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MISTAKES

The November editorial collective regrets the following errors in the previous issue of *SftP*.

*Maurice Bazin wrote the unsigned article "At the Side of the Workers."

*Dave Culver, Rosario Morales, Naomi Culver, and Dick Levins wrote the report of actions at the International Genetics Congress (including the Critique of the Green Revolution), not the Berkely SESPA chapter as indicated.

*Andrew Zimbalist wrote the unsigned article "Workers Control: Its Structure under Allende."

EDITORIAL PRACTICE

Each issue of *Science for the People* is prepared by a collective, assembled from volunteers by a committee made up of the collectives of the past calendar year. A collective carries out all editorial, production, and distribution functions for one issue. The following is a distillation of the actual practice of the past collectives. **Due dates:** Articles received by the first week of an odd-numbered month can generally be considered for the magazine to be issued on the 15th of the next month. **Form:** One of the ways you can help is to submit double-spaced typewritten manuscripts with ample margins. If you can send six copies, that helps even more. One of the few founding principles of *SESPA* is that articles must be signed (a pseudonym is acceptable). **Criteria for acceptance:** *SESPA Newsletter*, predecessor to *Science for the People*, was pledged to print everything submitted. It is no longer feasible to continue this policy, although the practice thus far has been to print all articles descriptive of *SESPA/Science for the People* activities. Considerably more discrimination is applied to analytical articles. These are expected to reflect the general political outlook of *Science for the People*. All articles are judged on the basis of length, style, subject and content. **Editorial Procedure:** The content of each issue is determined by unanimous consent of the collective. Where extensive rewriting of an article is required, the preference of the collective is to discuss the changes with the author. If this is not practical, reasons for rejection are sent to the author. An attempt is made to convey suggestions for improvement. If an article is late or excluded for lack of space, or if it has non-unanimous support, it is generally passed on to the next collective. **Editorial statements:** Unsigned articles are statements of the editorial collective. **Opportunities for participation:** Volunteers for editorial collectives should be aware that each issue requires a substantial contribution of time and energy for an eight-week period. Help is always appreciated and provides an opportunity for the helper to learn, and for the collective to get to know a prospective member. There are presently plans to move the magazine production to other cities. This will increase the opportunity for participation. For legal purposes *Science for the People* has become incorporated.



*What can one man do, my friend
What can one man do
To fight pollution in the air
That's closing in from everywhere?*

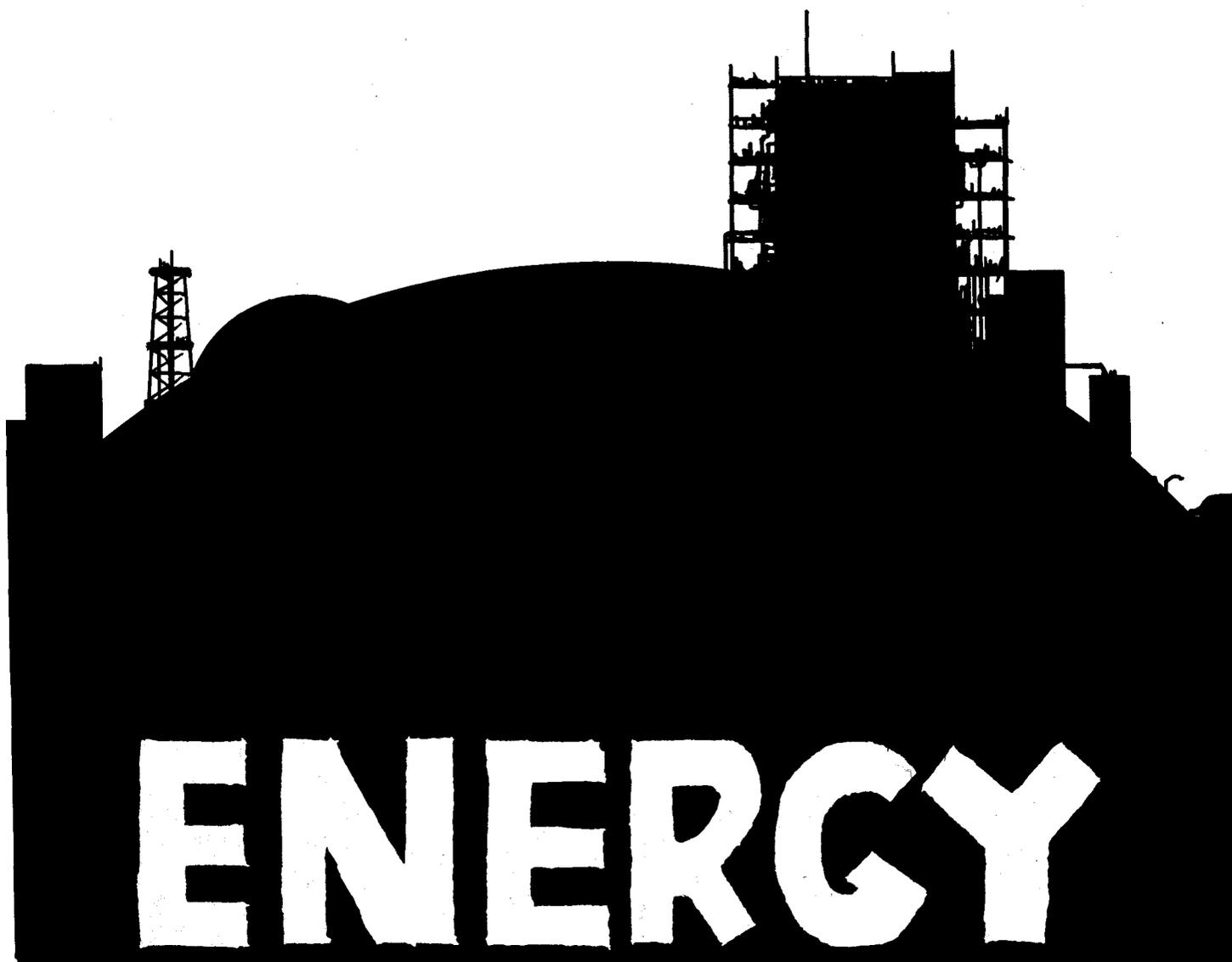
There is one thing you can do, my friend.

SMASH CAPITALISM

The following article, taken from a pamphlet published by the Boston SftP Science Teaching Group [see ad p.23 this issue] provides a broad survey of the economics of oil and of the current energy 'crises'. A future issue of **Science for the People**, focussing on the topic of energy, is now being planned. An energy group which will function in part as a magazine support group now exists in Boston. Several articles are being written by different people around the country and we want to encourage others to contribute as well. Some general areas which seem to demand attention are: 1) A discussion of the 'blaming the consumer' syndrome, and an analysis of the origins of our material culture which diminishes most people's welfare through conscious mis-design. 2) Case studies of the demise of railroads and public transportation systems. Studies of building design for natural cooling and heating, alternative technologies, reactor safety, etc. 3) A critique of the **Limits to Growth** hypothesis. 4) A global political analysis of the energy situation, its origins, ruling class strategies for power and where we are heading.

In this forthcoming issue, we would like to go beyond descriptive analysis to proposals of political action. As pointed out at the North East Regional Conference, active political involvement should not only benefit from a magazine with 'good material' but it should also be the main source of such material. The sorts of ideas which may become relevant in the coming year include: 1) possible kinds of local strife as shortages in transportation, housing, fuel and heating begin to take effect, 2) reports of job-related struggles related to the energy crises (lay-offs, shut-downs, etc.).

Contributions or suggestions should be sent to the Boston SESPA office c/o Magazine Support Group—Energy.



WHO MAKES THE MAJOR DECISIONS ?

At the heart of the energy industry are the giant multinational corporations. At the present time, seven international oil companies (Standard Oil of New Jersey, Texaco, California Standard, Gulf, Mobil, Shell and British Petroleum), five of them U.S. based, dominate the international oil markets, controlling $\frac{2}{3}$ of the oil and natural gas. [1] These companies are involved in the extraction, refining, marketing and transportation of oil and gas products. There is a second group of 20-30 smaller companies, referred to as the "Newcomers" or the international minors, which are primarily U.S. firms (Standard Oil of Indiana, Phillips Petroleum, Continental Oil, Atlantic Refining, etc.), but include important firms from other countries, such as the Japanese-Arabian Oil Company and the ENI of Italy. In spite of their differences, these two groups have the same primary aim of profit maximization.

The Soviet Union also plays an important role. It has exported oil to a number of countries in Eastern Europe and Western Europe, as well as to Egypt, Cuba and Brazil. In order to break into existing markets they have to offer lower prices and the possibility of bartering other commodities for oil. In recent years, however, Soviet oil exports to the Third World have slowed considerably.

History

In recent years, the international oil industry has moved to extend its holdings over remaining portions of the globe (the Arctic, South-East Asia), and has also branched out within the North American continent to buy up reserves of coal, natural gas and Uranium. One of the factors that prompted this trend was the nationalization of the oil industry in Iran in mid 1951. At the time, the only oil company operating in Iran was Anglo-Iranian (later BP), with a 51% share owned by the British Government. Progressive forces in Iran felt that their country got little benefit from the oil industry, and that real power over their destiny and economic development could only be obtained through nationalization.

A British boycott of oil from Iran was followed in 1953 by a coup which overthrew Dr. Mossadegh, the premier, and reinstated the Shah. The role of the CIA in executing this operation has been well-documented. [2] Herbert Hoover was then sent out to Iran by Eisenhower to make arrangements for Iranian oil to be controlled by a consortium of British, French, Dutch and American concerns.

This deal enraged Enrico Mattei, head of the Italian State enterprise ENI, and he attempted to break the monopoly of the Anglo-American oil cartel. Mattei proposed the idea of a joint Italian-Iranian venture with the Iranian Government getting 75% of the profits. (A 50-50 profit split was currently in operation.) The Iranian Government agreed with the proposal, and this served as an early model of participation in oil policy-making. Saudi Arabia

made a similar arrangement with the Japanese, and the Mattei example was increasingly adopted by the nationalist Arabs of the Organization of Oil Exporting countries (OPEC). Standard Oil of New Jersey tried to accommodate Mattei with offers of cheap oil and refining capacity, but he was killed in a plane crash before the deal went through.

As independent and nationalist regimes in the Arab countries have increasingly seized control of oil resources through participation and shared profits, in part encouraged by the presence of the counter-vailing Soviet empire, the oil companies have been forced to diversify their holdings in two ways. They have extended their ownership over other energy sources in the U.S. to the point where they now account for over a quarter of domestic coal and Uranium production. For example, Jersey Standard now has major Uranium deposits, is fabricating nuclear fuel, and has accumulated the largest block of coal reserves in the nation (six billion tons in Southern Illinois). The Oil industry has now become the energy industry. [1] They have also staked out their claim over South-East Asia and the Arctic, and are involved in drilling for oil and gas on continental shelves and sub-sea territories around the world. This consolidation of political and economic power is enhanced by the fact that the large companies are the only source of information about the size of our energy resources.

All this means that a handful of corporations have set themselves up as a "private government of energy," and are in a position to determine the development rate and uses of the world's remaining fossil fuel resources and alternative energy sources as well. But the energy companies are not an isolated sector of U.S. industry. Rather these companies are an integral part of the corporate system in which planning and accommodation are joint activities, the government a willing junior partner.

How the Government Helps the Energy Companies

Two themes are immediately obvious here—the first is the monopolistic nature of the oil industry (eight companies hold 64% of the nation's crude oil reserves and are responsible for 55% of the gasoline sales). The second is that government policy has favored this growing concentration of economic power rather than acting in the best interests of the public.

In a remarkable report released in Washington on July 17, 1973, the Federal Trade Commission accused the nation's eight largest oil companies of conspiring to monopolize the refining of petroleum products over a period of at least 23 years. The result, according to the FTC, has been a shortage of gasoline and other products in some areas of the country, when no "real" shortage exists, "substantially" higher prices forced on American consumers, closure of some independent marketers of petroleum products and "excess profits" for the eight conspiring companies. The FTC complaint recited 11 different ways in which the eight oil companies were said to have acted illegally to create and maintain a monopoly.

The government has helped the oil companies a great deal. One example is the number of tax loopholes for the industry. While the average citizen paid federal income taxes at the rate of 20% or more in 1970, the five large domestic oil companies paid an average of 5%. (Gulf paid only 1.8%). [3] Further, a great deal of the U.S. oil supply lies on the outercontinental shelf, which under law is administered by the Interior department for the Federal Government. But even here the Government has turned over administration of oil production rates to the industry dominated state-regulatory commissions.

In regard to natural gas, the 1954 Supreme Court Phillips decision authorized the Federal Power Commission to regulate the price of natural gas at the well-head . . . For ten years, the FPC ignored the court order. The FPC finally established a pricing mechanism in the sixties. Very shortly after, the oil companies warned of an impending gas shortage, and argued that the price of gas be raised to encourage the companies to search for new supplies. It is difficult to know whether there is a genuine gas shortage since all figures on gas reserves are provided by the industry, and there is no independent government estimate. The staff of the FPC questioned the industry data, but John Nassikas, Chairman, and the other members, accepted the industry's statistics.

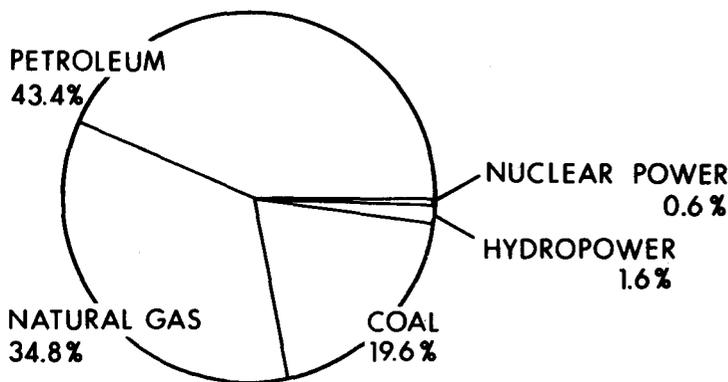
The Internal Revenue Service allowed oil and mining companies to buy coal firms in the mid-sixties using pre-tax corporate profits, thus avoiding paying corporate income tax on the money used for the acquisition. At the same time, the Justice Department (anti-trust division) and

the Congress allowed these major mergers to go forward without opposition. The result—three companies, two of them oil firm subsidiaries, control 27% of all coal production in the U.S. In the past five years, oil companies have increased their share of the national coal production from 7% to 28%. [1]

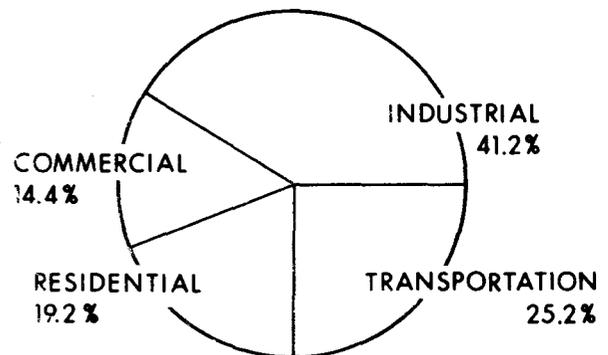
The connection between the Government and the international oil companies is complicated by the existence of a large domestic oil sector (companies without international holdings), and the existence of conflicts between the domestics and the internationals. In spite of this, U.S. Foreign Policy has actively promoted the interests of the international oil companies. [2]

Nixon's energy message, unveiled originally in April, 1973, and modified with each change in the economic situation since then, has been exuberantly greeted as a bonanza for all sectors of the oil industry, domestic and international. The message eased restrictions on the import of oil, lifted Government controls on natural gas prices, increased support for domestic oil production and refining, and posed a serious setback for the environmental forces in the country. The only unpredictable element was a generous new system of tax credits for oil and gas exploration. The net result of all this was to drive up the already-bloated price of oil-stocks. Also, it offered little hope for an enlightened policy of clean cheap energy that could prove undamaging to the majority of people and their environment. The corporate recipients of this generosity could have written the message themselves—its language and future visions are remarkably similar to the copy produced by advertisers for the petroleum industry.

WHERE THE ENERGY COMES FROM



HOW THE ENERGY IS CONSUMED



from Hammond, A.L., *Science* 117, Dec. 8 1972.

from "Patterns of Energy Consumption in the United States," Office of Science and Technology, Jan. 1972.

DEPLETION OF RESOURCES

The energy crisis has come to mean many things, each characterized by a different time-scale. We are apparently confronted with:

1. immediate problems of supply and distribution of gasoline over the next few months,
2. questions of energy production and refinery capacity over the next three years,
3. difficulties in world oil production over the next 10-15 years,
4. ultimate depletion of world oil supplies in about 40 years.

It is convenient to treat each of these phenomena separately.

1. It is important to stress that the term "energy crisis" as promoted in thousands of corporate advertisements and government pronouncements refers to the first two time scales, and particularly the first. There is growing evidence (like the FTC report) that the short term shortages of oil, gasoline and natural gas are convenient devices for allowing the major oil companies to implement a strategy which has the following goals.

- a. Forcing independents out of business.
- b. Countering the forces of Arab Nationalism (which seek increased participation in oil operations and profits).
- c. Diversifying holdings both geographically (the Arctic, Indonesia, Indochina) and in terms of controlling the development of other energy sources.
- d. Destruction of environmental opposition to projects such as the Alaska pipeline, drilling on the outercontinental shelf, extensive strip mining in the western states and nuclear power.
- e. Ensuring governmental and administrative arrangements that will further lubricate responsiveness to the interests of the oil companies.
- f. A desire to raise prices at all levels, particularly at the level of retail and wholesale business, which has been less profitable than the production and first sale of crude oil.

Oil company profits have never been higher. However the return-on-investment in the energy industry really has been slipping in recent years and the current energy offensive is presumably intended to help reverse this situation. A Wall Street analyst sees 1973 as "one of the classic growth years for the oil companies."* The same analyst, quoted in *Barron's* for June 18, 1973, was asked, "If I read you correctly, we're in the throes of bona-fide energy crisis . . . If that's the case, why bother with oil

*Figures available for the third quarter of 1973 indicate that Gulf Oil reported a 90% profit advance in the quarter and a 60% gain in the first nine months. Quarterly earnings gains by some other companies were: Exxon 80%, Cities Service 60%, Continental Oil 38.3%.



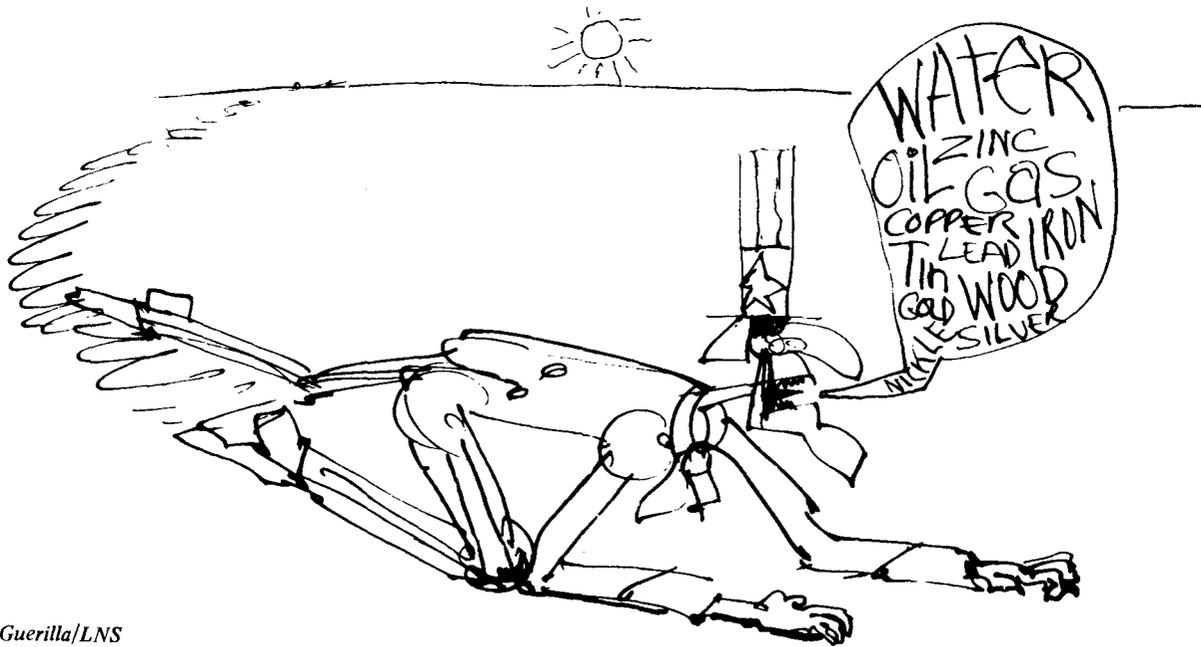
stocks at all?" His answer "The bleak picture I painted was not for oil company profits. It was for tighter supplies, rationing and fundamental changes which will see more and more intervention in the industry's affairs by both producer and consumer governments. But all this can be true and rates of return on assets can go up." Even S. David Freeman, director of the Ford Foundation Energy Policy Study, has stated, "The 'energy crisis' could well serve as a smokescreen for a massive exercise in picking the pocket of the American consumer to the tune of billions of dollars a year."

2. No new refineries have been built for several years. This is a process that could have occurred years ago, but the increased production could have endangered profits. It takes approximately three years to build a new refinery, so that refinery capacity is not likely to increase very much till 1976 or 1977.

3. Over a ten to fifteen year period we can expect growing dependence of the U.S., Europe and Japan on oil supplies from the Middle East, further world monetary crises (caused by dollars flowing out to purchase oil from the Middle East), possible military intervention to prop up regimes that can keep the oil flowing to the world's metropolitan centers, and much debate over what has been called "The Oil vs. Israel problem."*

Traditional sources of cheap and convenient oil from the U.S. and Venezuela will no longer supply the domestic demand—at the moment the U.S. imports about 1/3 of its oil, mostly from Latin America and Canada; 6% from

*At the time of writing, Oil producers in 6 Arab countries have announced a cut-back in oil shipments to the U.S. More militant factions have urged nationalization of all Arab oil if the U.S. continues to support Israel militarily and economically.



Guerilla/LNS

the Middle East. It is estimated that the U.S. will be importing 60% of its oil in 1980, mostly from Middle Eastern countries. These projections could change drastically if the Government commits itself to a program of making the U.S. self-sufficient in energy.

The *Wall Street Journal* considers that "the flood of dollars and other Western currencies into Saudi Arabia and other Oil nations threatens to become the number 1 problem of the World monetary system during the next decade." The key question is: How will the money be used? In another decade, Saudi Arabia is likely to have reserves of about \$30 billion in gold and foreign exchange, double the present American total. By 1980, fuel imports are expected to cost the U.S. up to \$20 billion annually, and this is being considered unacceptable by Washington.

One of the underlying issues in the current Middle-East conflict is the desire of Saudi Arabia and other capital-rich oil states to securely invest these funds in the Middle East area using advanced western technology while at the same time gaining access to U.S. and world markets for the resulting exports, including oil-based products.

There have been attempts to encourage investment of this money in U.S. corporations. Another way the money has been used is for arms purchases from the U.S. and Britain. Iran, for instance, has purchased close to \$3 billion worth of phantom jets, hundreds of helicopter gunships and personnel carriers, British Chieftain tanks with laser guided artillery, destroyer frigates and a fleet of hovercraft to skim battalions of assault troops over the waters of the Arabian Gulf (Persian Gulf).

This military build-up is clearly directed at any internal movement aiming for the kind of social change which would allow the people in the area full control over their oil resources. Iran's secret police organization

has been ruthless in suppressing political dissidence, and the ruling groups of Saudi Arabia, Kuwait and Dhofar have taken similar steps to arm themselves against any threat of internal take-over.

4. The references on page 11 describe the known World and U.S. resources (renewable and non-renewable) in some detail. Briefly, the situation is as follows: At present rates of consumption of energy, [4] most of the world's coal reserves will be exhausted in the next 300 years. 90% of the world inventory of oil will be used up in the next 40 years, and most of the natural gas in the next 25 years. If conventional reactor technology is continued (use of Uranium 235) the reserves are only sufficient for a 20 year supply. The use of breeder technology will extend this considerably (use of the more abundant Uranium 238) but this technology is also plagued by serious hazards that will be described later. Four other forms of energy appear to be possibilities for the future—solar energy (direct and indirect), nuclear fusion, tidal energy and geothermal power. [4]* Mastery of the processes involved in utilizing the first two sources should provide us with enough energy for a long time, with minimal environmental impact. Solar energy for large-scale use is already a technically feasible proposition [4,5]—one might wonder why we are not making the necessary political and economic changes to make this a reality.

*Tidal energy is a renewable resource, obtained from the gravitational force of the moon. A bay that experiences tides can be dammed and the flowing water can be used to turn turbines. There is a plant in France and one in the Soviet Union. Geothermal energy is obtained from the heat within the earth, in the form of steam or hot water. 180 megawatts of electricity are produced geothermally at the geysers in northern California. These two sources are potentially much less important than solar energy or fusion power.

THE ALTERNATIVES

Which technologies get developed and which are neglected reflects the opportunities and priorities of those in power, including the energy industry. The decline of railroads and public transportation, the hypertrophy of the automobile, the wasteful reliance by aluminum producers on 'cheap' electricity, the extreme sophistication of oil geophysical and petrochemical technologies, the neglect of safe and non-destructive coal-mining, of combustion technology for high-sulfur coal, and of building design for natural temperature control and for energy conservation—all are consequences of high priority for private profit and low priority for the people's optimum material well-being.

The following is a survey of alternatives variously being advanced or ignored by the energy industry and U.S. government.

The Present

The Nixon energy budget gives us a very clear idea of the priorities in energy research and development (R & D). The administration budget for fiscal 1974 (July 1973-1974) asks Congress for \$772 million to support energy-related research and development, an increase of \$130 million over the previous fiscal year. (There is currently a plan by the Nixon administration to spend \$10 billion on energy research over a five year period). The budget demonstrates a heavy reliance on nuclear power for the production of electricity, and the nuclear breeder reactor (due in the nineteen eighties) is being pushed as the answer to the nation's long term energy needs.* In addition, the White House wants the country's utilities to rely more on coal (as opposed to oil or natural gas) for future energy needs. A sum of \$129 million has been allocated for fossil-fuel R&D, which includes the development of processes for the gasification and liquefaction of coal.

Coal Gasification: This was developed and used by the Germans during the 1920's and 1930's, and the process provided them with a supply of synthetic fuel for the Air Force. Now that the Nixon administration has lifted controls on the price of natural gas, industrial interest in coal gasification has increased greatly in the U.S. There is expected to be an acceleration of strip-mining in the central plains and the Rocky Mountain states. In addition to the environmental damage caused by strip-mining, gasification projects will involve large amounts of water, which will be consumed and not returned after use. Since water is scarce in these regions of the country, much opposition to gasification has been expressed by environmentalists, farmers and others. [6]

*The Atomic Energy Commission has just estimated the cost of a commercially attractive breeder to be \$5.1 billion, up from \$2.5 billion 18 months ago.

Since nuclear power is expected to provide about 40-50% of the Nation's electricity in the year 2000 (up from 3% in 1972), it is important that we assess thoroughly this technology before embarking on what might prove to be a suicidal venture. (A number of good articles have been written on the hazards of nuclear power, and these are listed in the bibliography—[7,8,9,10].) Very briefly, there are problems associated with disposal of radioactive wastes, the possible failure of the Emergency Core Cooling System (ECCS, the device that is supposed to prevent a serious accident from occurring if the main cooling system fails), thermal and radioactive pollution. For breeder reactors there is the added hazard of handling plutonium, one of the most toxic substances known.

The most serious flaws with the current generation of reactors are the inadequacy of the ECCS and the disposal of radioactive wastes. Reactors now in operation use water as a coolant. If the water pipes should break or rupture, the reactor will still continue to generate heat from the Uranium fuel rods. Unless the emergency core cooling system begins to operate immediately (5-10 seconds), the fuel will melt through the container and large quantities of radioactivity inside the reactor could be spread over hundreds of square miles, leading to very high casualties. People hundreds of miles away could suffer genetic damage, radiation sickness and increased incidence of leukemia and cancer. The world's oceans could be seriously contaminated for thousands of years if fission products were accidentally released from one of the planned offshore nuclear plants. The Atomic Energy Commission (AEC) considers such an accident "extremely unlikely," but so is an airplane accident. A test reactor near Detroit came close to this point in 1966, when the Uranium fuel source overheated and melted. The reactor was immediately shut down while scientists debated the best means to solve the problem. One of the reports commissioned by the AEC estimated that 133,000 people would have been killed in the Detroit area if there had been an explosion.

Many of the AEC's own experts consider the criteria for an acceptable ECCS to be inadequate. The power-plant manufacturers (General Electric, Westinghouse, Babcock and Wilcox, Etc.) consider the criteria too strict. There has been a great deal of evidence to show that the AEC has consistently moved to suppress internal dissent and to ignore all information unfavorable to the reactor industry. [11] Important safety programs have been cut back or terminated. The reactor manufacturers do little safety research with their own funds, and the utilities do practically nothing.*

A 1000 megawatt nuclear plant now produces a cubic yard of nuclear waste every year, wastes that have to be sealed off from our environment for thousands of years. (There have already been leakages of radioactive

*In 1969, the utilities spent \$323.8 million on advertising and \$41 million for research and development.

wastes at the AEC's plant in Hanford, Washington.) There is currently no fully reliable way of handling these wastes, and this will have the effect of raising the radioactive level in the environment, thus causing increased genetic damage and radiation-linked diseases.

Energy Conservation

A great deal of research is presently being done on ways to reduce energy consumption, but much of the burden is being placed on individual rather than corporate consumers of energy. President Nixon, on November 9, 1973, called for householders to lower their thermostats by four degrees to help get the country through an oil-short winter. Other proposals included observing speed limits as well as more bicycling and walking. The slogan for the new campaign is "SAVENERGY" and the symbol is a cartoon of Snoopy, the dog in the "Peanuts" comic strip, dozing on top of his dog house.

It is worthwhile to state a few facts about energy consumption in the United States. First, *industry* [12] consumes about 41% of the total energy. The production of aluminum, steel, chemicals and paper is responsible for nearly a third of the total industrial energy. Transportation accounts of $\frac{1}{4}$ of the total energy, and cars consume over $\frac{1}{2}$ of this. Approximately $\frac{1}{2}$ again of the energy used by cars goes for commuting and shopping, thus pointing up once again the inadequacy of existing mass transit systems. Households consume about $\frac{1}{5}$ of the total energy and commercial establishments about $\frac{1}{7}$. More than $\frac{1}{2}$ of the household consumption of energy goes for space heating, and this could be cut considerably through better insulation. This indicates that energy conservation measures in the home, while important, are not as significant as possible cuts in the industrial and transportation sectors.

Structural Waste of Energy

The entire *structure* of industrial production encourages energy waste, with its inevitable consequences for the environment.

For example, about 35 million tons of ferrous material [14] is thrown away every year in the United States. Only about sixteen million tons of this is recycled. It takes about 5 times as much energy to produce steel from ore as it does from recycled material. (Comparable figures for aluminum are 30:1.) Considerable energy savings could be achieved by recycling all steel and aluminum, as well as other industrial metals, glass bottles and paper. In addition, energy expenditures on advertising, automobiles and war material could be cut substantially. Such a program would seriously undermine the ability of corporate owners to maximize profits. It could, however, form part of a strategy to satisfy majority needs for fulfilling jobs, durable products, clean energy and a safe working and living environment. This conflict of interest points up the importance of working for political structures where important decisions are taken by a majority of citizens.

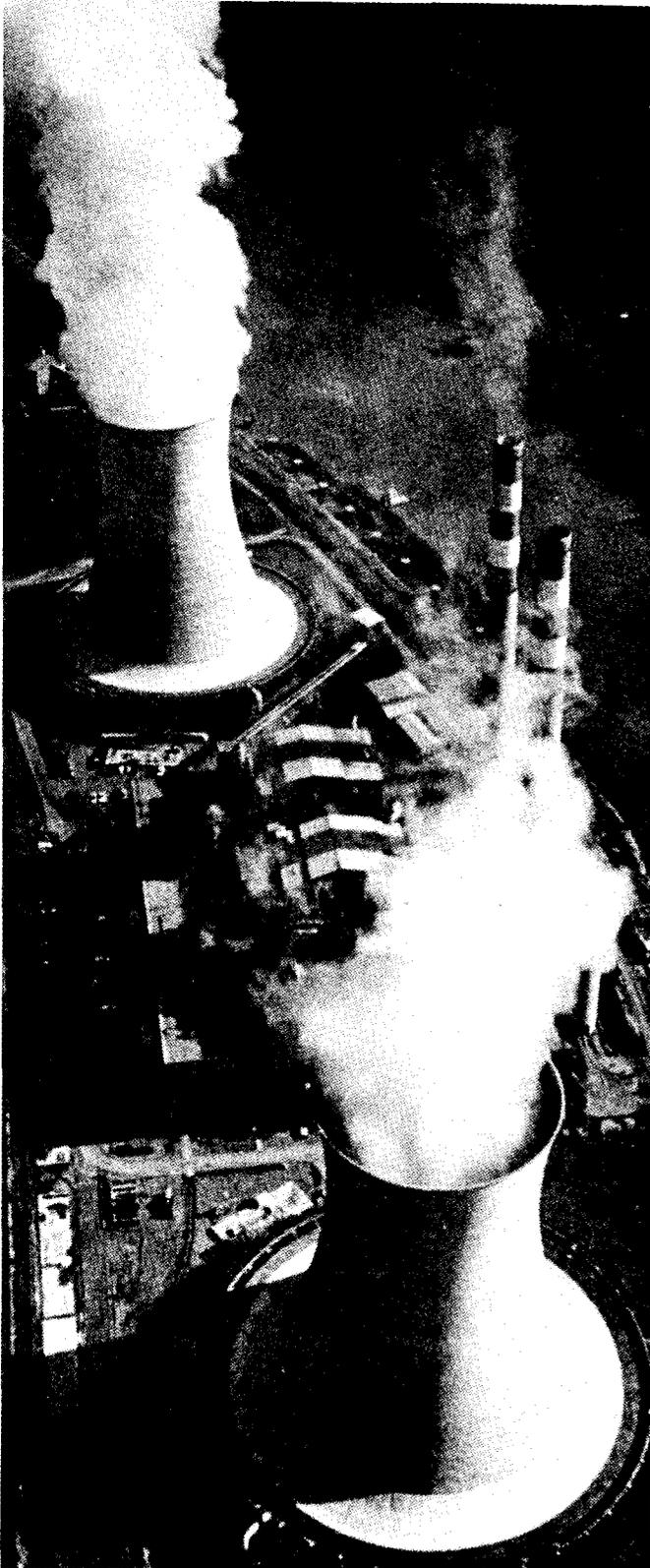
The rate structure acts as an incentive to consume more energy. The cost of electricity is an example. Studies [1] made in 1972 by the Fairfax County (Va.) Community Action Program show that low-income groups pay about three times as much for electricity as industry does, and more than twice as much as large residential customers. The fact is: the more you consume, the cheaper the rate. The study concludes, "This inequality persists despite the fact that costs of service in low-income areas is generally low, industrial demands for cheap power are the main reason for costly plant expansion, environmental problems and rate increase requests, and demands for expensive undergrounding of lines come from high-income residential areas rather than low-income neighborhoods." The same rate structure applies to gas.

Short-term Energy Conservation

The multitude of proposals for energy conservation do not tamper with this vast inefficiency and inequality. Instead, they aim for a few limited changes. But even these could save sizeable amounts of energy. For example, a report released by the Office of Emergency Preparedness in October, 1972, [13] makes a study of energy conservation measures. The study indicates that improved insulation in homes, more efficient heating and cooling in buildings, limited conversion to mass transit, more efficient auto engines and increased efficiency in industrial processes could save the U.S. over seven million barrels of oil a day in 1980 ($\frac{2}{3}$ of the projected oil imports for the year). It is likely that energy conservation measures of this kind will receive a great deal of attention in the months to come, and may indeed be part of a stop-gap solution to cut down on oil imports and the outflow of dollars. Most of the structural waste is likely to remain unless we take bolder measures. Such steps might include non-polluting power plants, possibly solar, total energy systems (utilizing the waste heat from power plants—there is enough waste heat at the moment to heat every home in the U.S.), efficient mass transportation, vastly reduced automobile manufacture, drastic reduction in military expenditure and wasteful industrial processes.

Alternatives Not Receiving Much Support

The means for obtaining enormous amounts of pollution-free energy is now available. A recent report by a joint National Science Foundation-NASA (National Aeronautics and Space Administration) panel [5] asserts that solar energy is a significant national resource, and that there are no technical barriers to its widespread application. The panel feels that the large-scale uses of solar energy would have a minimal effect on the environment, and that the cost would be competitive with other fuels. It is concluded that by the year 2020 solar energy could economically provide 35% of the total building heating and cooling load, 30% of the Nation's gaseous fuel, 10% of the liquid fuel and 20% of the electric energy requirements. The R & D budget for this comes to about \$1.5 billion (present spending on solar R & D is around \$8 million). There are numerous methods by which solar



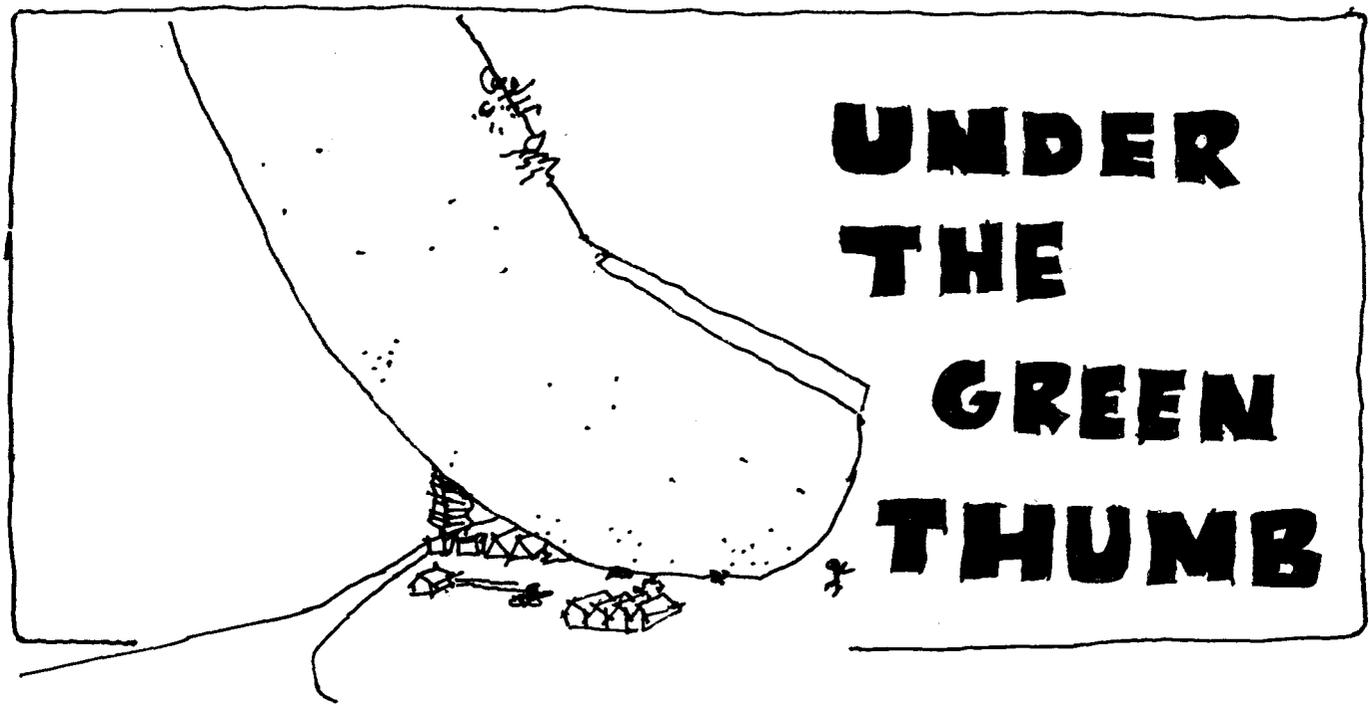
energy can be converted to electricity, as well as to solid, liquid and gaseous fuels. Some of these include satellite and ground-based collection systems, photosynthesis, bioconversion, winds and ocean temperature differences. Tidal and geothermal power could be supplementary sources for areas of the country where this is appropriate. Another possible area is the use of synthetic fuels, hydrogen, for example, assuming a pollution-free energy source to produce the hydrogen from the electrolysis of water.

Fusion reactors could provide us with a virtually unlimited supply of energy. We have not, however, devised a method for controlling the process that is responsible for energy release in the hydrogen bomb, sun and stars. (Optimists predict that controlled fusion will be demonstrated by 1980.) Two possible fuels, deuterium and tritium (heavy isotopes of hydrogen) are considered likely candidates. The deuterium is fused at high temperatures to form helium, releasing an enormous amount of energy in the process. (Another method uses deuterium and tritium.) Since deuterium is abundant in sea-water, we are provided with a cheap and practically inexhaustible supply of fuel. Another advantage is the impossibility of an explosive accident, and the vastly reduced waste problem. (Tritium is far less radio-active than plutonium, and easier to insulate from the environment.) Solar technology is, however, considerably in advance of fusion technology, and intensive efforts to develop the former can be expected to yield greater returns in the short run (the next 20 to 25 years).

D.J.

NOTES

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IMPERIALIST USES OF ECOLOGY

A number of influential commentators in the United States have recently begun to argue that economic development in the Third World would be incompatible with natural resource conservation and pollution control on a global scale. Robert Heilbroner,† for example, has flatly asserted that “the underdeveloped countries can *never* hope to achieve parity with the developed countries. Given our present and prospective technology, there are simply not enough resources to permit a “Western” rate of industrial exploitation to be expanded to a population of four billion . . . persons.”[1] He adds that “it is only in our time that we are reaching the ceiling of earthly carrying capacity, not on a local but on a global basis. Indeed . . . we are well past that capacity, provided that the level of resource intake and waste output represented by the average American or European is taken as a standard to be achieved by all humanity.”[2]

George Kennan,* a man known to have had some impact on international politics, has argued along similar lines. According to Kennan, “a number of the existing

†Robert Heilbroner is a left-liberal economist at the New School for Social Research whose earlier book *The Great Ascent* called for rapid economic development in the Third World. His uncritical conversion to environmental conservatism reveals the shallowness of his commitment to Third World development.

*George Kennan, former U.S. ambassador to Moscow and Belgrade, is well known for his influential article in *Foreign Affairs* after World War II which argued that the U.S. must “contain” the “aggressive” Soviet bloc. Since his impact on the formulation of foreign policy during the Cold War was considerable, it is interesting to note his current interest in the global environment.

(international) organizations, including particularly ones connected with the United Nations, have primarily a developmental focus; yet developmental considerations are frequently in conflict with the needs of environmental conservation . . . There is a considerable body of opinion, particularly in U.N. circles, to the effect that it is a mistake to separate the function of conservation and protection of natural resources from that of the development and exploitation of these resources for productive purposes. . . This writer must respectfully disagree . . . It may be boldly asserted that of the two purposes in question, conservation should come first.”[3]

This sort of formulation of the global environmental problem is dangerous for it can easily lead to two false conclusions: (1) that economic development in the Third World is the primary threat to world ecological stability and (2) that Western opposition to Third World development is motivated by ecological considerations. Nevertheless, reasoning of this type has already begun to take hold in some quarters. U.S. law, for example, now requires that potential environmental side-effects be considered in the granting of American development loans.[4] In addition, English opponents of the Murchison Falls hydroelectric scheme in Uganda have pressured the British government to withdraw financial support from the project because of its effects on stream flow through the Murchison gorge.[5] Finally, the World Bank is drafting standards “to evaluate the ecological consequences of Bank-financed projects.”[6]

The Major Threat to the Environment

Despite these fears about Third World economic development, it is in fact the developed countries of North America, Europe, and Japan which pose the major threat to the global environment. The developed countries, which account for only 30 percent of the world's population, discharge at least 80 percent of the global flow of many pollutants.[7] The United States alone, with only 6 percent of the world's population, accounts for 32 percent of the man-made carbon dioxide flow into the atmosphere.[8] This reflects the twin facts that U.S. energy consumption is 35 percent of the world total and that 96 percent of U.S. energy is generated by the combustion of (exhaustible) carbon fuels.[9] It is clear, therefore, that it is the developed countries, and not the poor countries, which are responsible for the preponderant share of resource depletion and environmental pollution in the world.

This relatively heavy strain which the wealthy countries impose on the global environment stems from a variety of social and economic causes. As Barry Commoner has pointed out, the rapid growth of pollution in the U.S. economy since World War II cannot be totally explained by the growth of U.S. population and per capita gross national product (GNP): the amount of pollution per dollar of real GNP has been increasing as well.[10] What Commoner failed to discuss is why capitalist economies, like that of the United States, tend to produce relatively high and even growing quantities of pollutants per unit of GNP.[11]

The fundamental reason is that where private firms organize production and seek private profits, there is a strong incentive built into the economy to freely discharge untreated wastes in order to avoid pollution abatement costs and thereby realize higher profits. The economic consequences of this profit incentive are that (1) firms tend to skimp on waste purification and recycling investments in favor of outlays on productive capacity, and that (2) products which are waste-prone in their production and use comprise too large a proportion of GNP. For example, because steel mills, tire factories, cement plants, and petroleum factories have been permitted to discharge their effluents relatively indiscriminately, automobile transportation has been relatively underpriced and overconsumed in the U.S. compared to public transportation.

A number of establishment economists have suggested that national governments levy pollution taxes on untreated waste discharges in order to induce business firms and households to undertake more waste purification and recycling efforts.[12] This suggestion overlooks the restraints which international trade competition imposes on the domestic policies of capitalist governments. Each capitalist state will be reluctant to adopt stringent national pollution controls if it believes that its own export prices will be driven up relative to those of its trading rivals.[13]

However, even if reasonably stiff pollution taxes or emission standards were imposed on their private sectors, thereby inducing a decline in the quantities of effluents

discharged per unit of GNP, capitalist economies would still be environmentally destructive in several respects. In the first place, the affluent economies of North America, Western Europe, and Japan not only discharge a great deal of pollutants per unit of production but also produce unnecessarily large per capita GNP's compared to their standards of living. This is because the measurement of GNP includes a great deal of wasteful production, such as military hardware and product duplication, which doesn't satisfy the essential needs of the population. A prime illustration of this is the fact that a substantial portion of health care expenditures included in GNP go to remedy the detrimental effects of the pollutants discharged during the production of the rest of the GNP.

The control which a few large firms exercise in many industries leads to non-price competition in the form of large advertising outlays, frequent model and styling changes, and brand proliferation.[14] An immediate correspondence of this product obsolescence is that high rates of production (and environmental costs) are required in order to replace and expand rapidly depreciating stocks of consumer goods. For example, suppose it were desirable to maintain an operating stock of ten million motor vehicles in the U.S. If cars, busses, and trucks had an average economic life of five years, it would be necessary to produce two million junked vehicles per year. If, on the other hand, the economic life of motor vehicles were ten years, current production and disposal requirements would fall to one million units per year.[15]

Rapid product obsolescence is not, however, the only ecological irrationality of capitalist economies. The emphasis on individual, rather than social, consumption in the affluent West means that relatively large stocks of consumer goods are necessary in order to maintain any particular standard of living. Individual consumption results in high environmental costs for several reasons. First, most types of consumer durables in advanced capitalist countries are substantially *underutilized*. Most private autos, for instance, are not in use at any particular time and consequently are not creating transportation services. In addition, these unutilized autos create severe storage problems in urban areas. Every single-family suburban dwelling has its own complement of household appliances, which are also used only periodically.

Second, the emphasis on individual consumption prevents the realization of *economies of scale* in the provision of various consumer services. The continuing suburbanization of U.S. cities, for example, makes the provision of water and sewage treatment systems increasingly costly. It also dictates that increasing numbers of American school children be driven long distances to their schools, a practice which is both financially expensive and ecologically destructive.

However, the most serious environmental defect of private enterprise economies is their dependence on *future* economic growth in order to avoid present mass unemployment and depression. In advanced Western economies,



Third World Development

When one looks at the economic dealings which the advanced capitalist countries have with the Third World, there is also good reason to be critical. The recently announced plans of the Ford Motor Company to invest nearly \$1 billion in the Asian auto market by 1980 are a prime example.[18] The primitive "Asian Model T" which Ford expects to produce and market in Southeast Asia will certainly not incorporate adequate exhaust emission devices. More importantly, this type of foreign investment, in addition to being highly profitable for Ford, tends to structure the technology and economy of the developing country so that the same social class patterns found in Western society are developed in that country. This type of economic development would reproduce in the Third World those styles and patterns of private production and individual consumption already so environmentally destructive in the West. The power of these newly created technical professional and business interests to sabotage attempts at social change has been adequately documented in the case of India [19] and Chile.[20]

Saigon is a chilling omen of what could happen to all of Southeast Asia: the thousands of motorcycles and other vehicles which congest the streets of Saigon have already begun to stunt the graceful trees lining its boulevards. According to the *New York Times*,

Japanese consumer goods, television sets, radios, water pumps and diesel engines, some of the goods that have flooded the South Vietnamese market . . . are beginning to be produced by Japanese manufacturers here (in Vietnam)—the latest sign of their growing economic interest in Vietnam. [21]

Of course, the issue is not whether the Vietnamese standard of living should rise. Rather, the issue is that the Vietnamese should decide what particular kinds of products they will produce and import, how equally these commodities will be distributed, and how great their environmental impacts will be. The plans of Japanese and other foreign firms to impose these decisions on the Vietnamese have political and environmental implications for all of Southeast Asia.

While international financial organizations such as the World Bank and the International Monetary Fund prevent the self-industrialization of the developing countries under the guise of environmental protection, the multi-national corporations with their easy access to capital funds are penetrating these economies and locating ecologically disruptive operations within their boundaries.† This serves to increase the dependence of the Third World on Western capital and to eliminate the third world as a competitive threat in world markets.

†The military government of Brazil has already embraced this sort of national policy. According to Joao Velloso, the Brazilian planning minister, "Brazil can become the importer of pollution . . . We have a lot left to pollute . . . And if we don't do it, some other country will." (*The New York Times*, February 13, 1972)

total consumer spending is wholly inadequate to fully utilize all available productive capacity and employ all workers, even with the expansion of consumer credit and corporate advertising.[16]

As a result, capitalist economies require high levels of private investment spending, export sales, and government purchases as a means of averting depression. But private firms are willing to invest now only if they anticipate that their new capital equipment will be profitably utilized in the future as production and sales expand. The ecological dilemma is that these future increases in GNP certainly result in more rapid depletion of exhaustible raw materials and may result in growing pollution *even if* pollution taxes and emission standards succeed in lowering the quantity of pollution per unit of GNP.

The New Economic Policy (NEP) of the Nixon administration relied heavily on corporate tax credits to spur private investment spending and thereby increase the rate of employment.[17] To a lesser extent, the NEP also depended on the repeal of federal excise taxes on motor vehicles to stimulate production and employment in the automotive sector. From the standpoint of environmental protection, these particular types of fiscal policy perpetuate the dependence of the U.S. economy on future economic growth and imply larger waste loads and natural resource demands in the future. Increased government spending on social consumption would be a fiscal stimulus with far sounder environmental implications.

Since it is unlikely that the developed countries will reduce their own rates of economic growth or reduce their own waste discharges it is not surprising that they are attempting to inhibit the industrialization of the Third World by an undue concern for environmental effects.

What has not yet been fully recognized in the West is that there is an alternative approach to economic development which is apparently more compatible with resource conservation and pollution abatement—the Chinese model. According to Professor John Gurley,

Maoists believe that, while a principal aim of nations should be to raise the level of material welfare of the population, this should be done only within the context of the development of human beings and of encouraging them to realize their manifold creative powers. And it should be done on an egalitarian basis . . . Maoists seem perfectly willing to pursue the goal of transforming man even though it is temporarily at the expense of some economic growth. [22]

The concrete effects of this social ethic on the Chinese environment have included "action in such areas as afforestation, water conservancy, land reclamation, and sanitation and public health." [23] Even more striking is *the concept of comprehensive use, introduced as a Maoist injunction to workers and peasants*

to recover and reuse (recycle) industrial and agricultural wastes. Although the comprehensive-use concept had its foundations in perceived conditions of scarcity and in Maoist frugality as a response to these conditions, it has nevertheless been explicitly linked to environmental quality . . . There are indications that Chinese science and technology is being asked to focus more of its attention on comprehensive utilization . . . to supplement the innovations of workers and peasants. [24]

It is probable that the particular type of economic development which U.S. administrations have opposed so vigorously for twenty-five years, namely the Maoist model, is environmentally superior to the style of development which the U.S. government has promoted in the poor countries.

The inescapable conclusion is that the defeat of imperialism is necessary, not only to eliminate alienation and ensure world peace, but also to protect the global environment which rightfully belongs to the whole of mankind.

R.E.

NOTES

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[2] *Ibid.*, p. 271.

[3] George Kennan, "To Prevent a World Wasteland: A Proposal," *Foreign Affairs*, April, 1970, pp. 407-8.

[4] Clifford Russell and Hans Landsberg, "International Environmental Problems—A Taxonomy," *Science*, June 25, 1971, p. 1311

[5] *Ibid.*, p. 1309.

[6] Michael Hoffman, "Development Finance and the Environment," *Finance and Development*, September, 1970, p. 3.

[7] David Leff, "A Meeting in Prague," *Environment*, November, 1971, p. 29.

[8] Walter Spofford, "Decision-Making Under Uncertainty: The Case of Carbon Dioxide Buildup in the Atmosphere," (Resources for the Future, 1970, mimeo), p. 17.

[9] Chauncey Starr, "Energy and Power," *Scientific American*, September, 1971, pp. 39 and 42.

[10] Barry Commoner, "The Causes of Pollution," *Environment*, April, 1971.

[11] Of course, not all the developed countries have private enterprise economies, and Western capitalism is not the only economic system that generates pollution and resource depletion. The Soviet Union has a centrally-planned, state socialist economy and yet still has serious environmental problems. This does not imply, however, that "technology" is more important than economic organization in determining the severity of a society's environmental impact. It simply suggests that both the capitalist and the Soviet economies currently lack environmentally sound social institutions. For a discussion of why the Soviet economy is environmentally unsound, see Marshall Goldman, "The Convergence of Environmental Disruption," *Science*, October 2, 1970.

[12] For examples of this approach, see Larry Ruff, "The Economic Common Sense of Pollution," *The Public Interest*, Spring, 1970; and E. J. Mishan, *The Costs of Economic Growth* (Praeger, 1967), ch. 4-6.

[13] It is probably the recognition of this point that led Kennan to call for the creation of an international agency, to be controlled by the dozen leading industrial and maritime nations, which would formulate and enforce emission standards for global pollutants. See George Kennan, *Op. Cit.*

[14] For a discussion of why oligopolistic competition leads to non-price competition and price fixing, see Joe S. Bain, *Industrial Organization* (Wiley, 1959), p. 321.

[15] Kenneth Boulding has been arguing for twenty years that consumer welfare depends on the *use* of stocks of consumer goods and not on the *purchase* of newly-produced consumer goods. Increased product durability would mean that the same population could enjoy the same standard of living with less production taking place. See Boulding's "The Economics of the Coming Spaceship Earth," in Henry Jarrett (ed.) *Environmental Quality in a Growing Economy* (Johns Hopkins, 1966).

[16] Some economists believe that this inadequacy of consumer spending reflects the unequal distribution of incomes and wealth in capitalist economies. For a discussion of the possibility of using a guaranteed annual income in order to stimulate consumer growth, see Warren Johnson, "The Guaranteed Income as an Environmental Measure," in Warren Johnson and John Hardesty (eds.) *Economic Growth vs. the Environment* (Wadsworth, 1971).

[17] Nixon's contention that tax relief for monopoly capitalists is justified by the "depressed" condition of corporate profits has been ably refuted by Professor Robert Eisner. Successive postwar "liberalizations" of corporate tax laws have permitted large companies to treat an increasing portion of their real profits as "depreciation costs." During the first half of 1971, after-tax profits *plus* depreciation allowances as a percent of gross corporate product were approximately the same as the average fraction from 1946 to 1970—about 18 percent. See Robert Eisner, "Are Corporate Profits Low?" *New York Times*, October 20, 1971.

[18] See "Ford in Asia," written by the Brain Mistrust research collective, in *American Report*, December 10, 1971.

[19] Thomas Weisskopf, "Dependence and Imperialism in India," *The Review of Radical Political Economics*, Spring, 1973, p. 76.

[20] David Barkin, "Quick Coup or Slow Strangulation?" *Science for the People*, November, 1973, p. 21.

[21] "Japanese Stakes in Vietnam Rise," *New York Times*, October 12, 1971.

[22] John Gurley, "Capitalist and Maoist Economic Development," *Bulletin of Concerned Asian Scholars*, June, 1970, pp. 38-40. Gurley's description of Maoist economics is similar to Schumacher's characterization of traditional Buddhist economics. See E. F. Schumacher, "Buddhist Economics," in Warren Johnson and John Hardesty (eds.), *Op. Cit.*

[23] Leo Orleans and Richard Suttmeier, "The Mao Ethic and Environmental Quality," *Science*, December 11, 1970, p. 1174.

[24] *Ibid.*, p. 1175.

POPULATION CONTROL

The two letters that follow were stimulated by articles previously published by Science for the People: the first by a section in the pamphlet, Science and Technology in Latin America: Por Que?, and the second by the article, "Preventive Genocide in Latin America", in SftP, March, 1973. These letters offer criticisms both of the specifics of these articles and of the broader political sentiment expressed. In an attempt to address this latter criticism, we solicited an article which would try to clarify some of the ideological problems of population control programs. We hope that this article will raise new questions and criticisms and that this dialogue will continue in future issues of the magazine. Due to space limitations, we were forced to delete some of the detailed criticisms of the Dobbs letter. Full copies of this letter are available from the SftP office.

Dear Friends,

Traditional religious and 'machismo' norms prohibit the woman from regulating her procreation and imposes an exhausting exploitation of her body. The Mexican woman of over thirty years of age has an average of 6.6 children. The 'radical' argument that the use of contraceptives is 'playing the imperialist game' is nothing more than a male rationalization. History does not show that there exists a mechanical relationship between the number of inhabitants per square kilometer and the revolution.

Punto Critico, August, 1972

The argument in *Science and Technology in Latin America: Por Que?* [a pamphlet published in December, 1972 and available from SESPA/SftP] about the use of population control measures is inadequate. Its inadequacy is so serious that it undermines the revealing of the racist counterinsurgency of the U.S. corporations and government in their support of massive experimentation on and propagation of birth control in the Third World, particularly Latin America. What the argument leaves out is tangentially alluded to in the final paragraph of the section on population control: "While we have been critical of existing birth control programs we are not against birth control *per se*." It goes on to explain that birth control is noxious when used *against* women, when they are guinea pigs for imperialist

science and the targets of the unhealthy technology that results. It ends: "In the present context, no birth control programs can liberate Latin American women or men from the oppressive conditions of their lives . . . Only in a society free of exploitation with free choice can birth control be a liberatory technology."

The article from the Mexican radical magazine *Punto Critico* from which we quote makes clear the following point: 1) that Mexican women are physically exhausted and enslaved by constant pregnancy especially in the countryside, 2) that tradition, religion, and the macho ideology prohibit women's control of their own bodies, 3) that the very argument of the *Porque* essay, the argument that birth control is an imperialist ploy is, as the article underlines, a ready rationalization of continued sexist practice and opposition to birth control. A fourth point can be made about the American Left: that the arguments about the inadequacy and therefore uselessness (a non sequitur) of birth control in Latin America is being made by a radical population with the full use of all the birth control information and techniques available in the U.S. today. That means that women in the U.S. Left are freed from constant pregnancy and are enabled to think, write, and advance arguments that postpone this privilege for Latin American women to a distant socialist future. This is racism.

Let us be clear. The argument in *Porque* documents well the institutional, imperialist racism of birth control experiments and their economic and political goals in Latin America. But the argument that Latin Americans should be opposed to birth control *in toto* until there exists "a society free of exploitation" reinforces the denial that women have the right to control their own bodies now.

Compare this position with our analysis of health care in the United States. It too is done for profit, it ignores the real needs of patients, experiments on poor patients without their consent and chauvinized Third World people and women. But the response of the Left is not simply to attack health care as capitalist and imperialist; we work to provide alternatives, to make demands of institutions, to educate people around their own needs. We want health care that is run in the interests of the people it affects. So, too, the responsibility of the left is to demand the right of birth control in the interests of the people.

No woman who is herself protected by birth control can deny that in some measure she is more liberated that if she were not. This measure of liberation however much it falls short of the socialist ideal must be shared with all women everywhere. We must not let our analysis of American corporate and governmental plots in Latin America lead us to abandon the legitimate rights of our Third World sisters.

Ms. Rosario Morales
Fred Melcher

Brothers and Sisters,

I'm not at all happy about the article by Bonnie Mass on "Preventive Genocide in Latin America", in *SftP*, March 1973. I don't want to hold up distribution while I produce the detailed response it seems to need, which would be much longer than the original article; so by way of compromise here are some comments, mainly on the philosophy, and (so as to give something more than 'negative' criticism) a partial response to a few of the issues raised.

It does not surprise me that some people regard us as "Marxist-Leninist-Fascist" when occasionally, however rarely, we publish an article which is based on a circular argument, on the principle of guilt-by-association, and which blindly attacks friends as well as enemies.

The basic thesis is that population control is genocide. This is assumed throughout, it is not proved and it is not true. Population control is only genocide, from the given definition, if it is imposed by some outside body for some nefarious purpose—specifically, "with intent to destroy". Again, population control at a national level is different from family planning, which is different from non-voluntary sterilisation of individuals; but these are tacitly assumed to be the same.

The question of evil intent in general seems to be settled simply by showing that many capitalists (executives of large companies, duPont, Chase Manhattan Bank, Ford Motors, Continental Can, etc.) and imperialists (U.S. government agencies, presidents and army men) are in favor of population control in one form or another. I think this is superficial class analysis, based on the idea that there are two classes in the world, the capitalists and the imperialists on the one hand and "the people" on the other, and that anything which is good for one class is bad for the other.

What I see as a circular argument is this: it is genocide because these evil people are involved; and the fact that they are involved in it is further evidence of their wickedness.

We are appallingly "alienated from the masses", out of touch, if we totally condemn something which many millions of women (and men) regard as one of the most important forces for liberation from poverty and fear: effective contraception (including sterilisation); however as honest scientists and/or revolutionaries we have the right and the duty to share whatever scientific and historical understanding and information we have so as to help people form a fairly balanced picture of the situation, and this includes criticising the motives, methods, and effects of the drug companies, governments, and other organisations and individuals involved. To criticise is not necessarily to condemn.

Overpopulation

So much has been written about the problem of over(?)population, often with more emotion or rhetoric than facts or analysis, that it is very difficult to arrive at a true picture (I'm not sure that I have). Many different figures tend to be quoted in argument: population density, growth rate, birth rate, fertility, median age, etc., it is worth remembering that there are three degrees of untruth: lies, damn lies, and statistics.

I read that Bolivia has a population density of less than four persons per kilometre—presumably that should be "per square kilometre". The context suggests that this is a low figure, but without figures for other countries I can't tell how low. Even then, for all I know, the land area of Bolivia may be made up of equal parts of desert and impenetrable jungle, in which case I would expect a very low population density. Or supposing that it is a moderately fertile agricultural country which is more or less self-sufficient, I still would not expect to find as high a population density as in Japan or Britain, say, where there is much industry and the country depends heavily on imported raw materials such as food, fuel, and ores. The point is that there is no worldwide standard for what the population density could or should be—Greenland will probably never have the same population density as Boston—so that it is not a very helpful statistic. (In the context, it expects the reader either to know all about it—be an expert—or to bow before

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NOT BETTER LIVES JUST FEWER PEOPLE

THE IDEOLOGY OF POPULATION CONTROL

Arguments for urgency in global population control are becoming well known. They are frequent fare in the messages emanating from government agencies or foundations and from organizations like International Planned Parenthood Federation (IPPF) or Zero Population Growth (ZPG). These arguments emphasize the extreme poverty of Third World nations, claiming that fewer mouths to feed means more food in each, or demonstrating that economic development with rapidly growing populations is sorely held back by the immediate task of simply surviving. A high fertility population has larger families, a lower proportion of productive workers, and more demands for expensive services (schools, etc.) and is thus less able to save for crucial investment for the future. Most recently, the popularized "Limits to Growth" thesis has pointed out not only the finite resource and space limitations of our own planet, Earth—a further constraint on the development process—but also has argued that we are very rapidly approaching saturation when further economic growth will be impractical or of dubious merit. A central variable in this description is of course population and its growth rate. We are told, "The greatest possible impediment to more equal distribution of the world's resources is population growth. . . . Equal sharing becomes social suicide if the average amount available is not enough to maintain life. . . ." [1] These arguments constantly refer to real problems in people's lives—jobs, pollution, energy shortages, crime, inadequate recreation opportunities—in order to impress on the public consciousness the importance of population.

Other arguments, which tend to be less public, hold that orderly, disciplined economic growth and "modernization" are threatened by the continuing population growth is that the climate for business, alleged to be the ultimate solution to the problem, is itself compromised. The World

Bank* sees population control as a necessary consideration in its lending activities. The Bank does not feel it can legitimately allocate the funds of its bond-holders and contributing states to countries which are bad risks—don't have population under control.

There are many assumptions implicit in the argument for population control which are either questionable or outright nonsense from the point of view of radical political economy, and therefore many "radicals" have denounced the entire concept.[2] After centuries of rapacious exploitation of the world's peoples and manipulation of institutions and governments to advance the interests of private wealth, these same interests are now observed suddenly to be very concerned about these populations on ostensibly charitable grounds. In fact, looking into the institutions involved—the Ford and Rockefeller Foundations, Population Council, IPPF, the Agency for International Development, the World Bank, etc.—and examining the historical development of population control programs, it becomes quite apparent that population control *is* motivated by fundamental self-interest on the part of the U.S. and allied ruling classes.[3] However it is not enough to prove that population control is another component of imperialist foreign policy or investment interests. The key political question is: what are the interests of the working peoples of the underdeveloped countries concerning population, and consequently, what should our position be toward it?

Many people who share an anti-imperialist view feel that programs for population (at least voluntary ones, abuses aside) are really very good and necessary in the current world context despite their sponsorship. As a result critics of population control have been attacked on the grounds, for example, that it is sexist and racist to deny to women in the underdeveloped countries the access to birth control which women in the "advanced" capitalist countries take for granted (see the letters from Morales and Melcher, and H.N. Dobbs printed above).

This article was written in an attempt to resolve these questions. In summary, it will be argued that population control in the world capitalist-imperialist context is inherently destructive and should be attacked for the reasons to be enunciated. It will be proposed that not only does population control fail to come to grips with the people's fundamental problems, much worse, it actually retards doing this (and *not* in the sense that unchecked population leads to "revolution" and hence to solutions; that would be simplistic, cynical opportunism). As for the "population problem," the position of this article is that under any good "solution," for underdeveloped countries and advanced countries, the population growth rate should fairly rapidly decline toward stability, in almost all cases.

*The World Bank is an official institution controlled as a joint operation by most 'western' countries with the major industrial states dominating and the U.S. leading. Its objective is lending funds to develop new industry and build essential infrastructure (ports, bridges, etc.) in underdeveloped countries, in cases where private capital is not forthcoming. It raises capital by floating bonds in world money markets and through contributions from participating governments.

Determinants of Family Size

Underlying the subjective basis of *desired* family size is a material basis, which for most people in the underdeveloped countries is the stark reality that there is little or no economic security in old age or in case of disease other than one's own children, not all of whom will survive until adulthood. In Pakistan, a survey in 1968 revealed that on the average a woman should have five children in order to have a reasonable probability of her husband having at least one son living when her husband reaches 65.[4] The situation is similar in India. In an article explaining the trials and tribulations of policies for population control in India, the *New York Times* reveals the following critical information:

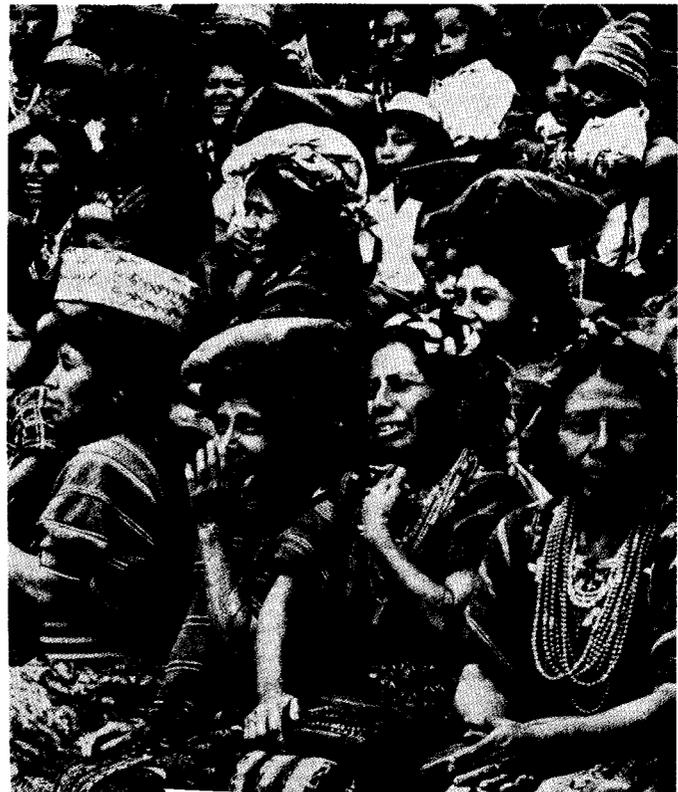
Essentially, family planning experts here maintain that birth control is hampered by illiteracy, superstition and embarrassment about the use of contraceptives and the yearning among poor parents to have numerous children to support them in old age. The problem is compounded by child mortality, and the fear among parents that their children will not survive to assist them. Thus, families often have numerous children.[5]

Furthermore, in the marginal economics of the subsisting family, whether rural or urban, an additional child is often a net benefit rather than a cost, aside from considerations of security.

Closely related to, and frequently derived from the material basis for family size are cultural factors such as customs, superstition, and the endemic sexism by which, for example, a son is a future asset, a daughter much less so. The special value of a son, however, clearly goes beyond his relative economic worth (because of sexist discrimination in employment, land tenure, etc.) to the male chauvinist ideology pervading all operating institutions—religion, education, etc.—and, needless to say, these attitudes are not limited to the Third World countries. Another factor in desired family size is simply the number of kids people want to have around, which is itself a more subtle but no less legitimate product of the material conditions of life.

The people's perception of ideal family size—which in most underdeveloped countries appears to substantially exceed that required for an "acceptable" growth rate—is thus a consequence of a traditional, sexist ideology but is based on a not unreasonable assessment of people's prospects in societies which have extremely restricted options for the majority of the working class. There is considerable debate within the population control establishment about just how badly people's desired family sizes diverge from the optimum "zero population growth" size in different countries, this being an issue that helps divide the voluntarists from the coercionists of population control. Elaborate and painstaking surveys of the world's masses

have been conducted on this question but with ambiguous results. However, careful analysis of many programs where birth control has been widely disseminated suggests that the fertility reduction attributable only to access to birth control techniques is not substantial; that non-access to contraceptives is not generally the major determinant of "excess" family size.[6] In any case it is widely agreed by advocates of population control that the people's view of family size must be modified, by persuasion or coercion, and thus social-psychological research in this area is a major focus of research and development funding.[7] KAP studies (knowledge-attitude-practice), large sample surveys of fertility attitudes and reproductive behavior, have been carried out in most populous countries. These studies attempt to develop the data base and empirical support for designing programs to effect the appropriate changes in attitude on family size, use of birth control and related behavior. However, like most social science in oppressive social milieus, these studies have questionable meaning (not to mention relevance) because of inherent bias in their operation. Interviewing peasant women about the family size they "really" want, and why, clearly is not a trivial task. This is a good thing, reflecting as it does a healthy distrust of government agencies.



Population Control: The Strategy

The population control programs in operation today, under the direction of outfits like IPPF, the Population Council, AID, etc., but increasingly administered by local government or private organizations, uniformly seek to reduce fertility by changing people's awareness of their best interests *without* trying to change the underlying material basis for their current choices. Seriously undertaking the latter, (which would mean creating large numbers of jobs, eliminating sex and racial discrimination, and forcing restructuring of investment) would clearly conflict not only with the host country's governments in most cases, but also with the goals of the sponsoring organizations (e.g. AID, the Rockefeller Foundation). Given the extreme economic deprivation and insecurity of the working class in the underdeveloped countries, a situation getting worse as the Rockefellers' "green revolution" forces people off the land, it must be concluded that "effective" population control programs may actually make things harder for individual families.

At this point, population control is a program enlisting social science technology for selective attitude correction and behavior modification. However, as the more rabid proponents of population control keep reminding us, there are limits to persuasion technology. With the elaboration of the current population control infrastructure—data bases, technical assistance networks and bureaucracies—the institutional capabilities for coercive methods, both formal and informal, will be ready. In India, "this is just beginning. . . with Government housing and job preferences for heads of smaller families and men who can show certificates of sterilization. Some private companies have also begun to enforce the same policy." [8] But even this kind of mild coercion has limitations since in the current social order the supply of jobs and housing is obviously limited. The hard-core proponents of population control have already written off places like India as "hopeless," [9] so that for them it is only a matter of time before mass sterilization technology is developed and used. Fertility control agents (e.g. in drinking water) have serious technical drawbacks at present, [10] but in the future these may have to be overlooked—if "necessary." Of course respectable population planning institutions like the Population Council (the top private policy-making population control organization in the U.S.) reject any talk of strong coercive measures, being ever-glowing in their praise of progress under voluntary schemes. However, it should be recognized that this is in fact the only politically viable position for them to take since their major objectives at this time are to make population control an accepted part of government activities and to play a guiding role in the establishment of organizations and policies for regulating population growth. This done, the need for stronger than voluntary measures, as time goes on, will be met with mutual consent.

There is a much more damaging consequence of population control than the manipulation of people's fertility in relation to the material conditions of their life. This is the ideological function of "blaming the people" for the society's severely oppressive nature. The propaganda claims

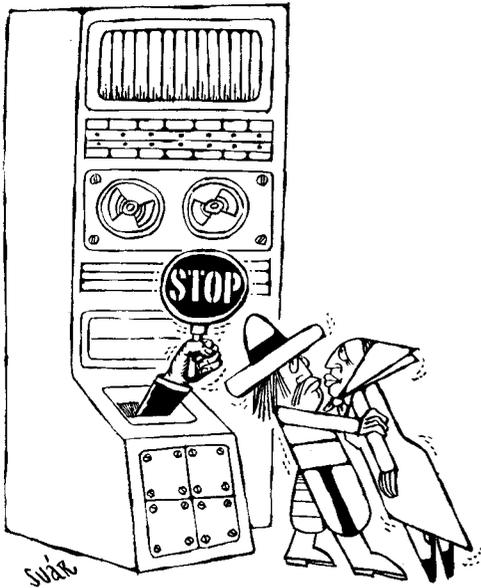
that population is the cause of people's problems: "you are the cause, by your excessive, irrational family size." Billboards advertize large families as the enemy, not landlords, industrialists, or foreign investors. Because there are "too many people," doing something meaningful about the overwhelming problems looming on the horizon for Asian cities like Calcutta, Jakarta, or Manila means getting tough with urban squatters—former peasants forced off the land—by shipping them forcibly back to their villages (already done in Indonesia). [11] It doesn't mean expropriating landowners and setting up labor intensive agricultural projects. Rather than encouraging collective consciousness and action on the real problems, the ideology of population control (not surprisingly) proclaims the role of individuals to be: have a small family and "get ahead;" don't be like "them."

Basis of the Population Control Strategy

Why do population control programs attempt to treat the symptoms (excessive growth rate) instead of the disease (a social order allowing no hope for a better future)? Capitalist economic development means a continuing and frequently increasing *disaster* for most of the people. Robert McNamara, former Secretary of Defense and current President of the World Bank, agrees with this assessment. In a rather candid report to the World Bank Group's Board of Governors he comments that:

The poorest quarter of the population in developing lands risks being left almost entirely behind in the vast transformation of the modern technological society. The "marginal" men, the wretched strugglers for survival on the fringes of farm and city, may already number more than half a billion. By 1980 they will surpass a billion; 1990, two billion. Can we imagine any human order surviving with so gross a mass of misery piling up at its base? (Emphasis added.) [12]

The manifestations of this disaster, nevertheless, can be somewhat suppressed and made more manageable with population control. This is now an urgent concern simply because in many underdeveloped countries the "development process" after several more decades promises still to generate large population increases without a corresponding increase in non-subsistence level opportunities. Thus the improvements in living standards which were experienced following industrialization in Europe, North America or Japan and which led to an automatic decline in fertility, are not expected to be repeated in the Third World countries nearly soon enough. The fear is that the "demographic transition"—the observed fall in fertility with relative economic advancement under contemporary capitalist development will never be realized. . . before it is too late. There is no doubt that population control is an urgent political necessity for the rulers of these lands. But it won't in general make the people's lives better, just fewer.



Three examples of countries with "population problems" will now be mentioned briefly. Until recently, business leaders in Mexico welcomed increasing population because it meant cheap labor and a large market, but now they are worried. Now, after years of indifference, the

government apparently plans to work closely with the Foundation for Population Studies, a private organization started in 1965 by leading citizens. It operates on an annual budget of more than \$1 million, 40% of it from Mexican sources and the rest from international agencies, among them the International Planned Parenthood Federation and the Ford Foundation. [13]

President Echeverria, not missing the political significance of the population issue, told a conference of workers and farmers, "Many of the nation's problems stem from an increase in population." In a country where sixty years ago a revolution supposedly delivered the land to the people, we now witness the top official, representing the agriculture-business elite, explaining how population is the cause of many problems.

Egypt is another country with a bad population prognosis. A government survey perhaps reveals why: three out of four are technically unemployed, probably one of the highest rates of overt, or disguised unemployment in the world. Only 7% of women play an active role in the economy, partly due to the 78% illiteracy rate. This report recommends a population control program as part of a short-run solution.[14] Fighting a war allegedly to help the Palestinians apparently comes before fighting a crippling illiteracy or sexist traditions, or developing a mass mobilization through which the people would generate solutions to their real problems.

Indonesia's capital city, Jakarta, was declared a closed city in 1970, prohibiting further immigration from the countryside (unenforceable). Two thirds of Jakarta's population of 4.5 million earn less than \$75 a year, yet there

is a continuing influx because the rural situation is worse. Meanwhile, off-shore oil, minerals, and lumbering concessions make Indonesia one of the high spots in this area for Japanese and U.S. investors.

Must economic development be this way? Development in the capitalist mode is designed to optimize the use of capital which the people don't own. The people, in this process, are merely an essential resource whose supply will generally exceed the "needs" of capital, especially in the case of foreign, high-technology capital. As McNamara explains it:

Technology becomes steadily more capital-intensive and absorbs steadily fewer men. Although agricultural productivity is now on the rise, the new techniques are destabilizing in the sense that they widen income inequities and release still more workers from the overcrowded land. [12]

(Notice how technology suddenly decided that the land was overcrowded?)

A real alternative would be a development program depending on what the people do have, i.e. people, for *their* benefit. This would be a very different political solution, naturally, and would have characteristics such as relatively labor-intensive industrialization, non-elite educational systems, and the erosion of traditional sexist roles and attitudes, thus undermining the basis for large families and excessive growth. People's China is one approximation of this alternative.

Fundamental Critique of Population Control

The position of genuinely concerned liberals in support of population control amounts to a negation of class struggle, claiming as it does, that people's rate of progress—quality of their life—is mainly related to their *numbers*—inversely. This might be true in the extreme case where labor shortages develop, causing wages to rise (not without a struggle), but very rarely do governments or ruling classes allow labor shortages to occur—certainly not in underdeveloped countries. (Japan's planners recently proposed *increasing* Japan's population growth to prevent such shortages.)[15] Generally it seems that political factors, such as the strength of the working class, are much more important than numbers in determining the people's rate of progress. In many sparsely populated countries the people remain very badly off (Paraguay, Bolivia, Ethiopia, Malaysia), while in some highly populated ones, there has been substantial progress (China, Japan during its early phase of capitalist growth which was independent of foreign capital).

An idea closely related to the numbers-progress theory holds that massive population will lead directly to revolutionary upheaval. This premise, which some radicals believe, and other radicals are accused of believing, seems not to be at all accurate. Why hasn't India long since exploded? Why has Chile a long history of advanced political struggle, but Haiti a relatively stagnant

*Those Who Take The Meat
From The Table*

*Teach contentment.
Those for whom the taxes are destined
Demand sacrifice.
Those who eat their fill speak to the hungry
Of wonderful times to come.
Those who lead the country into the abyss
Call ruling too difficult
For ordinary men.*

Bertolt Brecht

oppression? The much more satisfactory explanation for how things get better, for why people sometimes even revolt against their oppressors, concerns the actual development of the class struggle in each case. Basic improvements in the underdeveloped countries—in land tenure, urban and rural squatters' rights, for education and other services, the right to organize unions, and in other issues that enter the local arena—result at least in part from concessions by the rulers responding to pressures from the people. These pressures may manifest themselves as sharp clashes, organized “misbehavior,” or just moves by established political parties (where they exist) which feel their hold slipping. Essential to these pressures, however, is an underlying class consciousness—awareness of class allies and enemies—which of course is itself a complex historical development. The history of previous struggles, the creation of organized political groupings and the cultivation of important concepts—unity, class struggle, the role of the state—are primary. But this is precisely where population control (and more traditional, allied, reactionary ideas like nationalism or racism) plays a destructive part, in blaming people's numbers, obscuring questions of power. Instead, our goal should be to help *advance* class consciousness and struggle.

In general terms this would mean contributing to struggles in underdeveloped countries for economic security and better employment, especially for women, for better health care (including birth control, as the “market” for it grows). It would mean fighting reactionary ideology like population control, racism, sexism and elite technology. Serious progress in modifying the material and cultural bases for family size, would have potentially far greater consequences than the ruling classes' population control programs, including possibly, removing some ruling classes. In contrast, the argument that population control is now a top priority clearly assumes the above changes will *not* be realized. With this assumption, they are right; population control is urgent: less population growth now means less genocide and murder later.

Population Control and Political Practice

There are specific political objectives for technical-professional workers in rejecting the fallacies behind population control, identifying the sponsor's real motives, and in showing that the world's “multiplying people” are our allies against multinational corporate marauders, not our enemies. The U.S. and the international medical R&D establishment is an important context in which to make these points. The population control forces recognize the need to consolidate support for their programs among foreign professionals and they conduct seminars for this purpose:

Doctors and scientists conducting this research sometimes have to be convinced of the necessity for solving the population control problem quickly. The government holds seminars for foreign scientists for this purpose, and has been quite successful. As was pointed out at one of the International Planned Parenthood Federation seminars: “Perhaps one of the most important accomplishments of the seminars has been the change of attitudes on the part of many delegates from a negative or doubtful attitude toward family planning and population problems to a positive, dynamic outlook... [16]

Clearly a critical analysis of population control is lacking here. Other forums for this debate are numerous: professional meetings (many scientific organizations have population committees, or activities, e.g. AAAS, American Psychological Association); university departments where foreign policy studies, foreign aid, or other international projects are funded (almost all universities); within the ecology movement where population is commonly assumed to be the problem. Criticism of the population control concept certainly should include discussing the role of sexist and related ideology and it would be valuable to formulate concrete suggestions for how institutions and government programs could fight these ideas, if they happened to want to.

Besides ideological critique, there are many ways people in this country can more directly contribute to real progress in the underdeveloped countries. Attempts to restrict the behavior of multinational corporations, particularly their investment policies, could be the basis for alliance between U.S. and world workers. The issues could include: more labor-intensive production, ending sex and race biases in employment, and social benefits like health benefits, day-care. Exposing the repressive functions of military and “public safety” (police) foreign aid as well as the insidious role of counter-insurgency social engineering in general, would also assist progressive forces in underdeveloped countries.

Another area of activity is interacting with groups or organizations in other countries concerned with improving comprehensive health care, public health measures, education, old age security, etc, addressing, among other things, the concept of population control. In particular, population control programs that involve drug testing or

sterilization should be very harshly scrutinized. No program should be allowed to exploit or cut corners on grounds of "urgency". Drug testing in underdeveloped countries to evade more stringent regulations in the U.S. should not be allowed. There should be no incentives offered for sterilization and no formal or informal pressure (e.g. at child-birth). Obviously these can be enforced only by mass awareness. Population control ideology in advertizing and public education should also be challenged.

In cases of well-meaning organizations involved in population control, like the American Friends Service Committee, an attempt should be made to generalize their programs to broader health-nutrition issues, purging any population control propaganda content, while continuing to make available birth control and encouraging open discussion and activities aimed at breaking sexist attitudes and institutional practices.

Population in "Advanced" Countries

The population situation in industrialized countries is very analogous to the underdeveloped country case: there are material and cultural factors in family size, which again reflect various forms of oppression and damaging ideology (for example the defined sex roles). At least some policy makers and "leaders" in the U.S. would like to modify fertility, especially of low income and minority groups, without inconveniencing the system or modifying the basic options of the people involved. The government and private institutions have shown little interest in challenging sexism. A similar political function is manifest in these countries with population—the people—being blamed for environmental destruction, resources shortages, and crime. The political importance of population can also be seen in the constant and not very subtle allusions to the welfare "burden" of urban blacks as a "population problem". Corresponding to the public racism of the politicians is the private racism which allows young black women to be sterilized unknowingly, or makes black mothers agree to submit to sterilization in order to have a baby delivered under medicare.[16]

Clearly what problem of population growth there may be in the U.S. (it's hard to tell since they've messed everything up so badly) will readily vanish when women (and most men) gain more appealing options for their lives, than raising families with or without oppressive jobs. In this sense, the population problem in the industrialized countries parallels that of the underdeveloped ones, and therefore, unity with the people, not ideological or technological servitude to the rulers, should be our immediate objective.

Conclusion

A progressive political role in the developing countries is one which helps advance the people's class awareness and strength, a process which clearly both depends on and fosters the liberation of women. Accordingly, the practice of birth control would be a likely and desirable concomitant of the developing class struggle. Population control programs, on the other hand, seek to methodically and manipulatively modify reproductive behavior while leaving unchanged and even protecting the fundamental bulwarks of exploitation and oppression in these and all countries.

B.P.

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THE STRUGGLE AGAINST ARMY



IN THIS SECTION:

A. THE TRIAL OF KARL ARMSTRONG

B. EXPOSING MILITARY MATH

C. THE AMRC PAPERS: EXCERPTS

THE TRIAL OF KARL ARMSTRONG

In February 1971, Karleton Armstrong was apprehended by Canadian police in Toronto, arrested, and jailed pending extradition proceedings. Imprisoned for the following 21 months, Karl was subjected to an extraordinary series of legal machinations by the judicial apparatus of Canada and the U.S. Finally, a hearing in Toronto concluded that the bombing had no "political connotations", thus permitting Karl's extradition under Canadian law*. This was followed by a secret flight to Madison in the governor's personal airplane, a \$450,000 bail which is the highest in Wisconsin's history, and months of pre-trial

* Technically speaking, Canada guarantees to political fugitives protection from extradition or deportation to the country fled from if they are charged with politically motivated crimes. Armstrong's extradition hearing is a remarkable example of international ruling class solidarity in defiance of the facts of the matter and their own laws. For a description of the hearing see "Karl Armstrong: After the Bomb" by David Wagner, obtainable from *Takeover*, Box 706, Madison, Wisc. 53701.

MATH

motions in a court room protected by closed circuit TV cameras, guards with metal detectors, and scores of redtape for anyone hoping to enter.

Events climaxed surprisingly on September 28, 1973 with the announcement of a bargain between Armstrong's lawyers and the prosecutors. Karl pleaded guilty to four counts of arson for his role in the August 1970 bombing of the Army Mathematics Research Center in which physics researcher Robert Fassnacht was accidentally killed. Armstrong also pleaded guilty to assorted lesser charges, including six bombings directed at ROTC offices, a Selective Service office and an ammunition plant. In exchange, the prosecution dropped the murder charges from first to second degree, recommended that the sentences be arranged to cover a maximum of 25 years in prison, and allowed Karl a two week hearing to persuade the judge to reduce the sentence.

The mitigation hearing was a crucial part of the bargain as explained by William Kunstler, one of Karl's lawyers:

"Karl agonized over his decision. On one hand, he didn't want to let down his many friends and supporters, who saw in his trial an opportunity to expose the insidious connection between the Army Math Research Center and the war in South-east Asia. On the other hand, he wanted to be assured that he would be able to get such information before as much of the American public as he could reach. When his lawyers told him that it was extremely doubtful that such evidence would be admissible in a criminal trial, he elected to plead guilty and present it in full at a mitigation hearing. It was a hard choice for anyone to make and I am proud of Karl for the courageous way in which he resolved it.

Karl's decision was particularly courageous because he had a good chance of being acquitted of first-degree murder in a jury trial. The evidence indicated that stringent precautions had been taken to ensure that no one would be injured in the detonation. Madison police ignored an anonymous warning to evacuate the building. Karl might have escaped a lengthy sentence after a long legal battle—which might have buried the politics of his act.

The serious question for us . . .
is not the question of our own welfare
but the moral trajectory of our act—
that it fly undeflected, to the heart of the matter,
which is
the infamy of the widening war
the grief torture dislocation death
rape murder terrorism
inflicted by our government
upon the innocent.

— from "The Passion of Dietrich Bonhoeffer"
by Daniel Berrigan

The Mitigation Hearing

The hearing began on October 15, 1973, a triple anniversary: Karl's birthday, the first moratorium against the Vietnam War, and the commencement of the war crimes trials at Nuremberg. Karl had already voiced the themes for his defense when he pleaded guilty:

The acts with which I have been credited were undertaken with the purpose of crippling the efforts of the American government to wage an illegal, criminal and aggressive war against the Indochinese peoples, to prevent further loss of life, devastation and suffering. I have acted out of a sense of moral responsibility and felt for me, not to have taken action against this war would have been criminally irresponsible. I am not happy about the death of a human being and the injuries suffered by others as a result of these actions, but I do not apologize for having taken these actions. These actions were intended as an affirmation of life and great precautions were taken to prevent injury to human life.

According to attorney William Kunstler, Karl's unprecedented use of a purely political defense is "historic."

In the two weeks of mitigation pleadings Karl's defence was elucidated by the testimony of witnesses such as Vietnam veterans, Philip Berrigan, Anthony Russo, Daniel Ellsberg, biologist Egbert Pfeiffer and historian Gabriel Kolko. Many of the Vietnam veterans clearly found Karl's act of resistance preferable to their own war crimes which they graphically explained to the court. After telling of his years in Vietnam, one marine, Sam Schoor, concluded, "I've killed many more people than Karl Armstrong and would gladly serve next to him in jail."

International law expert Richard Falk reviewed the U.S. government's many crimes in Vietnam such as the indiscriminate killing of civilians by the electronic battlefield and automated air war, and then discussed the legal basis for resistance:

"To stop the commission of great crimes, one may have to commit lesser crimes. What is illegal or criminal has to be understood in the context of the larger notion of the illegality and criminality of the war. . . . In the light of the Nuremberg tradition and the absence of constitutional redress, the sense of the right and the duty of the individual to take the law into his own hands is reinforced."

Falk then recalled cases during World War II when this principle was used by President Roosevelt and others to encourage the violence of the resistance movements against the Nazis.

When asked about the legal responsibility of AMRC mathematicians for their work on the electronic battlefield, Falk cited the Nuremberg trials of scientists who developed Zyklon-B gas for the Nazis' death chambers. Because these German scientists knew the use intended for their research, the Nuremberg tribunal found them guilty of crimes against humanity.

It was during the time of the Sputnik that I decided to become a scientist because the country needed scientists. It was later when I entered college that I saw that science is studied for the benefit of the few, that it oppressed people.

The bombing was a statement of moral as well as political protest. The depth of Karl's moral outrage over the Vietnam War was pronounced in the testimony of Armstrong, his parents and the people who knew him in the movement. In his father's words, "He couldn't take it just because it was 10,000 miles away and he knew that what was happening there was just as important as if it were happening to my best friend right here at home."

As the hearing reached its end Karl recounted the process which prompted the son of a Madison worker to set bombs. First, as a nuclear engineering student. His struggle then became focused on the Vietnam War, and he went through a history familiar to many: dozens of demonstrations starting with draft protests in 1965, campaigning for Eugene McCarthy, marching in Chicago in 1968 and Washington in 1969.

Concluding that peaceful means had been exhausted, he testified:

I debated the use of violence. But I had a horror and revulsion against the war. I am a very non-violent person. I don't like to use violence. I don't feel comfortable with violence. After fire-bombing ROTC and the Badger Ordnance Plant, I felt very alienated from the violence I was using. I was wishing that there was some other way to stop the war. I alternated between pacifism and violence.

But events led him to plan the bombing of Army Math: "I thought if the bombing of AMRC saved the life of one Indochinese, the destruction of professors' research—all that destruction versus one life—to me, would be worth it."

The hearings were a compelling reaffirmation of Karl's moral and political commitment. As Gabriel Kolko testified, "He will be respected and honored, and his action will be a milestone in the history of the resistance to the Vietnam War." But the moral worth of Karl's actions did not weigh as heavily as the political pressure which induced Judge William C. Sachtjen to hand down a 23 year jail sentence (two years being exempted from the maximum sentence for the time which Karl has already spent in jail).

Army Math on Trial

The political import of the bombing of Army Math was not as widely grasped as its moral underpinnings.

Too few people in Madison at that time understood the nature of AMRC and U.S. imperialism to follow up on Karl's act of violence. The mitigation hearing, however, helped to build consciousness about Army Math here in Madison, although a media blackout kept the story from the rest of the nation.*

Along with The AMRC Papers, the record of the hearing is a powerful indictment of the center's work. Steve Hawkins, a veteran of the Air Force in Southeast Asia, testified about the employment of AMRC research in the war. His list included the electronic battlefield, electronic and computer components of which had been produced at Project MICHIGAN with AMRC's assistance, vehicles and methods of transporting weapons in the jungle (the work of the Waterways Experiment Station, a regular AMRC customer), and the dispersal of various chemicals in aerosol mists (a frequent element in the AMRC consultations with the Army's chemical and biological warfare experts). In one of the most chilling moments of the hearing, Hawkins explained how the Air Force would lay down a cloud of CS tear gas over the Vietnamese countryside, and then drop napalm to cause a chemical reaction producing lethal hydrogen cyanide. Although the idea for the chemical reaction (obviously a war crime) was probably generated elsewhere in the Army's research system, AMRC reports clearly mention research on the aerosol technology needed to control the cloud of gas.

In cooperation with Armstrong's defense, Science for the People also put AMRC's acting director R. Creighton Buck on the stand at the mitigation hearing. The defense had subpoenaed records of AMRC's reports which were delivered by Army Math's director. After a technical examination on the nature of the documents, the prosecutor subjected Buck to a lengthy cross-examination in which all the center's rationalizations for its work were once again enunciated.

Today the Army Mathematics Research Center is still in operation. Fighting, hardship and injustice in Indochina are not over. American imperialism wields its puissant forces elsewhere. Graphically "bringing home" the horrors of Vietnam, the Armstrong trial was a summons to revitalize our commitment to the anti-imperialist struggle. It is our responsibility to Karl, to the spirit that engaged him, that we pursue that fight—because the "real murderers are still at large."

Madison SftP

* The best story of the hearing which was distributed around the country appeared in *The Nation*, 26 November 1973. Hopefully, a publisher can be found to make a book out of the hearing's transcript.

EXPOSING MILITARY MATH

In Madison, the struggle against U.S. imperialism has refocused on the Army Mathematics Research Center (AMRC) at the University of Wisconsin. Two important events in the fight to abolish AMRC have taken place this fall: Karleton Armstrong was tried and sentenced for his part in the 1970 bombing of the center, and a book called *The AMRC Papers* was published by the Science for the People collective in Madison. The book and the Armstrong trial exposed Army Math's work to people throughout Wisconsin, and brought increased support for the two demands raised by Science for the People: close AMRC, and replace it with a People's Mathematics Research Center (PMRC).

A History of Struggle

The background of the movement against Army Math was described in the article "Calculus for Conquest" in the March 1973 *Science for the People*. In Madison, the trail of expose, protest and demonstrations built up to a massive bombing on August 24, 1970, which destroyed the center's building and accidentally killed a researcher. The Army Math center was seriously damaged by the bombing, but it soon resumed its work in another building on the fringes of the campus. In contrast, the movement against AMRC was dissipated by the shock over the death and by the repression that followed from the FBI, grand juries, and the local police.

Fresh resistance to AMRC welled up in 1972 from two sources. First, Karl Armstrong, one of the four men accused of bombing AMRC, was captured in Toronto, Can-



ada. As the legal systems of Canada and the United States put Karl on trial, the Left slowly came to his defense. The people who defended Armstrong had different attitudes towards the bombing of AMRC and the resulting death, but everyone was united by the idea that the American government, the murderer of more than a million in Indochina, had no right to try Armstrong for a single death. Under the slogan, "The real murderers are still at large," the Armstrong defense also became an attack on U.S. imperialism and on AMRC in particular.

The second attack on Army Math came from the Science for the People collective in Madison. Beginning in June 1972, SFTP demonstrated against the symposia which AMRC holds twice yearly on the Madison campus. During these actions, we condemned the center's clear perversion of science for destructive ends as well as its role in preparing the U.S. for the Vietnam war and future wars against Third World movements. It quickly became clear to us that this condemnation by itself was not enough. We needed more concrete information on the workings of AMRC to provide a basis for our arguments. We also needed to present an alternative to AMRC to juxtapose what is and what could be. In this light, we developed the idea of a People's Mathematics Research Center (PMRC), a center which would apply AMRC-type mathematical tools to the problems of working people. By contrasting PMRC with the reality of AMRC, we hope to build awareness of the misuse of U.S. science.

The AMRC Papers

While we were picketing the AMRC symposia, we had ample opportunity to debate the nature of AMRC with the participants who crossed our picket lines. In these discussions, Army Math's apologists argued primarily that the center did only "pure" research. We realized that the only public evidence to the contrary was circumstantial fragments such as travel vouchers for the center's trips to Army bases. Even such basic documents as the AMRC contract were not available to the public.

Consequently, in the Fall of 1972, members of the collective began a project of research on Army Math. While searching for the original Army-AMRC contract in the University Archives, Paul Still came across the papers of former U.W. president Fred Harvey Harrington. In Harrington's files, Paul found not only AMRC's contract, but a series of reports which the center regularly sent to the Army. These Quarterly and Semi-Annual Reports included lists of contacts between AMRC scientists and the Army. This was a major discovery. These reports spelled out in great detail the services which AMRC provided for the Army. The University Administration attempted to withhold these reports; but they are required to release most official documents to any member of the public by Wisconsin's "Open Information Law." The entire collective was soon working on the AMRC papers—digging out missing reports, collating the information and interpreting the facts.

In our research, we concentrated on AMRC's consultations with eleven Army bases which were producing weapons and strategies for counter-insurgency warfare, chemical and biological weapons, missiles and conventional weapons. We also found the center's contract and budget, a list of the staff's highly inflated salaries, and documents on the maneuvers which brought AMRC to Wisconsin.

Material of this extent and complexity could be published only as a book, and the entire collective started the writing in early 1973. After considerable discussion, we settled on the kind of book which a non-scientist could read and a scientist would believe. The chapters written by scientists were therefore reviewed by non-scientists. We also realized that all of our details about Army Math's work made sense only in their political context—the U.S. Army's role in guerrilla wars past and future. In long discussions, we clarified our thinking on U.S. imperialism and the People's Mathematics Research Center, and included chapters on both these subjects in the book.

We also decided to publish the book ourselves. We did all the work of typesetting and laying out the pages ourselves with equipment and advice of the local underground newspaper, *Takeover*. The people in the collective had little previous experience with publishing, so we learned each step in the process through trial and error. Some parts of the work turned out pleasantly: finding graphics and photographs, drawing the eagle on the cover out of equations from AMRC reports and seeing a good-looking page come together in our hands. However, publishing a 130-page book was a large burden for the fourteen people in the Madison collective, even with two of us working full-time on the project.

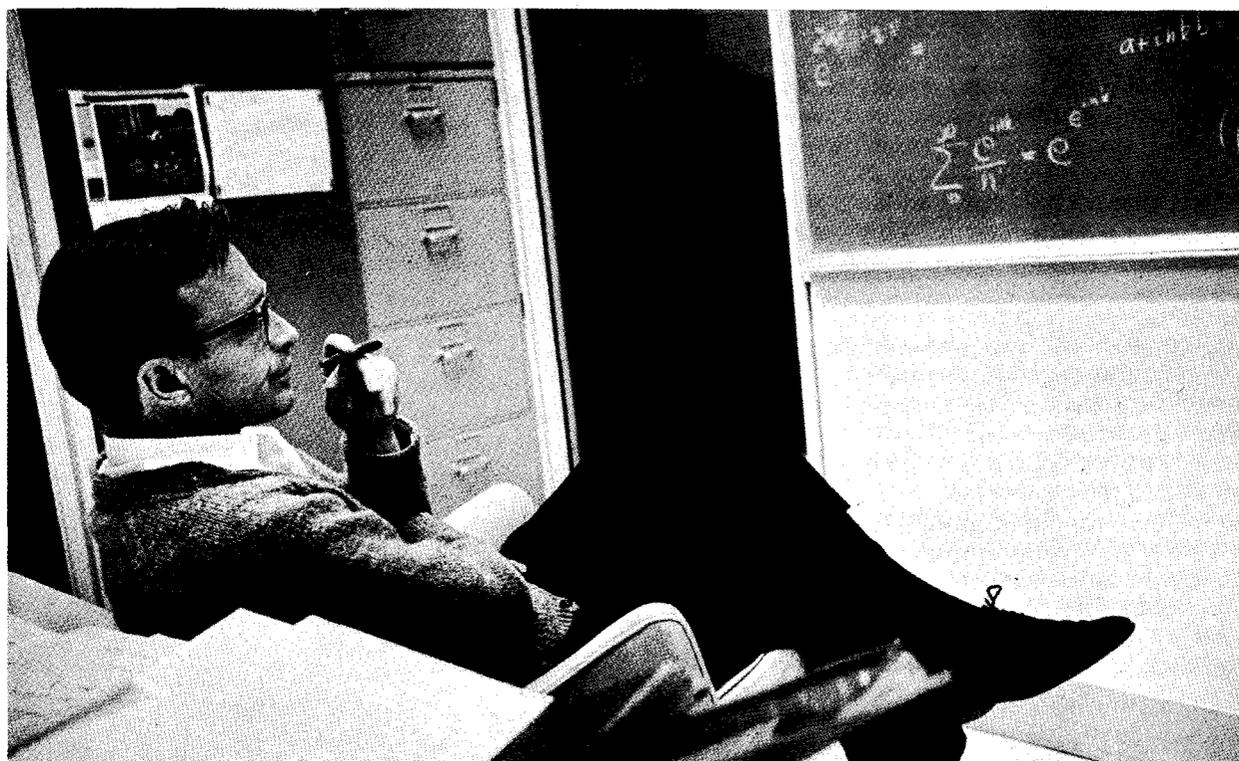
Launching the Book

While *The AMRC Papers* was being printed, we began organizing a movement against AMRC. According to our analysis, Army Math could be removed† by Wisconsin officials if they decided that the center were a political liability. Thus, our strategy is to mobilize public sentiment against AMRC throughout Wisconsin.

Our first task was launching the book with enough publicity so that people would read it. To ensure that the media would not ignore us, we arranged a press conference in the office of Madison's left-liberal mayor, Paul Soglin. In preparing for the press conference, we spent several weeks seeking support from reporters, editors and politicians. The result was good press coverage in Wisconsin papers and even in the *New York Times*.

Having built this wave of publicity, our problem is to transform the press coverage into a general consciousness of the nature of AMRC, and to work with people to channel this consciousness into political action. To develop this consciousness, we are going out into the community—to clubs, classrooms, labor unions and city ward organizations—speaking about Army Math. To generate actions, we organized a demonstration protesting AMRC's Fall symposium and introduced a resolution in the Madison City Council calling for the cancellation of the center's contract.

† AMRC could not exist without several favors granted to the center by the University. For example, AMRC's permanent staff were granted permanent leave by the Math department, in order to receive salaries far above the University maximums from the Wisconsin Alumni Research Foundation (WARF). In May 1973, the Math faculty considered withdrawing these permanent leaves, thus breaking AMRC's contract, but the motion lost by a 4 to 1 margin.



THE AMRC PAPERS: EXCERPTS

The following sections are excerpted from Madison SftP's recent book (copies available), *The AMRC Papers: An Indictment of the Army Mathematics Research Center*. These excerpts are meant to convey the thorough documentation the book provides of the objectives and activities of the Center, and the critique it offers of the misuse of mathematics exemplified by the Army Mathematics Research Center (AMRC).

The Army has realized from the outset that a university setting is essential for the kind of mathematics research center it needs, where close scientific contact between Army research and development personnel and other scientists, primarily academic ones, is possible. Additionally, only by providing a stimulating university environment can the Army draw the top researchers in the desired fields of applied mathematics to such a center. These researchers would not work in the more controlled environment of an Army base or laboratory where the options, and the publishing so important for the esteem of their scientific peers, are more restricted. These researchers, however, eagerly come to the University of Wisconsin to do the same research for the Army. What the Army expects from its partnership with the University is outlined in the objectives of the Army-University contract in which the University agrees to fulfill the objectives and scope, utilizing its best efforts, personnel, and facilities.

The contract states that the objectives are:

- A. To provide a group of highly qualified mathematicians which will conduct mathematical research in the areas cited in (1)-(5) of paragraph A below. The emphasis in this research is to be on long range investigations with the intention of discovering mathematical techniques that may have application to the scientific and technical needs of the Army. The research is to supplement (not replace) that of existing Army facilities.
- B. To provide for the Army a source of advice and assistance on mathematical techniques, mathematical programs and mathematical problems.

C. To provide a center for stimulating scientific contact and cooperation between Army scientific personnel and other scientists.

D. To increase the reservoir of mathematicians that may be called upon by the government for assistance in the event of national emergency, by acquainting mathematicians with problem areas relevant to Army needs.

Contract DA-31-124-ARO-D-462
Modification P010, June 1973

What AMRC Does

The programs carried out by AMRC fall into several categories: research, consulting, training, providing technical services, and working with academic scientists. These are each described in detail in The AMRC Papers where extensive information from letters, proposals, and reports is given as evidence of AMRC activities. This chapter not only demonstrates how these different activities fulfill AMRC's contractual obligations, but how they are essential aspects of military research—the design and testing of weapons, and the formulation of military and political strategy.

The mathematical papers published by AMRC provide AMRC spokesmen with the excuse that no secret work is done, in accordance with a University regulation, and that the Center's total work is found in the "open literature." But what is omitted from publication are the ways in which this so-called "pure research" is in reality directly applied towards solving the Army's mathematical problems. The clearest method of this application is through the permanent staff's consultations with Army base mathematicians, involving lectures, symposia, and orientation sessions with large groups of Army personnel, and other times the advising of smaller groups of Army mathematicians on specific problems . . .

As the trail of Army-AMRC consulting was traced out by Madison SftP, the Army's growing dependence on mathematical models became an obvious fact. Through mathematical modeling AMRC has helped the Army in three important areas. First, it has helped design new weapons and the technological components of new weapons systems. Second, it has aided in the testing of weapons. Third, AMRC has helped analyze and plan strategies for future warfare systems. Again, the real situation is simulated as a game in mathematical terms. The player of the game is the Army strategist, who tries out various strategies to determine which best attain the Army's goal. The assumption is then made that the strategy working best in the game will work when the situation is faced in actual combat.

The Army transforms AMRC's mathematical tools into military hardware and strategy at a number of research bases. These bases are a crucial step in the process which pipes "pure" University research into the American military machine. Gathered there are the scientists and engineers who apply AMRC's work to strategies and weaponry. Providing these bases with the latest mathematical techniques has been AMRC's primary purpose since its birth.

CONSULTING ON GUERRILLA WARFARE

The following excerpt is a discussion of AMRC's work with STAG (Strategy and Tactics Analysis Group)—one of the ten Army Bases for which Madison SftP was able to obtain the most information on ARMC consulting. It is an example of the in-depth research contained in The AMRC PAPERS.

STAG is an Army group which plans battle tactics and strategies at all levels. One of the main tools used in such planning is war games. These "games" are sets of mathematical equations representing a combat situation. The military strategist makes a decision; the decision is then represented by placing values in the equations. The answers, which are often found by computer, predict what would be the combat results in a real war given the strategist's decisions. AMRC helped STAG prepare equations which will simulate, as correctly as possible, what really happens in combat. These are called "models" of war.

AMRC's help began in 1960 and has continued through 1972, according to the Center's latest written report, and may well be continuing today. Assistance has focused on increasingly sophisticated combat situations, including guerrilla warfare, as the Army's work has progressed over the years. The mathematical problems in finding equations to represent the complexities of combat are very intricate and require AMRC's expertise.

To give a sense of what is required in such models of war, a basic model, the Lanchester Model, is described in the box on pg. 33. AMRC has been involved in attempts to improve this model over the last several years . . .



Contacts between AMRC and STAG have taken place periodically from 1960 to the end of 1972. These consultations have been primarily with one STAG person, Dr. R. Howes, . . . who works on computer models of guerrilla warfare, including the Lanchester model. The first consultation is described in AMRC's 1968 Annual Report:

A COMBAT EFFECTIVENESS PROBLEM.

March 21, 1968. In response to a detailed request for assistance with a problem concerning measures of effectiveness which was received from Dr. David R. Howes, U.S. Army Strategy and Tactics Analysis Group (STAG), Bethesda, Maryland on March 6, 1968 Professor J.B. Rosser wrote to Dr. Howes to suggest a meeting between STAG personnel and Professor Bernard Harris. A preliminary study of the problem indicated that a solution technique could be provided.

April 4, 1968, et seq. An exchange of correspondence began, resulting in an appointment for Dr. Howes to visit MRC on April 26, 1968.

April 26, 1968. Dr. Howes consulted with an MRC group consisting of Professors M. Fox, B. Harris, G. Kimeldorf, and J.B. Rosser regarding the estimation of a parameter measuring relative combat effectiveness in a computer simulation of war games. The solution to this problem for the special case considered which had been worked out at MRC in the interim was presented by the MRC group. It seemed that it dealt adequately with the problem.

"Effectiveness" in Howes' work is probably the factor of combat effectiveness used in models such as the Lanchester equations of combat.

In 1969, Howes wrote Rosser:

Dear Mr. Rosser:

Following our telephone conversation on 23 December, I discussed your Center's draft of orientation lectures on mathematical programming with Colonel Carpenter, our Commanding Officer. Colonel Carpenter was most encouraged to hear that this series is close to realization. He hopes that STAG can avail its personnel of these lectures at the earliest date, since the maintenance and operation of large programming models has become a STAG responsibility.

While STAG can look to other sources for instruction in various technical aspects of the operation of computerized programming models, it is only by means of a series such as yours that STAG personnel can be brought to appreciate the concepts and theories which underlie the computer models.

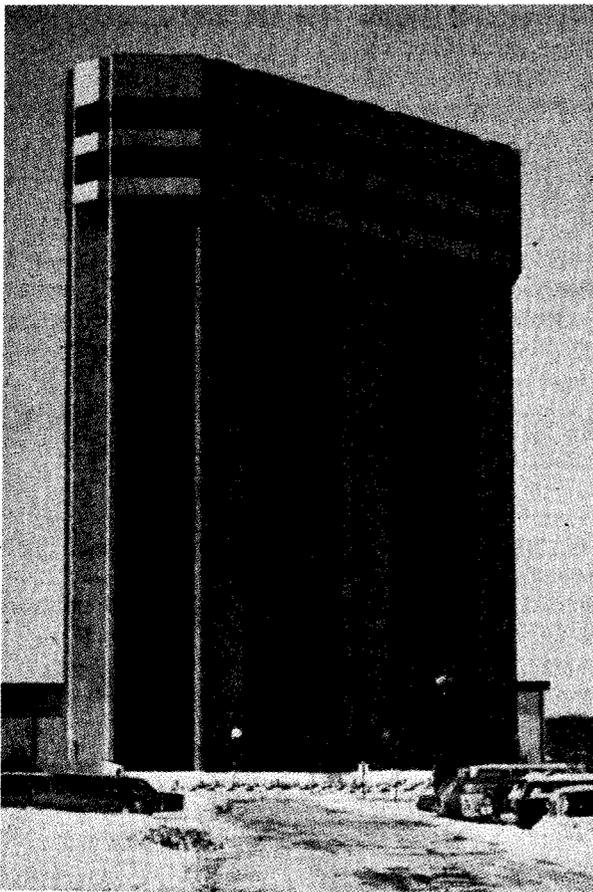
I hope that you will be able to give early attention to your draft.

Howes' only paper in the Defense Department's indexes appeared in 1971. It was entitled: "GUEVARA, A Computerized Guerrilla Warfare Model" (AD-863 983L); the "L" attached to the code means that access to this paper is limited to those with the proper security clearance.

In 1971, Howes' consultations with AMRC continued when "Prof. J.B. Rosser furnished Dr. David R. Howes of STAG an approximating function for a certain integral" (27 April 1971 Semi-Annual Report) . . .

Howes consulted AMRC again in 1972. According to the 20 October 1972 Semi-Annual Report:

On 2 April 1972 Professor Louis B. Rall, Associate Director, returned material sent to him by Dr. David R. Howes, U.S. Army Strategy and Tactics Analysis Group, Bethesda, Maryland, concerning dynamic Lanchester equations. Since the problem of obtaining oscillations in a Lanchester model seemed to be fairly difficult, Professor Rall suggested using a Volterra model for the attrition rates and cited two references that might be of interest in this connection.



AMRC is a "sanctum sanctorum of a bunch of scientific mercenaries."

—Donald Armstrong, father of Karl

This work on the Lanchester warfare models described above is an attempt to make the models apply to the more complicated situation where the probabilities of various outcomes of the combat change according to the progress of the fighting. The "Volterra model" referred to is an alternative type of equation that might be used in the Lanchester theory. It is interesting to note that John Nohel of the UW Mathematics Department has now, and has had for some time, a Defense Department grant to study these Volterra equations in their abstract form. Nohel, it should be noted, works occasionally for AMRC.

The 20 October 1972 AMRC Semi-Annual Report further states that "On 5 April 1972 MRC TSR Nos. 1140, 1142 and 1158 were mailed to Dr. David R. Howes, US Army Strategy and Tactics Analysis Group, Bethesda, Maryland, at his request." No. 1140, "Computational Solution of Ratio Games by Iterative Linear Programming," was written by Stephen Robinson. The motivation for this study is spelled out in the 3 May 1972 Semi-Annual Report:

Dr. Stephen M. Robinson consulted with Mr. David R. Howes at STAG, Md. on March 13, 1972. He presented a new method for formulating and solving an optimal delaying action problem discussed by representatives of US-STAG at the 1971 Army Numerical Analysis Conference. He also pointed out possible applications of a ratio-game model to an optimal weapons allocation system. Work on the latter subject is continuing.

No. 1158 was written by Fred Brauer of the UW Mathematics Department on the "Predator-Prey problem." The predator-prey type of equation offers a way of predicting when and with how much effort a predator can destroy a prey. Howes would be interested in using this type of equation in place of those in his current warfare model to see if it gets better results. The prey would be the guerrillas, and the predator the US.

The predator-prey problem occurs in ecology as well as in Howes' studies on guerrilla warfare. For this reason, the Technical Summary Report written on the predator-prey equations includes a note that it will be published in the "open literature"; the other two reports sent to Howes contain no such remark. The ecologists however will have to wait about two years for the AMRC report to appear in the journals, while STAG received a copy immediately.

The third paper sent to Howes, No. 1142, was also written by Stephen Robinson. This paper concerns the Von Neumann economic model, a mathematical description of the functioning of an economic system. The fact that Howes requested information on economic models suggests that the economy of a country in which a guerrilla war occurs is a factor in the warfare models currently being constructed. In other words, the US is determined to manipulate the economy of whole countries in order to defeat guerrilla movements. This concern with economic modeling is a new direction in AMRC's research, as we describe in the last section.

EXAMPLE OF A WARFARE MODEL

LANCHESTER'S THEORY OF COMBAT

The idea of mathematically representing combat to aid in making strategic decisions was first suggested by F.W. Lanchester around the time of the First World War. Lanchester formulated a battle between two forces in terms of equations which described the rate at which each side's strength decreased. He was especially concerned with air combat. Today, Army researchers have modified Lanchester's equations and assumptions to use them as a means of predicting the outcomes of other combat situations such as ambushes or guerrilla warfare. Primary efforts have been devoted to the problem of using the equations to determine, from the initial condition of the armies, which side will ultimately win.

Lanchester himself dealt with two situations. In the first instance, each side knows only the general location of the opposition forces; and as units on either side are destroyed, the remaining forces then distribute their fire uniformly over the whole battlefield. In the second situation, each side knows the exact location of each opposing unit; and as units on either side are destroyed, the fire is concentrated on the surviving units.

Actual Battles

These simple cases worked on by Lanchester have now been expanded to make the modeling more realistic. He assumed that opposing units had the same firepower, and to modify the equations, introduced different weapons such as tanks versus rifles.

But the outcomes of actual battles are determined by factors more complex than the numbers of troops and weapons. Model builders today incorporate human variables which introduce elements of certainty, that one side will defeat the other.

Troop morale and training is an important factor. Whereas Lanchester's equations described attrition resulting from hostile fire only, today's equations are formulated to include desertion and surrender which also cause attrition. Retreat and advancement of forces could be predicted on the basis of the attrition they suffered; observed casualty rates and theoretically "acceptable" rates would be compared to determine whether a force should advance or retreat.

Equations could be modified by allowing each side to add reinforcements during the fighting. Lanchester assumed that the size of the forces was fixed during the battle.

An additional factor to be considered is the role of the military decision-maker in influencing the course of events. Essentially, depending on the factors taken into consideration, a war game played with opposing forces of the same relative strengths could have an infinite number of outcomes.

Counter-insurgency Planning

Serious counter-insurgency modeling began in the early sixties by S.J. Deitchman, and was continued by M. B. Schaffer of the RAND Corporation. Their mathematical models were based on Mao Tse-Tung's three phases of guerrilla warfare, which are summarized by Schaffer:

The first two phases of insurgency are characterized by small-force ground-yielding operations by the insurgents but overall military superiority on the part of the counterinsurgents. In phase II the insurgent operations become increasingly military; however, they continue to be basically small-force guerrilla activity which cause the defense to fragment and the engagements to be localized and relatively isolated. In phase III the insurgents take the strategic offensive and operate with larger, more conventional forces.

—Lanchester's *Models of Guerrilla Engagements*

To model guerrilla warfare, Schaffer extended the basic Lanchester equations to include the effects of battlefield desertions, capture of prisoners, supporting weapons, and changes in weapon efficiency over time (as could be caused by rusting or extended use). Schaffer's equations represent three kinds of combat—skirmish, ambush and siege—which occur in "phase II" of Mao's strategy.

Skirmish is a battle in which surprise is not a factor. An ambush involves an element of surprise and, because of this, a smaller force could defeat a larger one. Siege involves an attack on a fortified position such as a strategic hamlet in Indochina. Here, timing the use of supporting weapons such as artillery or aircraft is critical. If a preliminary "softening-up" is undertaken, then the element of surprise is lost.

Equations aid the planner in balancing some advantages against others. But as Schaffer points out, these equations cannot predict the outcome in guerrilla warfare because they do not take into account political, sociological, economic or moral factors. They do help in estimating casualty rates in both sides, demonstrated by the emphasis on "enemy body-counts" during the Indochina War.

Recent modifications in these equations now take into account intelligence about the opposing force, command efficiency, and search and reconnaissance to pin-point the enemy's location.

I don't believe that the type of research program we have and the areas in which we work would be any different if, for example, the entire contract were to be assumed by the National Science Foundation or the Department of Health, Education & Welfare or anything else.

Stephen Robinson, 27 March 1973
interview with People's Video

This long-standing claim that AMRC is unaffected by its Army funds was completely refuted by staff member J. Ben Rosen in an interview which he gave the *Daily Cardinal* (11 May 1971) on leaving the Center for a new job:

The influence of the source of funds is felt by the selection of people appointed to the MRC. They are chosen keeping in mind research for military application and not for, say, ecology. The research in both these fields may be the same, but not generally.

The Army funds have been such a great stigma for the Center that, in 1971, an application was made to the National Science Foundation (NSF) for sufficient funds to cover AMRC's entire operation. In a 1972 interview, Robinson admitted that the NSF application was made "to get the radicals off our backs."

Eventually, Army Math's proposition was turned down, presumably because NSF could not afford the Center's \$1,400,000 annual budget. Nonetheless, the Center's willingness to apply for NSF funds has occasionally been taken as proof of AMRC's independence from the Army. An inspection of its proposal to NSF shows otherwise.

First, the funding request left the AMRC contract with the Army intact, with the same principles of Army assistance and the same coordination by the Army Research Office through the Army Mathematics Steering Committee. Further, the Permanent Staff would have remained unchanged under the proposed NSF grant, and thus their partiality for Army work would not be hindered.

So the request itself was simply a political cosmetic, designed with no purpose beyond deception, and the continued protection of the Army's work force in academia.



The Army Mathematics Research Center is expanding the scope of its research to include investigations in broader areas. This shift parallels the increasing interest of the military in political and social sciences. The motivation behind this interest was outlined by former Chairman of the Joint Chiefs of Staff Maxwell D. Taylor, in an interview with Bill Moyers shown on Public Television in Madison, 17 March 1973:

We ought to take time out now and take a deep breath and look at what we learned in Vietnam, and then try to project our present threats and problems into the future and ask ourselves what kind of threat we are likely to face which might require the use of military strength . . . The problems that might cause a nuclear or major war are still there but I would say diminished in intensity, whereas I see endless increase in the field of limited problems [for example limited war] arising from all sorts of things to include population growth, which happens to be one of my hobbies at this time.

According to Taylor, the burdens of excess population cause weak governments to collapse, create discontent in populations, endanger "democratic" government, and intensify

the competition that's going to arise between the industrial nations fighting for the diminishing supplies and raw materials on which they depend. The easiest example of the economic pressures which could lead to military operations is in the case of oil . . . If indeed access to oil, for example, would be shut off, that would be a situation which might very readily lead to military operations. Meanwhile, many minerals are going to become scarce in the coming decade, so that this whole globe is going to be grasping for solutions to the depletions of these stocks.

The military is very interested in anticipating possible future conflict situations and maintaining control in those areas in which it is already involved. As Taylor confirmed in the interview, military commitment follows the flag and wherever the flag is put, the commitment will escalate.

Economic Modeling

Today, AMRC still works for the Army. Its changes in policy correspond to the world political and economic situation. AMRC's Assistant Director Stephen Robinson, in a recent interview with People's Video on 27 March 1973, talked about diminishing resources and the future:

We're using up a lot of resources. Some of these are non-renewable resources. I don't think we've done very much thinking about the consequences of this. Now part of the effort here [at AMRC] is to take a look at what might happen in the future, when we keep on with this growth pat-

FUTURE DIRECTIONS FOR NSF ?

The National Science Foundation, in an attempt to respond to the "mounting interest throughout our society in the ethical and human value implications of science and technology" has appointed the one-time counterinsurgency task force chief for Southeast Asia under the Kennedy and Johnston Administrations, Charles Maechling, Jr., to head up a new program in ethics. Maechling, a lawyer, served as the State Department's director for internal defense from 1961 until 1963 and was the chairman of a National Security Council task force on counterinsurgency from 1961 until 1966. The Ethical and Human Value Implications of Science and Technology program, which will be run jointly with the National Endowment for the Humanities, will have access to various kitties held by the Director. The amount of these monies varies during the year, but this year they totaled the considerable sum of \$2 million.

Science, vol. 180, June 1, 1973, p. 939

*tern that we're in now. We keep on using up these resources—what's going to happen? The preliminary studies that were done at MIT tend to indicate that some rather unpleasant things might happen. We'd like to find out if that's true. And if so, are there policies we can follow that will tend to avoid this?**

An economic model is a system of equations which attempts to describe the relationships between factors in a country's economy such as the availability of raw materials, industrial and agricultural production, trade and foreign investment. Such models have not been successful because of the extremely complex relations among the factors. The rewards from developing the simple models which now exist, and so increasing their predictive abilities for our military policy makers, makes a large investment in research worthwhile.

The effort Robinson talks about is a new program in economic modeling, coordinated by himself and H.R. Day of the UW Economics Department, who was also a member of Robinson's Ph.D. thesis committee. The 20 October 1972 Semi-Annual Report briefly describes the 1972 summer cast of characters: B.E. Easton and Lynn McLinden; J.P. Aubin of Paris, interested in competitive equilibrium, B.P. Stignum of Northwestern University, in dynamic stochastic processes; and D.G. Tarr of Ohio State University, interested in oligopoly models. All but Tarr will be back for the 1973 summer program.

*The "MIT study" refers to *The Limits to Growth*, published in 1972, describing a global model designed by the MIT Project Team headed by Dennis L. Meadows. Present trends in world population, industrialization, pollution, food production and resource depletion are analyzed, with the conclusion that unless enormous changes occur, sudden and uncontrollable declines in population and industrial capacity will result.

Population Dynamics

Held in June 1972, at the same time as the summer program in economic modeling, was AMRC's Symposium on "Population Dynamics." As Maxwell Taylor noted in his interview, this is an important subject for military planners. In line with this, AMRC consultations with the military planners of the Strategy and Tactics Analysis Group (STAG) have been on the upswing during the past few years (see Chapter 1). An example of STAG's work is the paper written in 1971 by David R. Howes, entitled: "GUEVARA, A Computerized Guerrilla Warfare Model." This work which AMRC and STAG collaborated on clearly falls into the area which might be called social science modeling.

In order to obtain the information needed for these more complex social models, AMRC is attempting to expand its influence into other University departments. We have already mentioned that Economics and Demography faculty have cooperated with AMRC. In addition, there were held during the 1973 spring semester joint seminars of personnel from AMRC and various departments, including Mathematics, Computer Sciences, and the Social Systems Research Institute. The joint work undertaken by AMRC and these additional academic departments tends to give AMRC a more respectable appearance. Increased respectability enables AMRC to entice more academicians to contribute towards AMRC's work for the Army, under the guise of continuing normal scholarly research.

These inter-departmental seminars are merely local versions of the yearly symposia and seminars which AMRC holds. Their purpose is the same: to collect as much information as possible, in the hope that some of it might be useful to the Army.

As the Army Math Research Center expands its work into seemingly more abstract and less technical weapons research, spokesmen will claim that the Center is doing work which is of benefit to all citizens rather than solely helping the Army. AMRC staff will claim that their discoveries have "good uses" as well as Army applications. While there may be some truth in their theoretical statements, in practice it will not be true. The work will be tailored to the Army's needs.

In the future, we can expect an increasing diversity in AMRC's research activities, as United States' foreign policy and military needs grow, and require the designing of systems for social control beyond the development of new weaponry. AMRC can be expected to try to sell this new research as beneficial to all since it deals with "social problems." But as long as this research is directed toward the needs of the military instead of the needs of the people, it cannot be said that AMRC is serving the public. AMRC's newest research for social and economic manipulation can only be stopped by political action from people opposed to the imperialists' use of science.

* * * *

NORTHEAST REGIONAL CONFERENCE



In the past year there has been an increasing awareness of the need for SESPA/SftP to better define its politics and to develop organizationally in broadening the base of people who accept responsibilities and make decisions. A Northeast regional conference to discuss program, tactics and organization was conceived as a step in the direction of that definition and development, and will hopefully lead to a national conference in the near future.

Approximately 85 people attended the conference held October 26-28 in Voluntown, Connecticut at a farm run by the Community for Nonviolent Action. Many people came from the Boston area with sizeable groups from New York City and Stonybrook. There were representatives from as far away as Minneapolis, Chicago and Cincinnati with others from Dartmouth, Oswego and Rutgers. Planning for the conference was done by a group from New York and Boston, after a lot of initial footwork by Jim Landen of Schenectady. Position papers were solicited and received from various chapters, individuals and local area groups. Copies of the papers were redistributed to attendees prior to the conference in preparation for the conference.

People started arriving on Friday evening, which was set aside as a time for people to meet and get to

know each other. At the initial plenary session on Saturday morning, the position papers were discussed. Following the plenary session and after lunch, workshops were held that dealt with the magazine, chapter problems, industrial organizing, university organizing, professional society meeting activities, political education in SESPA and the relation of SESPA to other struggles. An evening plenary session heard reports and proposals from the workshops. Following the plenary session, at a point when people's heads would no longer function, a party was held.

Sunday morning workshops were organized around three topics: guidelines for SESPA/SftP Chapter activities, regional coordination, and the magazine, with the intent of developing concrete proposals. These were presented and discussed at the plenary session which followed. The proposals on *SftP* magazine and on a Northeast regional Coordinating Committee were approved as were some of the proposed guidelines for chapter activities [see boxes on the following pages] Other guidelines specifying the constituency to which SESPA/SftP should direct its efforts and the form of the organization's political work were discussed, but await future regional meetings to be worked out more fully and approved.

RESOLUTION ON
REGIONAL COORDINATING COMMITTEE

Proposal

1. That a Northeast regional coordinating committee be established.
2. That the committee initially consist of one representative each from New York City, Boston, Stony Brook and Washington, D.C. groups.
3. That this committee meet at least once every eight weeks with the first meeting to take place the weekend of November 17-18 in New York City and future meetings to rotate among the cities involved.
4. That the committee be charged with the initial function of generating a proposal for deciding on what criteria there should be for individual and group membership and that this proposal be submitted to the present Northeast Regional Group members for approval.
5. That initially the Committee should have primarily a coordinating function and that future policy-making functions await the establishment of a decision-making mechanism which would have to be approved by the entire Northeast Regional membership as then defined.
6. That the Committee be charged with the following ongoing functions:
 - (a) Communication and coordination between chapters—this implies the requirement that the Committee be kept informed of all local activities.
 - (b) Convene regional meetings at least once per year.
 - (c) Build for a national conference.
 - (d) Facilitate the organization of new chapters and the enlargement of chapter membership.
 - (e) Work closely with the magazine coordinating committee and aid in decentralization of magazine responsibilities.
 - (f) Help to mobilize membership for actions and coordinate activities with other political groups.
 - (g) Report the results of each coordinating committee meeting to the magazine and send a report to each chapter contact throughout the country.

CONFERENCE CRITIQUES

NEW YORK CITY SESPA/SftP

We of NYC SESPA/SftP would like to share some of our reactions to the Northeast Regional Conference, in the hopes of keeping up the dialogue and interaction that started there. First, we came away with really good feelings about the people we met and the friendly atmosphere of the entire conference. The 80+ turnout Friday night and the warm, if somewhat intense, accommodations provided by the CNVA were the first pleasant surprises.

In working with other people to set up the conference, we had hoped that it would contribute to the development of a national political perspective, strategy, and structure for SESPA. In general, we think that we got something in the first category (in the "Guidelines for Activities"), nothing in the way of strategy, and all that could be hoped for at this time (in the form of the Regional Committee) in the last category.

We thought that the position papers presented by the various chapters and individuals were of a high enough quality to serve as the basis of very productive discussions. Although each position paper was somewhat limited, in that all grew out of the experiences of single chapters and to some degree advocated more of that experience as the best road for SESPA as a whole, the advocacy of the various positions has helped us considerably in understanding what is going on in the rest of SESPA. Also, most of the papers gave careful attention to one of our most serious problems—a reasonably undisciplined internal work style. We are somewhat chagrined that our position paper, which we thought was perhaps too grandiose when we were writing it out, actually turned out to present fairly minimal concrete proposals.

Unfortunately, the issues raised in the position papers got badly mangled in the first plenary, Saturday morning. With a few exceptions (notably the Stony Brook chapter), the opening presentations (ours included) failed to come to grips with the issues raised in the papers of other groups. In the discussion that followed, no one managed to come up with even a clear statement of the questions involved, such as the conflicts and agreements between industrial organizing, support activities for industrial workers or third world struggles, and cultural and ideological struggles. The meeting degenerated into a series of reasonable points, none of which bore any relation to the issues raised by the previous speaker. In

retrospect, this is not too surprising; the disparate activities of our various chapters meant that each group had very little practice giving substance to its arguments in any activities other than its own. That's why we called a conference.

The mc²* is exempted from any aspect of the above criticism. They came to the conference with a carefully thought-out paper presenting a problem of such national importance that their intense pursuit of it was fully justified. [See *SftP*, Vol. V, no. 5, Sept., 1973]

The workshops ranged from good to bland. Getting together in smaller groups certainly helped communication—we discovered that the Industrial Group was nowhere near the “into the factories” types a too-hasty reading of their position paper had led us to believe. The Magazine workshop was productive, due to both prior preparation and to the urgency of the problem. In the Chapter Problems workshop, jumping off from Mike Teel's “Work Style” paper, we found that our senses of what was wrong in SESPA chapters were nearly identical, and the sexism, racism, and elitism guidelines flowed from this sense quite naturally. In the other workshops (University organizing, Political Education, and Relations to Other Struggles) there were some valuable discussions, but there was also some ego tripping, and differences were not overcome to a degree sufficient to bring clarity to SESPA's future in these areas.

In the Saturday evening plenary, the discussion got somewhat bogged down after the workshop reports, but it seemed to be more a case of exhaustion than anything else. The party was a gas.

The Sunday morning workshops on the Magazine, Regional Structure and Guidelines for SESPA activities actually accomplished what they set out to do and presented concrete proposals to the 11:00 am plenary. The near unanimity of that plenary in adopting the proposals “in principle” may have been due in part to the sense of urgency (it was time to go), but we think that they also represented a real consensus of Northeast Regional SESPA on the minimal organizational requirements for the next stage of our struggle, based on the practical political experiences that we did have in common.

We were disappointed that the conference did not manage to come to grips with questions concerning a national strategy, such as a critique and comparison of the People's R&D proposal and the Industrial Group's class analysis position. This weakness is probably a reflection of the ultimate weakness of SESPA: we do not have sufficient ties to our constituency to have developed links between a long-term strategy and our actual practice. However, if we can do one half of the things we said we would do at the conference, we are sure that SESPA will grow so strongly that we will be able to return to these questions at the next conference (and the one after that) with the experience that will enable us to do them justice. As Mick Jagger said at the Saturday night party: “You can't always get what you want, but if you try sometimes, you just might find, you get what you need.”

**SftP* Magazine Coordinating Committee

RESOLUTION ON SCIENCE FOR THE PEOPLE MAGAZINE

Introduction

The magazine is a crucial activity and must be **put to use** (aggressively pushed, cited, distributed, widely disseminated, etc., as an integral part of our work). It will be so used if members think it is **relevant**, good material, good enough for the **purposes** of their political work. It will be good **enough**, if the people who will be using it generate, **one way** or another, the materials that would make it that good.

Proposal

1. That the chapters take responsibility for **distributing the magazine** through the following mechanisms:

full subscription of members
distributing or selling to people you are
trying to organize
getting library subscriptions
distributing through bookstores
distributing and selling at literature tables

2. That the chapters take responsibility for **producing material** for the magazine at least once each year—this contribution to range from a single article to an **entire packet** which would comprise the majority of an issue. (This should be a collective effort sent as readable copy.)

3. To facilitate these points:

Each chapter will designate a liaison person to the Magazine Coordinating Committee (mc²) who will be responsible for maintaining regular communication. (Person to be chosen before end of conference)

Each chapter will meet to formulate a concrete plan for distributing the magazine and contributing material and send this to the mc²

4. That the Northeast regional committee structure convey to other chapters this agreement and urge them to do the same.

STONYBROOK SftP

The following is an attempt to convey the essential points of agreement reached by the Stonybrook SftP chapter during the discussion of the first Northeast Regional SESPA/SftP Conference. Despite the number of critical points we wish to raise, we do believe that the conference was a worthwhile endeavor, both in terms of the positive results (guidelines, regional structure, and plans to revitalize the magazine) and in terms of what we learned from the first experience that should result in more successful future meetings.

I. *Organization*

Advance planning for the conference was weak in several respects.

- A. Considering the duration of the conference, its goals were too diffuse to result in anything concrete.
- B. There should have been an attempt to involve more groups in the planning.
- C. There was not enough attention given to childcare arrangements, resulting in overburdening for parents and volunteers.

II. *Structure*

Poor structure again tended to diminish the hopes of arriving at concrete conclusions.

- A. The first evening was marked by general confusion resulting from the unclear procedure. This got things off to a bad start.
- B. The actual structure for the crucial first session was not worked out until the last minute, leaving most participants badly prepared.
- C. This lack of planning could have been compensated for by an effectively handled chair. This would insure a more focussed session. Although practice in chairing meetings is generally a good means of building leadership, these yearly conferences require more experienced chair people.
- D. The final sessions, on Sunday morning, were considerably better organized, primarily resulting from a correct analysis of Saturday's organizational deficiencies.

III. *Discipline and Attitude*

- A. Stemming from vague goals and loose structure, the conference was characterized by a somewhat lax and unserious attitude on the part of its delegates. Meetings began late, people spoke off topics, and serious matters were treated with levity. It is clear that there is some disparity between the urgency stressed in the position papers and that actually felt. Indeed, in our material living conditions, there is little to warrant such urgency. Strong discipline and structure are necessary to compensate for lack of urgency that would exist if we were a working class group.

GUIDELINES FOR SESPA/SftP CHAPTER ACTIVITIES

1. The Northeast regional conference endorses the formation of regional organizations and movement in the direction of forming a national organizational structure.
 2. SESPA/SftP defines its objectives as becoming an anti-imperialist socialist organization based on a class analysis of all workers but especially scientific workers.
 3. Position papers of this conference should be discussed by chapters with an eye toward developing a national program; chapters should experiment with programs leading to a national program.
 4. Each chapter should analyze its internal membership. For the next conference, there should be papers containing a discussion of how chapters are combatting sexism, racism and elitism. Each chapter should write a paper on this matter for discussion and circulation. The conference asks that the magazine publish two such reports per issue until they are all published.
 5. Guidelines should be a basis for chapter activities. However, they are not meant to be a restraint on or to restrict chapter activity, but should insure that political discussion informed by the guidelines precedes activity. The eventual aim is to develop discipline and accountability of chapters.
- B. There was a lack of serious attention given to points raised by women. In general, there is evidence of this type of dual treatment. Points would be ignored, very often until subsequently reintroduced by men. An example of this occurred in the Sunday workshop on the coordinating committee. The question of the size of the Boston representation was initially posed by a woman and received no response. A few minutes later, when a man brought up the same point, it generated a ten-minute discussion.
 - C. The attempt by the Stonybrook delegates to act as a disciplined group was generally regarded with suspicion and uneasiness. We believe that this results from the difficulty in combatting the all-pervasive socialization toward individualism in our society. This must be struggled with if SftP is to become a truly revolutionary organization.
 - D. We wish to commend the seriousness and good preparation on the part of the magazine and industrial groups. (We particularly appreciated the constructive role played by the magazine coordinator in attempting to analyze and correct the problems that were apparent during Saturday's sessions).

IV. Content

- A. The conference was characterized by a great deal of rhetoric. In itself this is not necessarily bad. In this case, however, because of the varying degrees of political knowledge and backgrounds of the participants, there was a lack of common understanding. Rhetoric was used to cloud issues and compensate for a lack of clearcut analysis.
- B. There is a tendency to use rhetoric in an elitist manner, putting off those not in command of these terms. Women are not educated (generally speaking) in the type of intellectual game playing men indulge in. As a result, women are often suspicious of intellectual activities. This rejection was characteristic of many members of the conference. Since many of these terms, when clearly defined, are useful, rather than objecting to their use, definitions and explanations should be demanded.
- C. We recognize the importance of organizing technical workers. However, considering the fact that 90% of SftP is University-based, this desire has little material basis. As stated in the Stonybrook position

paper, the struggles at the Universities, around secondary contradictions can be effective in raising consciousness about the primary contradictions between workers and capitalists. Our high degree of University affiliation should have merited more discussion on University issues. In the one session on University organizing, the discussion was limited to problems of radical faculty members. No attention was given to questions of educating and organizing undergraduates.

- D. The important role of criticism in clarifying and unifying the sessions was neglected. Even in the initial session, those who spoke generally chose to summarize their own group's position rather than to critically analyze and contrast other positions with their own.

V. Conclusion

The conference was characterized by a great deal of sincerity and a willingness to learn from our mistakes. We have learned a great deal in terms of organization and planning. With this in mind, we look forward to a period of construction and revitalization.

ACTIONS FOR UPCOMING MEETINGS !

SCIENCE TEACHING FOR THE PEOPLE

Are you interested in changing the way science is taught in our schools?

Do you feel that current science curricula help to perpetuate the sexist, racist, and other oppressive values in our society?

Join us for actions at the annual convention of the National Science Teachers' Association (NSTA), the major science teachers' organization in the country.

Chicago, March 15-19, 1974

Scientists, science teachers, everyone—come and help out. We need people to raise issues at various workshops, distribute literature, hold our own workshops, and rap with teachers in general.

The Boston SESPA Science Teaching Group, which includes scientists and science teachers, will have a packet of alternative teaching materials available there on a variety of science and society issues. We need suggestions for films, literature and other approaches to science education.

For further information, write to either:

Dave Culver	Science Teaching Group
Dept. of Biological Sci.	SESPA/SftP
Northwestern University	9 Walden St.
Evanston, Ill. 60201	Jamaica Plain, Mass. 02130

AAAS ANNUAL MEETING

San Francisco, Feb. 24 - March 1, 1973

Berkeley and Palo Alto groups will coordinate plans for SESPA/SftP activities. We have just begun to discuss ideas and we welcome all your suggestions. If you are planning to attend, please let us know of any special issues that you are interested in working around. (The official preliminary program is outlined in the October 26 issue of *Science*.)

Box 4161
Berkeley, Ca. 94704

Box 4209
Stanford, Ca. 94305

CALL TO IEEE ACTION

We are planning an action at the IEEE (Institute of Electrical and Electronics Engineers) Annual Convention to be held in New York City, March 26-29, 1974, at the Coliseum (59th Street, Columbus Circle). Anyone interested in helping is asked to contact us at the address below:

Committee for Social Responsibility in Engineering
475 Riverside Drive
New York, N.Y. 10027

LETTERS

Printed below are excerpts from three letters written in response to a questionnaire sent out last summer by the Science for the People Magazine Coordinating Committee to all chapters and SESPA/SftP local contacts. The questionnaire was designed to stimulate discussion and help develop plans concerning the magazine: its relationship to SESPA/SftP, its focus, its usefulness in organizing among scientific and technical workers, and its political content. [See SftP, Vol. V, no. 5, Sept. 1973, "Forge Better Words".] In raising these questions the Magazine Coordinating Committee took a rather critical view of both the magazine and the organization as a whole, calling for the development of a more "comprehensive political analysis." It asked that in answering these questions people consider the future course of the organization and what the relationship between SESPA/SftP and the magazine should be. We hope there will be continued discussion of these issues and the points raised in the following letters.

... it seems to me that:

1. It is not possible to be systematically comprehensive and consistent in our criticism of activities without appearing overly dogmatic, rigid, utopian, and even somewhat commandist to others who have not reached our stage of analysis. Each of us, coming from a different perspective, has a different mode of criticism; this is inherent in the nature of such a free political group... It is important to realize that not all of us speak the same political language, and that often we may be saying the same things in different terms (even though we are not).
2. We should definitely move beyond moral outrage in our analysis; what we deal with is not a moral issue, it is an issue of class conflict, and one class is on the side of the future, while the other is on the side of the past. This does not make the future morally "right" in any sense; it is merely necessary that the future supplant the past. Capitalists have their morality and we have ours; theirs justifies the killing of Vietnamese under the mantle of saving the world from Communism, and the exploitation of the American worker under the mantle of profit. Ours must reflect our priorities (service to the people, international brotherhood, love of human liberty, including freedom from hunger and bad living conditions). Anything that offends these human priorities, necessary to the continued survival of the species, must be cast out, not

as a matter of morality, but as a matter of commonly understood necessity. We must thus build ways of deciding what our priorities as a species should be, which includes ways of relating to each other so that we do not violate each other's rights and humanity. We began this job by trying to build structureless groups, so all would have an equal voice. We have found that it is strictly impossible to have a completely structureless group. We must now agree with each other upon the means of structuring the group and the structure we need. This to me is a step forward. We cannot theorize about building a new society without attempting to build a practical example among ourselves. We must embody the new society we advocate among ourselves; we must create the structures we need and in the process transform ourselves to become the kinds of people we need to become to take charge of the future. Hopefully, as we begin this task, we will be an example to others who wish to join with us. Because people understand political arguments (including descriptions of a hypothetical future system) in different terms, they are liable not to believe in something they have not seen examples of; such skepticism is necessary for survival. The only way to deal with this skepticism is to show them, not to give them more visions. Most people are tired of visions. This is why our internal organizational work is vitally important to our development; we will learn how to organize a society in accordance with our priorities by practice and theory, in dialectical motion.

3. We need the magazine to be a signal beacon, because we are all somewhat lost in the post-war period. The magazine should also tell us where we have to go by providing news of other activities, reports of conferences and political struggles, pieces of serious thought about problems of organizing scientists and engineers, information to use in arguments with people who aren't in the group yet, analysis of "science in the service of the oppressor"; in short, all of the things that have appeared so far are useful, precisely because of their variety and because they inspire thought, criticism, further articles, etc. Although the Gorz article [see *SftP* Vol V, No. 3, May Day 1973, "Technical Intelligence and the Capitalist Division of Labor"] was useful too in this respect, I would *not* want the magazine to become all Gorz (as some would, I sense) because I don't think very many people know how to cope with him (or things of that type).

We must help others to learn without being "teachers" in the traditional sense, and we must not hoard political knowledge but instead try to show people how to solve problems in cooperation with others. This is one of the ways that the magazine collective and the project groups, convention working groups, etc., are important, because no one is the teacher and we all are students and teachers at one and the same time. We should maintain this kind of relationship and strengthen it *in practice*. Remember that the bonds we build with each other are (or should be) the bonds that will hold our new society together...

Dave Westman

RADICAL AMERICA

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... I fully concur with several of the recent letters which emphasize that we should begin working harder to organize in the workplace, become more up-front as a socialist and communist organization. We need not do this in a "heavy" way, but I think our organization and strength is now such that a new direction in our work is possible. We can continue the older work—the magazine, meetings (AAAS), special projects—but I think we are ready to grow. Not just in numbers, but also in political areas. We need more contact among industrial technologists, as well as lab technicians, etc., on campus. I'm not one most experienced in this kind of work (a function of my bourgeois background), but I'm convinced it is necessary. The magazine could, for example, emphasize more industrial health than in the past, etc. Our present cooperation (as at the Genetics Congress in Berkeley last August or here in St. Louis) with groups like Progressive Labor should be one step in further growth, I believe. Increasing the circulation of *SftP* is also very important, both as a means of spreading ideas and of contacting people. I haven't done my best in this regard and so will try to do more in the future.

In re-reading the 10 questions posed on your "yellow sheet", sent out over the summer, I am struck by the sense, embodied in nearly all the questions, that our biggest problem right now is that we talk to each other much too much. That's what I was trying to get at in the previous paragraph. I do think we talk too much to old anti-war types, and have not been specific enough in our political analysis: i.e. in suggesting how our strategies for change should be developed. We haven't cultivated the class consciousness of workers enough among ourselves. That seems to me to be absolutely necessary. As long as scientists, lab technicians, grad students continue to think of themselves as middle class, and pursue middle

class values, we will be doing no more with SESPA (and *SftP* specifically) than encouraging the moral outrage and frustration which typifies bourgeois response to oppression and crisis. I think *SftP* can begin to promote a more overt class analysis of science both by historical examples and by analysis of concrete contemporary cases: e.g. the I.Q. and race controversy. The understanding of this phenomenon demands a class analysis. And inherent in such an analysis is the question: Which side are you on? We don't want to polarize people unnecessarily. But if we are going to grow in revolutionary consciousness, we cannot ignore certain issues.

Along the same line, I think *SftP* should contain more articles about workplace science and its oppressive nature. More on hospital workers, industrial health, an analysis on unions in relation to selling out workers (such as the recent United Auto Workers settlement, or Chavez' sellout of the United Farm Workers). These topics may not relate specifically to science and technology. But they do relate to the solidarity we must be showing more and more with workers. For it is historically scientists' roles to be servants of the ruling class, and we must get ourselves away from being in a middle position: a dissident voice whose fundamental mores remain with the ruling class. There can be no middle ground, and I think *SftP* can emphasize that. We can and should, of course, continue to publish articles about science, technology, and their misuses. But most fundamental, I believe, is to build a class-conscious political movement among scientific workers (and that can include all grad students, undergrads, and faculty who are willing and able to begin struggling with the class issue). This is more fundamental to developing a viable and increasing political movement than articles about science *per se*. There's no need for an either/or choice, but we haven't traditionally done as much with the former as with the latter.

I agree we should avoid jargon in the magazine. Progressive Labor's paper, *Challenge*, for example, has very good analysis, but often seems to me to err with certain kinds of jargon: for example, calling Mao and Chou-En-Lai part of the bosses like Nixon. One can admit clearly that China may now be on a revisionist course without being so simplistic as to say that Mao is no better than Nixon.

This raises a final point. We can learn a lot from analyzing (and writing about) science and politics in the socialist countries: China, Cuba, Vietnam. But we should not approach these countries uncritically, there's a definite trend among many left groups to idealize these nations and thus to not see the revisionist course some of them (Cuba, China) seem to be on. The purpose of this analysis is not to condemn China or Cuba, but to try and learn from their mistakes. How does a revolutionary society purge itself of bourgeois ideology? How can revisionism be avoided? I'd like to see *SftP* take up these issues with a real, modern Marxist analysis, not with jargon and political heaviness (which is usually simplistic and insensitive). Can we do it? I think so.

Gar Allen

... **SESPA** is the organizational threat to dehumanized science, the source of information and analysis that untrained people cannot possibly obtain, much less write about for publication. The most bitter criticism within the movement is usually motivated by guilt cultivated by the ideological battles in which intellectuals of one group (A) stand for another class group (B) who may claim to speak for the very same group or another group; but no matter who they speak for, in America at least, they are usually intellectuals battling one another in the name of the working class, all of which is so much unfortunate crap. *If SESPA has a constituency outside the intelligentsia it is news to me, and if it doesn't, this is the central fact which needs facing.* I am assuming that SESPA is a group of intellectuals, whether we like it or not, and after assuming this, I make the following suggestions:

1. That the magazine itself come out less often (maybe twice a year) and its format be less that of Saturday Review and more a journal of ammunition regarding science issues which SESPA people can use to turn on themselves and those they get to know who may be interested. Hence the new format would have muckraking and debunking along with brain pieces concerning constructive social alternatives to present abuses in the system, plus futurist proposals.

2. That the primary outreach functions to new people be made through broadside sheets that deal with substantive issues, attractively laid-out and printed, whose purpose is to inform fellow workers and the public and connect the information with the work of the organization at a local and national level. For example, a short run-down on the politics of birth control (women instead of men, black instead of white, etc.) on a printed sheet with the *New England Free Press* poster format of the pregnant man saying, "Wouldn't you be more careful..."—poster art, in other words, as opposed to the magazine as advertisement for the group. Cheaper, possibly more effective. The production of the posters to be the function of the national coordinating committee.

3. That SESPA continue to focus on the AAAS [American Association for the Advancement of Science] meetings. It is proper that we be there, organizing, demonstrating, studying the moguls of American science close-up, enjoying ourselves, too.

4. That the magazine be supplemented regularly by a mimeo newsletter similar in tone to the Boston SESPA newsletter as a purely internal organ, announcing meetings, gatherings, needs, visitations, etc. A few copies should be sent to each chapter for passing around rather than a big-ass mass mailing like Sears catalogues which people toss aside. Let people touch each others' hands passing these things around rather than making ourselves unnecessarily into a collection of printed-rubbish-remains-of-trees.

5. That SESPA organize itself as a sort of scientific LNS [Liberation News Service] for movement publications, regularly supplying the media of the movement and any non-movement publications that are possible, with

our articles to be published as in "1" above. We should attempt mass publication of our researches and supply graphics which are appropriate to the materials.

6. That we should come to realize that American science is so powerfully entrenched as a mythology infallible that we've much work to do not unlike the necessity of the early Spring plowings, and the second plowing and the third which defeats the weeds so that the vegetables, when planted, have a chance to grow strong. Please, let us not fantasize our transformation, through intellect, to a proletarian organization overnight. Let us not twist ourselves into ulcerous knots over fantasies.

Mike Gold, the life-long communist writer who was certainly of the proletariat if anyone ever has been, believed that over a long period of time it was possible for those not born into the lower class to become proletarianized, but he stressed what an incredibly long time it took and what great efforts were involved. I believe that this is the process underway throughout the movement that peaked in 1970. We realize that we must find, and learn to live, the commonest values of our world, to live in them and make them work humanely. Here is Whitman:

The greatest poet forms the consistence of what is to be from what has been and is...drags the dead out of their coffins and stands them again on their feet...says to the past, Rise and walk before me that I may realize you...learns the lesson...places himself where the future becomes present...

Joe Neal

win

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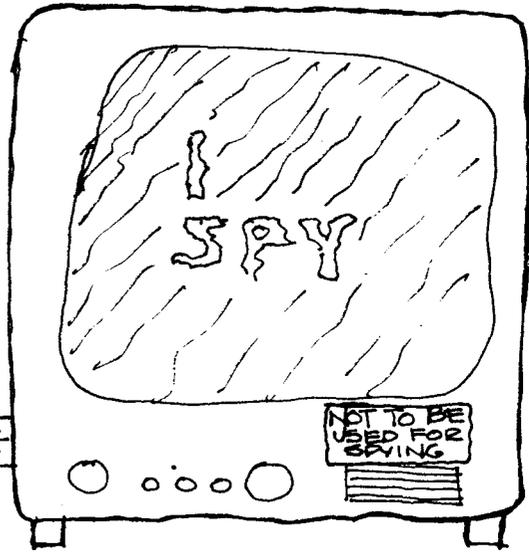
WIN * Box 547 * Rifton * NY 12471

Dear SESPA,

In your March 1973 issue you refer to my "proposal for a two-way closed circuit cable TV spy system". At no point did I ever suggest any system, closed or open, on cable TV or otherwise, for spying purposes. Your statement is utterly completely, and unequivocally false. On the contrary, the purpose of my system is to provide for participation by all the people, for all the people. (Copies of the report are available. Send a postcard to Dr. Amitai Etzioni, Center for Policy Research, 475 Riverside Drive, New York).

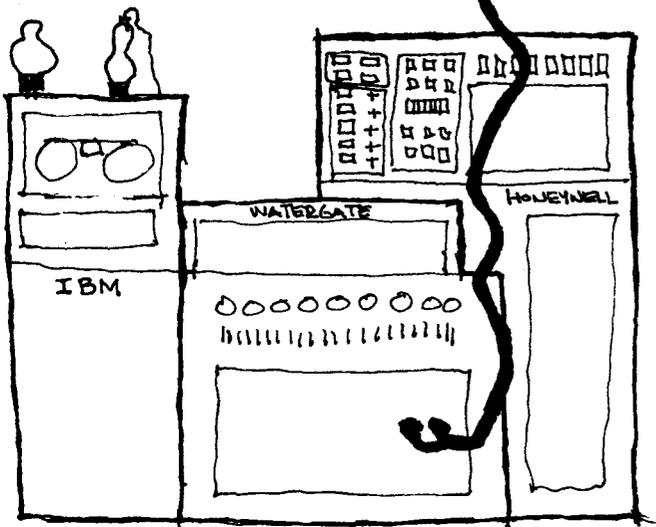
I consider your statement a malicious lie and provide you herewith, with an opportunity to retract it, reserving my rights to seek redress elsewhere if you do not act expeditiously.

Sincerely,
Amitai Etzioni
Director



CABLE T.V.

The appearance of a new technology such as cable TV invariably serves to distinguish between those who regard technology as a neutral tool and those who view technology as a part of the overall political system, subject to the constraints of that system. Amitai Etzioni, along with a number of academics, lies outside of even those two categories. Viewing society as a basically harmonious social order in which conflicts reflect misunderstanding rather than basic and real differences, Etzioni imagines cable TV as a technological "shortcut" to participatory democracy. Nowhere in his description of the possibilities of cable TV does Etzioni consider that participatory democracy may not be in the interests of those who presently wield power. Other commentators have also envisioned cable TV as the source of a "communications revolution". The U.S. is to become the "Wired Nation" (as if we weren't already) with cable TV providing, in addition to its normal television function, audio, video and facsimile transmissions that will allow us to obtain newspapers, do our banking, receive library information, communicate with medical personnel and even shop—right in our homes or apartments. Community organizations have advocated cable TV on the basis that it could serve as "community television" with programs by and for the local community. None of these hopes for the development of cable TV take into account *who* is developing this technology and for *what* purposes.



“If citizens sense that their needs are ignored, the new technological system may make them more aware of this condition... If their expectations are unrealistic, it might help them adjust their aspirations.”

—Amitai Etzioni, in *Policy Sciences*

Cable TV began with small businessmen in rural areas putting up sensitive antennas on high towers and transmitting the received television signals to local sets via cable. Through the 1950's and into the early 60's, the cable TV industry remained small, fragmented and mainly uncontrolled by the Federal Communications Commission (FCC). As the potential for this new technology became apparent, increased pressure from the established broadcast industry succeeded in forcing the FCC to freeze cable TV expansion in 1966. This freeze lasted until December, 1968 when the FCC issued its “Proposed New Rules and Notice of Inquiry”, and during this two-year period of uncertainty ownership patterns for cable TV systems showed a marked change. By 1969, 75% of cable TV system ownership resided in the hands of TV-radio broadcasters, telephone companies and newspapers. Big business was investing in cable TV franchises for big profits. Due to the high level of initial investment, exclusive franchises are invariably demanded so that cable TV functions within each area as a monopoly. Expectations that cable TV will provide a real alternative to the pablum we currently receive from the established media are likely to prove overly-optimistic, since the industry is hardly as excited about increasing the possibilities for participatory democracy as it is in the creation of a vast new market in communications and merchandising. Given the costs for installing the cable, it is not likely that the cable TV industry will turn to the ghettos of the inner city for their subscribers. Demands for public access channels are being met with resistance by the industry and are being only minimally fulfilled. All of this is to be expected, since technology in a capitalist system inevitably reinforces and enlarges the already existing social and economic inequalities. Technology for profit means technology for those who can afford to buy it.

What will be the future for cable TV? Although its potential for functioning as the “electronic town hall” is small, its potential for the creation of a vast new market in communications is great. Along with the development of this market, it is inevitable that governmental monitoring of our lives will increase. For those who choose to bank, shop, or conduct medical interviews over cable TV there is the real possibility of computer compiled files of their everyday transactions. Tapping cable TV will be just as easy as tapping telephones. (When a participant in a session at the American Association for the Advancement of Science meetings in Washington, D.C. in 1972 protested to Etzioni that she

didn't want a cable TV installation since she already had a “two-way cable communications system” in her house—the telephone—and she suspected that it was already tapped, Etzioni's reply was that if she was worried about spying she could always unplug her cable TV!). A less obvious threat is that cable TV could provide the government with a much more sophisticated propaganda tool. In the ultimate in “community television”, the government could direct messages to different ethnic, racial, and class groupings, which could differ slightly in their contents. (Want to explain why the presidential tapes are missing? Try three alternate explanations to selected areas of one city, do an automatic electronic poll to determine which has been received most favorably, and then use that one for the rest of the country.) Automatic polling, determining which program each set is tuned in to at any specific time, also has a great potential for a new form of preventive surveillance. The scenario might read like this: the government, in a study of 1000 known community organizers has developed a profile of their viewing habits over an extended period of time. Computers then scan the output from tens of thousands of cable TV sets over a period of time. Individuals whose viewing profiles are congruent or largely overlapping with those of the activists are then selected out for “further study”. In this way, “troublemakers” could be identified even before they ever began to make trouble.

“The idea that technological developments might be used to reduce the costs and pains entailed in dealing with social problems is appealing.”

—Amitai Etzioni, in *Science*

Within the confines of our society, the technology of cable TV represents a “progress” filled with contradictions and dangers. Liberal analysts, such as Jerrold Oppenheim or the American Civil Liberties Union, have advocated a set of legal safeguards to protect individual privacy. However, given the readiness of the government and its various police forces to disregard the legal rights of individuals, it is unlikely that such barriers will give more than the illusion of protection. Nor can we expect the FCC or the Office of Telecommunication Policy to protect the public interest in regulating this new industry. What, then, can be done? At this time, we feel that it is necessary to oppose the introduction of cable TV to new areas and to limit its development until our society is structured to allow the people to take advantage of its technology. Where cable TV systems have already been installed, it is important that community organizations be supported in their struggle to obtain the most open and community-directed cable TV possible. Finally, we must be willing to confront those technological apologists who, rather than deal with the nature of an unjust society, would try to buy us off with irrelevant “shortcuts”.

R.F.

Continued from page 17

the author's superior knowledge: I don't understand it, but I suppose (s)he knows what (s)he's talking about: I believe because I don't understand. This is science for the experts, elitism, obscurantism or whatever you like to call it, not science for the people.)

A more immediately helpful statistic than population density is the median age: if we were comparing an "underdeveloped country" (UDC) with a developed country (DC), we might find that the UDC had a median age of 17, while the DC had a median age of 30 (say). This would mean that half the population in the UDC were under 17, while half the population in the DC were under 30. This sort of pattern can arise in the UDC because until recently their life expectancy has been low; the death rate among children has been particularly high so that they are used to having many children, of which only a few would be expected to survive long enough to have children of their own. Now

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with improvements in hygiene and medicine, and with the efforts of various charities and international bodies to prevent starvation, malnutrition and illness among children (without, unfortunately, ensuring that there was going to be food or useful employment for them later), and with developments in communications which at least ensure that if there is food available for distribution in a local famine it can be distributed, a far higher proportion of the children survive—but since this happened only recently, there are still only a few who have reached adulthood, and if nothing too disastrous happens the median age may rise slowly for a while. *But* if the median age is 17, this suggests that about a third of the population are of what we regard as "school" age, (7–17), and about a third are probably dependent (0–11). This is an enormous burden on the productive workers of the country (farm and factory), especially if their production methods are inefficient. To improve their efficiency, it seems, they need education—which increases the load on everyone else. Solutions have been found to this problem in some places; in China there are schools run by factories, farms and factories run by schools, and part-time-work part-time-study schools. But life could be a great deal easier both for the individual parents and for the workers of the country—if they had fewer children.

Friends and Enemies

This is probably my most serious objection to the article. Anyone who treats a friend like an enemy is going over to the side of the enemy, says Mao Tsetung. The American Friends Service Committee are friends of ours. We are forever using and advertising their material on the Indochina War and occasionally getting into trouble with the authorities for doing so. So why are we denouncing them here? "In Mexico, the AFSC has sponsored international training programs for medical personnel and teachers at all educational levels. In 1971, 239 professionals were trained. In Columbia, the AFSC has been proud to claim 100 monthly IUD insertions in Barranquilla." Proud? If so, why publish it in a *Confidential Report*, not in all the newspapers? The footnote to this says "The AFSC requests that no written publicity be given to its family planning programs in Mexico." So we have carried out a big Nader-style raid on the AFSC and are boasting about it. Is that any way to treat a friend? If I say something *in confidence*, will it be published with a footnote to say how secretive I am?

The IPPF may have some rather strange members, but in general it is made up of non-profit, non-governmental family planning associations, and it does help with the establishment of independent associations in countries (such as Ireland) where this is difficult. It is interesting to view IPPF as part of the international capitalist conspiracy when our local reactionaries regard it as part of the international communist conspiracy.

Love/Truth,

H.N. Dobbs

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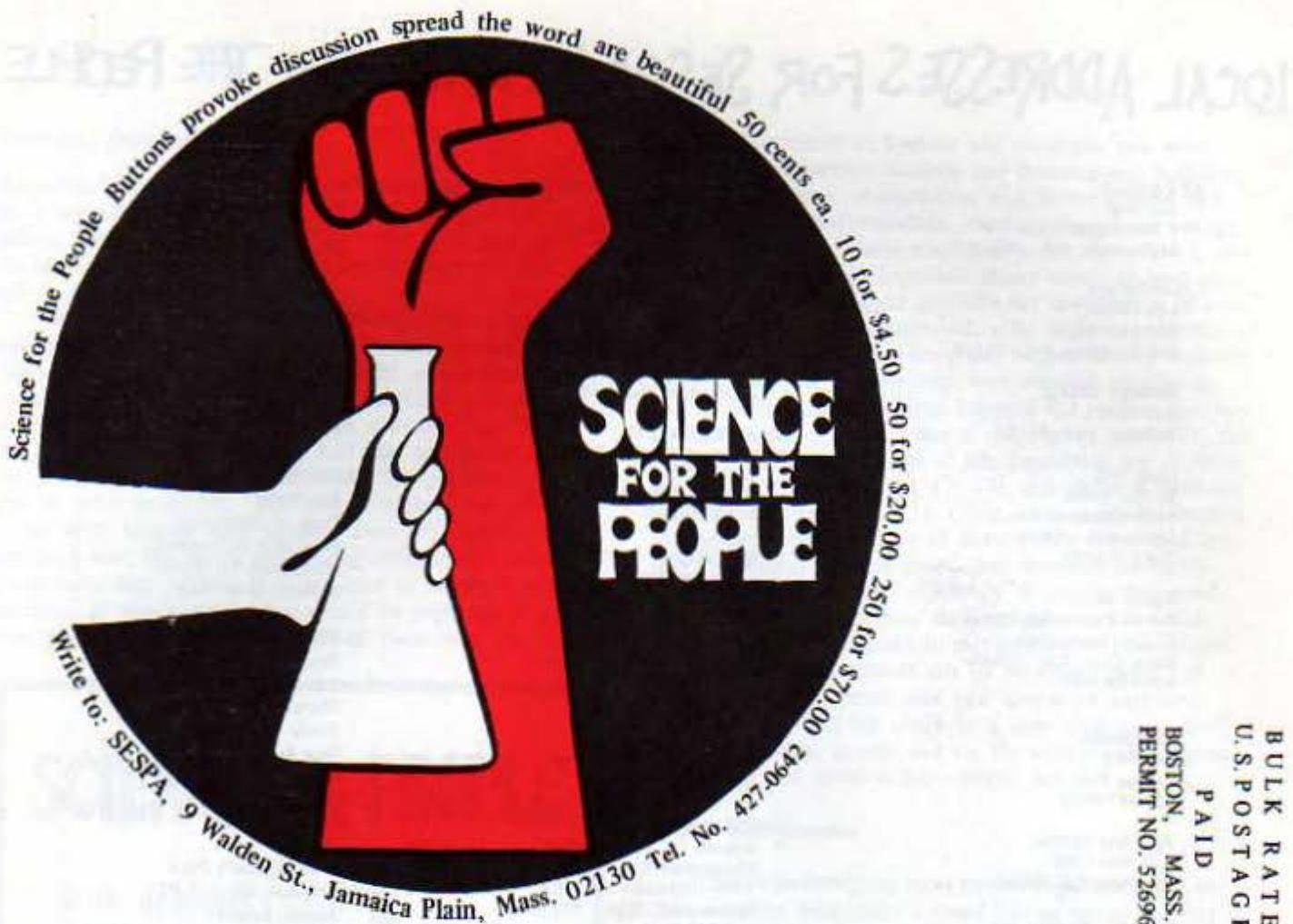
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SUBSCRIPTIONS TO SCIENCE FOR THE PEOPLE AND MEMBERSHIP IN SESPA

SESPA is defined by its activities. People who participate in the (mostly local) activities consider themselves members. Of course, there are people who through a variety of circumstances are not in a position to be active but would like to maintain contact. They also consider themselves members.

The magazine keeps us all in touch. It encourages people who may be isolated, presents examples of activities that are useful to local groups, brings issues and information to the attention of the readers, presents analytical articles and offers a forum for discussion. Hence it is a vital activity of SESPA. It is also the only regular national activity.

We need to know who the members are in order to continue to send *SCIENCE FOR THE PEOPLE* to them. Please supply the following information:

1. Name:
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- Occupation:
(if student or unemployed please indicate)

If you are working, do you work in industry [], government [], university [], other _____

2. Local SESPA chapter or other group in which I'm active:
3. I am enclosing money according to the following scheme: (a) regular membership—\$12, (b) indigent membership—less than \$12, (c) affluent or sacrifice membership—more than \$12, (d) completely impoverished—nothing, (e) I have already paid.
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5. I am attaching a list of names and addresses of people who I believe would be interested in the magazine. Please send them complimentary copies.
6. I would be willing to provide technical assistance to community, movement, or Third World groups in the areas of:

Please add any comments on the magazine or SESPA or your own circumstances. We welcome criticism, advice, and would like to get to know you.

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