

ACADEMICS & TH

A CRITIQUE OF THE AUSTRALIAN NATIONAL UNIVERSITY' by Brian

Can a conventional educational establishment teach the ecological approach to the problems society faces today? This is unlikely because of the structure which divides knowledge and learning into separate and watertight disciplines. British universities have not yet attempted it. Even when they teach 'ecology' they still, to all intents and purposes, use the reductionist approach, while 'environmental sciences' means something different wherever it is taught; too often it is only another label for urban planning or pollution control.

"When to speak is unpopular, it is less pardonable to be silent than to say too much" — H.C. Coombs

In the wake of widespread public concern about environmental problems in the rich countries of the world, many academic institutions have begun promoting research in this hitherto neglected area. The Australian National University's Centre for Resource and Environmental Studies (CRES) can be seen as a manifestation of this new academic interest.

CRES is the only academic organisation in Australia devoted almost entirely to research in environmental and resource areas. Its current annual budget exceeds \$600,000. Although not the first year of its existence, 1976 was the first year in which CRES had more than a skeleton staff. This account is based on my experiences as a research assistant in the applied systems analysis group in CRES in 1976.

My object here is to argue that CRES, because of the disciplinary training of most of its members and because of its organisational structure, is largely unsuited and indeed in many ways unable to tackle environmental and resource problems from any deep and critical perspective. Because of this, studies done in CRES serve mainly to justify policies and practices serving the interests of powerful groups in society — elites in government and industry primarily — who have no real concern about the environment.

The existence of CRES as an organisation may give the illusion that substantial effort is being devoted to a search for fundamental solutions to environmental problems. Therefore it may be that the most serious actual function of CRES is to help to co-opt the environmental movement. (Of course, serving the interests of powerful groups in society and co-opting the environmental movement are not conscious or intentional aims of most CRES members.) For these reasons, this critique is not meant as an attempt to influence the development of CRES, but a warning to activists — in and out of academia — of the dangers of leaving to academics the search and struggle for change in society which strikes at the roots of environmental problems, rather than treating symptoms.

Reasons for writing a critique

I am writing this critique as a result of my interest in the political function of institutional arrangements in society, and my belief that a drastic change in these arrangements is necessary if what is potentially best in human culture and community is to survive and prosper. I believe that showing the workings of organisations is one way of alerting people (outsiders mainly) to the need for different structures which are more directly responsive to the self-expressed needs of the populace.

I believe that organisations and individuals should continually sub-

ject themselves to critical internal and external appraisal as to goals, methods, and the need for change. Needless to say, this does not occur in the large majority of organisations or individuals. This account is my attempt to say to a wider public what I was discouraged from saying within CRES.

It is perhaps unfair to single out CRES for criticism, since it is not really any worse than most other organisations. But that does not mean that the criticism is any less valid.

It is true that my position at CRES (renewable annually) was not renewed, so that it may be claimed that I have a grudge. My perspective is different. The previous year I had planned to write a critique of the School of Physics at Sydney University, but in the end I did not. That I am writing about CRES may show that there is something worth saying about it. Besides, several friends have urged me to do it. I particularly appreciate the sympathy and encouragement from those, including a dozen or so members of CRES, who commented on this article for me.

Another encouragement for this attempt is knowing many people, with much more damning information about other organisations than anything I say here about CRES, who are afraid to speak out because of their careers. And it is a risk to speak out: in my experience, the response of organisational hierarchies is to attack those who express unpalatable ideas, rather than to consider the ideas themselves.

E ENVIRONMENT

S CENTRE FOR RESOURCE AND ENVIRONMENTAL STUDIES

Martin

This is not so in the case of Australia's National University's Centre for Resource and Environmental Studies (CRES). This represents a novel and interesting departure and employs some of the most distinguished figures in the field of Human Ecology and Natural Resources. However, as the author of this illuminating article points out, it has not really succeeded in shedding the shackles of the age of reductionism and quantification from which we are only now beginning to emerge.

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My analysis will have three components. First, I will analyse the disciplinary backgrounds and approaches of the three main research groups in CRES: resource economics, applied systems analysis, and human ecology. Second, I will look at CRES's organisational structure, and finally at the actual actions taken by members of CRES and by CRES as a whole.

The resource economics group

"The purpose of studying economics is not to acquire a set of ready-made answers to economic questions, but to learn how to avoid being deceived by economists —"
Joan Robinson.

The resource economics group is the largest research group in CRES, consisting in 1976 of a professor, three research fellows, several research assistants, and a secretary. Virtually all of those on the research staff are economists by training, and most seem to follow the approach of neoclassical economics.

It is being increasingly recognised that neoclassical economics is a remarkably unsuitable discipline for treating environmental problems. There are several reasons for this.

First, environmental quality is owned by no one, and cannot be bought and sold on the market (though market operations are sometimes influenced by environmental factors, mainly via laws).

Air pollution, urban blight, and artificially-induced climate change are 'externalities' to economists: annoying effects not regulated by the market. Because they are not easily put into a market model, they tend to be ignored or downgraded, and usually are introduced into economic analysis in a significant way only after outsiders (non-economists) forcefully emphasise their importance. It is no surprise that economists have been and remain conspicuous by their absence from environmental movements.

Second, environmental costs and resource shortages must be introduced into economic analysis in an after-the-fact manner. This is because the value of environmental quality and of scarce resources results partially from public perceptions rather than the operations of economic processes. Awareness of the dangers of excessive use of pesticides or wasteful exploitation of petroleum resources certainly was not due to economic analysis. The best the economists seem to be able to do is plug new values into their analyses long after most of the damage has already been done.

Third, economic theory assumes that money and the things it can buy provide a comprehensive measure of people and their values. Yet anyone familiar with practical psychology, religion, politics, anthropology — or who has observed what makes people tick — will realise that what people value most in life may have no price (or an unrealistic price) on the market. Take for example the

traditional Aborigines, whose relationship with their land is an integral part of their rich culture and is of overwhelming importance to them: *no amount of money could ever compensate these Aborigines for the loss or destruction of their land and the culture it sustains.* Similarly, other people find personal relationships, art, ideology, or religion of predominant importance in their lives. The economic approach simply cannot treat these factors in any satisfactory way. By translating people's values into economic measures, economists downgrade and obscure the possibility of patterns of social, political, and economic development based on other values.

Fourth, and most important, the economic perspective does not readily lend itself to any evaluation of policies and actions based on radically different values. Economic analysis can be applied to the economic system as it presently operates (or rather, as it is thought to operate), but becomes even more dubious when applied to hypothetical alternatives. This is because many of the tools of economic analysis — from supply-demand curves to the compensation principle to regression analysis — are much less useful if used to describe an economic system based on different values. The basic problem is that economics builds the values of the present system into its models, and thereby promotes these values to the exclusion of alternatives.

Let me give an example of the

limitations of the neoclassical economic perspective. Economists find it natural to justify the current transport system based on private motor vehicles. They argue that if people wanted bicycles instead, they would buy them in the marketplace, and if they wanted better public transport they would demand it through elected representatives. (More precisely, automobile use will reach a level constrained by factors such as the price of petrol, waiting time for parking, and commuting time, all of which serve to limit or encourage demand.) This argument ignores political and institutional effects, such as the massive promotion of cars through construction of roads, production of petrol, and development of suburbia designed for cars, and the political and media influence of manufacturers of cars, roads, and petroleum products. The idea of incremental market change downgrades the 'externalities' of pollution, resource exhaustion, medical care for accident victims (not to mention death and suffering), and lack of proper exercise. It is quite possible that *if* there were an extensive system of bicycle paths and rapid, clean, efficient public transport, if cities were designed and living and workplace relationships structured to minimise transport needs, and *if* an ethic predominated which encouraged a clean environment and good health rather than material possessions, *then* people might consider cars to be about as useful as helicopters are now. The idea of incremental market change obscures this possibility.

These then are some of the reasons why traditional economics as a discipline is not suited for treating environmental problems from a deep critical perspective. Perhaps it is not impossible for economic theory to adapt to treat these problems (as some of the studies of steady-state economics have suggested), but it is probably harder to do this than to start afresh without knowing traditional economic theory.

What then of the CRES resource economics group? In my opinion, most of the work produced by this group has suffered from being within the traditional economic perspective. The interesting thing is that members of the group will tell you (in private) about the limitations of

economic theory — they are not naive. But when it comes to making a study, this awareness of limitations is translated into caveats; the essence of the work reflects the basic orientation of the discipline.

One study performed by two group members concerns the "economics of environmental services". This refers to people's "demand" for clean air, quietness, or a stable climate, and the guarantee or supply of such "services" by the private and public sectors. The approach taken in the study is to look at money spent to protect "environmental amenities". It turns out that most of this money consists of government expenditure for sewerage and garbage collection, industrial expenditures for pollution control, with a small amount for other things such as treatment of air and water pollution. Once one has the expenditure figures, one can play around with values of this spending as a fraction of GNP and fit it to various simple models as a function of population density or per capita income. On the technical side one may quibble with the approach, for example by pointing to political considerations involved in provision of sewerage. But the main thing that strikes me is how blind this approach is to social and political solutions to problems of environmental amenity. For example, the "service" of garbage collection might be replaced by promotion of recycling (for all non-biodegradable materials) and composting. Naturally this would require a change in social expectations (people would frown on dumping of refuse as they now frown on shitting in the road), in marketing practices (companies would have to promote something besides convenience in foods and glamour in appliances, such as wholesomeness and durability), and in political control (community groups could most efficiently oversee recycling and composting activities). These sorts of changes just do not fit in the neoclassical economic framework.

The whole "environmental services" perspective is built on the assumption that any improvement in environmental quality entails a corresponding reduction in the benefits from material production. I brought up the possibility

that by eliminating some wasteful packaging, production costs could be reduced and the environment improved at the same time. It was argued by the economists that if people bought the highly packaged product, then the surplus packaging *must* be providing some service to them!

Whatever the economists may think, I feel that the possibility of the elimination of pointless packaging — as well as of eliminating planned obsolescence, manufactured demand, and institutionalised 'necessities' (offices which are used a fraction of the time, energy-expensive machines and buildings) — shows that the environment and the standard of living could be improved at the same time. For example, if appliances were designed to be easily repairable by the user, and designed in components so as to be useful for diverse purposes, then availability of goods could be increased with a decrease in production and in environmental impact.

A second basic difficulty with the resource economics group's approach to "the economics of environmental services" is the implicit assumption of equal distribution of incomes. Neoclassical economists typically utilise the compensation principle; in the case of this study the assumption is that the demand for environmental services will reflect a willingness to pay for them, or to be paid for accepting the disamenity. But what a person is willing to pay depends on that person's ability to pay. (The group's study mentions this limitation of their analysis in a single sentence; the analysis carries on with the assumption of equal per capita incomes.) Since if anything the environmental costs of growth fall on the poor in a community, the compensation principle introduces a hidden inegalitarian value judgement. Moreover, this approach does not encourage the systematic search via research and development for alternative technologies (such as recycling), but instead focuses attention on ameliorative tactics based within existing institutional structures.

In summary, the resource economics group's study of "the economics of environmental serv-

ices", by assuming that "the flow of material goods" and "environmental amenity" are inevitably opposed, and by implicitly assuming that people have equal amounts of money to "demand" their "environmental amenity", obscures rather than elucidates any solution to environmental problems other than cosmetic, incremental changes.

Another subject studied a bit during the year was beach sand mining. Suffice it to say that the economists automatically think in terms of taxes to be imposed on beach sand miners during certain phases of the mining cycle. The approach of the Fraser Island Environmental Inquiry, which recommended against mining on Fraser Island due to its unique ecological characteristics, is alien to economists: the only way such a stance can be integrated into their approach would be by setting certain prices to infinity. From the economist's point of view (using cost-benefit analysis) a more rational way to measure the value of beach sands would be to determine what amount companies would pay to mine them, and what the populace would pay to protect them. Such an approach is of course again flawed by the inadequacies of the compensation principle: it ignores the differences in wealth and political power between those who would exploit the beach sands and those who would protect the island's ecology.

A more fundamental analysis of the question of mining beach sands must look at what the minerals in the sands are used for, whether making extra bright paints or making cladding in nuclear reactors. Perhaps if as a community we promoted suitable changes in life-style (such as not painting the building in which CRES resides with bright white paint inside and out) then the difficult decisions about mining Fraser Island would not need to be made. But economists do not look at changes in life-style, since the economic system automatically takes into account the 'demand' for white paint and other products of beach sands.

Finally, let me make a few comments about econometrics, which is studied a bit in the resource economics group as well as in the applied systems analysis group. Econo-

metrics is a mathematical offshoot of economics: it takes equations generated by economists and determines existence and uniqueness of solutions, finds methods for solving the equations and for testing the solutions, etc. Econometrics can be fun (like all mathematics) and you don't even have to know much about economics. The basic problem is that econometricians do not (and perhaps cannot) question the assumptions underlying the economic equations which they analyse. Indeed, to question them would be to undermine the source of their livelihood. Aided by the apparent lack of values in econometrics, this unconscious incentive to justify one's occupation makes it easy for econometricians to carry on with their work without worrying about what purpose it ultimately serves.

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The applied systems analysis group

"The worst of him is that he is much more interested in getting on with the job than in deciding whether the job is worth getting on with." — John Maynard Keynes.

The applied systems analysis group consists of a professor, a research fellow, a couple of research assistants, a programmer and a secretary.

The basic orientation of the group is that of control engineering, set by the background of the head of the group. Control engineering can be considered to be the study of policies for managing systems (which often are uncertain and erratic) to obtain a desired output. In its actual practice, control engineering usually leaves unquestioned the purpose of the

system being studied, and concentrates on making that system work efficiently. For example, study of the simple control mechanism in a thermostat obviously does not lend itself to questioning the desirability of heating a room or a roast. Unlike neoclassical economics, whose concepts actually hinder a deep critical approach to environmental problems, the concepts of control engineering (like those of most of applied science) mainly serve to help one ignore the possibility of such an approach.

The most acclaimed tool in the applied systems analysis group's repertoire is an elegant and effective way for statistically analysing a series of data points. This and other related techniques have been used in the past to study water quality in rivers in England, and a similar project was sought in Australia for the group. The research project eventually undertaken was a study of water quality in the A.C.T. The project involves the use of existing river flow and other data, the gathering of data on nitrogen and phosphorus and the like in the rivers, and the modelling of the water quality mathematically. The project relates to the Lower Molonglo Water Quality Control Centre (LMWQCC), which will treat most of the sewage produced in the Canberra area. The LMWQCC is capable of removing virtually all the nitrate and phosphate from the input water, but this promises to be a very expensive operation. The aim of the study is to show whether it is acceptable to reduce treatment during periods of high river flow so as to cut costs, while still maintaining satisfactory water quality downstream from the treatment plant.

Thus the study is designed to show how to minimise the amount of sewage treated, and will provide technical justification for any policy that does this. But aside from this, the basic approach (modelling) does not get at the root of the environmental problem, namely at the source of the effluent itself. An alternative approach would be to look at changes in sewage disposal methods, principally involving recycling of human wastes at the household or community level (the technology has been around for

decades), along with stringent controls on industrial wastes. This alternative approach would have to look at community expectations, institutional pressures for centralised disposal, and changes in land use. Adopting such an alternative approach would mean that \$45 million treatment plants would not be required. It would also mean that fancy statistical techniques of control engineering would be unnecessary for modelling water quality. So it is not surprising that such alternatives are not studied, nor seriously mentioned nor perhaps even thought of, by control engineers. It is not only economists who have a vested interest in their ideas and their tools.

The human ecology group

"It is striking how rarely the scholars (devoted full-time to the pursuit of truth) lead the struggle for change" — George Lakey.

The approach of the human ecology group seems to lend itself much more readily to a study of fundamental environmental problems rather than environmental symptoms. Therefore it is significant that the group was not originally intended to be part of CRES; the association came about in late 1975 due to personal and political factors in the university.

The human ecology group consisted in 1976 of a professor, a research fellow, several research assistants, two Ph.D. students and a secretary. In its previous location the group had been involved in a major study of Hong Kong, involving and co-ordinating a number of outside researchers in this project. During 1976 this project was in its write-up stage, and plans for a new major project — similar studies of Adelaide and Lae — were under way.

The approach of the CRES human ecology group includes aims such as improving knowledge of the ecology of human settlements as a whole, especially in terms of flows and uses of energy and materials; understanding relationships between properties of the environment and energy and resource flows, and the health and well-being of the people; and understanding adaptation to detrimental environmental influences. A fundamental belief underlying the human ecology approach is that a comp-

rehensive description in an ecological way is essential to understanding the interaction between the total environment and human experience; and that the primary object in such a description is the improvement of human well-being within this total system.

The concepts used by the human ecologists clash strongly with those used by the resource economists. For example, the resource economists tend to assume (with qualifications) that human well-being increases with GNP, whereas the human ecologists question the wisdom of increasing use of energy and materials and technological construction of the human environment as a strategy for the long-term promotion of human welfare.

The human ecology approach encourages looking at alternatives.

Unlike neoclassical economics, whose concepts actually hinder a deep critical approach to environmental problems, the concepts of control engineering . . . mainly serve to help one ignore the possibilities of such an approach.

For example, in the agricultural sector of Hong Kong, there is an increasing switch to the use of artificial fertiliser, which uses more energy and resources (oil) and causes a major water pollution problem (due to human excrement entering potable catchment areas). The resource economists probably wouldn't concede there is any problem as long as GNP is increasing; they might be concerned with the effect of oil prices on productivity and the balance of payments. The applied systems analysts might be interested in the water pollution, mainly as a modelling exercise (where should the sewage be dumped to cause the least problem?). The human ecologists, on the other hand, would focus attention on the insignificant increases in yield due to switching to artificial fertilisers, on the marginal

increase in economic return to the individual farmers and therefore on the questionable return to society from this development. They would seriously investigate the alternative of recycling human and animal wastes back to the land as a source of fertiliser, which also reduces energy and resource use and pollution, and as well promotes a more equitable and satisfying life-style.

The actual work of the human ecology group is far from perfect, which is I suppose inevitable since it is to a large extent breaking virgin ground. Some of the studies might be called prophetic statements: they contain little detailed analysis. When the latter is made, it tends to be over-whelmed by data (on energy flows or health statistics), which often obscures important social and cultural factors. The excessive concern for collecting and analysing data in situations where its meaning is not clear or is misleading (and where fewer numbers and more insight might be better) may stem from the researchers' background in the biological sciences, or worries about attacks from the other more mathematically-based groups in the academic community.

Though the approach of the CRES human ecology group provides some very useful concepts, it suffers (as I see it) from a strong downgrading of institutional and political forces in society. In the human ecology group's conceptual framework covering population ecology, there are for example links between the total environment (which includes biotic components, culture, etc.) and life conditions (which includes personal environment, personal behaviour, etc.). There is no explicit mention of institutional factors linked with political and economic vested interests in society: such things as production processes, design of an urban area, and community services, all influenced strongly by government and industry. These factors, admittedly, are contained in the human ecology conceptual framework as aspects of the total environment and aspects of life conditions. But roads, telephones, buildings and working conditions do not spring up on their own, but reflect the interests of powerful groups in society.

It seems to me that in terms of

trying to get to the root of environmental problems, it would be better to include institutionalised political and economic forces as entities in themselves. Air pollution from automobiles may be affected a tiny bit by changed personal behaviour on the part of a few individuals, or by changes in cultural values; but much more influential would be changing to other areas the investment by industry in automobile and petrol production, or altering the promotion of automobile transport by government departments through road construction and town planning.

Another example of the lack of a critical political dimension in the human ecology group's conceptual framework is their categorisation of groups in society which affect energy use and the technological environment in general as (1) promoters (for example, oil and lumber companies and associated government departments), (2) government, (3) community, and (4) environmental reformers (such as Friends of the Earth). As an explanation of how energy and resource use gets out of hand, this categorisation seems plausible (promoters are influential and numerous, reformers can at best block changes), but it is superficial because it does not get at *why* so many people are paid to promote energy and resource use and so few are supported to promote alternative strategies.

Some members of CRES feel that the approach of the human ecology group is insufficiently rigorous — certainly less rigorous than the approach of the other two groups. This is quite true if one is talking about deriving conclusions from statistical tests on data. This sort of rigour is not what the human ecologists are trying to achieve (or not, in my opinion, what they should be trying to achieve). Much of the criticism seems to be based on a lack of understanding or communication about the aims of the human ecologists. A more valid criticism could concern the consistency, coherence, and robustness of the human ecology conceptual framework. Here I only note that the human ecologists give much more critical attention to their framework than the other groups give to theirs, and if it is more amorphous it is also probably more sound. Many are prepared to

admit that the assumptions of neo-classical economics are riddled with holes, and that control engineering consists of a set of techniques posing as a philosophical approach. Rigorous results obtained using erroneous or narrow assumptions are hardly worth having.

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It is worth noting here that in the work of the research groups, the absence of features challenging the status quo of environmental policy-making in an open or extensive way may be considered to be a tactic for achieving change. Resource economists may feel that they can only affect policy (of the government) by using conventional economic ideas; applied systems analysts may feel that they must work within the current model for sewage treatment; and human ecologists may feel that the explicit presence of political factors in their conceptual framework would alienate potential patrons. These are the terms in which researchers justify their current activities.

However, if significant change in the forces now determining social change is desirable, then someone must lead the way. Piecemeal efforts will only reinforce or streamline present patterns. As in the case of the tools of neoclassical economics, working on the basis of current values tends to reinforce those values, whatever the intention of the user.

Furthermore, seldom is there any attempt to *try* a more dramatic and forceful approach towards change. Unless this is done (and it *is* done by some), then any claim that one must work within the system is merely rationalising a support *for* the system.

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In summary, resource economics concentrates on antidotal measures and uses methods of analysis which hide the possibility of alternatives, and which promote business-as-usual (a continued assault on the environment): traditional economic concepts are ideally suited to downgrade environmental problems. Applied systems analysis concentrates on technical solutions to technical problems, and so ends up treating symptoms rather than get-

ting at causes: control systems concepts encourage an ignoring of the causes and solutions of environmental problems. Human ecology concentrates on environmental and human well-being factors with some insight, but fails to offer the conceptual tools needed to promote change in social policies affecting the environment: even the understanding of the problems is hindered by lack of consideration of political and institutional factors.

(There is also another minor aspect of CRES's activities, a small master's course starting in 1977. The content of the course is likely to reflect the orientation of the research groups, and its structure is likely to reflect CRES's organisational structure. Fortunately one can be more optimistic about the students.)

CRES's organisational structure

The relationships between people in an organisation strongly influence its ability to treat different types of problems. The organisational structure of CRES is such as to make it very difficult to treat environmental and resource problems in a way that involves the values, skills, and interests of the community as a whole, or even of all CRES members.

CRES is extremely hierarchical. The following major classifications can be discerned: head of CRES ("the director"), professors, research fellows, Ph.D. students, research assistants, secretaries, and maintenance workers.

CRES is also highly compartmentalised. Each research group is concerned almost exclusively with its own research project or projects. Attempts often are made to expand the domain of these group projects, but attempts to develop common projects meet a monotonous apathy. Not only is co-operation lacking, but there is little systematic effort by CRES members to understand the perspective of groups other than their own.

It is well known that the environmental movement has had its basic impetus from the community at large; it has not been spearheaded by government officials, industrialists, or academics (although some of the latter have been instrumental in providing information and stimulating awareness). This is only to be expected, since it is workers and con-

sumers who suffer most from environmental degradation and resource depletion, and whose lifestyles are affected by technological innovation. Any serious attempt to provide fundamental solutions to environmental and resource problems (at the level of control over production processes, design of human settlements, forms of human interaction, and equity) must involve people at a grass-roots level. The values of people can only be expressed if they are given access to information, given a real say in community planning, and given the opportunity to organise and sort out their ideas and wishes.

CRES is the antithesis of a democratic organisation designed to serve the community. To begin with, its hierarchical structure makes it very difficult for any real communication to occur within the organisation. Messages can go up the hierarchy, and requests can go down, but there is very little give and take. The basic patterns of research and organisational action are dictated by the few people at the top.

A few examples may indicate the effects of the operation of the CRES hierarchy. Firstly, a proposed course on "mathematical modelling of the upper atmosphere" was not approved because it was "too controversial" to discuss in it the effects of Concorde exhausts on stratospheric ozone. The person who vetoed the course never even condescended to speak to the proposer about the issues concerned: the decision was passed down via an intermediary.

Secondly, in one of the research groups it is official policy that any work done in CRES or published with a CRES affiliation must first be vetted by the head of the group, or someone he may specify. Of course others in the group have no right to censor the leader's work in this way.

Finally, secretaries are often discouraged from attending seminars of general interest, by explicit statement or feeble excuse (the need to tend the phones). Some of the leaders of CRES quite clearly want to keep secretaries in their subordinate place.

In CRES the exercise of power does not arise from people being forced to do certain things, but through selective encouragement

and discouragement of specific actions and attitudes. The lack of overt incidents does not mean that the effects of organisational hierarchy are any less important.

CRES's organisational structure has ill effects from the view of achieving full and free discussion of environmental problems. Because environmental studies are relatively new, those high up in CRES have no more expertise or experience in environmental matters than those at the lower echelons. In other organisations, such expertise and experience can serve as a justification for an imbalance of decision-making power. In CRES even the appearance is illusory.

It is perhaps no coincidence that attitudes to the environment and to organisational responsibility get almost uniformly more conservative the higher up one looks in the CRES hierarchy. This may partly be due to an age differential; more likely it is due to the greater professional vested interest associated with a safe academic career involved in the higher positions. Whatever the situation, the rigid structure provides a barrier against 'radical' ideas getting seriously considered or acted upon by CRES personnel.

CRES as an organisation makes few if any attempts to promote community involvement in and consciousness about environmental problems, and about the fundamental social and political choices involved in their solution. And needless to say, there has been no attempt to get input from community groups concerning what research CRES should be doing.

The leaders of CRES look mainly towards government and industry as sources of problems and as users of CRES expertise. Publications by CRES personnel mainly consist of internal reports (for selected distribution, as to government departments or academics who judge CRES) and papers for technical journals.

This orientation of CRES towards government and industry is strongly linked with the promotion by the leaders of CRES of studies which do not challenge existing approaches to environmental problems. For example, the head of one of the research groups in looking for a problem to apply the group's tech-

niques, struggled mightily to get strong involvement with government departments. At one discussion meeting, a government official involved noted that academics were in a good position to question fundamental features of the problem as defined, since they were tied to no special contract or guidelines. This brought no response from the head of the CRES group, who had made every attempt to involve the group in a programme tied down to particular aims.

If I have talked here more about the leaders of CRES than about the secretaries and others in the lower ranks, it is not because the contributions of the former group are greater or their opinions more valuable, but because they have more power over resources and people. It is my experience that those in the lower echelons as a rule have a more personal and practical concern about the environment, and as well relate more easily to the community. For these reasons, the CRES secretaries (for example) could greatly improve on the present direction of CRES in terms of considering the environment and the people rather than cultivating academic aloofness and currying favour with business and government.

Actions by CRES

More revealing than stated or inferred aims of an organisation are its actions; therefore I'll comment on actions (or lack of action) by CRES members and by CRES as an organisation.

It may be argued that the habits of individuals are not relevant to their work as professionals. But most people expect that the difference between stated precepts and actions should not be too blatant: for example, this expectation may be one reason why so many doctors have stopped smoking. On the level of minor individual actions, quite a number of CRES members have tried to be environmentally conscious of their lives: riding bicycles to work or around campus, turning off lights, saving on paper. Another group seems to have different preferences: for example they use a car even for the shortest trip, and invariably use the lift instead of the stairs. It is notable that the former

group is primarily composed of lower ranking members of CRES, while higher ranking members are almost entirely in the latter group.

As an organisation CRES has done almost nothing about the local or general environment by word or deed. The only attempt was a proposal, initiated within CRES, to institute about ten new parking spaces near the building in which CRES resides. The rationale for paving over more of the campus is based on a simple value judgement: it is more important for certain (important) members of CRES and visitors to CRES to save 5 or 10 minutes (otherwise spent walking to a parking area further away) than it is to maintain or improve the environment near CRES. And completely left out of the picture is the possibility that instead of agitating for more parking lots, such effort could have been spent encouraging use of the free university bus service, or pressing for better cycling facilities.

A significant contingent of CRES members supported this move (a few opposed it). Many of the CRES staff were prepared to say that their research was so vitally important that the 5 or 10 minutes saved by a parking lot was well worth any cost involved to the environment or in the promotion of a more automobilised society. However, the proposal was blocked by the university administration. The Assistant Vice Chancellor as well as planners in the university bureaucracy strongly opposed the proposal; they thought that in this case the environment was more important than the convenience that might be created.

It is clear that alternatives such as bike paths can never get off the ground as long as personal interest is pursued through institutional actions which do not challenge the existing contexts in which personal decisions are made. But it is encouraging that there are members of the university bureaucracy who are environmentally conscious and progressive, at least more so than a strong faction at CRES has shown itself to be.

Besides this parking lot example, there is little CRES has done in terms of action. What is noteworthy is the lack of interest or encourage-

ment from the top of the hierarchy for any discussion or even mention of possible statements, initiatives, or actions on environmental matters. Of course, agreement on such actions would be difficult, and almost certainly a drawn-out process of evaluation and argumentation would be required — which itself would be quite valuable. It would not be so upsetting that no actions had been made if it were not also true that either lack of interest or active discouragement greeted any proposal for study of such actions.

At one stage I advocated (at the only general staff meeting during the year) that CRES (or members of CRES) could: (a) put out a statement deploring the lack of thought about the environment in the planning and construction of the building in which CRES resides, calling for close attention to resource and environmental considerations in planning and construction of further university (or other) buildings; (b) put out a statement encouraging bicycling and walking on campus, and opposing further accommodation to the car; and (c) in general reflect on the relation between the things CRES studies and its organisational actions. This emotive proposal got a polite reception; the essence of the response was that no such initiatives would come from or be encouraged by the top. I had not expected agreement with my suggestions for CRES action; but it might at least have been hoped that discussion would have been encouraged.

Why is CRES the way it is?

Most of the leaders of CRES tend to look down upon arguments by environmentalists, and ignore them. As one CRES member astutely pointed out to me, what they could do is say, "Admittedly some of the arguments of the environmentalists are weak. But because the environmentalists have so little power and so few resources to promote their case, and because the companies have so much power and resources, let's direct some of our research effort towards making the environmentalists' arguments *better*." The leaders of CRES are in a position to do this; the tragedy of the organisation is that they don't.

It is always easy to blame particular people for the inadequacies of

an organisation. But it is probably more useful, if also more difficult, to trace the inadequacies of the organisation to structures in society. It is likely that the few people who were influential in setting up CRES conceived of environmental research as an academic pursuit oriented towards the needs of government and industry. Similar attitudes probably were held by those who were influential in choosing individuals, with particular personalities and particular disciplinary backgrounds, to direct research in CRES. And once the professors were appointed, their attitudes and orientation to the environment were vital in selecting further staff.

Resource economics concentrates on antidotal measures and uses methods of analysis which hide the possibility of alternatives and which promote a continued assault on the environment.

So it is not surprising that most of the staff have had no long or pressing concern about the environment, and may have been more interested in other problems (such as international trade or time series analysis). Nor is it surprising that individuals were chosen who preferred a strong hierarchy.

CRES probably closely approximates what its sponsors and leaders, unconsciously and underneath all the rhetoric, expected it to become. If this is disappointing, one should not blame the members of CRES, but the structures in society that helped generate an organisation which now serves the interests of those structures. Perhaps the lesson for activists is not to expect any more than this from academia.

My view of the environment

It is only fair that I spell out the perspective from which I have analysed CRES. There is a wide

range of orientations within the environmental movement, and my own view (presented in simplified form here) will necessarily be a minority one. But of course the critique here can still be revealing to those who look at things differently from me.

While the actual degradation of the environment and depletion of resources are very important in themselves, I believe these issues can form a more significant function as catalysts for social and political change (which simultaneously accomplishes change in attitudes toward the environment). There are many things wrong with current social, economic, and political structures; foremost among the consequences of these structures are war, poverty, alienation, decision-making by elites (lack of participatory democracy), and racism. Environmental and resource problems easily can be seen as another of the major consequences of these structures.

There are two basic approaches to the solution of these problems. One is to continue with the same basic social, economic, and political structures and try to solve the problems within the structures. War is to be prevented by more defence spending, poverty is to be alleviated by economic growth, alienation is unmentioned (it's the price of pro-

gress), decision-making by elites is to be made better by getting better elites, etc. The basic approach to the environment through these structures is the technological fix: pollution is alleviated by spending on anti-pollution devices.

The second approach is to promote drastic changes in the present social, economic, and political structures, to develop new structures which do not have the same disastrous consequences for humanity. War would be prevented by dissolving the nation-state and discouraging militaristic thinking; aggression would be met by non-violent resistance. Poverty would be attacked by designing an economic system that served the needs of the people, rather than the needs of profit and power (less production of luxuries, less planned obsolescence, etc.). Alienation would be alleviated by putting people in control of their own lives to a much greater extent: workers' control in production, community control over urban planning, student control over education, etc.

The approach to environment and resources based on structural change involves changed life-styles (less private ownership and more communal goods, such as a switch from cars to public transport and bicycles), a changed economic system (recycling, goods provided according

to need, emphasis on tools that can be made and controlled by individuals or small groups), and a changed political system (so that environmental assessments can be made by the affected community).

Cleaning up the environment alone is not necessarily going to alter the present social, economic, and political systems (if it is conceded that cleaning up the environment in more than a superficial way is possible within those systems at all). The value of environmental consciousness is that it can lead in a direct manner to awareness of the structures which cause many of the basic problems in society. Furthermore, environmental problems provide a useful lever to promote radical change in the system which causes these as well as the other major problems in our society.

The basic difference between the two approaches then is concerned with *which* solutions to environmental problems are promoted. The technological fix, the cosmetic alteration of the current system, can serve to reduce the visibility of the problems. A change in societal structures, on the other hand, can get to the root of the problems, and at the same time begin to challenge the institutional bases of other major problems in society.

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