However, when we asked men about this, we got responses such as "Sure we share equally. I dirty the dishes and she washes them." It would appear that the government is more advanced than our own in promoting women's rights, but that the culture makes it very difficult to achieve.

The macho culture is also used as a partial explanation of Cuban treatment of homosexuals.[8] This maltreatment reached its apex in the mid-1970s when many gay men were put into "reeducation" camps. Cubans now say that those policies were a mistake. Yet they will also say that as a people they do not like homosexuals. "Don't you really think that it's unnatural?" one Cuban asked us. As a result, homosexuals still do not fare very well in Cuba. Our sense from what we have read is that, in a society where many of the extra benefits go along with adherence and support of the system and its morality, homosexuality would be a strike against you. To our knowledge, the government which actively persecuted homosexuals at one point does nothing to promote "equal rights" for them in the face of these attitudes, as they have done for women.

There is simply very little in the way of clash of ideas.

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Conclusion

As in any society, Cuba has its plusses and minuses. However, we were so impressed with the dedication of the people we met to improving so many aspects of the average citizen's life and in promoting equality, that we consider ourselves supporters of their efforts. At the same time, we see aspects of the society that we feel will be destructive to their long-range goals. I doubt, for instance, that their science can really be as creative as they would like, without a change to a more open educational system and society. Cuba is in evolution. Significant policy changes have taken place during the course of the history of the revolution. We can hope that those features of the society that seem detrimental will also change. It is important for those of us who support their efforts to also offer our criticisms and not hide them for fear of doing a disservice to the revolution.[9]

NOTES

1. I have not used the real names of these men, as I was not sure how they would feel about the relating of their personal stories.

2. R. Ubell, *Nature* 302: 745-748 (1983).

3. Although the ownership of cars in Cuba is increasing, most people still do not have one. However, many of the scientists had cars, presumably because of the priority given science, the dedication of these individuals to their work and the necessity of a car for traveling back and forth to the institute late at night.

4. While there are representative structures in Cuban society (e.g. the Popular Power system), many of the decisions are still made at the top, and in particular, by Fidel Castro. Castro has always shown a strong interest in science, and the establishment of this particular institute is, from what I learned, one of his pet projects. While it is impressive how fast the Cubans have moved in this area, the nature of the ways in which decisions like this are made could be considered a problem.

5. Many of the statements and statistics presented here have been confirmed by reading numerous sources. In particular, a U.S. State Department handbook on Cuba has provided presumably "unbiased" confirmation of information provided by Cuba and its supporters. (J. Black et al., *Area Handbook for Cuba*, Superintendent of Documents, U.S. Government Printing Office, Washington, 1976.) The most recent statistics were obtained from a speech by Fidel Castro at the 1984 Congress of Pediatrics in Cuba (Editora Politica, Havana).

6. See M. Benjamin, J. Collins and M. Scott, *No Free Lunch* (Institute for Food and Development Policy, San Francisco, 1984) for a detailed look at the food situation and system in Cuba today.

7. J. Beckwith and J. Durkin, *Science for the People* 13, #5, 6-9, 32-35 (1981).

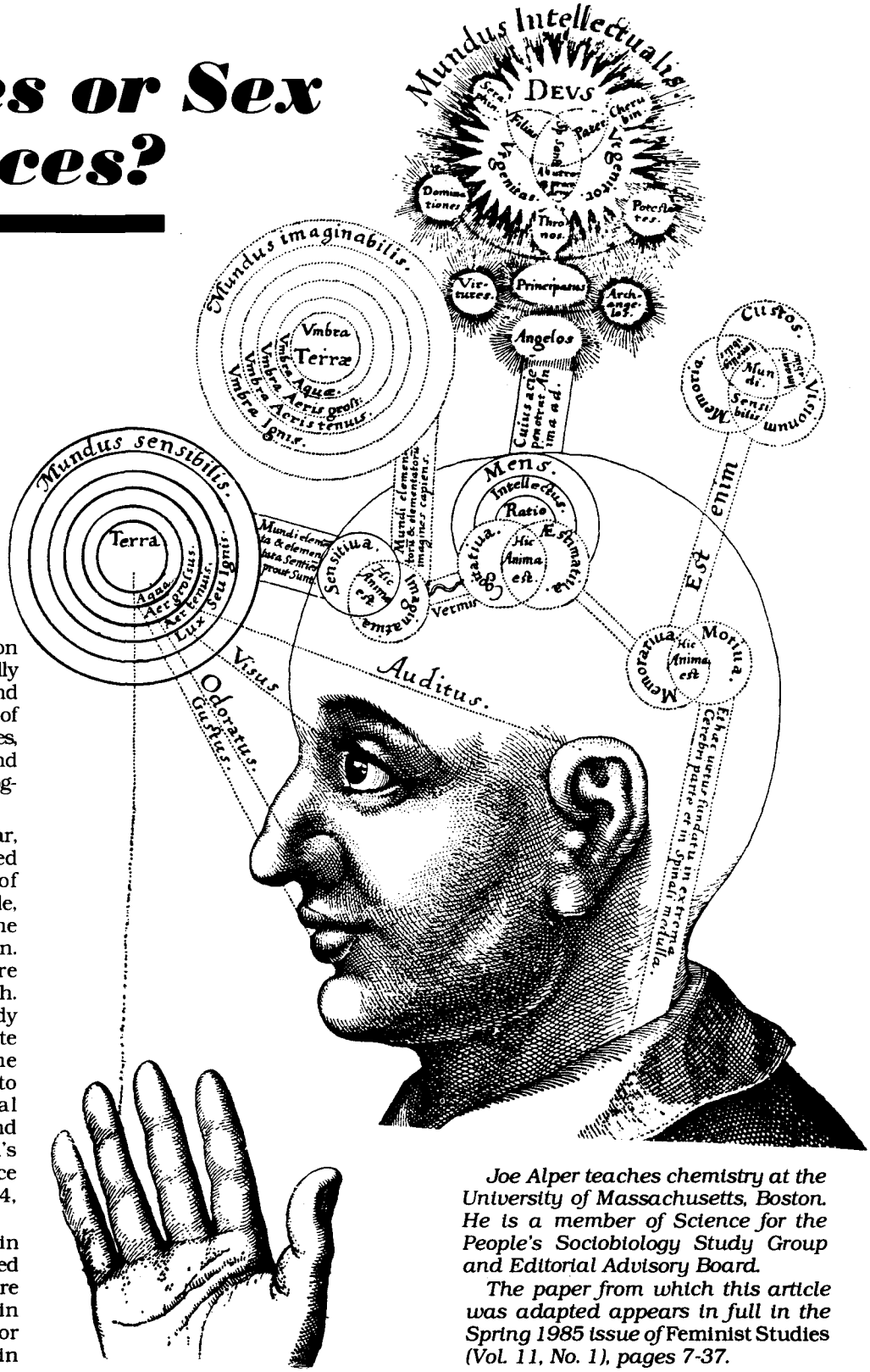
8. A. Young, *Gays Under the Cuban Revolution*, Grey Fox Press, San Francisco (1981).

9. Other useful sources are S. Halebsky and J. Kirk, eds. *Cuba: Twenty-five Years of Revolution, 1959-1984*, Praeger, New York (1985); J. Kozol, *Children of the Revolution*, Delta, New York (1978); and R. Levins, "Cuban Science," Science for the People 13: 29-33 (1981).

BRAIN ASYMMETRIES

Sex Roles or Sex Differences?

by Joe Alper



Sex differences are a fascination of our society. The supposedly vast gulf between women and men has been the subject of endless newspaper articles, jokes, cartoons, conversations—and now, more than ever, psychological experiments.

As reported in these pages last year, the popular press has trumpeted eagerly the pronouncements of various scientists that immutable, inherent differences exist between the sexes in the way they think and reason. These supposed differences are becoming accepted as scientific truth. Recently, a field of psychological study has arisen attempting to attribute cognitive differences between the sexes to what some scientists claim to be structural and functional differences between women's and men's brains. (See Barbara Beckwith's "How Magazines Cover Sex Difference Research," SftP, Vol. 16, No. 4, July/August 1984.)

Modern theories of sex differences in brain structure and function are based on the presumption that the sexes are characterized by innate differences in cognitive abilities: women are superior in verbal skills; men are superior in

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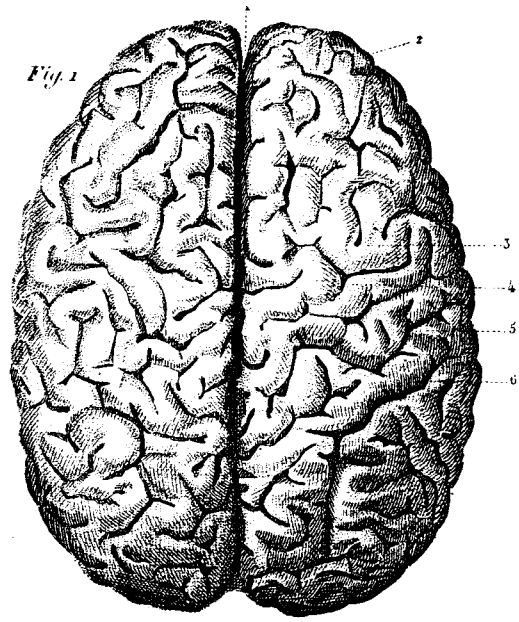
"Are there certain types of jobs that are more or less suitable for females—such as air traffic control?"



nonverbal and visuospatial skills. Because socialization of the sexes begins at birth, a separation of biological and environmental influences on behavior is impossible. Studies maintaining that cognitive differences are genetic generally ignore many of the environmental influences on behavior and analyze in an oversimplified fashion those influences that are considered.

Brain Research

Theories attributing differences between the sexes to brain structure and function date back well over a hundred years.[1] Paul Broca, perhaps the most famous of the nineteenth century brain researchers, found a large difference between the average weights of a group of male and female brains (1325 grams in men, 1144 grams in women). Stephen Jay Gould, who analyzed Broca's results, discovered that this difference nearly disappears if corrections are made for differences in body size between men and women, and for age and cause of death.

In 1906, a Virginia physician, Robert Bennet Bean, claimed that the sexes differed in the relative sizes of various anatomical features of the brain. This work was discredited in 1911 by Franklin P. Mall, Bean's mentor at Johns Hopkins, who repeated Bean's experiments while keeping himself in ignorance of the sexes of the brains prior to measurement. Mall found no sex differences at all.[2]

The study of the human brain as the source of sex differences in behavior is experiencing a recent renaissance. Because researchers in this field study a material entity which obeys the laws of the natural sciences, they enjoy the higher status conferred upon researchers of the "hard" sciences. Thus their conclusions are assumed to be "more true" than those obtained by other means of inquiry.

Scientific results in the field of brain research can be used more readily to legitimize social policy.[3] In particular, theories linking behavioral sex differences to dissimilarities between the brains of men and women have become a preferred vehicle for explaining and, by implication, justifying the continued existence of sex-based social roles.[4]

The supposed connection between cognitive differences and brain differences is based on the fact that the left and right hemispheres of the human cerebral cortex differ in function.[5] In general, the left hemisphere specializes in verbal tasks, the right hemisphere in nonverbal tasks.

The most significant work in this area was done by Roger Sperry and his co-workers. They found dramatic effects of brain asymmetry in split-brain patients, people whose nerve fibers connecting the two cerebral hemispheres have been severed as a means of treating certain types of severe epilepsy. As a result of this isolation of the two hemispheres, seizure activity is abated without dramatic changes in the patients' personality, behavior, or intelligence.

There are, however, some remarkable though subtle changes. In 1968, Sperry found that if a picture of a cup is flashed on a screen so that the image is accessible only to a patient's right visual field (and so reaches only the left brain), the patient is able to say that she has seen a cup. If the image of the cup only reaches the right brain, the patient reports that she has seen nothing. But with her left hand (the hand controlled by the right brain) she is able to select the cup purely by feel from a set of several objects.[6] This experiment and others like it provide convincing evidence for the hypothesis that the left and right hemispheres of the human brain differ in their function.

Within a few years of this work, researchers began looking for sex differences in the degree of brain lateralization (that is, asymmetry between the two hemispheres) to show that alleged cognitive differences between men and women are rooted in variation in the structure of their brains. Theories of sex differences hypothesize that men's brains are more asymmetric than women's, claiming more variance between the left and right hemispheres in men than in women. This difference is supposed to account for both the verbal superiority and the visuospatial inferiority of women.

Aside from vague speculations about the "interference" of verbal and nonverbal processes in the "more symmetrical" female brain, no mechanism has yet been suggested for the relation between brain asymmetry and mental ability. Nevertheless, it is widely believed that the existence of sex differences in brain asymmetry would provide a scientific explanation of the cause of intellectual and occupational differences between the sexes.

Research in the field of sex differences and brain asymmetry is usually categorized by the various types of empirical studies employed.[7] *Clinical* research focuses on patients who have suffered damage to one side of their brain, usually as a result of a tumor or stroke. The researcher investigates the effect of this damage on cognitive function and, in particular, examines the relationship between the location of the damage, the amount of loss of skill (verbal or nonverbal), and the sex of the patient.

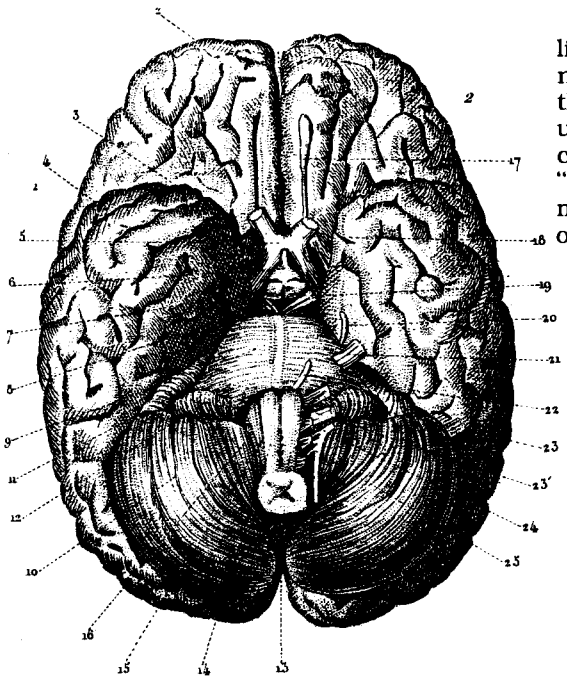
Normative research examines auditory visual, and sensorimotor function in healthy people. This research is based on the fact that the right brain controls the motor functions on the left side of the body and vice versa. Information is sought about the differences between the two sides of the brain in processing sensations and controlling motor skills. *Physiological* studies include examination of electroencephalogram (EEG) patterns and measurement of blood flow in each cerebral hemisphere. Measurements are made while the subject is at rest

and while performing various mental activities. *Anatomical* studies look for structural differences in the two sides of the brain.

Sex Roles & Differences

Obviously, a person's sex is crucial for determining his or her role in reproduction. But why should sex determine social, economic, or even familial roles? For the social sciences, sex is important because nearly all societies deem certain roles appropriate for each of the sexes. But this is a social fact. The existence of social roles does not prove that women and men differ in cognitive functions or in their intellectual and emotional capacities. Nevertheless, social scientists continue to theorize that sex differences in cognition and behavior are biological in origin and that these differences are responsible for, to give one example, the relatively small number of women in the physical sciences.[8]

However, differences in intellectual ability large enough to account for such role disparity have not been supported by research findings. Researchers who are not concerned with sex differences examine disparities between the two brain hemispheres in performing various types of cognitive activity. Researchers attempting to find sex differences look at variations between women and men in the functioning of the two sides of the brain. This "difference within a difference," or second-order effect, is much smaller and harder to observe than the primary effect of brain asymmetry.



The difference between the mental abilities of women and men (the *inter*group variation) is measured in terms of the difference found within each sex (the *intra*group variation). The standard deviation of a group, a measure of the intragroup variation, is defined so that 68% of the people of that group fail within a range of two standard deviations. According to a recent textbook on brain asymmetry by Springer and Deutsch, "Sex differences in higher mental functions (the intergroup variations) are typically on the order of one-quarter of a standard deviation."[9]

Given the fact that the intragroup variation is much larger than the intergroup variation, why is there so great an interest in the intergroup differences? Why don't brain researchers focus their attention on the causes of the large variation within each sex?

The decision to investigate the smaller difference between the sexes suggests that the focus of this field of research is not on brain differences but rather on sex differences. The field owes its existence to a single nonscientific premise: that the category of sex is important for a scientific understanding of human cognitive and behavioral diversity. While sex is an interesting category within our culture, it has not been proven to have any particular relevance for understanding brain function. This focus on sex introduces nonscientific values into the field of brain research and, in addition, has a tremendous impact on both the political implications and the scientific value of the field.

Testing Cognitive Ability

At present we know comparatively little about how the brain works. We do not know the units of information that the brain processes (assuming such units exist). Does the brain build up complex cerebral skills out of the same "atomic" procedures and in the same manner as cognitive psychologists theorize?

What is the connection between the neurons (or even grosser anatomical features of the brain) and cognitive function? How does the firing of neurons lead to the knowledge that 2 plus 2 equals 4? How anatomically localized is brain function with respect to the higher mental functions of the type we are interested in? In what way do various factors such as age, training and schooling, and cultural milieu—as well as sex—influence the manner in which our brains work and develop?

In terms of the cognitive tests themselves, the question remains whether researchers actually test brain function or, as is more likely, test abilities that we as social beings believe are important. Moreover, there is not even agreement among the researchers about what is being measured, and this is reflected in the wide variety of tests used. Verbal tests range from those measuring intelligence to others testing vocabulary or the ability to make analogies. Nonverbal tests range from figure completion skills to line orientation to the ability to perceive embedded figures.

The problem of evaluating the results of studies based on different tests is readily apparent. Can results based on a test of embedded figures be compared with one based on line orientation? Are both tests measures of the same entity we call spatial ability? Are the same parts or functions of the brain being tested? The answer to any one of these questions is not clear. The conclusion remains that there is no reliable theory of the relationship between various forms of cognitive abilities, and it may very well be that each test is measuring something different.

In studies of brain function that disregard sex differences, the large variations between normal and abnormal function (as measured by means of cognitive exams like the IQ test) will presumably appear in just about any environment. Consequently, the problem of controlling for the environmental variables that affect mental

The variation in cognitive function between the sexes is small compared with the variation in the overall population.

test scores is not formidable. For studies of sex differences in brain function, however, the cognitive differences in question are small—on the order of a few points on an IQ test—so that conclusions drawn from the studies are extremely sensitive to the wide variety of variables that can affect IQ scores.[10]

These variables, such as age and socioeconomic status, cannot be ignored as they can be in studies comparing normal and abnormal brain function. Under these circumstances, it is virtually impossible to perform controlled studies of sex differences in brain asymmetry and cognitive behavior. As the field stands now, none of the studies or experiments can be relied upon because of the hopeless confusion caused by the multitude of uncontrolled variables. In view of our ignorance of brain function, it seems arbitrary to focus attention on the small variation due to sex differences as a means of understanding brain function. Again, this focus can only be explained by the preoccupation in our society with sex and sex roles.

Lateralization Studies

Elizabeth J. Martin notes that "normal differences in cerebral vascularization between men and women, as well as consistent differences in the locus and extent of vascular accidents between the sexes, may account completely for the differences in testing results. Cerebral asymmetry, unless defined as vascular asymmetry, may not even be a factor."[11] And Dianne McGuinness points out that men are more right-eared than women (men hear better with their right rather than left ears) and that this asymmetry, not brain asymmetry, is responsible for the sex differences found in dichotic listening tests.[12] These two examples of the types of confounding variables which complicate the interpretation of brain lateralization studies illustrate the problematic nature of such studies.

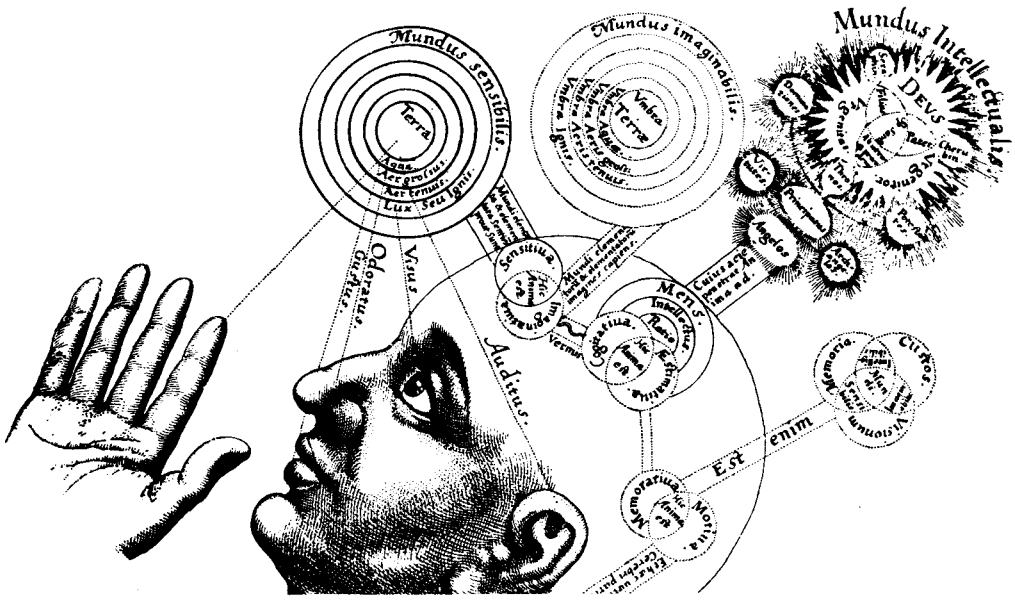
In clinical studies of brain asymmetry, the subjects are taken as they are found in the hospital ward. The sample is by no means a random representation of the entire population. In general, the patients are much older than the median age of the region, because the incidence of strokes and tumors increases with age. The distribution of races, classes, and other socioeconomic indicators are usually not random either, especially if the patients are chosen from one hospital. A public or private, urban or suburban hospital will have its own particular mix of patients. The very fact that the patients are ill adds another nonrandom variable to the sample.

The sampling errors in the normative and physiological studies are even more obvious. First, nearly all studies examine United States or Canadian subjects. The sex differences found could easily depend on the particular type of educational and social systems characteristic of North American societies. Second, most of the studies reported in the literature are performed by university professors. Their samples invariably consist of students in their classes or student volunteers. Students are selected for admission to universities at least partially on the basis of scores they achieve on the same sorts of cognitive tests used in the brain lateralization studies.

Such samples are not random and cannot be used to draw conclusions about the entire population. Researchers are not justified in assuming that sex differences in cognitive function in these highly atypical samples are the same as they are in the general population.

In their book *Left Brain, Right Brain*, Springer and Deutsch maintain that a large number of studies using a wide diversity of methodologies all point to the conclusion that females are less lateralized than males. They believe this conclusion is supported by the fact that most of the studies that do not support this conclusion find no sex differences at all, and only a small number find sex differences in the opposite direction.

There is no logical, scientific, or biological necessity for the linkage between social roles and sex.



In 1980, sex-based lateralization was reviewed in *The Behavioral and Brain Sciences*.[13] Jeannette McGlone, one of the leading researchers in the field, contributed an extensive survey which has become the canonical reference for the subject of sex differences and brain asymmetry. Although McGlone is firmly convinced that male brains are more asymmetric than females', she is extremely cautious in her conclusions and remarkably fair in presenting evidence supporting alternative conclusions. The review also contains commentaries on McGlone's article by 33 of the leading researchers in the field and her response to these commentaries.

A study of McGlone's review article reveals that most studies are of such poor quality (according to her standards) that no conclusions concerning sex differences can be drawn from them. Even McGlone's own studies are seriously flawed as judged by the commentaries. In addition, it is not true that the overwhelming majority of the studies find sex differences. Moreover, the majority of the commentators on

Despite the fact that women are physically weaker than men on the average, there are now women coal miners in Appalachia and women firefighters in New York City.

McGlone's article believe that there is, as of now, no convincing evidence for sex differences, or they take the stronger position that sex differences in brain lateralization do not exist.

Social Conclusions

Although most researchers are exceedingly cautious about drawing social conclusions from their scientific findings, some are not so reticent.Charles S. Rebert believes that sex differences in visuospatial processes "would seem to have practical implications for females in the work force. Are there certain types of jobs that are more or less suitable for females—such as air traffic control?"[14] Rebert's guess is that "to the extent they exist, sex differences in that dimension will indeed matter, whether explicitly recognized by society or not." Sandra F. Witelson suggests that separate school programs be designed to best suit the abilities of each sex.[15]

Even if the reported sex differences are innate, policy decisions such as those suggested in the preceding paragraph would be mistaken on purely pragmatic grounds. Assuming the intersex difference of one-quarter of a standard deviation suggested by Springer and Deutsch, approximately 40% of all women would score above 50% of men in visuospatial ability. Assigning educational programs or job categories by sex would therefore waste a huge amount of talent.

Even if sex differences were real and were much larger than is now believed, the dual track suggestions are not warranted. For example, despite the fact that women are physically weaker than men on the average, there are now women coal miners in Appalachia and women firefighters in New York City. If some particular characteristic is needed for a job, possession of the attribute itself should be the criterion for the job, not some other criteria, like sex, which might be correlated with that characteristic.

Even if sex differences were real and ineradicable, people should be treated as individuals and not as members of a particular sex. Rebert's remarks are repugnant because he does not regard people as individuals. Notice his use of the biological term "female" where the context demands the social term "woman."

Being treated as an individual and enjoying equal opportunity should be a fundamental right in our society. Equal opportunity means that the categories of race and sex cannot be used for the purposes of discriminating against individuals. This right is not in conflict with affirmative action programs which attempt to overcome the historical, social, and economic effects of discrimination against women, racial, ethnic and other minorities.[16]

The research field of sex differences in brain asymmetry owes its existence to the search for sex differences and the belief that sex is a fruitful category for understanding cognitive function in people. The variation in cognitive function between the sexes is small compared with the variation in the overall population. Because we have no theory of brain function which would enable us to analyze the small intersex variation, the focus on sex differences cannot lead to significant scientific progress.

There is a long history of theories which state that the social and economic differences between the sexes[17] and among the races[18] are due to biological differences between the groups. All of these theories were put forward by recognized and distinguished scientists of their day. As each theory was discredited, a new one arose to take its place. Although each theory surpassed its predecessor in terms of sophistication and in its use of the most recent mathematical and scientific advances, essentially no progress has been made towards biological understanding of group differences in attributes like intelligence (assuming that such differences are real).

There is no reason to believe that the research field of sex differences in brain asymmetry will meet with a kinder fate. All of these theories have been based on the notion that group differences reflect an essential difference in the humanity of the members of these groups. This is a notion that has proved to be totally bankrupt, not only morally, but also scientifically, and should be rejected once and for all.

NOTES

1. Janet Sayers, *Biological Politics: Feminism and Anti-Feminist Perspectives* (London: Tavistock Publications, 1982).

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3. Jurgen Habermas, *Toward a Rational Society* (Boston: Beacon Press, 1970), Chapter 6; Alvin W. Goulder, *The Dialectic of Ideology and Technology* (New York: Seabury Press, 1976).

4. Jo Durden-Smith, "Male and Female—Why?" *Quest/80*, October 1980, p. 15-19, 93-98.

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6. Roger W. Sperry, "Hemisphere Deconnection and Unity in Conscious Awareness," *American Psychologist* 23 (1968): 723-733.

7. Sally P. Springer and Georg Deutsch, op. cit., Chapter 6, p. 121-130.

8. Edward O. Wilson, *On Human Nature* (New York: Bantam, 1979), p. 138.

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10. Michel Schiff, Michel Duyme, Annick Dumaret, and Stanislaw Tomkiewicz, "How Much *Could* We Boost Scholastic Achievement and IQ Scores? A Direct Answer from a French Adoption Study," *Cognition* 12 (1982): 165-196.

11. Elizabeth J. Martin, "Inadequate Criteria for Hypothesis Testing in Cerebral Asymmetry Research," in Jeannette McGlone and commentators, *The Behavioral and Brain Sciences* 3 (1980): p. 243.

12. Diane McGuinness, "Strategies, Demand, and Lateralized Sex Differences," in Jeannette McGlone and commentators, op. cit., p. 244.

13. Jeannette McGlone and commentators, "Sex Differences in Human Brain Assymetry: A Critical Survey," op. cit., p. 215-263.

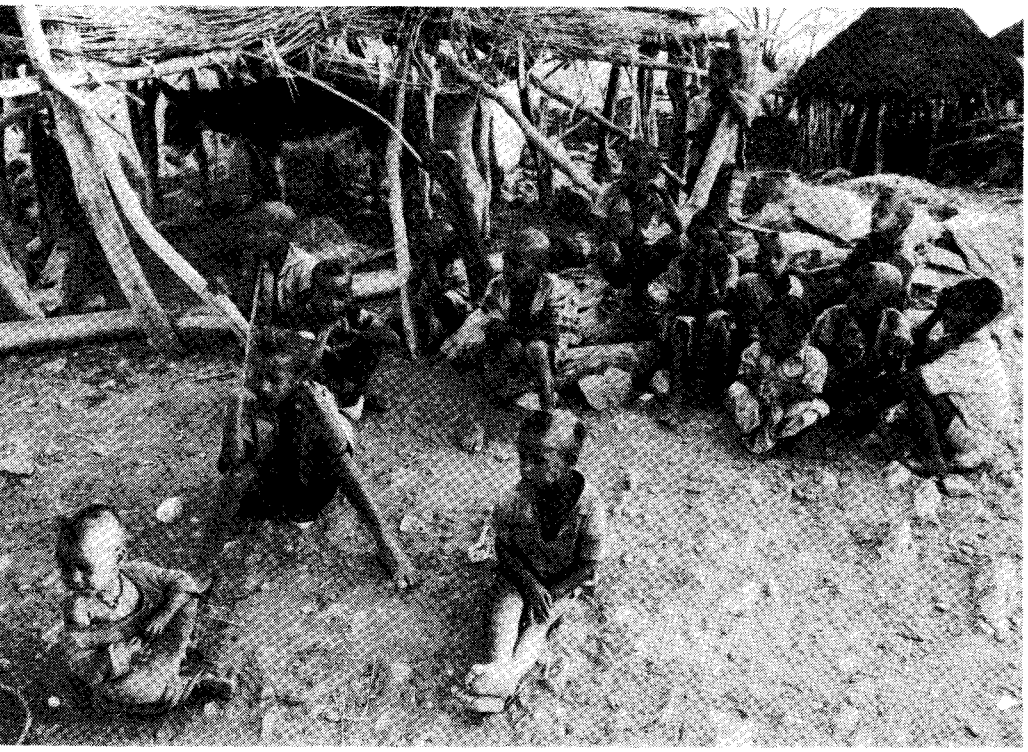
14. Charles S. Rebert, "Sex Differences in Complex Visuomotor Coordination," in Jeannette McGlone and commentators, op. cit., p. 246-247.

15. Sally P. Springer and Georg Deutsch, op. cit., p. 129.

16. For a more rigorous and complete discussion of equal opportunity and affirmative action, see Philip Green, *The Pursuit of Inequality* (New York: Pantheon, 1981).

17. Ruth Hubbard, Mary S. Henifin, and Barbara Fried, *Biological Woman: The Convenient Myth* (Cambridge, MA: Schenkman, 1982).

18. Allan Chase, *The Legacy of Malthus: The Social Costs of the New Scientific Racism* (New York: Knopf, 1977).



Dan Connell/Grassroots International

MYTHS OF AFRICAN HUNGER
continued from page 17

to the 48 countries of sub-Saharan Africa, nearly half goes just to four countries (Sudan, Somalia, Kenya, and Liberia). These countries contain only 12 percent of sub-Saharan Africa's population, and their governments do not follow policies favoring the majority, but they have naval bases, CIA listening posts, or other strategic assets.[16]

The U.S. government uses foreign aid as a political tool. In 1981 when the government of Mozambique expelled several U.S. officials for spying, the Reagan administration cut off all food aid even though thousands of Mozambicans were facing starvation. Washington slashed aid to Zimbabwe by nearly one-half after Robert Mugabe's government differed with the United States on two U.N. votes dealing with the Soviet downing of a Korean airliner and the U.S. invasion of Grenada.

While punishing these governments who have demonstrated a commitment to helping the poor, Washington lavishes aid on corrupt regimes such as that of Mobutu Sese Seko in Zaire. Mobutu is one of the richest men in the world, but most Zaireans live in desperate poverty, suffering from malnutrition, lack of health care, and high infant mortality. Despite his mismanagement of Zaire, Mobutu has received billions of dollars from U.S. banks and the U.S. government because his country has important mineral reserves and he is staunchly anticommunist.

Nearly all U.S. foreign aid is directed to repressive elites who have enriched the few while impoverishing the many. They use U.S. aid money to strengthen their hold on power. Given the undemocratic nature of these regimes, U.S. aid is more likely to perpetuate poverty than eliminate it.

Myth Six: Donating surplus American food is the best way to help alleviate hunger in Africa.

Most people's attention has been focused on giving food aid. As we've pointed out, however, food aid, at best, is only a short-term palliative. It does nothing to solve the underlying problem of poverty. Only by taking active responsibility for what U.S. corporations and the U.S. government are doing to perpetuate inequality can we confront the real causes of hunger in Africa.

Given widespread misunderstanding about what is wrong in Africa, we need to educate ourselves about the real causes of poverty there.

A good introduction to the current situation in Africa is the September 1984 issue of *New Internationalist*, 113 Atlantic Ave., Brooklyn, NY 11201. A reliable weekly that covers all of Africa is *Africa News*, P.O. Box 3851, Durham, NC 27702.

An excellent book on West Africa is Richard W. Franke and Barbara H. Chasin's *Seeds of Famine: Ecological Destruction and the Develoment Dilemma in the West African Sahel* (Montclair, NJ; Allanheld Osmun, 1980). On the role of multinational corporations, see Barbara Dinham and Colin Hines, *Agribusiness in Africa* (London: Earth Resources Research Ltd., 1983).

Food First is now distributing a new book by our Issues Analyst, Kevin Danaher, *In Whose Interest: A Guide to US-South Africa Relations* (Washington, DC: Institute for Policy Studies, 1984).

For a broad range of audiovisual materials contact the Southern Africa Media Center, 630 Natoma Street, San Francisco, CA 94103 (415) 621-6196.

There are many ways other than aid that the U.S. helps undemocratic governments. For example, through trade, investment, intelligence cooperation, and diplomatic support, the United States is the key international ally of South Africa's apartheid regime. The white minority government has purposely impoverished the Black majority to ensure a docile work force willing to work for low wages. In addition to preventing the Black majority from exercising basic rights such as voting and choosing where to live, the white minority government has so impoverished Blacks that *an average of 136 Black children die from hunger every day.*[17]

South Africa also launches military attacks on neighboring countries, targeting their food systems for destruction. A key reason why countries with great agricultural potential such as Angola and Mozambique have been unable to develop their agricultural sectors is the ongoing sabotage of South African-backed terrorists.

Working to end U.S. corporate and government support for South Africa's white minority regime is a direct way to put ourselves on the side of the hungry. The following groups have solid track records in the fight against apartheid: The Free South Africa Movement, c/o TransAfrica, 545 8th St., SE, Washington, DC 20003 (202) 547-2550; the American Committee on Africa, 198 Broadway, New York, NY 10038 (212) 962-1210; and the Washington Office on Africa, 110 Maryland Ave., NE, Washington, DC 20002 (202) 546-7961.

NOTES

1. *Africa News*, October 8, 1984, p. 2.
2. See Chapters 3 and 4 of Richard W. Franke and Barbara H. Chasin, *Seeds of Famine: Ecological Destruction and the Development Dilemma in the West African Sahel* (Montclair, NJ: Allanheld Osmun, 1980).
3. "Africa's Development Crisis: Looking Beyond the Famine," Overseas Development

Council, 1984, p. 4.

4. Carl K. Eicher and Doyle C. Baker, *Research on Agricultural Development in Sub-Saharan Africa: A Critical Survey* (East Lansing, MI: Michigan State University, 1982), p. 52.

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6. Oxfam America, "Hunger and Population," Facts for Action, #7, p. 2.

7. UNICEF, *State of the World's Children, 1984* (Oxford: Oxford University Press, 1983).

8. *World Development Report, 1984*, p. 162.

9. For a detailed analysis of this process see Robert H. Bates, *Markets and States in Tropical Africa: The Political Basis of Agricultural Policies* (Berkeley: University of California Press, 1981).

10. Alan Grainger, *Desertification: How People Make Deserts, How People Can Stop, and Why They Don't* (Washington, DC: Earthscan, 1982), p. 48.

11. "Zimbabwe Farms Prosper as Industrial Growth Lags," *Los Angeles Times*, 1 April 1985, p. 1.

12. "Africa's Debt Crisis," Note 84-31, 13 July 1984, Interfaith Action for Economic Justice, p. 2.

13. Ibid.

14. Seth S. King, "Worldwide Food Production Levels Show a Big Rise," *New York Times*, 2 December 1984, p. 12.

15. *Why the Poor Suffer Most: Drought and the Sahel* (Oxford, England: Oxfam, 1984), p. 12.

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17. "The poverty of apartheid," *The Economist*, June 2, 1984, p. 73.

WHY ARE AFRICANS DYING?
continued from page 14

These actions are intended to "rationalize" African economies by freeing up money for local investment and by stimulating local markets. However, they push rural subsistance farmers beyond their ability to support themselves. They also tend to spark urban unrest.

Increased unrest can escalate into costly and destructive counterinsurgencies which feed the spiral of militarization, indebtedness, and economic dislocation. Internal unrest can also lead to confrontations with neighboring states which may erupt into full-scale wars.

The strain is felt most strongly by the small producers in the countryside who receive little or nothing of international economic assistance, regardless of whether the country is pro-West or pro-Soviet. Imported farm equipment rusts in untended fields for lack of spare parts, fuel, or trained mechanics. Corrupt elites squander surpluses on personal consumption or on bloated armies, while Washington and Moscow reap the benefits of new arms markets.

The Solution

Africa's current economic crisis is structural—it is rooted in unequal relations between nations and within divided societies. The international response to this crisis, if it is to be at all effective, must be comprehensive and sustained. It must also foster genuine economic and social development based upon principles of equality and democracy within African societies and between African states and the world's industrial nations.

In the short term, this means devoting increased attention and resources to literacy campaigns, agricultural extension programs, public health projects, leadership training, community organizing, and institutional development. At the same time, support must increase for integrated rural and urban development that empowers the poor through education, training, and direct involvement in project planning and implementation.

The most urgent long-term issue is the cancellation of the multi-billion dollar debt that African states bear. Inequalities within African states need to be redressed through programs targeted at small producers, ethnic minorities and women, not through self-serving elites. Meanwhile, as long as East-West competition for influence fosters an African arms race, surpluses that do accrue may be wasted on weapons of war.

Present trends are leading Africa and the world as a whole down the road to global disaster. Private voluntary organizations like Grassroots International have both a special opportunity and a fundamental obligation not only to provide immediate relief to the victims of individual disasters, but also to grapple with their causes to mobilize our domestic constituencies to support lasting solutions to poverty, injustice, and war.

The death and displacement of millions of Africans are more than moral tragedies—they are a warning that the time has come for deep-rooted change. The stakes are too high to do any less.

In Brief

Feeding the Few:
Corporate Control of Food
Ill Fares the Land

by Susan George

Institute for Policy Studies: 1979, 79 pp., $4.95; 1984, 102 pp., $5.95

These two books provide much information on the connections between agribusiness's quests for profits and the social costs borne by the agrarian societies of the Third World. *Feeding the Few* focuses on the New International Economic Order, a proposal put forth by Third World nations for a reform of North-South trade that would attempt to correct the imbalances built up by four centuries of colonialism. George first analyzes the proposal itself in light of internal stratification of many Third World economies, and the role of arms trade in maintaining elites in post-colonial nations. Then she shows how multinational corporations and northern hemisphere governments have responded with their own international economic order of cash crop exports, agricultural technology and "developement" aid. Of particular interest is her insight into the connection of victories of farm laborers and independent farmers in the US to agribusiness penetration of the farm economies of Latin America and Africa. Though a brief 79 pages, *Feeding the Few* is a crammed with facts, statistics and charts that give a solid historical perspective to the ongoing food crisis.

Ill Fares the Land, George's most recent book, is a collection of articles, speeches and political satire on the power relationships between the over- and underfed. The approach is less scholarly than the previous book, but her insights are equally compelling. Technology transfer, development policy formation, class differences in former colonies, and possible responses to the crisis are confronted. The overview suggests that hunger is a world phenomenon whose components reach into all our lives. Thus the solution to hunger in Ethiopia may require profound changes in the economy of Kansas.

Fed Up!
The Food Forces That Make You Fat, Sick and Poor

by Brett Silverstein

South End Press, 1984, 160 pp., $8

Silverstein delivers a freeswinging assault on the food industry. His style is sarcastic, indignant and impassioned in short chapters that alternate between accounts of individual foods (The Chicken Story, The Bread Story, The Soybean Story) and portraits of food marketing, nutrition education, eating disorders, and the government's hand in food production and distribution.

The book is a valuable tool for those who want to take more responsibility for their own nutrition, as Silverstein exposes the manipulative and deceptive practices of producers, advertisers and grocers. His chapters on "natural" foods exposes the meaninglessness of this label on most items, equivalent to "new and improved" or "rich and flavorful" as a marketing slogan of no nutritional significance. Eating disorders and the role of the media in defining women's body images are also examined.

Food Fight
A Report on Teen-agers' Eating Habits and Nutritional Status

by Laurie Olsen

Citizens Policy Center, 1515 Webster St. #401, Oakland, CA 94612, 1984, 72 pp.

The pathetic and horrifying attitudes and eating habits of young people are explored in this detailed study. Olsen includes quotes from teenagers about self-image, dieting, excercise, and binge eating as well as the usual statistics, graphs and poll results.

A grim picture emerges of young people whose lack of knowledge and self confidence makes them vulnerable not only to bulimia and anorexia but the coronary and vascular diseases acquired from years of poor eating habits. Though 96% of teenagers know excercise is important, most define the importance as cosmetic: "looking good" is more important than being healthy. Many equate good nutrition solely with regulating sugar intake and avoiding acne. Olsen's recommendations focus on schools as a forum for education and reform of eating habits. She has some common sense advice for parents as well. But the food industry and advertising in print and broadcast media are barely touched upon.

So Let's Start Giving
National Student Campaign Against Hunger

Sponsored by national Public Interest Research Groups

PO Box 252525, Los Angeles, CA 90025. Telephone 202/546-9707 or 617/423-1796 (Boston)

What can you do to fight hunger? The National Student Campaign Against Hunger is conducting an intensive campaign on high school and college campuses this fall, focusing on three areas of activity:

Fundraising for USA for Africa. Money raised through concerts, raffles and other fundraisers will be distributed for short-term hunger relief and long-term agricultural and economic development projects. Ten percent of the funds raised will be used for U.S. hunger programs.

Educational Forums. The campaign will sponsor speakers, films, and literature to spark concern and action about world hunger. Resources will be available for extra-curricular and classroom study and discussion.

Local Hunger Projects. Students will initiate projects in their communities. Possible projects include recruiting volunteers for local soup kitchens and arranging for distribution of surplus food from school cafeterias and local businesses. Students who conduct the most creative and effective anti-hunger projects will be honored by USA for Africa at the annual World Hunger Media Awards Ceremony at the United Nations in November.

Your Career and Nuclear Weapons:
A Guide for Young Scientists and Engineers

by the Santa Barbara Study Group

Peace Resource Center of Santa Barbara, 331 North Milpas St., No. F, Santa Barbara, CA 93103, $2

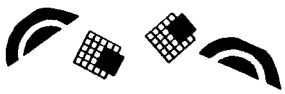
Those physics students surveyed in Berkeley (see Newsnotes) aren't alone. Many science students don't want to work for the military—although a third of US scientists and half of US physists are employed in military work. This booklet discusses the nuclear arms race and how it affects employment opportunities.

Nuclear Winter

Center on the Consequences of Nuclear War

1350 New York Ave. NW, 3rd Floor, Washington, DC 20005, $5/year

A newsletter geared for greater scientific and public understanding of the ecological consequences of nuclear war. The center provides resource information on nuclear literature, films, reports, conferences, and organizations. They also have a speakers' bureau of scientists available to discuss nuclear winter at conferences, forums and other events. Call 202/393-1448.

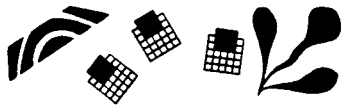


Health and the War Against Nicaragua, 1981-1984

by Richard Garfield RN, DrPH and David Siegel MD

Central America Health Rights Network, LINKS, Box 407, Audubon Station, New York, NY 10032, 1985, 20 pp., $2

While health care has improved since the Sandinista revolution, the *contra* war is threatening those gains and draining the health system in Nicaragua. This report contains statistics and an analysis of the long-term toll that war takes on third world health care delivery.



The Information Technology Revolution

edited by Tom Forester

The MIT Press (Cambridge, MA), 1985, 674 pp., $14.95

Tom Forester has compiled an impressive collection of essays from business writers, engineers, unionists and others on the front line of technological change. All but four of the 48 articles included were published from 1982-1984, and are arranged in chapters composed of introductory articles followed by case studies. Topics covered include the revolution in telecommmunications, artificial intelligence and the "fifth generation" of supercomputers, personal computers and homework, and the impact of new technologies on schools, factories, offices, banking, shopping and healthcare. Among the social issues discussed are computer crime, privacy, and the effect of computers on women, the third world, military policy and the future of work.

Making Waves
The Politics of Communications

Radical Science 16

Free Association Books (London), 1985, 176 pp.

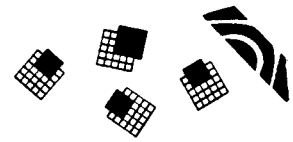
The current issue of Britain's *Radical Science* journal makes lots of waves by exploring radical possibilities in communication technologies. What does high-tech homework mean for women? Can infotech solve third world problems? What does "E.T." have to say about masculinity and technology? Other articles look at progressives' use of media technology: subversive cable programming in Texas, London's Community Radio Project, the Berkeley Community Memory Project's electronic bulletin board, and "Live from the Revolution"—Nicaraguan video projects.

Harvest of Peace

30 min., 16mm color film directed by Robbie Leppzer and produced by Lisa Berger

Turning Tide Productions, Box 1008, Amherst, MA 01004, 413/548-9375, $50 rental, $500 purchase

"This brigade is about a real international sense of peacemaking and of redefining the borders and boundaries of our lives." That view is echoed by other solidarity harvesters, who went to Nicaragua to share their labor as well as their presence for peace. Through a collage of images, music, and the narrative of Nicaraguan and American workers, the film documents the effect of the *contra* war on daily life, and the impact of the Nicaraguan spirit on US visitors. "The sensitive eye of the camera captures some of the most powerful and moving footage ever produced in Nicaragua," says Lucy Edwards of Other Americas News Service. You'll wish you were there, too.



Responding to the Rights of the Poor
Nicaragua, the Church and the US

by Jeanne Gallo, $3.50

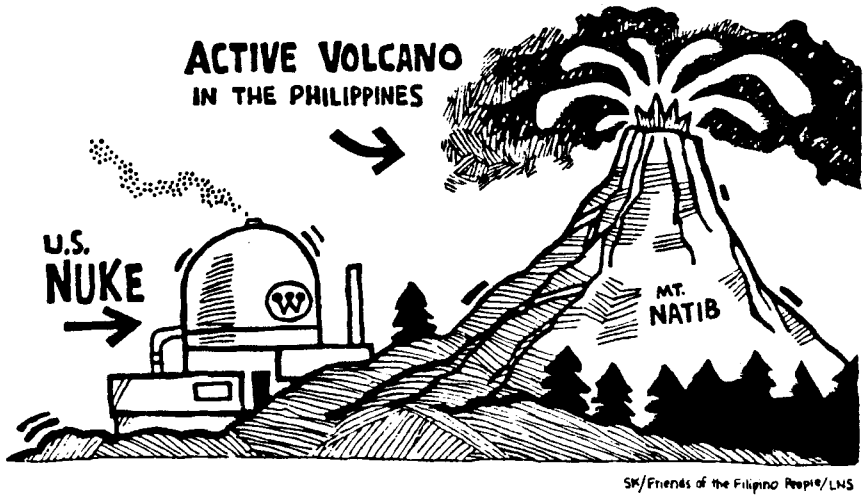
Nicaragua Libre

photos by Margaret Randall, edited by Jeanne Gallo, $10

Available from Gritare/Jeanne Gallo, SND, Emmanuel College, 400 The Fenway, Boston, MA 02115. Add 15% postage ($1 minimum).

Both of Jeanne Gallo's books focus on the struggle and courage of the Nicaraguan people. Her first book analyzes the implementation of human rights for the poor since the revolution, and the role of the US government and Nicaraguan Catholic Bishops in opposing those rights. *Nicaragua Libre* looks at life before and after the Somoza dictatorship through photos, statements and stories of the Nicaraguan people.

NUCLEAR STRIKE



by Zoltan Grossman

Morong, Bataan Peninsula, Philippines

Carrying torches to light their way up the coastal highway, thousands of marchers chanted together, "What is the answer to the nuclear plant? Strike, strike, people's strike!" Along the way, local villagers joined the march. Fishermen set off dynamite and churches rang their bells in greeting. The *welgang bayan*—people's strike—had begun.

From June 18 to 20, the people of Bataan carried out a general strike against the nuclear plant. All major transportation and businesses were paralyzed by human barricades. The blockades were met by heavily-armed military personnel, who at one point plowed through the crowds with a tank, and body-searched over 10,000 marchers. Since the strike, over 20 towers carrying powerlines from the plant have been dynamited.

Construction of the nuclear power plant began in 1977, after Westinghouse sold the reactor to the Marcos dictatorship for $1.1 billion. The U.S.-Marcos alliance extends to the nuclear plant, which is near two U.S. military bases, and already connected to them by powerlines. Despite a price hike up to $2.6 billion and years of controversy and delay, start-up procedures for the plant have finally begun, with full-scale operation planned for December.

"What is the answer to the nuclear plant? Strike, strike, people's strike!"

The Morong plant has become world-famous for the blatant danger it poses to the Filipino people. Built on the slope of an active volcano, 45 miles upwind of Manila, the plant straddles a major earthquake fault. The reactor is one of four planned by Westinghouse, who also built the Three Mile Island plant. Westinghouse has joined other U.S. firms whose financial losses, nuclear accidents and delays in the U.S. have caused them to accelerate their "dumping" of nuclear technology. Lower construction costs, weaker safety and tax regulations, and authoritarian governments guarantee them enormous profits in the third world.

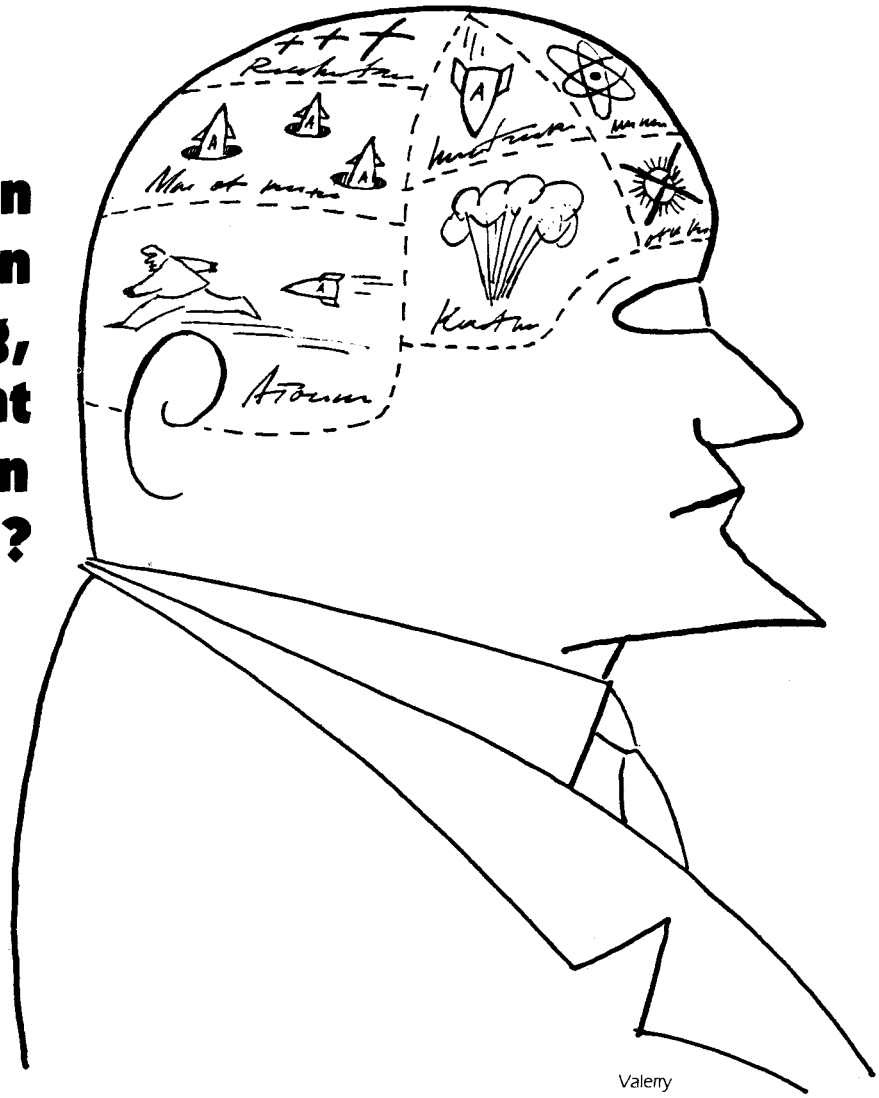
Nearly all the information on hazards within the plant comes from workers, engineers, and a few plant managers. They have reported a crack in the reactor vessel, a collapsed condensate tank, and rats chewing on wires in the control room. Most workers in Bataan oppose the plant, but the severe economic crisis makes the reactor one of the few employers in the area. After seeing a Westinghouse slide show on the effects of radiation, one worker realized, "Building the plant is harmful, especially for the children. But I had no choice. Otherwise it was no salary."

At least seven workers have died in accidents during the construction phase, and three have reportedly been exposed to radiation. While radiation detection badges are mandatory for management, workers are not given that protection. Dissenters within the plant face a network of company and military informers, and possible firing, imprisonment or execution. Some workers have wanted to quit, but are urged by activists to stay—it's better to have anti-nuclear or neutral workers than pro-nukers in the plant.

In Morong, nuclear power and military repression go hand in hand. Forced evictions initially cleared the site in the 1970s. From 1979 to 1981, four activists were executed by the military, including a construction worker at the plant site, whose body was found in a septic tank. "The four persons were killed directly from their association with work against the plant," said Elmo Menapat of the Nuclear-Free Philippines Coalition (NFPC). "It dampened the spirits of the people in Morong. Instead of getting people to react in a much more militant manner, it caused fear in them instead." Since 1982, Philippine Marines, Constabulatory, Central Intelligence, and the Civilian Home Defense Force have tightened their hold on the area.

The Nuclear-Free Philippines Coalition continues to organize grassroots opposition to the nuclear plant. They have worked with self-reliant, autonomous groups of workers, fisherfolk, peasants and professionals to form a solid base for the Philippine anti-nuclear movement. One Bataan organizer summed up the prevailing sentiment in the movement: "We are desperate. We do not want nuclear waste for a quarter million years. Marcos says he'll build the plant by all means possible. We say we will stop it by all means possible."

What do the chairmen of the boards of Union Carbide, IBM, Boeing, Eli Lily and the Joint Chiefs of Staff have in Common?



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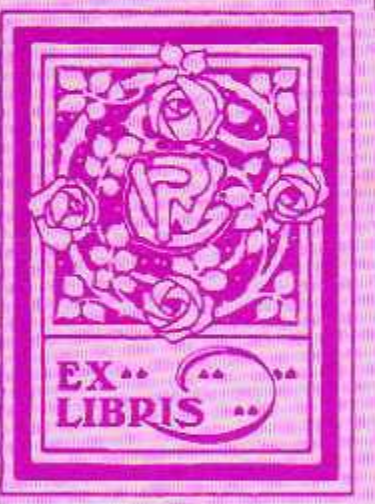

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