

How Should We Treat Environment?

University organization presently permits only piecemeal consideration of environmental problems.

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I was asked this question recently by a group at a major American university, and I have spent a long time pondering it. What should be the scope of environmental studies? How should they be organized? What is the relation between the political interest in environment and the things that make sense on the campus? I believe that we can answer these questions only if we are willing to poke hard at the university's cherished myths, and that we shall not make any sense politically until we have sorted ourselves out. The climate of the times demands that we do make political sense.

I had read an illuminating study of the political implications of concern for the environment (1), and in August I had the chance of listening to a discourse Caldwell gave privately (2). Although silent during the discussion that followed, I responded next day with an open letter to Caldwell's host, C. P. Runge, who has allowed me to amplify this letter into an article for wider circulation. I am not the first person to be set in motion by Caldwell's clarity and realism. In spite of his involvement in congressional affairs he looks at the question as I think all academics must—as one that we cannot ignore.

I will look mainly at the question of environmental studies in large, structurally complex universities like those spread widely over the Middle West. We all know the conservative quality of such places, where nothing can easily be done for either the first or the last time. The status quo is defended in depth by the vested interests of a large number of able people. Among these interests are those of the traditional departments and the largely analytical

disciplines they profess. Also strong are the numerous special institutes and centers that have gotten started in spite of the resistance of the departments. When we propose to start up a broad-spectrum, synthesizing effort like environmental studies we run full tilt into all these vested interests.

We also bang ourselves against the clan spirit of the traditional faculty groupings. Humanists, social scientists, natural scientists, and professionals like lawyers and engineers may fight like cats within the clan, but they close ranks and hitch up their kilts when someone questions their loyalties. Environmental studies have to involve many of these clans, which are not used to combining in the way required. If we suggest, as I do, that some of them—notably the humanists—may be utterly transformed by such combinations, we alarm the timid and anger the Tories among them.

But the greatest hazard in our path is inherent in Lyndon Johnson's acid query "Therefore, what?," which he is said to have thrown at a group of professors who had just briefed him on the Middle Eastern situation. The political interest in the environment demands proposals for *action*—on all time scales, from the immediate assault on pollution problems and other festering sores of today, to the long-term reconstruction of society in a better relation with environment. At present we are not equipped to make such proposals. We are not action-oriented, and on every campus there is a deadweight of opinion that regards action-oriented programs as hostile to the academic life.

In many ways this fear is justified. Being action-oriented, getting ourselves involved in planning society's future, and mending its present broken bones, does indeed threaten the selfish individualism and pursuit of our own

private thing that we call academic freedom. If we take on the job outlined by Caldwell, we must have a lot more institutional discipline. If the university as a whole adopts social goals of this kind, we must accept a greater degree of common directed action—of teamwork—than we are used to in most faculties. Doctors and engineers do this all the time. It will be in the humanities and social science areas where the shock will be most felt, because these are the chief homes of the lone wolf (3).

I must also stress the incompetence of the established disciplines to tackle many of society's real problems. What we mean by a discipline is an agreed, tested body of method—usually analytical—that we bring to bear on problems of our own choosing. The essence of our thinking is that we cannot tackle problems that do not fit the competence of our own discipline. It is true that we constantly try to enlarge that competence. Confronted with a new problem, we spare no effort to improve our methods. But if we do not succeed, we do not tackle the problem, and we tend to condemn colleagues who try.

Public policy—such as environmental control and design policies—can never insulate itself in this way. It has to face the real problems as they present themselves in all their complexity, and policy makers have to act on highly inadequate preparation and incomplete evidence. Policy-making is a crude process in which synthesis or just guesswork precedes accurate analysis. Moreover, it is nearly always broad spectrum in character, because no important social problem is ever simple and none ever lies fully within the competence of a single academic discipline. Even such questions as monetary and fiscal policy contain large components outside economics. We therefore arrive at the pessimistic conclusions that (i) the existing departmental and disciplinary structure of the university is out of kilter with the needs of action-oriented, policy-directed programs, and that (ii) we do not yet know how to adapt ourselves to this sort of challenge. We shall have to change, in fact, without knowing how to start.

What change, and how do we bring it off?

Our usual response is to say, "We are dealing with an interdisciplinary problem"; or, like the American Water Resources Association, "a multidisciplinary problem." In the past 20 years North American universities have said this many thousands of times. The result

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has been the proliferation of institutes, centers, programs, and so forth, dedicated to some problem, usually dominated by an individual with an idea, and legitimized by a committee. Most of these ventures have a short life, and most fail to survive the departure of the dominant individual. We can easily see that the step toward environmental studies is another and very ambitious move of this kind, and we must stop to ask ourselves the larger question—how do we create a more stable kind of interdisciplinary organization? (4).

The answer, I suggest, is that the study of problems such as we have been discussing is not simply interdisciplinary in the sense that it involves several of the old disciplines. Instead it demands a new kind of discipline, basically synthesizing in method. I am sure that the university will have to answer more and more calls to solve social problems, and that, if we do not answer these calls, we shall be bypassed by the creation of new kinds of institutions more flexible and realistic in outlook. I conclude that we must learn to develop these new disciplines of synthesis, and make them as rigorous as the older analytical disciplines. I can hear the scoffers scoffing—but, if we do not tackle this, we shall deserve to be counted out. By all means let us encourage interdisciplinary ventures—but in the hope that they will indeed become disciplines of the new kind.

I am aware that this is a gross oversimplification. No discipline is ever wholly analytic or wholly synthetic. None is completely logical and consistent in its methods. It is clear nonetheless that chemistry and physics are quite different from geography and history. The first two characteristically isolate phenomena and study them as exactly as they can under close experimental control; the second two take the world as it comes—or as it came—and necessarily deal with a complex of things and events. As a geographer I have recently been feeling, ironically, that the tide of events is turning my way. My colleagues and I have been trying for a century to deal with a problem that is now announced as new—the study of man in his environmental setting.

There are, that is to say, a few of the broad disciplines already, and there are moves toward more. Systems thinking is popular, and the jargon of systems analysis even more so. Among many of the new social quantifiers the word

“synthesis” is regarded with contempt: “multivariate analysis” sounds better. I suggest that the past century was the era in which we achieved great things by dissecting reality so that we could look at its fine texture; and that is how most of our existing disciplines got going. The next century will be that in which we learn to cope intellectually with complexes of things, and especially with those that make up the environment of man.

Organization

Turning now to organization, I agree with Caldwell and others who say that success in environmental studies depends on the will to do it rather than on specific structural changes. What such ventures need are dedicated charismatic leaders, well known and respected on the campus, who will set out to create this will. I do not think that a massive before-the-fact recasting of the academic façade will achieve anything, and, unless you are in a very untypical university, it will engender factional opposition. So why not proceed informally?

If you decide to take the plunge, I suggest you gather round you all the like-minded members of the university you can find. Do not call yourselves a committee—be like the most successful scientific society I know, the Friends of the Pleistocene, which I believe has no officers, no journal, no headquarters, no subscription—but lots of members and solid achievement. The group or cabal (a term I favor) ought to point to its own most galvanic member and say, “You are it!” And he in turn ought to be trusted to go to Washington to fight for funds, having first got the pledges he needs from those willing to help. If you succeed and in 2 or 3 years have begun to get solid results, it ought to be easier to persuade other groups on the campus to join in.

Scope

And finally, the question of scope. This is difficult, because without even trying you can relate nearly everything to the theme “man and environment.” The scope of an academic program in environmental studies has to be broad enough to catch the imagination of faculty and students, but narrow enough to avoid differences. It also has to be

clearly related to social goals, for reasons of conscience as well as fund-raising.

At the outset I make the distinction between (i) short-term correction of technological errors, broadly “pollution control,” and (ii) long-term design and control of the environment. The first is often summarized as “environmental quality,” though this is a misnomer. I object also to the notion of “restoring the quality,” because we should have to go too far back in time to do it—at least to the Neolithic.

The short-term problem of pollution control is as far as present-day public concern goes, except for certain far-sighted men in and out—mostly out—of the universities. The Tukey Report of 1965 (5) defines this problem concisely; the report admits that Western industrial societies have made a mess of their own home, partly because human beings are just messy, but also because of the overconfident use of technological aids such as pesticides, the profligate overuse of resources like water, and the burning of fossil fuels. This has messed up America, and threatens to mess up the world. The report makes 104 sweeping recommendations for action, adding that this is an incomplete list, and publishes valuable appendices that offer the most authoritative review of the pollution problem. Hardly any of the recommendations have been acted upon, though they have had some effect on government practices.

It is quite clear that many of the problems defined by the authors of the Tukey report can be tackled by the universities. They stress the need for graduates trained in the necessary skills and fired with a concern for environmental restoration. Many of the specific recommendations touch on the need for the universities to undertake research and research-training in the field. It is also clear that the large modern university can be and already is involved in tackling the ad hoc problems enumerated in the report.

I do not, however, believe that a major university can sweepingly alter its work and outlook by adopting such a negative theme as the correction of past error. Something altogether more exciting and far reaching is needed. I look for this in the idea that in future we shall increasingly control and design our environment. We live in an era when we can extend our horizons for such control from the walls of our house to the ends of the earth. It will

take time, but I have no doubt that we can and must convert this planet, not into a spaceship, which it already is, but into a safer and more comfortable home for our whole species and for the other living things with whom we coexist—and without whom, of course, we could neither eat nor breathe.

Boulding has argued that economics and ecology must come together; otherwise ecology is only bird-watching and egg-snatching, and economics continues to be dismal (6). We have to earn our living by seeing to it that the rest of the living world can survive, too.

If we take this long-term, exalted view, how do we define environment? From a man's-eye view we can perceive these possibilities: (i) The natural environment, which means the physical-biotic world outside society, and our interactions with it. This view supposes that it is feasible to separate our handiwork from that of nature. It is the view that President Johnson took when he established the Environmental Science Services Administration. In his message he spoke of a unified treatment of the natural environment (7). It is also the logic behind the creation in 1965 of Britain's Natural Environment Research Council, though I can testify as a founding member of that body that it took my colleagues a good while before they would have admitted, by majority vote, that a unified treatment of the environment was a useful exercise (8). (ii) The social environment, which arises from the obvious fact that each of us has to survive in a matrix of our fellow men, and that each society must coexist with surrounding societies. In practice for most of us this means the problems of the Western city, with its nightmare inadequacies. On a world scale it must also mean the tensions of rural India and Pakistan, the Red Guards of Maoist China, and the tribal strife of some African countries. Nearly all the deep-seated political problems of the world reside here. It is often argued that a major function of environmental design must be to reduce these tensions—as, for example, in the rebuilding of city centers. (iii) The built environment, which recognizes that man-made structures provide the actual home of both working and sleeping mankind, and in the richer societies that it also accommodates his play, his higher culture (whatever that may mean), and his vulgarities. Geographers have long talked about the cultural landscape, meaning that the built element in en-

vironment extends to the countryside. Landscape architects have a similar concern. (iv) Finally, there is the total environment, which pops up in the more exalted literature, and which seems to mean (i) + (ii) + (iii). The trouble with such concepts is that the thing environed gets so mixed up with the environment that they become rather fuzzy.

I am not sure that we ought not to add to this list the spatial or geographic environment, in which (i), (ii), and (iii) occur intermixed, but are sufficiently spread out to be manageable. Certainly the environment of the ecologically minded geographer is a rather different thing from the sum of the components of the natural environment.

In many universities that have launched environmental studies, there is only provision to look after the natural environment, and the grouping consists of various interested parties in the physical and biological sciences, sometimes with the geographers thrown in. In others, the entire enterprise is given a strongly ecological twist. In still others the emphasis is upon planning, and the prime movers are architects. The number of open options is large, but one rarely finds a case where a university has committed itself deeply to a broadly based curriculum. In all cases known to me these are new universities—Wisconsin at Green Bay, East Anglia (U.K.), and Waterloo (Ontario), for example. In these places, environmental studies have been elevated to a par with arts, science, and the other traditional faculties. This is easy when the world seems young.

I assume that in major, highly evolved centers, where the great strength lies in the diversity of research skills and in the numbers of first-rate thinkers in the relevant disciplines, the starting point should be in research and graduate training. The enterprise's sponsors ought to start out by saying something like the following:

1) The university considers that the study of man's environment, natural, social, built, and complex, presents a splendid focus for future academic development. It not only touches on a life-and-death problem for the supporting society, but opens up new lines of intellectual experiment that ought to keep us busy for a generation or more.

2) The framework of a unified program of environmental studies is ecological in the largest sense. It is made up of the links that in the real world connect a man's work and play

with the people that surround him, his society with neighboring societies, and human society at large with the rest of the natural world. These links allow flows of energy and mass between domains, the kind of thing that some ecologists deal with in the ecology of biota. They also represent, for those connecting man with man directly, links in some kind of intellectual domain; if I were as obscure as Teilhard, I would call these the strands of the noosphere. And finally, and in concrete terms, the links represent, for civilized as well as barbarous societies, lines along which some of man's most important institutions must operate. We have achieved the proper outlook for environmental studies when and if we can see, or to want to see, these links in a unified ecological framework.

3) We have to admit that our viewpoint is that of Western industrialized society, and that we shall be working out our program in the light of that society's past mistakes and assumptions for its own future. This implies (i) that the Western value system is of direct concern to us, and that humanists ought to be deeply involved in environmental studies; and (ii) that we must not make the mistake of assuming that other societies have similar relations with environment, nor should they be expected to have Westernized ambitions for the future. Rather, in fact, the reverse. It should be a major objective of those involved in environmental studies to alter the Western outlook on such questions. We shall solve our environmental problems only by deep-seated changes in society itself.

4) Given that we achieve this altered outlook, it still seems likely that Western society will become even more completely urbanized in the future. It is hence necessary that the social sciences and psychology play a major role in environmental studies. The field of urban and regional planning is equally central, though I share Boulding's feeling that much of what we have done in these areas is well-meant error (9). I think it is clear, nevertheless, that we shall increasingly try to deliberately design and build our future environment; and the core of our program should be a painstaking attempt to create a better atmosphere for such conscious creation.

5) Putting environmental theory into practice means political action, and the evolution of institutions to cope with the new ideas and requirements. Hence we can not hope to succeed without political scientists like Cald-

well, institutions like Resources for the Future and the Conservation Foundation, and concerned public figures.

All this adds up to the fact that a really positive and successful program of environmental studies ought to involve a large part of the university, and it ought to spread downward until it contributes heavily to the undergraduate curriculum and influences what is done in the schools.

References and Notes

1. L. K. Caldwell, in *Future Environments of North America*, F. F. Darling and J. P. Milton, Eds. (Natural History Press, New York, 1969), pp. 648-671.
2. I owe a debt to C. P. Runge, and to C. A. Engman, R. Bryson, and V. R. Potter (Univ. of Wisconsin) for many discussions of this subject, and for permission to publish this article.
3. At least one graduate dean, on hearing me express this view, says that engineers are as troublesome as the rest of us!
4. I realized this point only after discussion with Bryson and Potter. See also V. R. Potter, *Land Econ.* 38(1), 1 (1962).
5. J. W. Tukey, chairman, and Environmental

- Panel, President's Science Advisory Committee, report, *Restoring the Quality of Our Environment* (White House, Washington, D.C., 1965).
6. K. E. Boulding, in *Future Environments of North America*, F. F. Darling and J. P. Milton, Eds. (Natural History Press, New York, 1966), pp. 225-234.
7. L. B. Johnson, letter of transmittal to the Congress, on Reorganization Plan No. 2, 1965, the United States Weather Bureau. See *Bull. Amer. Meteorol. Soc.* 46, 457 (1965).
8. I compared the two bodies in F. K. Hare, *Geography* 51(2), 99 (1966).
9. K. E. Boulding, in *Future Environments of North America*, F. F. Darling and J. P. Milton, Eds. (Natural History Press, New York, 1966), pp. 291-292.

NEWS AND COMMENT

Education and Health Funds: A Billion Dollar Difference

President Nixon has chosen to use his first veto in a situation supercharged with intraparty politics and questions about national priorities. At issue is a \$19.7 billion appropriations bill for the departments of Health, Education and Welfare (HEW) and Labor which includes \$1.26 billion added by Congress above what the President requested. The Senate gave final passage to the bill on Tuesday; the President earlier declared he would veto the measure.

The White House argues that the extra funds would seriously breach its strategy to fight inflation by controlling federal spending. The opposition in Congress urges that cuts be made in other sectors of the budget, notably military expenditures, rather than in important domestic programs which have borne the brunt of Vietnam austerity measures.

Because of the glacial pace of congressional action last year, the show-down on the bill providing money for fiscal 1970 comes after 7 months of the fiscal year have elapsed and release of the President's budget for fiscal 1971 is imminent. Since the new budget is expected to maintain a tight rein on spending for education and health programs the debate is likely to continue nonstop in the new session.

Even before Congress reconvened, Counsellor to the President Bryce N. Harlow, the White House's plenipotentiary to Congress, estimated that the odds were about even in the anticipated

fight by his congressional opponents to muster the necessary two-thirds majority to override a veto. Harlow pledged an all-out fight by the Administration to have the veto sustained.

This is an election year, of course, and both parties are searching for campaign issues. But the collision is attributable in larger measure to a potentially significant shift of power in the House of Representatives and an impressive performance by an education lobby which has been more cohesive and effective than ever before.

Perhaps the primary political lesson of the recent events is that a broad base of local support for federal-aid-to-education programs has developed nationally and the emergence of this new constituency has drawn a response in Congress, particularly in the House of Representatives.

Discontent in the House over education and health funds boiled over in July when the powerful Appropriations Committee found itself in the unaccustomed position of having more than \$1 billion added to one of its money bills by amendment. Most observers say the uprising would not have succeeded without a lobbying effort representing most subdivisions of American education, organized labor and allies, such as the manufacturers of instructional equipment.

The education lobby can count victories as far back as the National Defense Education Act of 1958, but it was a volatile alliance in the early

years and it exploded in 1962 over the religious issue and over differences between the public-school and higher-education elements of the lobby.

The Commissioner of Education at the time, Francis Keppel, had a lot to do with the process of reconciliation and revitalization of the lobby, and the period of prosperity for the education forces began in 1963 with the passage of the first higher education act. The era was marked by the enactment of landmark legislation in almost every major sector of education. In this period the lobby aimed at the authorization process by which new programs are created. As the costs of the Vietnam war and new social and welfare programs exerted pressure on the budget, the funding of many new education programs was arrested at a modest level; some programs received little more than planning money.

This year, the education forces changed targets and tactics. The key decision was to concentrate on appropriations rather than authorizations. This meant that the size of the pie, not the way the pie was to be cut up, became the question, and the problems of maintaining unity were much reduced.

For the first time a central office with a small staff was set up to coordinate efforts. There have been national committees formed to seek national objectives for education before, but they tended to be ephemeral, letterhead organizations. The new Emergency Committee on Full Funding is headquartered on Capitol Hill and serves as a coordination point for action. The committee's principal staff man is Charles Lee, who was Oregon Senator Wayne Morse's chief assistant on education matters until Morse's election defeat in 1968. Lee not only has an insider's knowledge of Congress and wide contacts in the education community, but also has the advantage of not being