

# SCIENCE FOR THE PEOPLE

Vol. 15 No. 3  
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## Lessons from the Mondragon Cooperatives



The New Eugenics  
Resource Wars in the Lake Superior Region  
Human Embryo and Gene Manipulation  
Women and Technology

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# about this issue

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*Science for the People* has traditionally set itself apart from mainstream popular science publications by exploring, in an analytical fashion, issues of science and technology as they play themselves out in a world of well-defined political relationships. We have sought to present issues of contemporary concern which reflect both the limitations of science, particularly as it is practiced within a capitalist framework, and the vast potential of socially-useful, applied scientific research.

At times, and perhaps of necessity, we have painted a highly gloomy picture of current scientific practices. However we have never lost sight of the need to provide, within our coverage, articles which probe and challenge the status quo, as well as pieces which explore real and positive changes which have taken place. This issue combines the various approaches of change and innovation, challenge and query.

Bob Milbrath provides us with a critical look at the successful Mondragon worker cooperatives of the Basque region of Spain. In spite of rapid growth which has caused certain problems within the Mondragon system, he concludes that the cooperatives provide us with an exciting and effective means of challenging traditional capitalist relations of production. Further, Mondragon has revitalized a region that would otherwise suffer high unemployment and has implemented social welfare measures which provide protection for all members in the face of changing economic conditions.

Phil Bereano and Christine Bose offer us another positive alternative, this time closer to home. In designing a course, at the University of Washington, which focuses on women and technology, the authors both challenged traditional pedagogic methods, and provided a much needed interdisciplinary approach to issues which have traditionally failed to include women. The authors have provided a lengthy and comprehensive annotated bibliography which is useful to both interested readers and those who may design similar courses elsewhere.

Barry Mehler, writing about the new eugenics movement currently legitimized by the conservative political climate, warns us of the re-emergence of many of the same beliefs which flourished in Hitler's Germany. More alarming is the current tendency in academic circles to provide eugenicists with increased respectability, access to prestigious publishing houses, and greater voice in university communities. Mehler outlines an expanding institutional network which currently provides funding and media access for eugenicist views; and

warns that the debate which once surrounded the ideas of Arthur Jensen and William Shockley in the early 70s is far from over.

Environmental battles under the Watts regime have reached fever pitch since the election of Ronald Reagan. Al Gedicks reports on the uranium mining industry in the northern Great Lakes region which, with government cooperation, threatens to devastate much of northern Wisconsin and upper Michigan. Here, as elsewhere, potential destruction is being combatted by an active and organized community of concerned individuals; Gedicks details their struggles against a complicated scheme of government and corporate collaboration to exploit resources at high social cost.

Ruth Hubbard describes the elitism and commercialization surrounding the development of techniques for manipulating human genes and human fetuses in the womb. As new and complicated techniques with high profit potential, they are currently peddled with an enthusiasm which grants few opportunities for critical examination of possible social costs or risks. The situation is sharpened by the fact that many of those involved in the research or delivery of such techniques are also investing heavily in the chance for instant wealth once results reach the market place. Hubbard effectively underlines the need for demystification and control of the new technologies by those who may be their victims as well as their beneficiaries.

While the subject matter within this issue of *Science for the People* varies widely, it is the hallmark of the organization to see the connections between these topics in the need to build a science and technology which works for the people. To this end, within these pages and in the activities of our chapters and contacts around the world, we try to make individuals in the sciences more accountable for what they do, to challenge attempts to use science and technology for the realization of huge profits and large-scale destruction, and also to document those efforts around the world where people are trying to build a socially-useful science and technology, one which can be put to work for a common good.

## UPCOMING ISSUE OF SFTP

The Midwest Editorial Committee is now soliciting articles for the November/December 1983 special issue "Science and Technology in Central America." Please send articles, outlines, graphics and other material to: Midwest Editorial Committee, Science for the People, 4318 Michigan Union, Ann Arbor, MI 48109. Copies of author's guidelines are available from the National Office, 897 Main St., Cambridge, MA 02139.

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# letters

## VIOLENCE AGAINST WOMEN

Dear SftP

I found "A Culture of Violence Against Women" (March/April 1983) very disturbing. Is behaviorism really the psychological theory of choice for feminists and other radicals? Unthinking use of "scientific evidence" in reference to studies in the very bourgeois and almost totally positivist social sciences is rather distressing to find in a radical publication, especially following an anti-psychiatry article. Feminists enamoured of such "evidence" might want to dust off their copies of *Sisterhood is Powerful* and reread Naomi Weisstein's classic "Kinde, Kuche, Kirche" As Scientific Law: Psychology Constructs the Female."

Furthermore, if you *must* use such "evidence" at least be consistent. Why quote an expert who states that "non-violent erotic films do not increase (the incidence) of rape" when you're trying to indict all pornography? I'm certain they didn't use feminist "erotica" in the studies to which he refers.

And why, when describing feminist opposition to the anti-porn movement, did you quote only the most extreme position—defense of "snuff" films? Most of us are angered not by the attacks on explicitly violent imagery, but by the way *all* pornography is considered violent by association, that, for example, a woman posing with her legs spread is "inviting sexual assault," as you put it. Goddess forbid she might be inviting sex! We are also angered by a seeming consensus among anti-porn fanatics that all anal intercourse is "forced," that women who get off on exhibitionism, voyeurism or "bestiality" are twisted victims and that youth sexuality is a horrifying creation of the "pornographic imagination."

As for sadomasochism, we need an analysis that recognizes the complexity of desire and doesn't lump s/m with violence. Most real s/m porn—which does *not* include Larry Flynt's stupid attempts to bait feminists—hardly looks violent at all and the bulk of it is directed at straight male submissives and gay men.

If we want to create really radical social change, we *must* develop a sophis-

ticated analysis of the interrelationships of sex, violence, brutality, the media, power, aggression, representation, anger, etc. in our culture. Unfortunately, "A Culture of Violence Against Women" isn't even a first step.

Lisa Orlando

## EUROPEAN DISARMAMENT MOVEMENT

Dear SftP:

Certain things that Les Levidow said in his "Report on the International Meeting of Radical Science Journals" (SftP Vol. 15, No. 1) particularly disturbed me.

he wrote that the Center for Nuclear Disarmament's (CND) [Les cannot even get the name right—its the *Campaign* for Nuclear Disarmament] approach has nothing necessarily to do with peace as its overall politics are perfectly compatible with conventional rearmament."

CND is a broad based popular movement, which is on the point of winning majority support for nuclear disarmament, unilateral if necessary, in Britain. CND supporters are opposed to all wars and all preparations for wars and to say that they are not interested in peace is both insulting and untrue.

However it is unlikely that a political party, such as the Labour Party, could win a general election on a platform of out and out pacifism. Therefore many peace movement activists, such as myself, argue for an alternative defense policy, that is for a *defensive* defense policy. The Alternative Defense Commission base in the Peace Studies Department of Bradford University is producing a pamphlet this week entitled "Just Defense" on how a hypothetical Russian invasion could be resisted without either nuclear weapons or offensive military weapons such as tanks and bombing aircraft. This may not be a recipe for the socialist millennium, but defense issues are a matter of life and death.

Also as a member of the Labour Party I do object to being told that there is no difference between us and Thatcherite Conservatives. It's a bit like saying there is no difference between say, Tom Hayden and Ronald Reagan.

Lastly, Les Levidow advises us all to read "Towards a Citizens' Militia" an anarchist manual which takes defense

seriously" (unlike the rest of us). I have read this "manual" and it struck me as an interesting example of an-archo-militarism, stuck in a time warp of romantic nostalgia for the Spanish Civil War and bombs, barricades and blood on the streets.

It is not a work dedicated to bringing about peace, rather it is one which advocates revolution, which is something entirely different and I take to be Les Levidow's position. Still in the spirit of "peaceful co-existence," I'll try not to insult him too much and then perhaps he will not want to insult me too much either.

John Bradbook  
Office Coordinator, British Society  
for Social Responsibility

## POISONS IN COFFEE

Dear SftP:

Recently I've been wondering whether the connection some studies show between coffee consumption and cancer could be the result of widespread overseas pesticide 'dumping.'

So I decided to begin to explore this notion. Because a friend had recently started a water-testing business (Water-Test Corp., in New London, N.H.), I found I had a way to get samples tested in a preliminary fashion; in addition to testing for a number of metals, the lab uses a measure of 'total organic halides'—a measure that would catch most of the EPA's 'primary pollutants' (DDT, lindane, endrin, etc.), even though much more sophisticated testing would be needed to specify just which pollutants were present.

I bought small amounts of coffee beans from Mexico, Guatemala and Colombia and had each sample ground. Then, using distilled water, a glass coffee maker, and an ordinary coffee filter, I prepared three samples.

Organic halide levels for all three samples were incredibly high. Whereas my own water tested at .015 mg/l, and the microbiologist who heads the Water-Test lab says they had tested no water sample above .40, the coffees tested at 9.60, 11.28, 17.60 mg/l.

Especially after reading *Circle of Poison*, I fear this is just the tiny tip of a horrible iceberg. Are any readers in a position to do much more rigorous and systematic testing of this sort? A full-scale article on the results of such tests, geared to a wide general readership, could aptly be called "If this were water, it would be unsafe!"

Harriet Feinberg

## AIDS MEETS FUNDING DROUGHT

The acquired immune deficiency syndrome (AIDS) has struck more than 1300 people from 34 states and 16 countries since June 1981. The syndrome, which is thought to be transmitted by sexual contact, exhibits a mortality rate of almost forty percent. The AIDS problem, already termed an epidemic by the mainstream press, has resulted in more deaths than those attributed to toxic shock syndrome, swine flu and Legionnaire's disease combined.

Researchers need swift and extensive research funding from the National Institutes of Health (NIH) and the Center for Disease Control (CDC) in Atlanta to combat outbreaks of deadly epidemics such as AIDS. But perhaps because AIDS is known as a gay disease (it was first discovered among young gay and bisexual men with multiple sexual partners), funding is not forthcoming with the same alacrity as funding previously apportioned for similar disorders.

As Dr. Kevin M. Cahill, director of the tropical disease center at Lenox Hill Hospital, recently noted in the New York Times, "Organized medicine seemed part of a conspiracy of silence," in the fight against AIDS. "When a fatal infection struck veterans attending an American Legion convention, health professionals across America joined the search for a solution. When women using tampons became ill with toxic-shock syndrome, medical centers immediately focused their enormous talents on that problem. But when the victims were drug addicts and poor Haitian refugees and homosexual men, no major research programs were announced."

In fact, CDC figures for the first two years of research funding for AIDS, toxic shock and Legionnaires' Disease indicate that funding for AIDS research has not been commensurate with the seriousness of the health problem AIDS presents. In the first year, AIDS research funding from the CDC came to \$3225 for each death CDC attributed to the disorder, whereas toxic shock received \$5628 and Legionnaires' disease \$4500 for each death. By the second year, however, AIDS research funds lagged significantly further, with AIDS funds per death set at about one quarter (\$8991/death) the funding provided by the CDC for toxic shock (\$36,100/death) and Legionnaires' disease (34,841/death).

NIH distributed \$3.355 million for AIDS research in 1982. Depending upon political pressures and progress towards the elimination of AIDS, NIH will allocate \$8 or \$9 million for AIDS research in 1983 and between \$9 and \$12 million in 1984. A generous estimate for NIH funding for AIDS research in 1983 would be .25 percent of the approximately \$4 billion NIH budget.

AIDS patients face a grim future. Inequiate funding for research to combat AIDS dims their hopes for some escape from the syndrome. Besides the deterioration of their health and some of their personal relationships, they find they are not eligible for disability funds from Social Security. They must find a way to deal with a crippling disease and pay hospital bills often in excess of \$100,000.

Lesbian and gay organizations across the country have raised funds to help the AIDS patients in their communities and to lobby for money to fight AIDS. AIDS

is of special concern to the lesbian and gay community, not only because the syndrome strikes primarily at gay men, but also because apparently healthy individuals may transmit the disorder to others 6 months to 3 years before their case is diagnosed. About two thirds of known AIDS cases occur in the New York City area and in California.

But not only has research funding been slow in coming, AIDS has provoked strong reactions among homophobes and overzealous evangelists coming out of the closet everywhere. In one of the more dramatic examples, a group of physicians in Texas, known as "Dallas Doctors Against AIDS," seek to reinstate Texas' anti-sodomy law. Fighting against a court decision ruling the statute unconstitutionally these medical lobbyists seek an appeal on the grounds that AIDS, and therefore gays, will present a danger to the "health" of the community.

—Will Doherty

## INMATES FIGHT ASBESTOS CONTAMINATION



While some efforts to combat asbestos contamination in school and workplaces have been relatively successful (see "Asbestos in the Classroom," *SftP* Vol. 14 No. 5, 1982), struggles against contamination in other types of buildings have met with more resistance. A group of inmates at Massachusetts Correctional Institution at Walpole have recently filed a civil lawsuit against the state, fighting to clean up the asbestos contamination they live with daily, and seeking damages totalling \$450,000.

The suit charges that, "Since 1980, inspection reports (by the Massachusetts Dept. of Public Health) have indicated that asbestos covering is loose, broken and flaking in many areas of the prison. On information and belief, studies published by the United States Dept. of Health and Human Services, Public Health Service, Center for Disease Control, indicate that asbestos contamination in the human body can cause asbestosis and certain forms of cancer; that asbestos, when loose from its covering and flaking, readily produces airborne fibers too fine to be seen by the human eye, which can subsequently be inhaled

and/or swallowed by human beings; that once in the lungs or other parts of the human body, asbestos fibers may lodge there and remain for life; that asbestos is one of the most potent carcinogenic substances known, and that asbestos-related cancers are almost never curable; that as little as two months exposure to low level asbestos contamination can result in asbestos-related disease; and that there is no threshold, or safe, level of asbestos exposure."

The inmates seek an injunction that will require the administrators to repair or replace asbestos products in the prison, and to provide medical examinations for them from time to time relative to asbestos-related illnesses. They also seek an injunction which, "Prohibits the defendants, their agents, officers and employees, from harassing, threatening or retaliating against the plaintiffs herein because they brought this action. Such retaliation to include arbitrary out-of-state transfers by any of the plaintiffs without their express consent." The state has used transfers in the past to break up organized groups of prisoners who attempt to change the conditions in which they live.

## CHEMICAL FIRM DEFENDS PESTICIDE SPRAYING OF EGYPTIAN CHILDREN

The Swiss-based chemical corporation Ciba-Geigy is defending its decision to spray several Egyptian children working in a cotton field with the pesticide Galeon (brand name for the chemical chlor-dimeform) as part of a "field trial."

Ciba-Geigy, which recently spent over \$5 million upgrading safeguards at its factory to keep its Swiss employees from coming into contact with the chemical, stated that the spraying of unsuspecting individuals is "rare" but still happens after animal tests have been done, to "double-check" that the "product will be safe under normal conditions."

While the particular spraying in question occurred in 1976, it has only recently come to light during a Swiss television program, causing a good deal of current controversy. Anita Friedland, spokesperson for the corporation, acknowledged that chronic, long-term effects to the victims of such human "testing" would not be found by the corporation through such methods.

And as if its audacious stance on its so-called "field trials" weren't enough, adding irony to insult, company publicity in Europe states specifically that children must be kept away from the pesticide.

—information from *New Scientist*  
Feb. 24, 1983.

## "NO FUTURE" FOR THE U.S. POOR

There has never been any question that marketing "experts" are more interested in the affluent sector of society. Lately, however, they seem to be more blatant about it. According to a *Pacific News Service* item that appeared not long ago in the *Boston Globe*, despite the worst recession in 50 years, marketing experts "from New York to California have some surprising advice for clients: 'move up to luxury goods.'"

According to market analyst Jeff MacCallum: "The uneducated, the uncaring, the minorities are going to be left out. They won't retrain themselves and industry won't do it for them. The bottom 10% of this society has no future." Sounds like they won't ever either, with people like MacCallum making the decisions.

## VDT UPDATE

Due in large part to the growing public awareness of VDT health issues, several state legislatures have been prompted to propose safety bills, and VDT safety studies. According to *Microwave News*, a monthly newsletter which has been particularly strong in its coverage of VDT health issues, safety bills or requests for VDT studies are pending in five states, and planned in four others.

While most of the legislation is concerned only with standards for lighting, furniture and terminal design, bills in Oregon and Massachusetts would also require employers to offer alternative work to pregnant women, a clause included in several Canadian union contracts. Many of the states would also require regular eye examinations.

Not surprisingly, the Computer and Business Equipment Manufacturers Association (CBEMA) opposes the proposed regulations, targeting it as one of their major issues. Hopefully public awareness and pressure can be sustained to protect workers until more is known about this important potential hazard.

## SEE JUAN READ?

The 13 February 1983 *Detroit* magazine (in the *Detroit Free Press*) featured a cover story with the caption, "See Johnny Read." It told about Hazel Loring, a retired teacher who, while contending with the effects of heart disease and cancer at the age of 79, wrote and distributed free of charge to 5000 Michigan teachers a 26-page booklet on teaching phonics to young readers. As quoted in *Detroit*, the booklet includes a copyright notice that could serve as an example for *SftP*—"Unlimited reproduction for solely educational purposes is encouraged," it says, but "reproduction for profit may not be made of any part of this publication."

For those unfamiliar with the politics of phonics, it must be noted that early in this century phonics skills were replaced by a gestalt approach to reading that taught students to recognize lists of whole words in order to build a reading vocabulary, with the help of pictures to suggest the meanings (remember Dick and Jane?). 'Look-say' reading has been effectively discredited by Rudolf Flesch in his popular books *Why Johnny Can't Read* (1955) and *Why Johnny Still Can't*

*Read* (1981). Look-say methods have simply proved to be seriously inferior to phonics-first techniques, which teach students to sound out new words, thus enabling them to quickly develop larger vocabularies as a result. Phonics was virtually banned but is now making a comeback; but Flesch noted in 1981 that only 15% of U.S. schools make any more than at best token efforts to teach phonics skills.

Why could this be a particularly progressive point of concern? Differences in reading skills have long had political repercussions. One obvious example is I.Q. tests, whose results depend in large part on reading ability and vocabulary, and which are still used by racist individuals and institutions from Arthur Jensen to the U.S. Army to classify minorities as inherently inferior in 'intelligence,' based on average differences in I.Q. scores between whites and non-whites. Differences result ultimately of course from differences in educational opportunities or cultural backgrounds that are not white and middle class as implicitly assumed by the I.Q. exam questions.

Most current reading textbooks feature look-say methods, although as the demand increases, more texts emphasizing phonics should appear. It's not hard to predict that the first schools to become aware of the new methods and to be able to replace their curricula are likely to be those in areas that can afford to provide for better education. In short, we might expect a new and significant qualitative increase in the difference in average reading skills and its effects to appear between inner city or other disadvantaged school systems and wealthier-neighborhood or private schools. And such differences only serve to foster the malignant correlations about differences in intellectual abilities between whites and non-whites, while again actually reflecting only differences in the proportions of the different groups in good or poor schools. Progressives interested in basic education must join efforts to make the best possible reading methods available to all students, and beyond this, to anticipate the reaction to the effects of its 'trickle down' through the educational system.

A copy of Hazel Loring's booklet, entitled "Reading made easy with blend phonics for the first grade" can be obtained for \$1.00 for postage from the Reading Reform Foundation; 7054 E. Indian School Rd.; Scottsdale, Ariz. 85251.

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# LESSONS FROM THE MONDRAGON COOPS

by Bob Milbrath

Is it really possible to get along without the capitalist class, the managerial elite, or the central planning bureau in today's technologically and financially sophisticated economic world? Is it possible to retain regional and community control over the means of production in an era of multinational and nationalized enterprises? The Mondragon worker cooperatives, centered in the Basque province of Guipuzcoa, Spain, shed some interesting new light on these questions.

There has been considerable interest in this federation of cooperatives because its scope and dynamics seem to defy established political-economic theory. It includes some 91 industrial enterprises which produce a wide range of consumer durables, parts, machine tools and construction products; a cooperative bank with half a million depositors; a large network of consumer cooperatives; a social insurance system; its own advanced technical research center; and numerous educational, housing, agricultural and service cooperatives. The group includes more than 18,000 worker-members, and operates in one of Spain's more industrialized areas with a tradition of metallurgical activity which goes back to medieval times. Starting as it did with only 23 members in 1956, the growth of the Mondragon experiment has been remarkable.

## **"Knowledge is Power"**

The origins of the Mondragon cooperatives go back to the aftermath of the Spanish civil war following the defeat of the Republic and the rise to power of Franco. The war had left the Pro-Republican Basque region in ruins. In 1941, a young priest, Don Jose Maria Arizmendi-Arrieta, founded a technical school oriented towards working class youth. Taking as its motto the

slogan "knowledge is power", the school began operations in 1943. Through persistent diplomacy, Arizmendi was soon able to get official recognition and financial support for the school from the Ministry of Education.

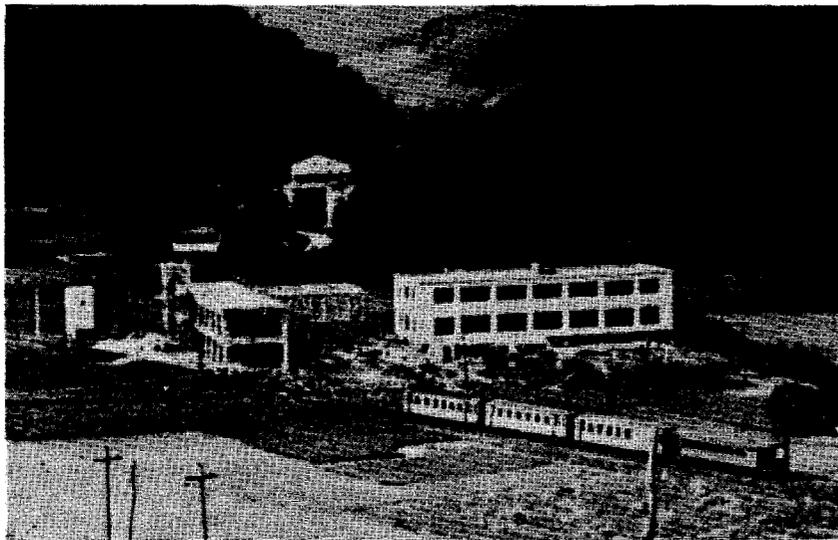
Among the first graduates were five students who went on to university courses in engineering. After returning to town and working a few years in Mondragon's largest factory, they started their own operation based on self-management principles. Twelve years after the opening of the school they founded an operation they called ULGOR (composed of letters from the names of the founders) in the nearby city of Vitoria.

ULGOR's first product was oil cookers, and the early months brought a series of frustrating attempts to master the technology and materials. Fortunately around the time the shop was moved to Mondragon in 1956, butane appeared on the market to replace oil. With the help of a license to use some foreign patents, ULGOR was able to launch its gas cooker known as "new dream", which became the basis of the operation's eventual vast development. At that time there were a few other manufacturing cooperatives and a consumer cooperative operating in the Mondragon area. Arizmendi persuaded them to avail themselves of the possibilities of cooperative banking in conjunction with ULGOR. This decision was perhaps the most critical of all to the success of the Mondragon experiment.

The bank, named the *Caja Laboral Popular* (literally, the Working People's Bank), was established under Spanish law as a "second-degree" cooperative, that is, one which has other cooperatives as its constituent members. The Caja began quickly to draw deposits from local savers, who undoubtedly shared a certain enthusiasm for what was unfolding. Its rapid growth enabled the financing of other cooperative ventures, (especially those starting in the late 1960s and after) as well as provision of the loan capital necessary to temporarily fund the expansion of ULGOR and the other larger cooperatives. According to a delegation from the Wales Trade Union Council who recently visited the Mon-

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*Bob Milbrath is a graduate student in economics at the University of Michigan. He spent about 5 months in the Mondragon area in 1981 and 1982 in connection with a research project on the cooperatives.*



**Left:** A photograph of Ulgor in 1956, before the formation of the cooperatives. **Right:** The Ulgor plant, 1979.

*These before and after pictures in many ways tell the whole story of the Mondragon cooperatives. It is immediately clear that the region pictured underwent tremendous economic growth. Also implicit in these two photographs is that this region has had to face many of the same*

## THE PRINCIPLES AND STRUCTURES

### Internal Solidarity

One of the most remarkable features of the group has been the ability to attract members with high level skills operating within a compressed salary scale of three to one. For example the general manager of the Caja laboral earns only three times the salary allowance of an entering production worker.

### Democratic Control

The supreme authority is the general assembly of members with one vote for each member, except in the cases of EROSKI, the consumer cooperative, and second-degree cooperatives where there are representational voting arrangements.

Membership meetings are normally held once a year, and practical responsibility is delegated to a managing board elected from the membership. Anyone may serve on the managing board. Board members receive time off but no extra pay for their duties.

To provide for interim communication between membership and board there is also a larger social council with representatives from all the work units in the cooperative. In ULGOR the social councils of each plant have become vital centers for discussing fundamental problems in the relations of production within the cooperative.

The managing board appoints or reappoints the managers, who as members are on an equal footing with everyone else, but are vested with day to day authority and responsibility for proposing plans and policies to the board.

Finally, there is an elected auditing committee to watch over the board and management's handling of finances.

### Worker-ownership

In general all workers must be owners, and all owners must be workers. Small exceptions are allowed when specialized personnel must be contracted. The initial capital contribution varies between two and four thousand dollars. One fourth of the initial contribution goes to collective funds, the rest remains along with earned surpluses for the members/owners to share.

The fact that each member has a share of the business is thought to impart a sense of personal responsibility for the enterprise. Ownership shares are not transferable.

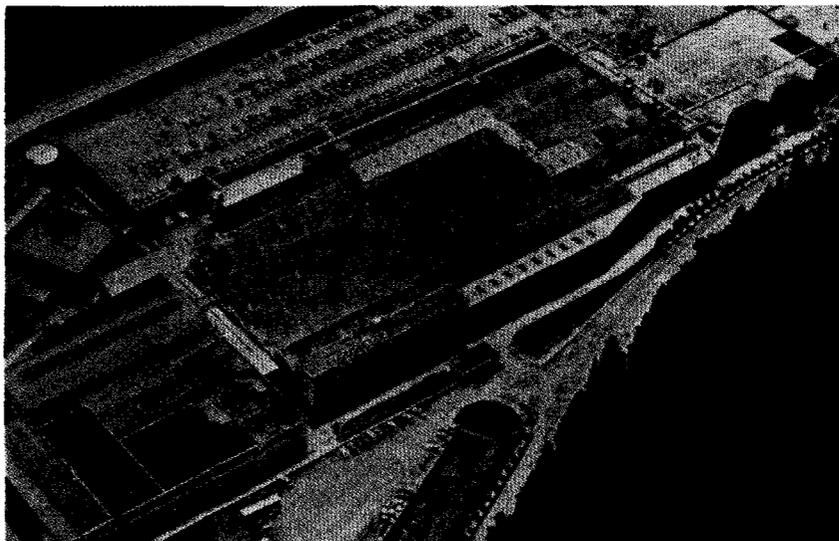
### External Solidarity

Within the three to one scale, salary allowances for low and middle levels are roughly equivalent to regional wage levels. This tie to wages in the non-cooperative sector prevents a successful cooperative from paying out super wages which would give members a privileged status above their non-cooperative counterparts. At the same time it helps to insure that what is earned over and above the allowances will be reinvested in creating new workplaces, or keeping plant and equipment competitive.

### The Open Door

Membership is, in principle, open to anyone who wants to join or start their own cooperative. Over time, however, screening and hiring qualifications have become more rigorous. Preference is given to entrants with the required skills for the position who are residents of the locality, and who have greater need for employment. There is a bias towards younger entrants. The entry of women is encouraged especially as it is recognized that female participation in labor is below European stan-

problems any other industrialized area must face. While the Ulgor plant in many ways resembles any capitalist industrial plant, the important differences in the principles and structures of the Mondragon cooperatives are outlined below. It is important to recognize that being a cooperative did not make the problems of industrialization go away. The cooperative structure did, however, provide a means to deal with the industrialization which they faced.



## OF THE MONDRAGON COOPERATIVES

dards, but there are complaints that women have lower paid positions. Privileges for founding members and seniority provisions are limited to prevent latecomers from having a second class status, but they may exist. Similarly, potential new cooperatives are rigorously screened. The open door, in practice, means a commitment to expand cooperative employment.

### Distribution of Surpluses

The principle is that surpluses earned by the cooperative are distributed to members accounts according to the sum of the value of their labor measured by salary allowance plus the service value of their capital measured by a 6% interest allowance.

Before making this distribution, 10% of the surplus is allocated to a social and educational fund which is spent on projects benefiting the community. In addition, 20% of the surplus is allocated to collective funds if surpluses are normal or below.

If they are high, the percentage rises according to a formula. The existence of a collective fund, not claimable by members if the cooperative breaks up, prevents the members of a cooperative with a market advantage from selling out to realize large gains. The rest, normally 70%, is credited to the value of the shares of the individual members, claimable only when a member leaves the cooperative or retires.

### Contracts of Association with Caja Laboral

Adherence to most of the above provisions is a requirement for association with the Caja Laboral which among other things enables loans and managerial assistance for the participating cooperatives. In addition the associated cooperatives make a commitment to lend support to the Caja in the event of solvency problems, and pay a modest membership fee.

The Caja issues policy directives, especially concerning required financial ratios for good standing. If a cooperative becomes too weak financially it must subordinate itself to the Caja's managerial guidance to be eligible for loans, and must withhold some wage and interest payments to improve cash flow.

The associated cooperatives are the constituent members of the Caja Laboral, and they send representatives to its general assembly. Voting power is roughly proportional to the size of each cooperative up to a maximum, but the staff of the Caja also have minority representation. Two-thirds of the Caja's board is elected from the cooperatives and one-third from the staff.

### The Cooperative Subgroup

All new cooperatives must affiliate themselves with a regional subgroup, like the ULARCO group in the Mondragon area. Provisions require certain financial contributions, and the release of members to work for the central staff. In addition, 70% of the surpluses and losses of subgroup members are put in a common fund, and distributed jointly. This shares risks. The subgroups also develop common policies for the transfer of personnel among cooperatives, mutual support, and on other business matters.

Representatives are elected to the subgroup assembly which in turn elects a board, and a common social council and auditing committee. Any members of the participating cooperatives may serve.

### Rights and Responsibilities of Members

The social statutes clearly designate rules concerning grievances, penalties, and violations leading to loss of membership rights so that entering members (and, in the case of the contract of association, entering cooperatives), know the constitution under which they are to live.

dragon cooperatives to examine their organizational form and community as a possible model for the languishing Welsh economy:

The most significant element identified was the existence of the People's Savings Bank (Caja Laboral Popular) and the role that it played. In this was observed the power of locally deployed savings. It was clear to the delegation that here was the pivot of the Mondragon system and the driving force behind its expansion and efficiency.

In the same year, 1959, the Spanish government launched its Stabilization Plan and the modernization of Spain began in earnest. The economy was turned over to a financial oligarchy with its accompanying international connections. Restrictive monetary policies held down wages and helped to restore conditions favorable to profitable investment. Unemployment was limited by exporting workers to other European countries. Commitments were made, meanwhile, to support industrial development and 'rationalize' industry. Protectionist policies guaranteed the local market against the products of foreign competitors. The result was an influx of national investment and foreign capital aided not insignificantly by tourist revenues and monies the exported workers sent back home.

By the mid 1960s, the Spanish economy was booming with annual growth rates exceeding 10% in some years. The new wealth led to an increased demand for modern conveniences, machinery for the new factories, and construction projects, and these were the areas into which the cooperatives expanded. In the field of white line products, such as stoves, heaters, washing machines, and refrigerators, ULGOR was in "on the ground floor" and soon became the industry leader. By the end of the 1960s it had the capacity to produce up to 2000 refrigerators per day.<sup>2</sup>

#### **Old Networks, New Associations**

Within the first five years about 25 cooperatives had been started or had affiliated themselves with the Mondragon group, almost all of them in metal working and furniture industries. Some of these came about through conversions of capitalist firms to cooperatives. Others, such as ULGOR, started spontaneously from scratch. Growth followed a peripheral strategy; there was no attempt at first to set up or affiliate cooperatives in the major cities. Ten years passed before the Caja Laboral Popular even opened an office in the major industrial center of Bilbao.

When parties interested in forming a cooperative in the 1960's, they were told first to establish a branch office of the Caja in their town. In some cases, the setting up of industrial cooperatives simply followed the location of a branch office. Informal connections among the Basques in the different towns, extended family networks, and the Basque drinking and eating clubs were important to the mobilization of support for the cooperative ventures. The big cities offered fewer opportuni-

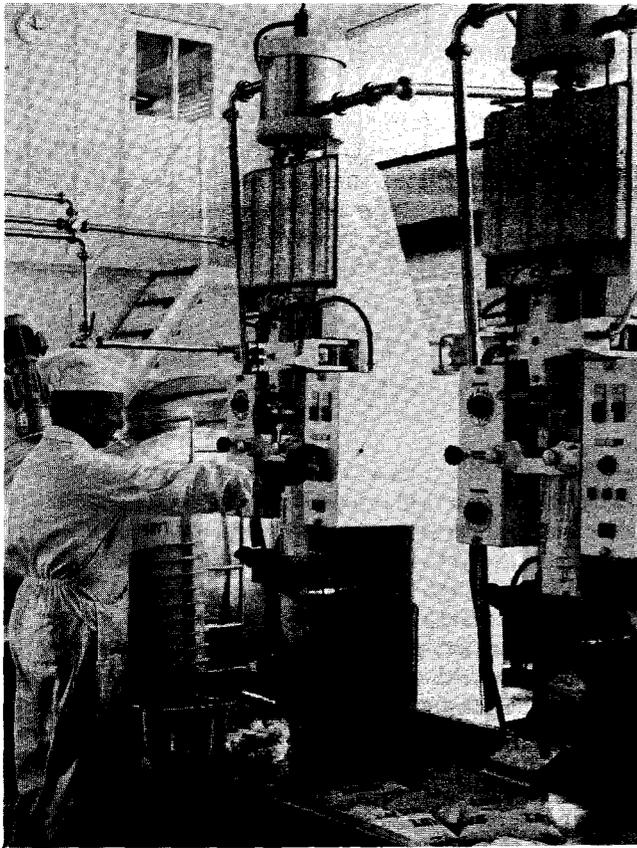
ties for this; the location of cooperatives within smaller towns, however, ultimately enlivened locations which might otherwise have suffered a loss of vitality.

The 1960's also saw a number of innovations which greatly amplified the possibilities of the cooperative experiment. An agricultural cooperative, LANA, which included a dairy, and a lumber mill was affiliated. The workers in the dairy and the mill were made equal members alongside the farmers. The Caja Laboral then spun off *Lagun-Aro*, a second-degree cooperative dedicated to providing social insurance for the associated cooperatives. Members of the cooperatives were considered under the law to be self-employed, and excluded from most of the State's social security benefits. *Lagun-Aro* filled this gap, providing health insurance, worker's compensation, pension plans, and medical services. More recently *Lagun-Aro* has added unemployment insurance.

In 1965 several cooperatives in the Mondragon area, including ULGOR, formed a subgroup within the association of cooperatives. This subgroup, ULARCO, was created to share risks, as well as marketing, engineering, and financial resources. Here again, use was made of the second-degree cooperative structure. In the same year, ULGOR made its electronics division a separate cooperative, *Fagor Electrotecnica*. This was also an important method used to solve the size problem: starting new cooperatives by splitting off divisions from those which had grown large.

In the following year, ALECOOP, the cooperative student factory, was founded in response to students' needs to finance their education at the Professional-Technical School. Participating students split their time between studies and work. This conjoining of work and study is carried over into the classwork where high school students are required, in one course, to build their own machines such as lathes or drill presses, and to design dies and molds. Therefore students not only gain a theoretical knowledge of engineering, but also the ability to apply knowledge to actual designs and constructions.<sup>3</sup>

A few years later, in 1969, the consumer cooperatives associated with Caja Laboral grouped themselves into one network, EROSKI, which in the subsequent decade became the largest part of the Cooperative group next to the ULARCO cooperatives. The organization of EROSKI is notable because of the importance given to worker interest; as in LANA, there is a hybrid structure, with six worker and six consumer members on the managing board. In addition, worker-members earn surpluses on their membership investment as in other of the worker cooperatives. As a consumer-oriented cooperative, EROSKI strives to keep prices down and quality high. A substantial effort is expended on consumer education, and the publishing of reports on product quality. Finally, EROSKI has developed a sophisticated product testing lab to assess product quality.



*Milk production at the Lana Cooperative.*

### **Role of the Caja Laboral**

Most of the Mondragon cooperatives were started from scratch. In the 1960's the initiative came from groups of people wanting to start cooperatives, but in the following decade more of the initiative came from the Caja Laboral itself. By that time the economic situation was less favorable, and investment requirements had escalated because of the growing technological complexity of production. A much greater proportion of the "start-up" capital for a cooperative had to come from the Caja Laboral.

After splitting off Lagun-Aro, the Caja Laboral was organized into two divisions: economic, concerned with banking, and empresarial, concerned with providing business expertise and guidance to fledgling cooperatives. As time passed, the activities of the empresarial division expanded to include the actual fostering and creation of new cooperatives, the purchase and preparation of land for industrial parks and leasing of factories, and finally a more general involvement in regional and economic planning.

One of the reasons the Caja Laboral has been so suc-

cessful as a credit cooperative is the close attention and support it traditionally provides to new enterprises. Only once has a Caja-backed cooperative significantly failed, in the case of a fishing cooperative started in 1969. On the whole the Caja has been very cautious in its policy on taking in new cooperatives. While this might seem to be a violation of the 'open door' principle (see box), it is probably counterproductive to set up cooperatives which are not going to succeed.

Some critics have observed that the Caja's active role in the affairs of the associated industrial cooperatives seems to contradict the principle of democratic self-management by restricting the ability of cooperative members to make their own decisions, yet few cooperatives have left the group. A study of the cooperative statutes (see box) shows that the autonomy of the associated cooperatives is in fact protected, and once an enterprise gets off the ground, specific intervention is unlikely unless that cooperative develops chronic financial difficulties. In fact the development of the sub-group structure was partly for the purpose of avoiding the need for intervention.

A final observation about the growth of the cooperatives concerns the creative use of the social and educational fund, a percentage of earned surpluses required by Spanish law to be invested in the community, in lieu of taxes. As the cooperative group grew, it began to use these funds for creating educational cooperatives, and for the promotion of *Euskara*, the Basque language, which Franco had banned from the public schools. These funds were used also to build a hospital in the Mondragon area and perhaps even more ambitious, to create a technical research center, *Ikerlan*, which has been able to recruit top researchers (within the three to one salary scale), and is today among the most highly regarded technical research center in Spain.

The economic achievements of the Mondragon group today are impressive. Ninety one industrial cooperatives, plus about 60 other cooperatives, 114 bank branches, and 63 EROSKI outlets are spread throughout 86 towns and cities in the Basque country. The industrial cooperatives, ranging in size from embryonic ventures with a few members to the giant ULGOR whose membership peaked at almost 4000 in the mid seventies, are still heavily concentrated in metal-working industries. Sixty two of the ninety one cooperatives produce parts and components or machine tools and industrial equipment. Even though cooperative employment in manufacturing makes up only about 3% of the Basque population employed in manufacturing, a measure of the dynamism of the group is that cooperative investment was about 77% of all Basque industrial investment in 1981.<sup>4</sup> The Caja Laboral is itself the fastest growing financial institution in the region.

*(Continued on 28)*

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# RESOURCE WARS

## Fighting the Mining Industry in the Lake Superior Region

by Al Gedicks

**F**aced with the revolt of raw material colonies in the Third World, U.S. based multinational corporations have intensified their search for "politically secure" supplies of raw materials within the United States, Canada, and Australia. From the point of view of these corporations, "political stability" means the extraction of minerals at extremely high rates of profit with very little risk or interference from democratic institutions. A significant proportion of the world's remaining energy and mineral resources lies under native people's lands in these countries. The size and scope of these resource extraction projects constitutes an assault upon the physical, cultural and economic environments of resource-rich areas. The process whereby indigenous populations are subjected to this assault has been described as "resource wars."<sup>1</sup>

The following account of resource war planning and resistance in the Lake Superior region is based upon my work as director of the Center for Alternative Mining Development Policy in Madison, Wisconsin. Since 1975 the Center has provided technical assistance and organizational support to Indian Tribes and rural communities who opposed the plans of the multinational mining corporations to obtain energy, water and materials at the expense of the people and environment of the Lake Superior region.

### **The Lake Superior Region: A New Resource Colony for the 1980s?**

In the past ten years, multinational mining corporations have quietly leased over a million acres of valuable farm, forest and recreation land in the Lake Superior region of northern Wisconsin, northern Minnesota and the Upper Peninsula of Michigan (see map of region).<sup>2</sup> Over 40 multinational mining corporations are

exploring, drilling and planning to mine the region's valuable reserves of copper, nickel, lead, chromium, zinc, vanadium, titanium, uranium and thorium. The reservations of the Chippewa, Potawatomi, Menominee, Stockbridge-Munsee, Oneida, and Winnebago Indians lie in the southernmost extension of the energy and mineral-rich geological formation known as the Canadian Shield (formerly known as the Chippewa Lobe). The long range planning of these corporations envisions the Lake Superior region as a new resource colony that will provide raw materials for corporate growth and diversification and a dumping ground for the toxic and radioactive wastes left behind from the mining process. One of the basic assumptions in almost all state agency and university planning documents is that there will be serious long-term environmental contamination from mining and that mining companies should not be liable for the costs of clean-up and monitoring of mine wastes. A 1976 University of Wisconsin report stated:

mining waste, because of acid drainage or the discovery of potentially carcinogenic material in the waste, may have the long-term effects on the natural and cultural environment. Because these effects may occur only as an act of God and long after the mining firm has left the area, repairs and compensation may become the responsibility of the public sector. In certain cases the potential for damage may be so severe as to require perpetual monitoring and maintenance similar to that done by federal authorities with radioactive waste material.<sup>3</sup>

The same Indian tribes and rural communities which have been targeted for uranium and base metal (copper, zinc) mining also face the threat of radioactive contamination from the siting of a high level\* nuclear

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*Al Gedicks is the Director of the Center for Alternative Mining Development Policy in Madison, Wisconsin and the co-author of Land Grab: The Corporate Theft of Wisconsin's Mineral Resources.*

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\*High level wastes continue to be so radioactive that they generate too much heat for early burial. Many of the radioisotopes created during nuclear fission remain dangerous for thousands of years. The nuclear industry produces high level waste from commercial nuclear power stations, military programs and commercial and military fuel reprocessing.

**Multinational corporations are applying the same techniques to subvert tribal governments that they learned in Third World countries like Chile.**

waste dump in the granitic bedrock of the Lake Superior region. A 1979 report for the Department of Energy (DOE) ranked the Lake Superior region as the "most favorable for further study" as a potential radioactive waste disposal site.<sup>4</sup> The report names 33 counties in Minnesota, 17 in Wisconsin and 3 in the Upper Peninsula of Michigan as potential sites. No public official in the region was aware that such a feasibility study was being conducted until after the results were reported to the press in September 1980. The DOE had previously denied that the Lake Superior region was under consideration.

Corporate and governmental plans to mine uranium and site a nuclear waste dump have proceeded under extreme secrecy. Batelle Memorial Institute, a DOE contractor on nuclear waste disposal projects, has advised the DOE that initial citizen opposition could stop efforts to determine whether a site was suitable for high level commercial and military nuclear wastes.<sup>5</sup> One of the major risks confronting uranium mining companies is that the public will become aware of the full range of impacts from mining before mining actually begins. Public discussion of the hazards of uranium mining has resulted in bans against uranium mining in New Jersey, Vermont and the Canadian province of

British Columbia. Dairy farmers in Rusk County, Wisconsin have already demonstrated the power of public education and citizen mobilization to stop a proposed open-pit copper mine that would have contaminated groundwater and driven them out of business. In 1976 the Wisconsin Department of Natural Resources (DNR) was forced to cancel Kennecott's mine permit hearing when the town and county boards resolved not to grant zoning permits for the mine.

As early as 1975, R.H. Kennedy of the U.S. Energy Research and Development Administration warned the International Atomic Energy Agency that uranium mining was becoming the "Achilles heel" of the nuclear industry:

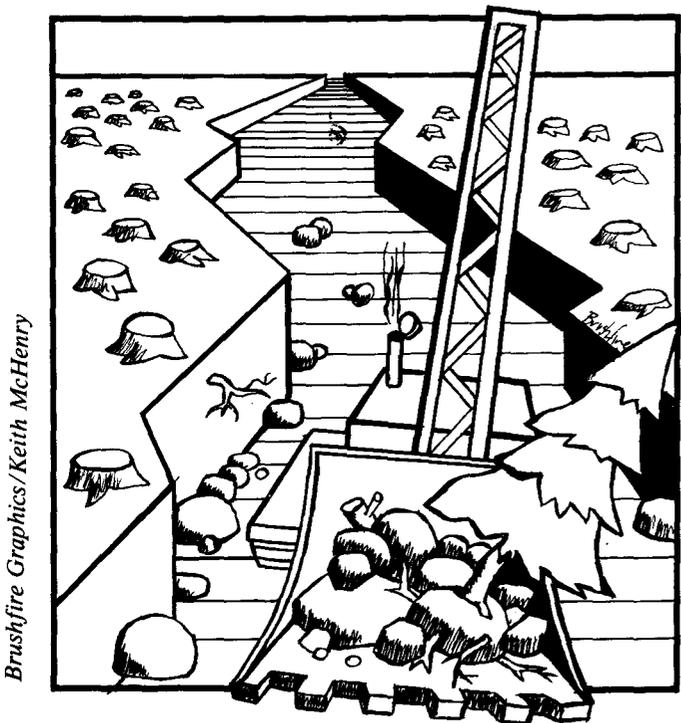
So we have here an industry in which the number of deaths attributable to radiation far exceeds that in all other parts of the nuclear industry put together. The environmentalists are going to take this point up—in fact they are taking it up—and they are regarding the uranium producing industry as perhaps the Achilles heel of the whole nuclear programme in the USA. I am sure that this will be a problem in other countries as well.<sup>6</sup>

As essential part of the planning for the new resource wars in the Lake Superior region involves strategies to pre-empt and/or overcome local resistance at both the front end (uranium mining) and the back end (waste disposal) of the nuclear fuel chain. The control of technical information by corporations and various "experts" is an important component of this strategy.

**Social Scientists and Domestic Counterinsurgency Research**

The stakes involved in finding a solution to the problem of nuclear waste disposal are very high. Nuclear plants will begin to close if storage cannot be provided for spent fuel, and the military will soon face a similar problem. Yet there is no proven technology for disposing of these wastes. According to Cassandra Dixon of the Lake Superior Region Radioactive Waste Project, this has led to a "quick fix" mentality on the part of the industry and the DOE.<sup>7</sup> In order to overcome local resistance to the siting of a nuclear waste dump, the DOE has hired social scientists to collect information on the opinions and attitudes of the subject population. The aim of these so-called "incentive studies," according to the Oak Ridge National Laboratory is:

to increase local support and offset local opposition to repositories in potential host communities. Incentives are judged to be preferable to disincentives (e.g., federal or state preemption) since incentives may generate support while disincentives do not eliminate opposition.<sup>8</sup>



Brushfire Graphics/Keith McHenry

Pilot studies for this incentives project were carried out via telephone surveys in three rural Wisconsin communities in 1980 by Dr. John Kelly of the Complex Systems Group at the University of New Hampshire. Kelly found that offering a range of incentives increased support for siting a repository from 22% to 42% and decreased opposition from 71% to 47%. Various promises were made to 269 respondents who were opposed to a waste site: payments to communities, information access, independent monitoring, representation on a governing board, and power to shut down the facility. When all of these incentives were offered 99% of those originally opposed changed their minds.

**T**he very process of administering such a survey is then an exercise in psychological manipulation. The survey creates the impression that the DOE is willing to take public concerns seriously. Yet one can examine the hundreds of documents produced by the DOE and their private consultants and not find a single reference to plans to shut down a nuclear waste facility if the public objects. None of this research ever questions the assumption that the nuclear industry and the military ought to be able to continue producing this hazardous waste indefinitely. Quite to the contrary, the researchers have accepted a corporate-governmental definition of the situation which identifies the problem as people's attitudes toward nuclear waste, but not the production of nuclear waste itself.

Once the corporate definition of the problem is accepted, the task becomes one of identifying those sectors of the population who are likely to oppose the siting of disposal sites and estimating how much of a threat they are likely to pose. Thus the survey contains questions about what people would do to "actively express their opinion about a repository." Among the options are signing a petition, contacting an elected representative, participating in a demonstration or committing civil disobedience. This type of research on the attitudes and beliefs of subject populations is the mirror image of the resource extraction process. In both cases, resources (minerals and information) flow in one direction only—from the resource colony to the corporate and bureaucratic elites who make policy.

### Corporate Secrecy and Uranium Exploration

Mining corporations have known since the 1950s about several uranium and thorium (both are radioactive) prospects in the Precambrian rocks of northern Wisconsin and the Upper Peninsula of Michigan. These rock formations stretch across Ontario, where they have already been exploited near Elliot Lake, the site of Canada's largest uranium mine. A recent report for the DOE notes that "this vast expanse is bound to become one of the principal exploration areas of the future."<sup>9</sup> Information collected by the DOE's National Uranium Resource Evaluation (NURE) program provides the companies with estimates of potential uranium deposits

by analyzing water samples for parts per million (ppm) of uranium. The NURE program does not collect information about the *radioactivity* in water samples, measured in picocuries per liter (pc/l). This latter measure would be relevant to assessing the *health impacts* of uranium mining as opposed to its *profitability* for uranium companies.

Some of the biggest uranium producers in the world, including Exxon, Kerr-McGee, Western Nuclear, Anaconda, Urangesellschaft (West Germany) and Minatome (France) have leased mineral rights to hundreds of thousands of acres in the Lake Superior region. At the same time that Kerr-McGee was shutting down its uranium operations in New Mexico, it was secretly acquiring mineral leases for potential uranium mining in the Lake Superior region. In 1978, for example, landowners in Forest and Florence counties, in northeastern Wisconsin, leased mineral rights to the Transcontinental Oil Company in Louisiana. After the leases were signed and registered, Transcontinental simply transferred ownership of over 84,000 acres of mineral rights to Kerr-McGee.

The Forest County Potawatomi reservation lies in the heart of the area identified as a uranium "hot spot" by the NURE program. Kerr-McGee has approached Potawatomi tribal leaders several times for permission to explore on reservation lands. The Potawatomi Tribal Council has repeatedly denied Kerr-McGee's requests. This has not stopped Kerr-McGee, however. In May of 1980, the Center for Alternative Mining Development Policy compared Kerr-McGee's mineral options\* to the legal description of Potawatomi reservation lands and discovered that they had quietly optioned the mineral rights to over 22% of the reservation (2476 acres).<sup>10</sup> At no time was the tribe informed of this option by either Kerr-McGee or the Bureau of Indian Affairs (BIA). Only after the tribe obtained legal counsel to examine the legality of this transaction did Kerr-McGee offer to withdraw its mineral options on Potawatomi lands.

Despite the enormous health and environmental impacts of uranium exploration and mining, the uranium companies have managed to withhold the results of their drilling activity from the public. The Noranda Exploration Company (Canada) is a case in point; in 1978 the firm won an injunction against enforcement of a Wisconsin law requiring mining companies to file field reports with the state. In doing so, Noranda escaped a maximum \$50,000 fine.

\*An option to explore and/or mine on certain lands can only be granted by the owner of the mineral rights. Since mineral rights can be sold separate from the surface rights it is possible to own land without owning the mineral rights. The treaties which created Indian reservations in Wisconsin normally did not withhold the mineral rights to reservation land, thus guaranteeing Indian ownership of mineral rights. In the case of the Potawatomi lands however, the mineral rights were claimed by the Chicago Northwestern Railroad. If this claim is upheld in court, Kerr-McGee could force the Potawatomis off their land when mining began.

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**Researchers have accepted a corporate-governmental definition of the situation which identifies the problem as people's attitudes toward nuclear waste, but not the production of nuclear waste itself.**

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Why would Noranda risk litigation simply to avoid reporting its geological findings? In small part they probably did so to prevent competitors from learning trade secrets. But the more important reason was to keep the public in a state of ignorance. The Lake Superior region's geology, after all, is well known to the multinational mining corporations, since the Federal Government provides them with low-cost geologic information through such programs as NURE. What the mining firms don't want the public to know is that mineable uranium has been discovered in Wisconsin's copper sulfide deposits. The DOE estimates that some 127,000 tons of uranium could be recovered by the year 2000 as byproducts of phosphate and copper mining nationwide.<sup>11</sup> Wisconsin's copper and the rich sedimentary phosphate deposits of Michigan's Upper Peninsula may well contain a good part of this projected uranium supply.

The Center for Alternative Mining Development Policy first raised the issue of the hazards of uranium exploration drilling before a Wisconsin legislative mining committee in December 1979.<sup>12</sup> In response to citizen and tribal concerns about the health and environmental hazards of uranium exploration and mining, the Wisconsin Department of Health and Social Services (DHSS) devised a radiation monitoring program to measure radiation levels around exploratory drillholes. The Center reviewed the program when it was first proposed in June, 1980 and pointed out that the inadequacies in the monitoring program would allow mining companies to later claim that radiation in the region of the mining and milling operations was natural background radiation.<sup>13</sup> The DHSS design excluded major sources of radiation from the monitoring program and did not meet even the most minimal standards for monitoring as outlined by the Nuclear Regulatory Commission (NRC) in 1979.<sup>14</sup> The Center concluded that the program was hastily put together to accommodate the drilling schedule of the mining companies, and was not designed to assess the health and environmental hazards of uranium exploration drilling.

#### **Indians and Environmentalists Join Forces**

Despite the lid of secrecy surrounding plans for uranium extraction in the region, the opposition to all mineral and energy exploration is growing. At the forefront of the opposition are the three Indian reservations which have been identified in recent Bureau of Indian Affairs (BIA) reports as prime candidates for uranium

exploration drilling—the Menominee, the Potawatomi and the Lac Courte Oreilles Chippewa.<sup>15</sup> These tribes have joined over 70 Wisconsin townships in adopting resolutions banning all mineral exploration and mining.

Three years ago, in May 1980, the Center for Alternative Mining Development Policy brought representatives from tribes in the Southwest, the Northern Plains and Canada to address a conference on "Great Lakes Tribes and Mining Development" about their experiences with mining. Eight mining companies turned down invitations to speak about their exploration programs; the companies couldn't spare any of their geologists who were busy doing field work. The overwhelming impression conveyed by tribal speakers was that mining resulted in a general deterioration of tribal culture and radioactive contamination of tribal lands. Daniel Bomberry of the Tribal Sovereignty Program warned that multinational corporations are applying the same techniques to subvert tribal governments that they learned in Third World countries like Chile. At the conclusion of the conference the Menominee Tribe of Wisconsin sponsored a resolution calling for an immediate halt to all uranium exploration in the Lake Superior region. The resolution was adopted by unanimous vote.

**T**he historic significance of this Indian and non-Indian grassroots opposition was not lost on Wisconsin's politicians. A resolution urging mining companies to comply with a one-year moratorium on uranium exploration drilling was approved by the Wisconsin Senate on June 26, 1980. A similar measure, introduced into the Wisconsin Assembly, was narrowly defeated after Kerr-McGee and other corporate lobbyists carried out a blanket telephone lobby of the Assembly. In a memo to Wisconsin Governor Lee Dreyfus, The Wisconsin Department of Business Development urged the governor to oppose the Senate resolution because "it would force the companies to openly disregard the will of the legislature."<sup>16</sup>

As the mining companies have used their power and influence to prevent the expression of opposition to mining through legislative channels, the focus of anti-uranium organizing has shifted to the local level. In September 1981 the Center conducted a "Tri-State Anti-Uranium Organizers Training Conference." This conference was the first attempt to establish a regional anti-uranium movement so that mining companies could not play one state off against another. The Lake Superior Region Radioactive Waste Project in Madison, Wisconsin has organized a similar regional coalition on the nuclear waste issue.

**Despite the enormous health and environmental impacts of uranium exploration and mining, the uranium companies have managed to withhold the results of their drilling activity from the public.**

### **Exxon at Crandon, Wisconsin**

As citizen and tribal concern has mounted over the continuing uranium exploration in northern Wisconsin, several companies, including Kerr-McGee, Exxon, Amax Exploration, and American Copper and Nickel—have insisted they are exploring for base metals, not uranium. The issue of uranium occurring with copper and other base metals has not been addressed by the state of Wisconsin or any of the agencies responsible for granting permits and monitoring mining operations. In response to citizen concern about the presence of uranium, radium, and other radioactive elements in Exxon's copper-zinc deposit near Crandon, the Wisconsin DNR held a closed-door meeting with Exxon and other state officials on April 10, 1981. Exxon offered to split prepared samples from the orebody for state inspection but noted that duplicate samples could not be obtained. Exxon refuses to turn over its core samples to the state for independent assessment.

Deborah Rogers, the former staff ecologist for the Center, has estimated the amount of uranium in the Exxon Crandon deposit by using numbers given in a letter from Exxon's Regulatory Affairs Manager to Exxon's lawyer in Madison, Wisconsin. Rogers concludes that the Exxon deposit contains a substantial amount of uranium.<sup>17</sup> Moreover, uranium production via byproduct extraction is technologically and economically feasible. Without public access to Exxon's core samples, it is conceivable that the DNR could issue a mining permit to Exxon for copper-zinc with no mention of uranium mining. After the permit was issued, Exxon could then announce the "discovery" of trace amounts of uranium and apply directly to the Nuclear Regulatory Commission (NRC) for a byproduct extraction license. The NRC has the option of not requiring an environmental impact statement.

During the course of public hearings on Exxon's preliminary plan for mining at the Crandon site the issue was raised of the possible use of the Exxon mine, as a nuclear waste repository after mining was completed. A recent DNR report states that "a repository will be briefly reviewed as a final alternative in Exxon's environmental impact statement."

Robert Russell, Exxon's Crandon project manager, says that if Exxon does develop the copper-zinc mine, it plans to deposit as much mining waste as possible back underground so there would be no room for radioactive waste.<sup>18</sup> Russell's explanation obscures the fact that if

radioactive mine wastes (tailings) are deposited back underground, the minesite will be a *de facto* nuclear waste dump. There are also several examples of where abandoned mines have been used for nuclear waste dumps. After 20 years of uranium mining near St. Priest-Laprugne, France, the French firm COGEMA decided to close the mine and re-use it as a nuclear waste dump under the pretext that they had a good geological knowledge of the place and the duty to re-employ some uranium miners.<sup>19</sup> In Australia, local aborigines and graziers are protesting the dumping of more than 20 tons of low-level\* radioactive waste at the old Radium Hill uranium mine.<sup>20</sup> The United States is now part of an international research effort to study the problems of nuclear waste disposal in granite at the abandoned Stripa mine in Sweden.<sup>21</sup>

Russell's statement also obscures Exxon's corporate interest in finding a solution to the problem of nuclear wastes. Exxon operates the Idaho Chemical Processing Plant for the DOE. The plant receives spent fuel rods from navy nuclear vessels and government research reactors, and chemically removes usable uranium. This uranium is recycled and used in the nuclear weapons production program. Recent tests performed by the U.S. Geological Survey have discovered leakage of radioactive materials from waste storage sites. Exxon also directly injected dilute radioactive wastewater into the Snake River Plain Aquifer which supplies drinking and irrigation water for most of southern Idaho.<sup>22</sup> When this became known it created considerable controversy over the safety of such a practice.

### **The Lake Superior Region: A Test Case for Resource War Planning**

With the assistance of state and federal agencies, government think tanks and academic social scientists, the uranium mining companies and the Department of Energy hope to present Indian tribes and rural communities in the Lake Superior region with the fact of uranium mines and nuclear waste dumps. The long lead time needed to plan resource extraction and waste disposal projects however, allows potential opposition to mobilize against such projects. The research and technical

\*Low-level wastes are less radioactive but still potentially dangerous. Uranium mill tailings, which contain 85% of the radioactivity that was in the original ore, are considered low-level wastes. The U.S. Environmental Protection Agency says these tailings present probably the greatest single hazard of the nuclear fuel chain. The U.S. uranium industry generates about 96,000 metric tons of radioactive uranium mill tailings each year.

assistance of the Center for Alternative Mining Development Policy is designed to increase the effectiveness of citizen and tribal resistance by exposing the lies, omissions and weaknesses of corporate and bureaucratic planning.

In December, 1982 Exxon Minerals filed its application with the Wisconsin DNR for its prospective copper-zinc-uranium mine near Crandon, Wisconsin. Robert Russell of Exxon said that while the step was significant, it didn't mean that Exxon was definitely going ahead with the mine. The DNR's technical review of Exxon's application could take up to three years, enough time for growing environmental and political opposition to have an impact on Exxon's final decision.

#### WHERE TO FIND FURTHER INFORMATION

For further information on the Wisconsin Resources Protection Council, write to P.O. Box 263, Tomahawk, WI 54487. For further information on mining, write to the Mining Center, 1121 University Avenue, Madison, WI 53715. For further information on nuclear waste disposal, write to the Lake Superior Region Radioactive Waste Project, 315 W. Gorham, Madison, WI 53703.

At the same time that Exxon filed its mine application, the Dominican Sisters of Wisconsin filed a stockholder resolution with Exxon asking that the corporation postpone any further investment in the Crandon project or further participation in the mine permit process until Sokaogon Chippewa treaty claims are settled. Exxon's proposed mine site is less than a mile from the Chippewa reservation. Tribal leaders claim that the orebody, which extends under their reservation, lies in the middle of a tract of land the U.S. government gave them following an 1855 treaty. Exxon must respond to the Dominicans' resolution before their annual stockholders meeting in May. In the meantime, the Chippewa will continue to pursue their treaty claim through the federal courts.

In July 1982 a new statewide organization was established in Wisconsin to coordinate the efforts of citizen and tribal groups concerned with mining—the Wisconsin Resources Protection Council (WRPC). The council recognizes that if Exxon is successful in obtaining a permit to mine, it will be a signal to the other multinational mining corporations and the DOE that this region is ripe for other resource extraction and waste disposal projects. Between now and the final master hearing on Exxon's mine application sometime in 1985, the WRPC will be conducting a major public education campaign to convince large numbers of people that the time to act to save Wisconsin's resources is now. □

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# THE NEW EUGENICS

## Academic Racism in the U.S. Today

by Barry Mehler

A new wave of racism has emerged in academic circles. It is being legitimized by an alarming change in American politics. In the past few years, particularly since the rise of the New Right and the election of Ronald Reagan, we have witnessed the growth of a kind of authoritarianism which has hitherto been confined to the fringes of American politics. The philosophy of the John Birch Society, once considered outside the mainstream of American politics, is now the ruling ideology of the Reagan administration.

The components of this authoritarianism are: 1) a call to "re-arm" America and get tough with communism, 2) a critique of the social explanations of crime along with demands for tough law and order measures, 3) scapegoating blacks and undocumented workers as a criminal class and 4) militant anti-feminism along with calls for the reassertion of traditional family and sexual values.<sup>1</sup>

Racism is nurtured in this atmosphere by politicians who call affirmative action "reverse discrimination," blame unemployment on undocumented workers and inflation on social welfare programs. And just as racism is being nurtured in the halls of Congress, it is being taught in the halls of academia. Not since World War II has racism been so respectable a subject among American intellectuals. It is in this atmosphere that the new eugenics movement has arisen.

### History

"Eugenics" is a term first made popular by Francis Galton (1822-1911) in 1883, in his widely-read book *Inquiries into Human Faculty and its Development*.<sup>2</sup> Galton, one of the most enthusiastic eugenicists, took the term from the Greek word "eugenes," which means to be well born. It came to mean, in his words, "the science of the improvement of the human race by better breeding." From the turn of the century to 1945, eu-

genicists in America, Germany, and England argued that most behavioral traits were genetically determined. They further argued that these traits could be modified by controlled breeding. Thus, for example, they advocated compulsory sterilization for criminals, sex deviants, and the 'feeble-minded'.<sup>3</sup> In the U.S. this movement was supported by professors in prestigious schools such as Harvard, Columbia and Stanford. Financial support came from major American foundations such as the Rockefeller and Carnegie foundations as well as numerous smaller foundations.<sup>4</sup>



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Between 1900 and 1930, eugenicists in the U.S. successfully lobbied for eugenic sterilization and anti-miscegenation laws as well as harsh criminal codes. Over thirty states passed eugenic sterilization laws and some 70,000 Americans were eventually sterilized under these laws.<sup>5</sup> In Europe the eugenics movement culminated in human breeding farms and death camps.<sup>6</sup> After World War II, the eugenics movement was buried under the bones and ashes of its millions of victims. Many people believed it dead forever, along with the racist political system which gave rise to it.

However, a new eugenics movement has re-emerged and appears to be particularly active in the United States, Germany, England, and South Africa. The aim of this movement is a world of racially pure stocks living in separate geographic areas, with strict apartheid practiced in areas where racial groups share one geographic land mass. The extreme wing of this movement openly advocates the elimination of all non-white races, Jews, and homosexuals.<sup>7</sup>

### The Pioneer Fund

The new eugenics movement is supported by a growing network of foundations, associations, journals and academicians. The Pioneer Fund, for example, which was created in 1937, promotes theories of black inferiority.<sup>8</sup> Founded by Frederick Osborn, Secretary of the American Eugenics Society, and Harry Laughlin, Director of the Carnegie Institution's Eugenics Record Office, it quickly became a tool of the radical Right in America.

In the 1950s and 1960s, the Pioneer Fund was directed by Rep. Francis E. Walter, who was the chairman of the House Committee on un-American Activities. Two other members of the Board of Directors were Henry Garrett, then head of the Psychology Department at Columbia University, and James O. Eastland, the right-wing Senator from Mississippi.

The Fund's resources were supplied by Wycliffe Draper, a reclusive heir to a textile fortune. Draper died in 1972 leaving the Fund 1.4 million dollars. Between 1976 and 1981, the Fund's assets increased to \$4.2 million. Examination of Pioneer Fund federal tax returns do not indicate the source of these additional funds. One thing is clear—large sums of money are being donated to the Pioneer Fund and other racist foundations.

Among the men listed as Directors of the Pioneer Fund in 1981 were John B. Trevor of New York, a founder of the American Coalition of Patriotic Societies as well as an advisor to Billy James Hargis' Christian Crusade. Thomas F. Ellis of North Carolina, an important supporter of Ronald Reagan, was an officer of the Fund in 1975.<sup>9</sup>

The Pioneer Fund was instrumental in bringing Roger Pearson, author of *Eugenics and Race*, from England to the United States in the mid-seventies. Pearson received Pioneer funds and worked with Willis Carto, who runs a number of fascist organizations including the Liberty Lobby, Noontide Press and *The Spotlight*.<sup>10</sup>

### From the Pages of:

*Human Variation: The Biopsychology of Age, Race, and Sex*, R. Travis Osborne, Clyde E. Noble and Nathaniel Weyl, eds., Academic Press, New York, 1978, pp. 383-384.

Thousands of Negroids were removed from Africa, where the women bore children and did the work while the men did the fighting and kept the population stable in numbers. On the North American and West Indian plantations, they all had work. There was neither famine nor unemployment, and there was very little war. The environment was more favorable than anything they had experienced in Africa. As slaves, they improved in health and increased in numbers.

When the Negroids were liberated from agricultural slavery, they were thrown free to shift for themselves in largely urban Caucasoid societies. Discipline and protection having been withdrawn from them, they were offered the beguiling prospects of life first in America and then in European cities. These simple, unskilled rural people were suddenly offered irregular urban employment combined with the opportunities of drink and drugs, gambling and prostitution, and no reliable means of productive, creative, or congenial labor.

The intellectually well-endowed races, classes, and societies have a responsibility for the problems of race mixture, of immigration and exploitation, that have arisen from their exercise of economic and political power. They may hope to escape from these responsibilities by claiming an intellectual and, therefore, moral equality between all races, classes, and societies. But the chapters of this book, step by step, deprive them of the scientific and historical evidence that might support such a comfortable illusion.

In 1978 Pearson and Earl Thomas, a former American Nazi Party stormtrooper, helped organize the World Anti-Communist League Meeting in Washington, D.C. The *Washington Post* referred to the group as "neo-fascist" and pointed out that the 800 delegates represented the forces of "authoritarianism, neo-fascism, racial hierarchy and anti-semitism." Among those in attendance were Giorgio Almirante, an ex-Blackshirt and leader of the neo-fascist party in Italy.<sup>11</sup>

Past recipients of Pioneer grants include William Shockley, who received over \$179,000 over a ten year period in the late sixties and early seventies; Arthur Jensen, America's leading proponent of black inferiority; R. Travis Osborn of the University of Georgia, who is fast becoming a key leader in the new eugenics; Dr. Frank C. J. McGurk and Dr. Audrey Shuey, author of *The Testing of Negro Intelligence*, a book that has formed the basis for numerous racist studies, including those of Jensen, Eysenck and Herrnstein.<sup>12</sup>

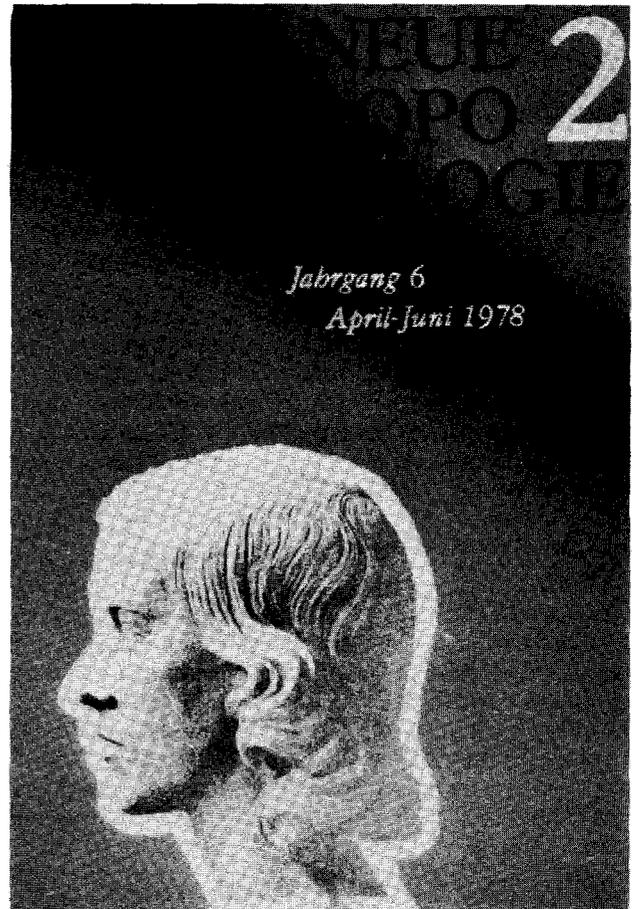
Among the more recent recipients have been the Foundation for Human Understanding (FHU), which received \$27,000 to distribute Jensen's *Straight Talk About Mental Tests*; the Institute for the Study of Educational Differences, which qualified for \$70,000 to study the intelligence differentials between Hong Kong and California schoolchildren; the Institute for the Study of Man, the recipient of \$16,000 for the printing of two monographs on eugenics and \$59,000 for two projects under the direction of Donald Swann (see below); the University of Minnesota, which was granted \$90,000 for its study of twins; and finally, the University of Pennsylvania's Population Studies Center, which received \$10,000 for an investigation of "dysgenic trends of the United States population."<sup>13</sup>

### Institutions and Publications

Another older eugenics organization which has taken on new life in the past few years is the International Association for the Advancement of Ethnology and Eugenics (IAAEE). The IAAEE is dedicated to the furtherance of eugenics and "raciology." The Association is "interested in encouraging a free flow of information. . . and in restoring freedom of inquiry to those areas (particularly the study of race and race relations) where extraneous political and philosophical pre-dispositions have frequently terminated discussions to the general detriment of the social and biological sciences."<sup>14</sup> Not surprisingly, the IAAEE has been a recipient of Pioneer grants. In 1981 they were given a grant to prepare a study of mental ability and personality of Anglo-Saxons to be submitted to the journal, *Personality and Individual Differences*.<sup>15</sup>

If you write to the IAAEE requesting further information, they will send you a number of handsome reprints which will help you understand the "science" of raciology. Among them are "Race Shows in I.Q. Tests—Differences in Races are not Just Skin Deep," by Donald A. Swann, secretary of the IAAEE, and "Those Bright Black Babies," by Robert John. John argues that black babies, like monkeys, develop faster than white babies but reach a plateau beyond which they rarely develop.<sup>16</sup>

Several members of the IAAEE Executive Committee (John R. Baker, C. D. Darlington and Donald A. Swann) are also members of the Scientific Advisory Board of the German eugenics journal, *Neue Anthropologie*.<sup>17</sup> This publication is devoted to issues of racial intelligence and characteristics, as well as polemics against race mixing. *Neue Anthropologie* is edited by Jurgen Rieger, a prominent member of the German Nazi Party and official spokesperson for the Party's youth division (the *Junge Nationaldemokraten*).<sup>18</sup> Also on the Advisory Board of *Neue Anthropologie* is Arthur R. Jensen who is also a frequent contributor to the journal.



Above: Neo-Nazi eugenics magazine to which Arthur Jensen is a frequent contributor and a member of the Scientific Advisory Board.

*Neue Anthropologie* is by no means the only overtly fascist outlet of the new eugenics movement. In the United States, several prominent eugenicists are connected with the *American Mercury*, a once prestigious journal. It was originally edited by H. L. Mencken, a notorious anti-semitic but one of the deans of American literature. Among the current editors of the *Mercury* is Robert Kuttner, a research Associate in biochemistry at the University of Chicago. Kuttner is also on the Executive Committee of the IAAEE and is a contributing editor to another eugenics journal, the *Mankind Quarterly*. Today's *American Mercury* is openly fascist. An editorial in the summer of 1978 entitled "Hitler—the Greatest Spenglerian" praised Hitler's political foresight and lamented his fall. Of course, "Hitler did not kill six million Jews. . . This is a despicable myth, constructed by the Jews to justify and rationalize their aggression in Europe, America and the Mideast."<sup>19</sup>

Yet another American institution involved in the new eugenics movement is the Foundation for Human Understanding, led by R. Travis Osborne. The Founda-

## DISSEMINATION OF RACIST INFORMATION

The Testing Research Fund, one of the racist groups cited in this article, recently purchased 2800 copies of Arthur Jensen's book, *Straight Talk about Mental Testing*. We have discovered, through a poll at various colleges and universities, that the Fund has distributed free copies of this book to admissions officers and college presidents around the country. Apparently, they hope to raise questions about the admission of black students. Further, the Foundation for Human Understanding, a related organization, has sent out reprints of a recent article by Richard Herrnstein to publishers of 8000 daily and weekly newspapers. The article by Herrnstein, which appeared in the August, 1982, issue of Atlantic Magazine, purports to show that IQ is genetically determined and that there has been a conspiracy by the media to suppress this information. Herrnstein gave his permission to the foundation to distribute the article. His arguments rely heavily on an article by T. J. Bouchard, Jr. and M. McGue in Science magazine (212, 1055-1059, 1981), which was a review of familial studies of intelligence. The article, which presents a much more cautious estimate than Herrnstein claims, is itself highly flawed. It ignores earlier criticisms of identical twin studies and has within it data which appear to argue against a strong genetic component to IQ.

tion not only has published his study, *Twins: Black and White*, but also ensures that university libraries carry copies by donating them. (The copy which I received from the library carries a librarian's note, "Gift of FHU.") Dr. Osborne is also Director of the Testing Research Fund, another foundation which uses tax-free dollars to spread the racist message. The resources of the Testing Research Fund are primarily expended on publishing and distributing texts favoring testing. Such texts include R. J. Herrnstein's *IQ in the Meritocracy*, Osborne's *Twins: Black and White*, and Osborne, Noble and Weyl's *Human Variation*. The source of their funds is a mystery. Their IRS forms do not declare any income or assets.<sup>20</sup> George S. Leonard serves as the secretary for both organizations. Neither organization is listed in the major directories of foundations such as the *Research Centers Directory* or the *Encyclopedia of Associations*. The tax returns of both organizations are signed by R. Travis Osborne and George S. Leonard. The Foundation for Human Understanding also lists Dr. Ernest van den Haag as Vice President and Director. According to the FHU 1981 tax return, the Foundation had \$37,000 in assets. The Pioneer Foundation is apparently the primary funding source for the Foundation for Human Understanding, donating \$25,500 in 1980 alone.<sup>21</sup>

Modern eugenics arguments are typified in *Human Variation: The Biopsychology of Age, Race, and Sex*, one of the many new eugenics texts available in college libraries today. Published by the Academic Press in 1978, the text contains 11 original essays by authors such as Arthur Jensen and Audrey M. Shuey, and has

pretensions to scientific respectability. Dedicated to Sir Francis Galton, "founder of behavioral genetics and eugenics," the book begins with a lament over the lack of objectivity on the subject of heredity and IQ. Indeed, writing on the subject of "human variation in the late 1970's presents certain difficulties." The issue "has deeply infiltrated the public sector where, periodically it erupts in the form of staged media events, campus demonstrations, establishmentarian resolutions, special national legislation, institutional coercion in matters of employment and promotion." Academicians who "decline to embrace the null hypothesis" in regard to heredity and IQ (that is, who believe IQ is heritable) are said to have paid a high price for academic freedom.

Rather than espousing the majoritarian doctrine of biopsychological uniformity, the contributors to this volume may be said, as a group, to entertain the hypothesis that heritable variations in many human reaction tendencies are significantly associated with the taxa of sex, race, and age. We assume continuities rather than typologies, quantitative intergrations rather than qualitative classes. Our biopsychological orientation represents a position whose origins are more evidential than attitudinal because most of us began our careers as empiricists, and we grew to professional maturity in the context of pervasive environmentalism. But the dramatic advances in behavioral genetics are compelling, and simplistic Watsonian psychology has yielded to the sophistication of neobehaviorism. Consequently, when one finds *belief* conflicting with *knowledge* it is unreasonable to persist. . . . Notoriously in the domain of race, but increasingly in discussions of sex and age, conformity of opinion is expected in the halls of ivy as it is in legislative and judicial chambers.<sup>22</sup>

Some explanation is in order here. The eugenicists claim that the debate going on today is between "environmentalists" and "hereditarians." The environmentalist refuses to accept the existence of any genetic differences between individuals. (Indeed, this was James Watson's basic position and was the foundation for almost all of behavioral psychology up to the present. Behavioral psychologists have generally refused to accept individual differences.) The eugenicist argues that the environmentalist position is supported by liberal politicians and academicians who demand conformity to this "orthodox" position. On the other side are the "hereditarians." This group includes Jensen, Herrnstein and Shockley. They insist that genes code for behavioral traits just as they do for physical traits. They claim there is ample evidence to support this view and it is rejected because of social pressure.

Dwight Ingle, Professor Emeritus at the University of Chicago, another contributor to *Human Variations*, explains why it is so important to keep an open mind on these issues. If we accept the "Negroid-Caucasoid IQ gap" as a characteristic of their diverse heritability, we might "stop telling Negroids that all of their problems are caused by racism, a dogma that has fostered racial hatred, social malignancy, and has unjustly blamed many fair minded teachers for the ethnic achievement gap in our schools."<sup>23</sup> C. D. Darlington concludes the

volume by summing up the true source of the "Negroid's problem" which, in his view, stems from emancipation (see box).

*Human Variations* is so obviously racist in content, style and intent that one would think that such material would be difficult to publish, but this is not the case. The book was published by the Academic Press, a subsidiary of Harcourt, Brace, Jovanovich—one of the largest and most reputable publishing houses in the U.S. A similar text by John R. Baker entitled *Race* was published by the prestigious Oxford University Press in both London and New York. The Foundation for Human Understanding, which reprinted Baker's work, advertised it as a book that "puts us straight on race." According to this ad, Baker's book tells us, among other things, 'how to tell "a Jew from a Gentile."'24

### Hereditarianism or Racism?

As we have already noted, the eugenicists advance the notion that the debate over eugenic ideas is really a debate between hereditarians and environmentalists. As explained in the preface to *Human Variations*, those who refused to "embrace the null hypothesis" have been harassed by overzealous and politically motivated environmentalists. In a recent article in the *Atlantic Monthly*, R. J. Herrnstein, Professor of Psychology at Harvard, argues that the debate over IQ has been completely one-sided.<sup>25</sup> He claims that the environmentalists, especially in the seventies, received most of the press while the hereditarians were either maligned or ignored.

However, for the period from March 1969 to February 1970, as indicated in volume 29 of the *Readers Guide to Periodical Literature*, fourteen articles by or about Jensen are listed! Excerpts from his *Harvard Educational Review* article were printed in the *Saturday Review*, and the *U.S. News & World Report* invited Jensen to summarize his views. How often do academics get such publicity for their work? Articles about Jensen's theories on the inferiority of black children appeared in *Newsweek*, *Science News*, *The Educational Digest*, the *New York Times*, *Commonweal*, *National Review*, and the *New Republic*. That is quite a conspiracy of silence! In fact, it is hardly a disputable fact that Jensen and Shockley have become household names both within and without academia.

It is not just the likes of Herrnstein who are arguing that a legitimate debate between "hereditarians" and "environmentalists" is taking place. This thesis has recently been supported by Jonathan Harwood, a liberal academic, who has written a number of articles on the history of the nature/nurture debate. Harwood's most recent article, "American Academic Opinion: recent developments in the nature-nurture controversy" which appeared in the *Oxford Review of Education*, in many ways parallels Herrnstein's *Atlantic Monthly* article.<sup>26</sup> Harwood wonders why there was so much fuss over Jensen's 1969 article in the *Harvard Educational Review*. After all, Jensen hadn't really said anything ter-

ribly new. It certainly was not because Jensen was so highly regarded or because he published his article in the *Harvard Educational Review*. Henry Garrett had been president of the American Psychological Association, president of the Psychometric Society and head of the Department of Psychology at Columbia University when he published his hereditarian papers. Dwight Ingle was professor of physiology at the University of Chicago (1953-1973), fellow of the National Academy of Sciences, and his major paper was published in *Science*. Apparently, hereditarianism prior to 1969 was relatively uncontroversial.<sup>27</sup>

We must pause for a moment to ponder Professor Harwood's definition of "hereditarianism." Here for example is a quote from Henry Garrett's 1960 paper on IQ and heredity:

Davenport and Steggerda in their Jamaica studies reported that race mixture leads to physical as well as mental disharmonies. The weak, disease ridden population of modern Egypt offers dramatic evidence of the evil effects of hybridization which has gone on for 5000 years. In Brazil, coastal Bahia with its negroid mixtures is primitive and backward as compared with the relatively advanced civilization of white southern Brazil. In the West Indies, the civilization is advanced almost exactly in the degree to which the populations are unmixed with the Negro. Haiti is an unhappy example of what the Negro can do when left to govern himself.<sup>28</sup>

The question is, are these "hereditarian" arguments or are they simply racist arguments? Harwood's "hereditarians" argue that blacks are intellectually inferior to whites. Professor Darlington believes they were best off under slavery and laments the problems which have arisen from emancipation. Would Harwood have us believe these arguments are legitimate? Apparently, he would: "the evidence bearing on race differences in IQ is highly ambiguous. It is by no means obvious that either the hereditarian or the environmentalist interpretation is correct."<sup>29</sup>

Harwood concludes that the "ferocity with which intellectuals attacked Jensen after 1969" derives from "the enshrinement of environmentalist theories in federal anti-poverty programmes during the 1960s" and to the commitment of academics to those programs.<sup>30</sup> There are signs, Harwood continues, that "the furor over race differences in IQ has by now largely subsided. . . Jensen is receiving a warmer reception by his colleagues than he did in the early 1970s."<sup>31</sup>

Plenum Press is about to publish yet another collection of essays on "bias in mental testing." The editors of this new volume refer to Jensen "as the acknowledged authority in the field."<sup>32</sup> Jensen's association with the Pioneer Fund, *Neue Anthropologie*, and other neo-fascist organizations goes completely unnoticed. He and his associates can publish books which are apologies for racism and white supremacy without damaging the "warmth" of their reception.

It is well that we remember that the old eugenics movement began in England and was led by Americans. It laid the groundwork for Hitler, death camps and

breeding farms. The new eugenics movement represents the intellectual backbone of modern fascism. That blatant apologies for racism and white supremacy can gain a foothold in academia bodes ill for the future.

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# HUMAN EMBRYO AND GENE MANIPULATION

by Ruth Hubbard



The more sophisticated a technology and the more training and skill it requires, the more likely it is to be controlled by elites, to increase inequalities, and to reinforce hierarchies. Those who are able to use it of necessity know more about it, and hence, have more power over its use than the people on whom it is used. When thinking about medical technologies, we must also take into account that in this country most scientists and physicians are part of the social and economic elite. The great majority is male and white, and only a small minority comes from families whose income is below the median.<sup>1</sup> Therefore scientists and physicians are an elite not only in knowledge, but also in terms of the other variables that shape the pyramid of power in this society. Their clients in general are poorer than they are and have less access to the kinds of social resources that give people a measure of control over their lives. The benefits and risks of sophisticated medical technologies therefore cannot be assessed as though their use involved transactions among equals.

Problems of professional dominance and control are inherent in the use of any new and complicated technology, but they become particularly oppressive in some of the new reproductive technologies. For example, clients for in vitro fertilization are people who have been unable to conceive a child that is biologically their own, but are desperate to have one. In the case of embryo and genetic manipulations, the clients are prospective or actual parents who have reason to fear for the health of their child. Both groups are highly vulnerable. When they are offered technologies that are new and hence untried, the professional who advises them is the only expert—there are no “second opinions.” Professionals therefore function as both advocate and judge in decisions about appropriate therapy.

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## Test Tube Babies

Usually clients for this procedure are women who have already travelled a hard road filled with ups and downs of renewed hopes and frustrations as they have undergone prolonged, sometimes invasive, medical examinations, changes in sexual practices, hormone treatments, and often surgery. For many of them the defect that in vitro fertilization is intended to correct—blocked or otherwise damaged Fallopian tubes—is due to chronic pelvic inflammation, ironically the result of previous use of an IUD to *avoid* pregnancy. Some women who previously used IUDs on the advice of physicians who did not warn them about the possibility of these ill effects, now feel that since medical technology has brought them their tragedy, it owes them repair. Encouraged by physicians who are excited by the scientific and therapeutic potential of the new techniques, they seem to ignore the fact that they are putting renewed trust into the same profession that failed them before. Yet there is no reason why assurances of safety should be more reliable this time. Quite the contrary. Because so little is known about the intricacies of fertilization and embryonic development, “experts” are on even less firm ground when they try to assess the effects of intervening in these processes than when they try to foresee the consequences (and hence the safety) of using an IUD.

Physicians' assurances that in vitro fertilization and reimplantation do not endanger the prospective child rest on their faith that if anything goes wrong during fertilization or early development, the fetus will abort spontaneously. But obviously this is not true when embryos are produced in the usual way, since some ba-

bies are born with genetic or developmental disabilities, although some abnormal embryos do indeed abort. There is no way to predict whether the situation will be similar or worse for embryos that result from in vitro fertilization, although it is not likely to be better.

Leslie and John Brown, the parents of the first "test-tube baby," were required to consent in advance to an abortion if Dr. Steptoe, the British physician who together with Robert Edwards developed the procedure, found that the baby was going to be born abnormal.<sup>2</sup> Steptoe and Edwards subsequently withdrew this requirement because it frightened too many of their clients. But it is also frightening that they thought it legitimate to exert that kind of control over their patients. Even now, when the technology has been in use for a few years, women have little say over the ways in which they are screened or in which the procedure takes place. Who is "permitted" to become a candidate for in vitro fertilization; what prior tests she must undergo; when, where, and how often she may try to become pregnant, are all under the control of the clinic or physician who performs the fertilization. Under present regulations in this country, it is even prescribed that the woman must be married and that her husband must be the sperm donor—facts that clearly are of no medical or scientific importance and ought not be the concern of the physician who does the procedure.

The methods developed for in vitro fertilization begin to lay the technical ground work for a range of possible manipulations of human eggs, sperm and early embryos, such as cloning, cell fusion and other means of genetic modification. All such procedures need not be dangerous in the best of possible worlds. However, in this real world, the power to initiate research and social programs and to determine their direction is vested in elites whose activities cannot be monitored adequately by the people who are most likely to suffer from them. Therefore experimentation that threatens to change reproduction in ways that will increase the power of "experts" over the day-to-day, and hitherto relatively private, practices of ordinary people, raises dangers even when it offers specific benefits to special groups with special needs.

### Fetal and Genetic Therapy

Professional dominance is also involved in manipulations of embryos later in pregnancy. This can be seen in some publicized instances of what has come to be called "fetal therapy." At present, "gene therapy" is not yet practiced, but human embryos have begun to be "treated" in other ways. Fetuses have had shunts implanted in the skull to relieve the excessive pressure of hydrocephalus ("water on the brain"). Others have had the effects of malformation of their urinary tracts relieved or repaired. These and similar instances of fetal surgery have been reported in the scientific literature and accounts have found their way into the news media. The procedures have had mixed results: some of the ba-

bies have died before birth or shortly thereafter, a few have clearly benefitted, and several have been born with multiple, and sometimes progressive, severe disabilities.<sup>3</sup>

From a biological point of view, it is not surprising that severe developmental problems often have multiple effects, since a great many processes occur simultaneously in a developing embryo. One particular disability, or group of disabilities, may be diagnosed during pregnancy and physicians may urge intervention—be it with drugs or surgery. In this situation, parents have little choice but to follow the doctors' advice. When a physician detects a problem and suggests that it can be repaired, expectant parents of wanted children are enormously vulnerable. They are upset that something is amiss. They want their child and it may be too late to abort, or they may not want to. All the diagnostic and therapeutic techniques are new, so that second opinions are hard to come by and of questionable value.

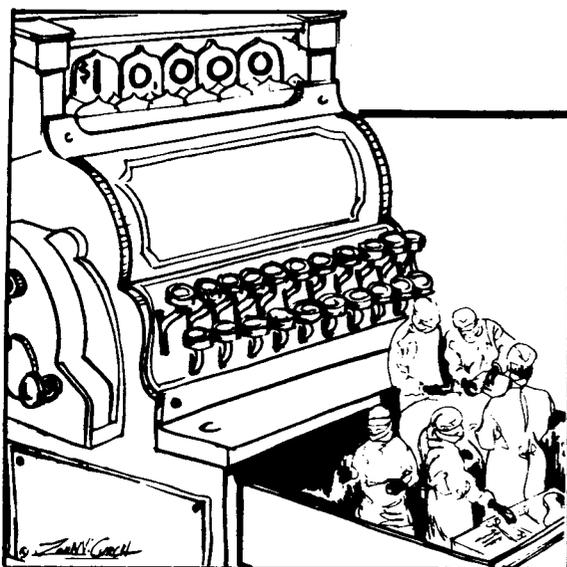
Worst of all, in the present legal and medical climate, some prospective parents' right to refuse intervention could come into question. Parents already have lost considerable rights to refuse therapy for their newborns and small children. If "fetal rights" gain legal standing, prospective parents could lose the right to refuse fetal therapy even before the practices have been widely accepted by the medical profession. Women are at a critical point at which a pregnant woman could be legally defined as an incubation chamber without her own right to bodily integrity. Surgery and other medical interventions could be mandated by joint decisions of physicians and judges.<sup>4</sup> For example, Margery Shaw, an attorney, has stated that

once a pregnant woman has abandoned her right to abort and has decided to carry her fetus to term, she incurs a conditional prospective liability for negligent acts toward her fetus if it should be born alive. These acts could be considered negligent fetal abuse. . . Courts and legislatures. . . should. . . take all reasonable steps to insure that fetuses destined to be born alive are not handicapped mentally and physically by the *negligent acts or omissions* of others.<sup>5</sup> (my emphasis).

Failure to intervene medically could be deemed such an "omission."

Interestingly enough, some of the physicians most closely involved with fetal therapy have recently counseled that "Most defects are best treated after birth."<sup>6</sup> Reviewing the record to date, they urge extreme caution; but unfortunately this is not likely to be the end of fetal interventions. In an interview in a magazine for physicians, called *Patient Care*, Dr. Frigoletto, Chief of Maternal and Fetal Medicine at Boston Brigham and Women's Hospital and one of the signers of the cautionary note, discusses enthusiastically innovations in the use of ultrasound for

"the monitoring of fetal well-being. . . It's almost like going to nursery school to watch behavior of 3-year-olds. Eventually, we may be able to distinguish normative behavior for the fetus. . . That will help us to identify abnormal fetal development, perhaps early enough to correct the environment or treat the fetus *in utero*."<sup>7</sup>



Let us remember that “the environment” happens to be a woman’s body. But that is not the only thing wrong with this prospect of fetus-watching. Considering the range of human variabilities, we can expect fetal development to vary. I find it chilling to anticipate the projection of standards for “normal” fetal development and the institution of “therapies” to bring deviations into line.

### Some Social and Economic Ramifications

Another point to stress is that while fetuses with multiple defects, as well as younger and younger premature infants, are being rescued from death, this country continues to have one of the highest rates of infant deaths and illnesses among western, industrialized nations.<sup>8</sup> The reasons for this are not medical, but stem from the extent of poverty and malnutrition. This country’s deplorable health statistics are due to the fact that an unnecessarily large proportion of babies are born prematurely or, though born at term, are too small and incompletely developed to survive or be healthy—many of them to poor, teen-aged mothers.<sup>9</sup> Numerous social and economic measures could be instrumental in decreasing prematurity and infant death rates. It is a serious misuse of resources to push high-technology baby-saving while the health status of women and babies declines as a result of economic and social malpractices, including medical neglect.

A few words about gene therapy. It is new even on the drawing boards and does not yet exist in practice, but it could involve the development of techniques to introduce genetic material obtained by means of the new recombinant DNA technology into eggs or sperms, or into embryos, babies or, even, adults. Chemical measures are also being developed that could be used to change the genetic material of individuals in, hopefully, predictable ways.

As might be expected, gene therapy too will involve special risks in addition to the fact that it is entirely new and hence untried. For one thing, it increases an already excessive preoccupation with *inherited* disabilities at a time when environmental hazards to health are on the increase, and could be reduced through more adequate

social policies. Also social applications of genetic selection have a dismal history in this country. Earlier in this century, discriminatory immigration and compulsory sterilization laws were enacted and enforced as part of a misconceived effort to improve the “genetic stock” of the American people.<sup>10</sup> (See, for example, Barry Mehler’s “The New Eugenics” in this issue.) It is enormously important that the social consequences of trying to make decisions about what are “good” and “bad” genes be thoroughly examined and widely debated. Professionals, who have no more than the required *technical* expertise, must not be allowed to acquire the power to make and implement decisions about who is fit to be born.

### Commercial Conflicts of Interest

The final issue I want to touch on concerns the social implications of the commercialization of genetic technologies, even before there are products to sell. At present, just about everyone working on the science or applications of gene manipulations has a relationship with the new genetics industry—as owner, board member, scientific staff or consultant of a company. In the last few years, many new firms have sprung up with names like *Gentech*, *Genex*, *Biogen*, and so forth, that are owned as well as staffed by scientists. In addition, several multinational drug and chemical corporations have become involved in genetic engineering, such as Eli Lilly, Schering-Plough, Hoffmann-La Roche, Monsanto, and Dupont. Some of these firms have formed partnerships with the small, new companies; others have entered the field on their own. Major chemical firms are also making arrangements directly with universities whereby academic laboratories or departments work in close collaboration with them.<sup>11</sup>

The fact that genetic technology has become a major event on Wall Street has enormous, and I think detrimental, implications for people who may one day soon find that they, their embryos, or their children are candidates for “gene therapy.” Because of direct links with the industry, the very people who are engaged in the research and practice of the new technology will be among those who reap the profits. And since recent articles on the financial pages speak of a “Biotechnology Retrenchment,”<sup>12</sup> the temptation to make overly optimistic claims increases.

Some scientists and entrepreneurs, as well as other observers, readily admit that scientific and medical claims already have been made with an eye on the stock market.<sup>13</sup> But such exaggerated claims and promises hold great danger for ordinary people, who must rely on their physicians for expert advice. Most people are not ready to regard statement by scientists and physicians as skeptically as they would the assurances of representatives of the automobile industry with respect to safety.

Already the impartiality of scientific evidence offered by one of the erstwhile academic leaders and a Nobel Laureate, Walter Gilbert, has been challenged by the

U.S. Solicitor General before the Supreme Court because Gilbert was one of the founders of Biogen.<sup>14</sup> Patients cannot really be expected to look into the commercial affiliations of their physicians or to request to see their portfolios! This situation goes beyond previous ones in which physicians have been accused of conflicts of interest because of their links to the medical-industrial complex. In this case, so much prestige and money are involved that millionaires will quite literally be made (or unmade) overnight. Gene manipulation has been called the new gold rush. The trouble is that this time our bodies are the frontier.

At present, Biogen and Genentech are in a race to market human interferon, which they hope will be active against viral infections and possibly cancer, and are beginning tests on patients.<sup>15</sup> There is always reason to worry about the fact that drug companies themselves are the ones to test and report favorably on their new products. In this case, the future of a new industry depends on the favorable outcome of clinical trials. There are enormous economic incentives for professionals with sizeable commercial interests to release overly optimistic reports about the benefits of these therapies. There have already been promises of cures for sickle cell anemia and cancer, as well as of genetically "improved" human beings, before *any* drugs or therapies are available. When they come into use, it will be a case of "Buyers Beware!" But unfortunately sick people, pregnant women, or parents of a child with a serious health problem are much more vulnerable and less able to look out for themselves than are buyers of new cars or of "scientifically improved" brands of toothpaste.

Educators, members of the press, and the public need to become more aware and sophisticated about these new technologies and about their social as well as their medical hazards. As scientists "for the people" one of our major tasks is to make people aware that they have a range of options when they confront the new biotechnologies, including the option to refuse. We must also fight so that pregnant women not lose this option to a wave of "fetal rights." But no matter what we do, in this society intricate technologies will of necessity disempower people without special expertise. Only major social changes will change that.

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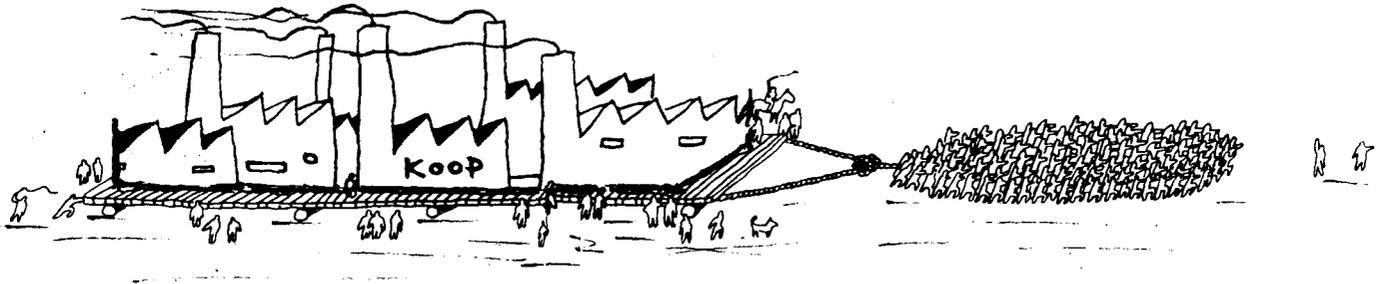
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Graphic from *Tu Lankide* newsletter.

### Social and Political Tensions

It would be misleading to report on the cooperatives without mentioning the social and political difficulties which have developed within the experiment. The successful development of the cooperatives depended in part on the ability of their leadership and ideology to walk a thin line between appearing in the eyes of the Spanish government to support the increasingly militant Basque labor and politically insurgent movements, and seeming in the view of the Basques themselves to be a coopting force on the side of the government. This path became very narrow in the early seventies when the Basque country exploded into a series of general strikes, and open guerilla warfare against the state. As Franco's health failed, Francoism itself was crumbling.

The cooperative statutes permitted solidarity strikes with Basque workers, and many cooperatives supported the general strikes. One particularly difficult decision involved the cooperatives' relations to the radical Basque separatist party, ETA (Free Basque Country). In one issue of the cooperative newsletter "*Tu Lankide*" it was discreetly suggested that there might be circumstances where there was no alternative but violent opposition to the government; but in another issue the editors lamented the assassination by the ETA of Carrero Blanco, Franco's hand-picked successor. Miraculously the cooperatives managed for the most part to avoid being damaged by the fray.

Yet there were other tensions. Having expended much thought on developing institutional structures and procedures to foster worker cooperation, the cooperatives were not as careful with respect to workplace organization and the implications of mass production. At ULGOR, new worker-members were assimilated into the cooperative much more rapidly than the social structure of a cooperative would allow. Large assembly lines were constructed, and techniques of scientific management (breaking down the work into small routines whereby each worker performs one operation over and over, such as installing a part, or turning some screws), were freely utilized. The very size of ULGOR invited conflict between workers on the line and management, thereby undermining solidarity and close working rela-

tions. The overall result was relations of production which conflicted with the spirit of cooperation.

These tensions came to a head in a wildcat strike in late 1974, provoked by a change in the system of job classifications which upgraded white-collar work at the expense of blue-collar work. After failing to get relief through the cooperative grievance procedures, a short strike broke out. This strike forces a painful reassessment of the relation between cooperative theory and practice. Such a strike was not supposed to happen within a democratic collective. Some of the problems the strike forced to the surface persist to this day, such as the tension between technocratic decision-making, and real participatory self-management, the question of the need for some kind of union structure even within a cooperative.

Yet the strike also brought about some positive results as well, such as the movement towards a redesign of the workplace which has guided the planning and construction of the newer plants, and a policy to keep maximum membership in an individual cooperative to around 500, using the sub-group device for larger economies of scale. An example is the dishwasher plant of ULGOR in the neighboring town of Bergara, which does away with the assembly line approach while at the same time reducing greatly the need for supervisory roles, and incorporating other quality-of-worklife and ecological features.

Resolution of the dilemma between the desires for worker participation in self-management and for efficient bureaucratic procedures and technocracy is difficult. On one side, there is a need for workers to become more educated; on the other a need for much demystification of financial and technical information and reports. There is also a built-in asymmetry between the production worker who spends a hard day performing work tasks, and the technical and managerial staff who spend the day considering managerial and design options. The former, less technically educated, have the added burden of digesting complex information in their spare time, if they are to participate meaningfully in decisions. It is no surprise that dissent from management proposals happens through organized pressure groups, and the major regional unions (now legal again with the

fall of Francoism) have been moving to sign up members within the cooperatives.<sup>6</sup>

### Cooperatives and the Recession

The cooperatives have more recently responded to regional stagnation which became a problem in the late 70's. Political unrest, as well as general recession and the predominance of older industries whose products could now be produced more cheaply elsewhere cut off investment. By 1979, serious unemployment problems had developed. Throughout the recession the Caja Laboral has remained financially strong; so much so, that grassroots sentiments criticize it for its increasing power and importance in the region. To legitimize itself, the Caja has put forward the goal of stimulating redevelopment and creating jobs by expanding cooperative membership. Meanwhile, however, the cooperatives themselves were afflicted by the drop in domestic demand for consumer durables, and ULGOR suffered large losses for the first time in its history in 1981.

Forseeing problems with lowered domestic demand, the cooperatives had already embarked on a policy of increasing export sales, which accounted for 28% of their total sales in 1981. But this policy carried with it the problem of dependence on export markets which are highly cost-competitive. To compete, much greater investments are required in plant and equipment than can be provided by the members. Newer cooperatives, especially, draw most of their investment capital from the Caja Laboral. The risks of such a policy of heavy borrowing are obvious.

Some within the group question this export-oriented strategy, and would like to see the cooperatives more oriented towards using regional resources to meet regional economic needs. However, the Basque region, having depleted its iron reserves, is poor in natural resources, and thus is dependent on income earned from sales to other parts of Spain, and on exports to pay for materials and energy.

To help cover losses and investment needs, the ULARCO subgroup has voted to withhold interest allowances and wage increases. These are received by members on paper as credits to their invested capital. Cost cutting has also resulted in the transfer of members from white-collar to blue-collar positions, something which a unionized capitalist firm would find impossible because of work rules. The ULARCO sub-group also developed a policy for transferring members among the cooperatives to avoid temporary layoffs, and its own compensation scheme for the small number who are unemployed within their group. Some use has been made of the technical school here, by providing courses for those who are temporarily idle.

While these measures show the remarkable flexibility of the cooperative structure, they do not always inspire heartening results. Domestic demand in Spain remains weak because markets are more saturated and buying power is low. Competition in export markets forces

prices of cooperative products down so that export sales have not been as productive as was hoped. In recent years the fortunes of ULGOR has seemed to hinge increasingly on whether or not large contracts were obtained; one large contract with Algeria not long ago was almost sabotaged by a disagreement that broke out between the Spanish and Algerian governments. Decisions made in the workplace seem to pale in comparison with high-level marketing arrangements.

Few doubt that the Mondragon cooperatives will continue to flourish economically despite the current hard times. However there is concern that size, complexity, success and the power of the Caja Laboral have eroded the original cooperative spirit. The conservation of self-management, participatory structures, and social purposes requires a continuing struggle, which can easily get lost in the impetus to create new workplaces.

Increasing technological requirements tend to take certain aspects of production away from the workers so that formal ownership and control rights appear meaningless. Yet these rights are still there to be used. The cooperatives are an important model because of their potential to humanize technology: within the constraints imposed by the market, the members do in principle at least retain the ability to choose their technology. This will be the challenge.

As Perez-Calleja, a director of the Caja Laboral's empresarial division, put it in 1976:

Mondragon is a free and open experiment, which grows organically as new situations and problems have to be faced by the Mondragon group of cooperatives. We have never been dogmatic or stuck to the old structures just because they were there. We have constantly had to force ourselves to be on the lookout for any modifications and changes in the system (however drastic), that were becoming necessary.<sup>7</sup>

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by Joseph Collins, The Institute for Food and Development Policy,  
San Francisco, CA 1982

Recently, the Reagan administration has publicized its policy goals of destabilizing the Nicaraguan government, and preventing similar revolutions from occurring in the neighboring countries, particularly in El Salvador. Joseph Collins' new book, *What Difference Could a Revolution Make? Food and Farming in the New Nicaragua*, addresses the subject of just what it is that the Reagan administration is so worried about. In one of the most current statements on the Nicaraguan revolution (writing was completed in September 1982), Collins discusses frankly both the successes and the failures of the Sandinista efforts to reshape an economic system in which half of the farmland had previously been controlled by two percent of the landowners.

Collins' book reports on the changes brought by the first three years of the revolution. How have the lives of the rural poor and the rural rich changed? Are the hungry eating better? How has food production—both for local consumption and for export—been affected? In discussing the new government's efforts to build a food and farming system that can meet the needs of the country's poor majority while increasing production of exports, Collins combats the myths about Nicaragua created in Washington, and at the same time, provides important insight into what *could* happen in the rest of Central America.

*What Difference Could a Revolution Make?* is an excellent sequel to Collins' earlier book, *Food First: The Myth of Scarcity*, co-authored with Francis Moore Lappe. *Food First* destroyed a number of popular myths about the cause of food scarcity, especially those which point to occurrences of "overpopulation" and "underproduction." In a detailed review of the various causes of food scarcity throughout the world, the authors of *Food First* show that only through radical social change can the real cause of scarcity be eliminated. Col-

lin's most recent book is a case history of such an experiment in social change.

Collins visited Nicaragua ten times as an unpaid advisor on food and farming policy, spending considerable time interviewing people and analyzing statistics. His investigation has determined that the overall food security and nutritional status of the poorest sector of the population have obviously improved. This has occurred through land reform, better use of previously underutilized lands, and imports of basic foods sold to the poor below cost. That such achievements have been realized within three years is remarkable given the significant obstacles which Nicaragua has faced.

The Sandinistas inherited a debt of 4.1 billion dollars. In 1982 interest and principal payments toward this debt took 52 cents of every dollar Nicaragua earned on its exports. With the election of Reagan, U.S. grain credits and bank loans were withdrawn and a widely announced U.S. program of destabilization was initiated, operating primarily within Honduras. A large portion of Nicaragua's resources that would otherwise be used to rebuild the economy must now be used in defense (e.g., newly imported tractors needed in agriculture must now dig trenches on the northern border to protect Nicaraguan soldiers). Collins supports the argument that the U.S. is essentially forcing the Nicaraguans into the arms of whoever else will give aid—particularly the Soviets.

Internally, when the Sandinistas came into power, they were confronted with the additional turmoil resulting from a disillusioned peasant population, a population which had supported the revolution and expected rapid and dramatic improvement in living conditions once Somoza was ousted. Such changes were not quick in coming and dissatisfaction was heightened when all large farms were not immediately confiscated and divided into smaller parcels for previously landless peasants. Ultimately the San-

dinistas learned that it is easier to overthrow a repressive regime than it is to build a collective consciousness that allows the new society to flourish.

Certain North American observers have been critical of Nicaragua's decision to push for increased export production using the most modern technology available. They emphasize that this technology is not sustainable and leads to degradation of the soil and contamination of the environment. They further point out that export production will only tie Nicaragua more strongly into the world capitalist economy, which makes it vulnerable to the vagaries of world commodity prices. Collins speaks to this argument by repeatedly emphasizing that at least in the short run Nicaragua has been forced to generate hard currency income by relying on commodities with which it has experience—cotton, coffee, sugar, and cattle.

These are just some of the accomplishments and setbacks of the Nicaraguan revolution documented by Collins. The overall picture is definitely one of optimism despite the very real problems which Nicaragua faces. The Sandinistas have learned much and the economy is slowly recovering. Despite the continued misgivings of the middle class and of some peasants, the vast majority of Nicaraguans are solidly behind the revolution and are committed to making it work.

The real question seems to be whether the U.S. will allow the experiment to be conducted without interference. The Reagan administration seems increasingly committed to destabilizing the Nicaraguan government through economic sabotage and outright military harassment. Washington is evidently concerned that the world might eventually learn from Nicaragua just what differences a revolution can make.

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## A University Course and an Annotated Bibliography

# WOMEN AND TECHNOLOGY

by Philip Bereano and Christine Bose

Six years ago the two of us first put together a curriculum on women and technology, based on our professional academic work and our political activities. Chris was at the University of Washington at the time, in the Sociology Department and Womens Studies Program, concentrating on such subjects as female labor force participation, and role and status definitions. Phil was in a program called Social Management of Technology (SMT). His work is in the area of the political economy of technological changes—the social/political/economic forces which gives rise to technological phenomena, and the corresponding impacts (benefits, costs, and risks) experienced by different groups. We realized that the area in which our work intersected has been largely unexplored (presumably for the related reasons that conventional researchers and funding sources would find an analysis of the masculinist aspects of technocratic ideology too threatening and an investigation of technology's impacts on women too trivial), and we decided to devote energy to it for reasons of political relevance and personal satisfaction.

While we were developing this course, we began research on changes in household technologies (specifically kitchen technologies) and their impacts on women's roles and lives. The evolution of our research is another story, but we can remark in *passim*; that we were unable to get outside funding for it (SMT supported us initially), were twice rejected by the National Science Foundation, and have had difficulty getting the results of our—resultingly modest—work published.\*

This year is the fifth time the course has been offered. It is sponsored by the SMT, the Women Studies Program, and the Sociology Department, but currently only SMT actually devotes funds to it. As far as we know, it was the first course of its kind and undoubtedly

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Chris Bose teaches sociology and women's studies at SUNY/Albany.

remains a relative rarity. It is mainly for graduate students although some upperclass undergraduates have taken it.

The major topics covered began with an *analytical framework* useful for understanding the case studies and specific issues which will follow. This involves (a) mainstream and radical approaches to the definition of technology and its relationship to society; (b) women's relationships to technology and technological change in preindustrial, industrializing, and industrialized societies, in order to examine how technologies have, or have not, controlled women or been controlled by women for their own needs; and finally (c) technology and value systems, specifically technocratic rationality relying on "reductionism" (breaking something down into small parts, like product assembly in the factory system), and feminist values emphasizing a holistic approach which is more accepting of the subjective aspects of a problem.

The next section of the course focuses on *the division of labor*, and looks at the impacts of technologies on both the home and workforce labor of women. We discuss the family and the relationship of its members to paid and unpaid work. Historically we examine how the industrial *workforce* was created in the nineteenth century, and the particular implications for women. The personal aspects of the process are presented by the contemporary stories in Barbara Garson's *All The Livelong Day* and Studs Terkel's *Working*. Relevant analytical and theoretical literature is used simultaneously to help explain the mass of data on industrialization's impact on women in the workforce and the home. We then cover the social and technological aspects of *housework* in some detail. We read about the ideology of housework and women's roles, current conditions of housework, domestic technologies and their claims to reduce costs, time expended, and fatigue (most of these claims are not well-supported in fact), the phenomenon of "consumerism" as an outlet for alienation and frustration, and the issues surrounding the "wages for housework" debate.

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\*Christine Bose and Philip Bereano, "Household Technologies: Burden or Blessing?," in *The Technological Women: Interfacing With Tomorrow*, Jan Zimmerman, ed., Praeger Publishers, 1983. A longer version of this work is due to appear in the journal *Technology and Culture*.



We then turn to biomedical technologies, an area which has tremendous impacts and implications for women. We discuss birthing, birth control, abortion, and the history of the male medical establishment's ability to define sickness and health.

Last year for the first time we included a specific topic on physical spaces—architecture, design, and urban planning—and read some of the recently published literature on women's plans for housing and communities early in this century (communal kitchens and laundries were popular ideas to socialize the isolated workload) as well as current needs for safety, security, and comfort in public transportation, parks, and so on.

Although we feel the course has been successful in many ways (just having it repeatedly given is a success of sorts), and helps both the students and instructors to integrate theory and practice, there have been some problems with it. Relatively few men have taken the course. This poor mix inevitably reinforces the politically debilitating notion that only the victims of a problem situation need to deal with it; certainly men have a vital stake in these topics (and should have their consciousness raised so they recognize it more fully)—why jobs are gender-associated, how household technologies tend to reinforce tradition, and other related topics.

The course has drawn together a good collection of readings covering theoretical works from a number of disciplines, case studies, polemics, etc. Below we include a selected and annotated bibliography.

The seminar requires heavy reading, and many of the students have resisted the theoretical component, preferring issue-oriented specific materials. The instructors have tried to make the readings less burdensome by introducing them in advance, but are steadfast in maintaining that theory and analytical rigor are also important skills to bring to these problem areas. Also students from the hard sciences and engineering need to learn that their disciplines are not entirely objective, but embody particular value systems. In this sense the course embodies all the pitfalls of interdisciplinary and multiparadigmatic work—it appears as neither fish nor fowl: our task as teachers has involved dealing with this difficulty as much as transmitting specific information.

#### Annotated Bibliography

- Arditti, Rita.** 1974. "Women as objects—science and sexual politics." *Science for the People*. 8-11 September, pp. 29-32. An early piece by one of the co-editors of *Science and Liberation* (South End Press, 1980), this focuses on biology and women's issues.
- Baxandall, Rosalyn, Ewen, Elizabeth and Gordon, Linda.** 1976. "The working class has two sexes. *Monthly Review* 28, July-August, pp. 1-9. In a response to Braverman's *Labor and Monopoly Capital*, the authors point out that the social division of labor (which is based on earlier gender divisions) is as much a 'crime against the person' as the detailed division of labor he describes. You cannot understand the public sphere without looking at how it is affected by the private; and the private sphere has been invaded by the "public" technological revolution in a way that degrades women's work there. A must to read along with Braverman.
- Bell, Daniel.** 1973. "Five dimensions of post-industrial society." *Social Policy*. July-August, pp. 103-110. An optimistic article about the roles of technology. The five dimensions include (1) a shift towards services and away from goods production; (2) the pre-eminence of professional/technical occupations; (3) the primacy of theory as a source of innovation; (4) future orientation; and (5) decision-making as the new intellectual technology. Bell is a major author in the classic debate on technology's role in the future, presenting a liberal view.
- Blau, Francine D. and Jusenius, Carol.** 1976. "Economists' approaches to sex segregation in the labor market: an appraisal." In: Blaxall, Martha and Reagan, Barbara eds., *Women and the Workplace*. pp. 181-99. University of Chicago Press, Chicago. A thorough review of the assumptions, supporting data and problems with several economic models purporting to explain gender-based segregation of occupations. This is one of the few articles on women and the economy which makes the theories clear and analyzes their strengths and weaknesses.
- Bookchin, Murray.** 1971. *Post-Scarcity Anarchism*. Ramparts Press, San Francisco. Bookchin is opposed to the way technology is currently used to amass capital and feels that society has not recognized the post-scarcity potential of its technology to create the material basis for liberation. This new "utopia" would be a stateless, classless, decentralized society. In arguing his case, many of the particular examples are drawn around environmental issues.
- Boulding, Elise.** 1976. "Familial constraints in women's work roles." In: Blaxall, Martha and Reagan, Barbara eds. *Women and the Workplace*. pp. 95-117. University of Chicago Press, Chicago. Women have always been breeders, feeders and producers. Up through the industrial revolution there was no substantial difference in women's situation. Since the industrial revolution, the first two roles have limited women's productive role.
- Braverman, Harry.** 1974. *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century*. Monthly Review Press, New York. A major Marxist analysis of the labor process under contemporary capitalism focusing on the origins and development

- of scientific management, the 'scientific-technical revolution,' modern corporations and the universal market. The structure and position in the labor process of the working class and of growing working class jobs (clerical, service, retail) is examined specifically.
- Burns, Scott.** 1976. "The shift from a market economy to a household economy." *Co-Evolution Quarterly*. Fall, pp. 18-29. This piece presents the argument that the home is again becoming an important center for production activities.
- Cowan, Ruth Schwartz.** 1974. "A case study of technological and social change: the washing machine and the working wife." In: Hartman, Mary S. and Banner, Lois eds., *Clio's Consciousness Raised*. Pp. 245-253. Harper & Row, New York.
- Cowan, Ruth Schwartz.** 1976. "The 'industrial revolution' in the home: household technology and social change in the 20th century." *Technology and Culture* 17, January, pp. 1-23. Cowan criticizes traditional sociological approaches which assume that the removal of production from the home together with the introduction of labor-saving devices allowed women to enter the work force. Cowan maintains that other forces combined to keep women in the home. The two most powerful forces preventing a decrease in housework time were the disappearance of servants and family members, placing the entire responsibility on the housewife and the development and marketing of new technologies specifically for home use. Both articles present a terrific challenge to one's everyday assumptions about technologies in the home.
- Davies, Margery.** 1974. "Woman's place is at the typewriter: the feminization of the clerical workforce." *Radical America* 8 (4), July-August. Historical review of the development and role of the "secretarial proletariat," especially as the job changed from male to female-dominated. A major factor in this transition was the introduction of the typewriter to deal with increased correspondence and record-keeping, creating a "sex-neutral" occupation. Excellent in looking at role of women vs. the role of technology in 'lowering' job status.
- Dickson, David.** 1975. *The Politics of Alternative Technology*. Universe Books, New York. Dickson is a progressive who defines technology as hardware within a political and cultural nexus. He feels technology reflects the political situation in which it was developed and that it is not the answer to world problems. An alternative technology, which first deals with social structure and relations, is necessary. The book presents a key, clear definition of alternative technology.
- Dolkhart, Jane and Hartsock, Nancy.** 1975. "Feminist visions of the future." *Quest: a Feminist Quarterly* II (1), Summer, pp. 2-6. Authors criticize the elite vision of change which assumes post-industrial technology will affect social life and not vice versa. Problems with this elite vision include ignoring the interests of women, minorities and lower class people; emphasizing consumption roles without looking at the impact on women; stressing only what is technically possible and not the human impacts; etc. Dolkhart and Hartsock argue that women must gain some control over power/technology, while retaining a humanistic approach.
- Ehrenreich, Barbara and English, Deirdre.** 1973. *Witches, Midwives, and Nurses: A History of Women Healers*. Feminist Press, Old Westbury, New York. Medicine, as we see it today, is a result of historical competition between women and men healers. Women are able to do science and have always done it. Men are not ahead in medicine because of modern scientific technology—they took over earlier. Their formalization and monopolization of knowledge resulted in mystification of medicine and suppression of women as "people's healers."
- Ehrenreich, Barbara and English, Deirdre.** 1979. *For Her Own Good: 150 Years of the Experts' Advice to Women*. Anchor Press/Doubleday. Garden City, New York. A history of women and the medical profession, beginning with how the 'experts' usurped women's traditional healing skills and then set themselves up as the sole authorities to give 'scientific' advice on 'the woman question.' Psycho-medical experts began this onslaught which was continued by other experts who defined the details of women's housework and child care activities. Only with the rise of the current women's movement has the power of these experts declined.
- Firestone, Shulamith.** 1970. *The Dialectic of Sex: The Case for a Feminist Revolution*. William Morrow, New York. Believes new technology can be controlled for human purposes if it is not used to reinforce current family values. Sees technology, especially reproductive and cybernation forms, in a social context and not as part of that context itself. She focuses on how fertility control through the use of test tube babies or parthenogenesis can be liberating, but does not deal with the origin of such technologies in male-dominated research. These unusual ideas point to the importance of who develops technology and for what purpose.
- Frankel, C.** 1973. "The nature and sources of irrationalism." *Science*. NY, 1 June, pp. 927-931. Frankel is defending "science" against "barbarians" like Roszak. He assumes that if one is not in favor of scientific rationality, then one must be in favor of irrationalism. He presents a classic, narrow definition of technology.
- Garson, Barbara.** 1972. *All the Livelong Day*. Penguin Books, Baltimore, MD. Garson reports on participant observation in a variety of work settings including tuna and mink plants, hospital labs, cosmetic factories and offices. She finds the division of labor deskills and destroys people and illustrates how Taylorism gives control of all work elements to management.
- Gilman, Charlotte Perkins.** 1966. *Women and Economics*. Harper & Row, New York. Gilman is a turn of the century feminist, popular in her own time, who wrote about the need to industrialize housework and remove it from the home. She describes the evolution of society to a point where women in their separate households are dependent upon men. In order to free women from housework, she proposes applying the capitalist principles of specialization and division of labor to take the burden off individual women and allow them independence.
- Gordon, Linda.** 1977. "Birth control: an historical study." *Science for the People*, Jan-Feb, pp. 11-16. 1977. "Birth control and the Eugenists." *Science for the People*, March-April, pp. 8-15. These articles are a two-part series. They document how birth control began as a radical and feminist movement in the 1910's. By the end of the 1930's, birth control was no longer part of a popular movement but was a part of the 'technological revolution.' This change occurred with the large scale entrance of professionals, mainly doctors and Eugenists into the birth control cause. These groups changed the movement goals from self-determination for women to more elitist values.
- Guilbert, M.** 1970. "Women and work (III): the effects of technological change." *Impact of Science on Society*, April/June, pp. 85-91. While industrialization has improved women's general condition, it has not helped in the area of employment. Automation has two types of negative impacts here. First, it can reduce the proportion of women workers in a firm. Or, second, women may be transferred to non-automated departments needing manual speed and precision. These are not better jobs than those previously held.
- Hartmann, Heidi.** 1976. "Capitalism, patriarchy, and job segregation by sex." In: Blaxal, Martha and Reagan, Barbara eds., *Women and the Workplace*, pp. 137-169. University of Chicago Press, Chicago. Job segregation by sex is a major mechanism under capitalism to maintain male superiority. Such segregation results in low wages for women, keeping them dependent on men and fostering marriage. But married women must perform domestic tasks for men, and those men benefit from a division of domestic labor which weakens women's labor market position.
- Henderson, Hazel.** 1975. "Philosophical conflict: re-examining the goals of knowledge." *Public Administration Review*, Jan-Feb., pp. 77-80. Henderson compares linear, scientific rationality with experientially-based, inductive methods and finds technology assessment as a field needs both forms of knowledge. Unfortunately science has become a religion and its value basis is too often hidden by our commitment to logical positivism.
- Kuhn, Thomas S.** 1970. *The Structure of Scientific Revolutions*. 2nd edn, enl. University of Chicago Press, Chicago. Kuhn describes how the "normal science" of a period proceeds in a day to day way, usually based on a particular paradigm or world view. Scientific revolutions occur when there is a change to a new paradigm. Kuhn's framework is useful in understanding the rise and predominance of current scientific management, rationality, and efficiency. He sets

# resources

## VDT INFORMATION

**VDT: Health and Safety**, an 80-page booklet covering such topics as: pregnancy problems among VDT operators, studies on possible effects on the eyes, workplace radiation surveys, etc. Available from **Microwave News**, P.O. Box 1799, Grand Central Station, New York, NY 10163, \$5.95 plus \$1.00 postage.

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## HEALTH

**Bitter Pills, Medicines and the Third World Poor**, Dianna Melrose, Oxfam America, 115 Broadway, Boston, MA 02116, \$9.20 (postage included).

**Closets are Health Hazards**, a slide presentation about gay and lesbian health care workers. Available from American Medical Student Association, LGPIM Staff Liaison, 1910 Association Drive, Reston, VA 22091, price negotiable.

**Union Health and Safety Committees**, a 38-page guide to the planning, formation, structure and functions of a Health and Safety Committee. One of many books, pamphlets, and factsheets available from the Western Institute for Occupational and Environmental Sciences, Inc., 2520 Milvia Street, Berkeley, CA 94704.

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## HUMAN RIGHTS

**The New England Human Rights Directory**, New England Human Rights Network, c/o American Friends Service Committee, 2161 Massachusetts Ave., Cambridge, MA 02140, \$5.25 (includes postage).

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## RACISM

**Exit 13: Oppression and Racism in Academia**, Monte Piliawsky, South End Press, 302 Columbus Ave., Boston, MA 02116, \$7.50.

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## DISARMAMENT

**Seeds of Promise: The First Real Hearings on the Nuclear Arms Freeze**, Randall Forsberg, Richard Garwin, Paul Warnke, & Robert Dean, Brickhouse Publishing Co., Andover, MA, 1983 213 pp. \$9.95.

**Waging Peace**, Southern Exposure, P.O. Box 531, Durham, NC 27702, 120 pp. \$4.00.

**Whole Freeze Catalog**, Citizen Action for Lasting Security, P.O. Box 12763, Salem, OR 97309. In addition to bumper stickers and T-shirts, this catalog lists access to organizations, books, brochures and periodicals. \$3.00.

## JOB OPENING

Microbiologist or biologist with bacteriological experience (B.A. or higher) to develop production of biological/bacterial insecticides (especially *Bacillus thuringiensis*) in Nicaragua. One year position, pending funding. Spanish is essential.

Send C.V.s to: John Vandermeer, Division of Biological Sciences, University of Michigan, Ann Arbor, MI 48109.

the tone for the debate about what constitutes technology and its relationship to social change.

**Langer, Elinor**. 1970. *The Women of the Telephone Company*. New England Free Press, Somerville, MA. Report on participant observation in phone company jobs which are white collar women's work. Langer documents the extreme division of labor, rationalization and "scientific structure" of the work as it serves company needs and effects the women themselves.

**Mesthene, Emmanuel**. 1970. *Technological Change*. New American Library, New York. Focusing on macro-technologies, Mesthene assumes technological and social change are inseparable. New opportunities and new problems are created by it, as are changes in social organization. He feels all people need to take advantage of technological opportunity; without noting that the benefits and risks of technology are unevenly distributed among people. Mesthene provides the best exposition of the "traditional," non-radical, position.

**Oakley, Ann**. 1975. *Woman's Work: The Housewife, Past and Present*. Pantheon Books, New York. Using Britain as an example, Oakley describes the emergence of the role of housewife with the development of industrial capitalism. Her interviews with contemporary women help to examine division of labor by sex.

**Peterson, Richard A.** 1973. *The Industrial Order and Social Policy*. Prentice-Hall, Englewood Cliffs, New Jersey. Author recognizes that the structure of society and values of people affect the way in which machine and social technology develops. In certain cases social technology as the organization of people precedes the introduction of machine technology, e.g., the "putting out" system preceding factory organization.

**Rich, Adrienne**. 1976. *Of Woman Born: Motherhood as an Experience and Institution*. W.W. Norton, New York. Drawing on a variety of materials including history, sociology, psychology, literature

and personal experience, Rich examines the history of motherhood as an institution and a personal experience. The chapters discussing the social-technological history of childbirth and obstetrics are of particular interest here.

**Rozsak, Theodore**. 1974. "The monster and the Titan: Science, knowledge, and gnosis." *Daedalus*, Summer, pp. 17-32. Science is not knowledge. Rather, science is a value system of its own and knowledge is science plus meaning. Science and technology only developed 100 years ago and technological rationality followed afterwards. Rozsak is more interested in attitude change than in political change. His work is a nice complement to that of Braverman and Dickson.

**Terkel, Studs**. 1974. *Working*. Pantheon, New York. Terkel interviews over one hundred workers all over the U.S. getting them to talk about their jobs and how they feel about them. In their own words people describe the daily humiliations, search for meaning and discontent they feel.

**Vanek, Joann**. 1974. "Time spent in housework." *Scientific American* 231 (5), 116-120. Full-time homemakers spend as much time on housework today as did full-time homemakers 50 years ago. Employed women average 26 hours per week without increased work by husband or paid help. Both groups are spending less time in meal preparation and more time on managerial tasks.

**Walker, Kathryn E. and Woods, Margaret E.** 1976. *Time Use: A Measure of Production of Family Goods and Services*. Center for the Family of the American Home Economics Association, Washington, DC. A home economics study which is part of a larger research project begun at Cornell in the 1920's. This report gives total time used by all workers for all household work and for each separate household task. (Households used are husband-wife or husband-wife-children in an urban/suburban NY area.) Challenges the assumption that men are putting in increasing amounts of time on housework.



## CHAPTERS AND CONTACTS

Science for the People is an organization of people involved or interested in science and technology-related issues, whose activities are directed at: 1) exposing the class control of science and technology, 2) organizing campaigns which criticize, challenge and propose alternatives to the present uses of science and technology, and 3) developing a political strategy by which people in the technical strata can ally with other progressive forces in society. SftP opposes the ideologies of sexism, racism, elitism and their practice, and holds an anti-imperialist world-view. Membership in SftP is defined as subscribing to the magazine and/or actively participating in local SftP activities.

**NATIONAL OFFICE:** Science for the People, 897 Main St., Cambridge, MA 02139. (617) 547-0370.

**MIDWEST OFFICE:** 4318 Michigan Union, Ann Arbor, MI 48109. (313) 761-7960.

**ALABAMA:** Bryson Breslin, 2349 Center Ways, Birmingham, AL 35206. (205) 323-1274.

**ARKANASA:** Dotty Oliver, 3211 Fair Park Blvd., Little Rock, AR 72204.

**ARIZONA:** Sedley Jossierand, 2925 E. Adams, Tuscon, AZ 85716. (602) 323-0792.

**CALIFORNIA: East Bay Chapter:** Science for the People, P.O. Box 4161, Berkeley, CA 94704. (415) 526-4013. Allan Stewart-Oaten, Biology Dept., USCB, Santa Barbara, CA 93110. (805) 961-3696.

**COLORADO:** Ann Wolley, Dept. of Anthropology, University of Northern Colorado, Greeley, CO 80639.

**CONNECTICUT:** David Adams, Psych. Lab., Wesleyan Univ., Middletown, CT 06457. (203) 347-9411 x286.

**DISTRICT OF COLUMBIA:** Walda Katz Fishman, 6617 Millwood Rd., Bethesda, MD 20034. (301) 320-4034. Miriam Struck and Scott Schneider, 1851 Columbia Rd. N.W. #109, Washington, D.C. 20009. (202) 387-0173.

**FLORIDA:** Progressive Technology, P.O. Box 20049, Tallahassee FL 32304.

**ILLINOIS: Chicago Chapter:** c/o Ivan Handler, 2531 N. Washtenaw, Chicago, IL 60647. (312) 342-6975.

**IOWA:** Paul C. Nelson, 604 Hodge Ames, IA 50010. (515) 232-2527.

**LOUISIANA:** Marie Ho, 4671 Venos St., New Orleans, LA 70122. (504) 283-8413.

**MARYLAND: Baltimore Chapter:** Pat Loy, 3553 Chesterfield Ave., Baltimore, MD 21213.

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**NEW YORK: New York City Chapter:** c/o Red Schiller, 382 Third St. Apt. 3, Brooklyn, NY 11215. (212) 788-6996. **Stony Brook Chapter:** P.O. Box 435, E. Setauket, NY 11733. (516) 246-5053. Steve Risch and JoAnn Jaffe, 909 N. Tioga St., Ithaca, NY 14850. (607) 277-4097.

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**SOUTH CAROLINA:** Keith Friet, 522 Savannah Hwy. Apt. #5, Charleston, SC 29407.

**TEXAS:** Ed Cervenka, 911 Blanco St., No. 104, Austin, TX 78703. (512) 477-3203.

**VERMONT:** Steve Cavrak, Academic Computing Center, University of Vermont, Burlington, VT 05405. (802) 658-2387; (802) 656-3190.

**WASHINGTON:** Phil Bereano, 316 Guggenheim, FS-15, Univ. of Washington, Seattle, WA 98195. (206) 543-9037.

**WISCONSIN:** Rick Cote, 1525 Linden Drive, Madison, WI 53706. (608) 262-4581.

## OUTSIDE U.S.

**AUSTRALIA:** Lesley Rogers, Pharmacology Dept., Monash University, Clayton, Victoria 3168, Australia. Janna Thompson, Philosophy Dept., La Trobe University, Bundoora, Victoria, Australia. Brian Martin, Applied Mathematics, Faculty of Science, ANU, P.O. Box 4, Canberra, ACT 2600, Australia. Tony Dolk, 17 Hampden St., Ashfield, NSW, Australia.

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