

ENVIRONMENTAL COMPETENCE: THE NEW EDUCATIONAL CHALLENGE

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The western philosophical tradition

Ever since the days of the pre-Socratic philosophers, thinkers have enjoyed the intellectual challenge of questions about reality and our knowledge of it. Notoriously, Plato himself held the view that the world revealed to us by the senses is of less reality than the world which the intellect can comprehend—the world of forms, or ideas.

After the Renaissance, questions about the reality of the natural world still continued to fascinate philosophers. Rationalists, like Descartes and Leibniz, held like Plato—the view that we have greater certainty concerning the objects of intellectual knowledge than about the things revealed through our bodily senses. Empiricists, by contrast, held that we had real knowledge of a world revealed through the senses, but that very world was itself dependent on us: in Berkeley, the essence of being was being perceived (*esse est percipi*), and in modern empiricism, the world is regarded as a logical construction by, for example, Russell and Carnap.

Post-Kantian idealism likewise maintained that the human thinker has a privileged position in the universe. For it is the thinker who is the source of the concepts and categories that structure the world of experience. Such idealism has not been confined solely to philosophical textbooks. Physicists have also toyed with the same general theme, sometimes grandiosely labelled 'the anthropic principle' as in the work of Barrow and Tipler.

The way that our philosophical tradition has placed the human being at the centre of things is perhaps understandable. Philosophy, like all other academic studies, is a product of the human mind, whether dealing with serious ethical issues, or engaging in that kind of analysis which sometimes appears to be a form of intellectual play. From its challenges and delights have grown the separate traditions of science: first biology, physics and astronomy, later economics and psychology. As the sciences have matured in their own distinctive ways, they have left behind their philosophical origins as far as doctrine is concerned. But we may wonder whether they have also shed the human-centred attitude of their originating studies.

This wonder is intensified if we consider the attitudes that lie behind much of what we do. Do we really take seriously the fact that human life must be geared to the carrying capacity of our planet? If we did, then perhaps we would give serious attention to whether we have a right to life and a right to have as many children as we want. Do we take seriously the fact that in all human creation within the sciences and technology we must start first of all with what nature furnishes? If we did, we would perhaps be less arrogant in our claims about the novelty of human creations. And do we take seriously the thought that what we produce by way of finished products or waste must be returned to nature in the end? If we did, then perhaps we would replace highly-polluting, 'open' industrial systems with others that are 'closed' in the sense that the by-products of one production process would be so devised to function as a resource for another.

Maybe philosophy is not entirely to blame if we cannot sincerely answer 'Yes!' to these questions. The tradition of European philosophy reflects a deeply human-centred way of thinking, though in reflecting it philosophy also legitimates and re-enforces it. The challenge we now face, however, is a major one. It involves shaking off the traditions of centuries, and giving up modes of thought that are deeply ingrained. It involves abandoning a whole tradition of great antiquity, but which is also very absorbed in the self. Just as no individual can aspire to moral goodness if he or she is purely self-interested, so no community or species can meet the moral challenge facing humanity unless it also learns to extend its interests and its cares beyond the bounds of its own species.

If there is to be hope for the future, we must learn to shed our arrogance, our self-absorption and force ourselves to look at things from a different point of view. This new point of view can be called many things. In previous Biopolitics meetings I have referred to 'ecological humanism'. Other thinkers have suggested that we need to adopt a biocentric outlook, one where nature as a whole is at the centre, rather than just one favoured species. Aldo Leopold called the new perspective 'thinking like a mountain', urging us to bear in mind the fact that what matters for the biosphere as a whole involves thinking in terms of a different time-scale from one that is geared to a single human.

However we describe the shift away from our human-centred perspective, a change in view will be required so that we can face up to the responsibilities we bear—not simply for the present and future generations of human beings, but also for the other species whose lives depend on us, and whose existence and marvellous diversity is an essential part of nature's richness.

Environmental competence

It is already clear that many young people now regard environmental conservation as the major challenge facing humanity. Yet, even the best-informed and enthusiastic people can become confused unless they have a real competence in understanding environmental issues. Such competence demands many different skills, and a major challenge for the educator is to impart these skills at appropriate times and in the most suitable way.

There is much excellent work on how best to tackle environmental studies in primary and secondary education, and I have little to add to this. One feature of good environmental education, however, which I would emphasise, is the importance of not regarding it as something to be added to an existing syllabus. Rather, it should be an integral part of all subjects. The mathematics class, like the literature class, provides many and varied opportunities for ecological study and discussion as noted at the turn of the century by John Dewey. Indeed, it is scarcely an exaggeration to claim that Dewey's philosophy of education supplies most of the theoretical basis for good practice in the primary and secondary school.

However, when we turn to university and college education, a number of special issues arise. One concerns the politics of academic life. The structure of academic disciplines represents the history of various power groups within the academic community rather than some objectively best organisation of knowledge. Within that structure there is severe resistance to change. This resistance is especially acute when changes involve not the addition of a new discipline or sub-discipline, but instead represent a challenge to the autonomy of the disciplines themselves. It is precisely such a challenge that is presented by the need for environmental competence.

Many theorists of education have noted the importance of learning about the different disciplines. Paul Hirst, for example, coined the phrase 'form of knowledge', to describe a specific way of organising both information and experience. He identified such forms of knowledge by virtue of the individuality both of the logical structure of, and the criteria for truth within, each one. Each point of view on a complex subject-matter will very likely have its merits, its own validity. Each organises the insights it brings in its own distinctive way. Economics brings a different set of insights from chemistry; literature can bring events, emotions and conflicts before our minds in a different way from psychology.

History, sociology, psychology, chemistry, literature and biology all have fascinating theories to display and accounts to narrate of human beings and their relationships. Humans are in history, but also in society; they have minds and they are also biological beings. Equally, they are economic, ethical and political animals. Given the complexity of the subjects we study, there is a clear case for the liberal ideal in education: unless learners are exposed to at least some of the many perspectives available on complex topics, then they will develop only simplistic attitudes to the world around them. Instead of helping them realise the richness of experience, education would equip them for only a superficial understanding of life.

These remarks gesture towards a line of argument rather than detailing it. But let us suppose it is accepted in broad terms, and that we are in general well disposed to such an educational ideal. Although it may be implicit in the tradition of liberal educational theory, I would argue that there is another side to the ideal which is just as important as the considerations just given. A liberal education should not only involve the exposure to a number of frameworks or forms of knowledge, but should also generate reflection on the limitations of these.

Why is reflection of this sort important? If we accept that each form of knowledge generates only a one-dimensional image of a multi-dimensional subject-matter, then no form of knowledge can give from its own resources an intellectually satisfying or complete account of our knowledge or beliefs. If university education is to stimulate thought rather than simply produce narrow specialists, if it aims to remove the blinkers from the learner's eyes, one way of doing this is by drawing attention to the limitations of forms of knowledge and of the associated disciplines. A significant challenge is involved in bringing learners to a recognition of the limitations of disciplinary thinking while not undermining the importance of the disciplines themselves. Such a challenge is one aspect of the wider intellectual challenge facing us in the post-modern world of how to recognise the limited validity of each human mode of discourse while not falling into scepticism or relativism.

The proposed International University for the Bio-Environment (I.U.B.E.) provides a golden opportunity to insist on multi- or trans-disciplinary perspectives right from the beginning. To do this is not to cast doubt on the importance of the existing disciplines—physics, history, chemistry, molecular biology, economics, and so on. But what must be done is to counteract disciplinary arrogance, the view that some disciplines provide a privileged discourse for describing experience and the world. Such arrogance is dangerous, whether it originates from physics, theology, philosophy or economics. It is doubly dangerous if it drives us into false beliefs about our environmental situation. Such false beliefs include the following:

that our problems are essentially technical, nothing to do with our lifestyle

that our problems are entirely to do with our lifestyle, and require the abandonment of advanced technology

that we are at the mercy of natural forces and biological urges and so have no control over the future

that we are confronted with purely economic problems to which we must find economic solutions

that we are under the control of powerful social and sociological forces which we are impotent to control

and so on. Each of these claims provides a simple formula as solution to an intricate issue. The elevation of any one of them to be the 'ultimate truth' about our situation is false, dangerous and unworthy of the complexity of the issues facing us.

The particular theme to which I am drawing attention here might be called the theme of humility, the opposite of arrogance. We need to approach the problems which confront us in a spirit of co-operation among the disciplines, recognising that all have something to contribute and that no one has precedence over the others. The spirit of humble co-operation can be infused into students too, once we realise how pretentious and absurd are the claims of individual disciplines for special authority. Of course each discipline does have authority, but only within its proper field. And if we are ever to produce a generation of educated people with greater competence than we have, their recognition of the strengths of the various forms of knowledge must also be tempered with an understanding of their limitations.

To illustrate the need for trans-disciplinary approaches, let me cite a case drawing on work by some colleagues in the University of Edinburgh. It is, they tell me, now technically feasible to couple up a genetically modified organism causing sterility in males with a highly infectious viral agent. The effect of releasing the virus with its sterility-inducing companion in a population would be, let us say, that around seventy per cent of the population suffer a mild respiratory infection, following which all infected males are incapable of fathering any further children. If we wished to complicate discussion of the case, we could imagine the organism's effects can be subsequently reversed by an injection.

Now think of the issues such a case brings up. First of all, there are technical, medical ones. Would there be other effects of releasing the organism, for example, on other aspects of human health or on other living things? Then there are socio-political questions. If such an organism were to be released, where should this be done, and authorised by whom? Then there are legal questions and ethical questions, including the central question of just what rights, if any, human beings have over their own reproduction. No discussion of this case from a medical, sociological, legal or economic perspective could possibly claim to be comprehensive, important though each of these perspectives undoubtedly is. This imaginary case, like all other environmental issues, requires a multitude of perspectives and a real sensitivity, on the part of all involved in the discussion, that no one discipline can answer all the questions it raises.

Providing for the next generation

At a previous Biopolitics meeting, important and intelligent suggestions were made for improving the university curriculum. These suggestions represent a significant step on the path to education for environmental competence and awareness.

For example, we can think of ways in which the skills of students studying the physical sciences, engineering and architecture can be focused on environmental matters by exposure to units on biological assessment and design, couched in vocabularies with which they are already familiar. Likewise students in business, accountancy and economics might usefully be exposed to units on the environmental impacts of industry. And, finally, humanities student could be offered units dealing with values and attitudes to conservation.

These schemes have the advantage of being easily integrated within the existing disciplinary structures of higher education, and they could also be adapted in suitable ways for a different target group, namely students in secondary education. An additional point to commend them would be that, during a period when public perceptions of environmental crisis intensify, as they almost certainly will, such units may prove increasingly popular. A problem does arise, I think, for the recommendations concerning humanities students. For they require something by way of scientific content to provide a real grasp of the issues. This content might best be provided at an earlier stage in the education system. Wherever it is provided, it must involve first-hand exposure to environmental science and the concepts and methods of ecology, including field-work.

Conversely, students in architecture, the sciences, economics and business may lack any real grasp of issues of value. Within economics, for example, the term 'value' is often associated with techniques of cost-benefit analysis; and economics has a tendency to equate all values to monetary ones. If anything is true about values it is that monetary value is not the whole story about what matters. So although we can make rapid progress deploying these suggestions for the bio-syllabus, in the longer term, I would argue, it is necessary to consider more radical proposals.

In the previous section, I argued that although the various disciplines in higher education have their strengths, each also has its limits. Even if the structure of academic disciplines only changes relatively slowly, there need be no essential connection between this structure and the shape of academic provision. An important feature of university education as it is currently understood is that students have contact with those who are active in research in the various disciplines. But it by no means follows that the disciplines themselves should structure such contacts. On the contrary, a balanced education, like a good meal, should involve a nourishing variety of courses, each embodying ingredients from several disciplines. Such an education is liberal in the traditional sense, and it is regrettable that so few universities and colleges of higher education show commitment to this kind of provision.

Here, then, is a proposal for the I.U.B.E. which would make its philosophy rather different from the one prevailing elsewhere in higher education, and will serve as a model to which other educational organisations could well aspire. Let us accept the ideal of studies which transcend disciplinary boundaries. We can perhaps best break away from modes of thought that draw on only one or two frameworks by providing units and ultimately degree programmes which encourage trans-disciplinary thinking. Some examples already exist, including degree programmes in human ecology, which draw upon the disciplines of various sciences as well as philosophy, politics and international law. If we can produce enough graduates to whom such thinking is natural, then there is some chance that a wider range of responses to our environmental problems will be forthcoming.

Once there is general acceptance that courses and degree programmes need not be directly linked to disciplines, there would be scope for translating this recognition through the system to secondary education as well. The stimulus arising from co-operation among the various disciplines may also lead to the emergence of new forms of organising knowledge, forms that we cannot so far envisage. The success of trans-disciplinary education may, however, break the link between the autonomy of a discipline and the status of its practitioners so that academic prestige would not always be associated with distinction in a single discipline. No doubt there will be a variety of opinions on whether such an outcome would be a good thing!

In conclusion, let me emphasise that nothing I have said is meant as a threat to the disciplines themselves, nor to the provision of the traditional specialist degree. I am not suggesting any general abandonment of disciplinary thinking within the academy at least not yet. What I am suggesting is that the ideal of liberal education should include provision for modes of learning that encourage reflection on the complexities of the problems we face and show sensitivity to the inherent limitations of the various disciplines.

References

1. Barrow, J.D., Tipler, F., (1986) *The Anthropic Cosmological Principle*. Oxford University Press, Oxford.
2. Aldo, L., (1949) *A Sand County Almanac*. Oxford University Press, Oxford.
3. Hirst, P., (1974) *Knowledge and the Curriculum*. Routledge, London.
4. The terminology was not particularly helpful to the theory of liberal education, any more than references to forms of knowledge were. Although we have ethical and religious beliefs, it is doubtful if we have, in any sense, knowledge in either of these areas. Cautious scientists would deny that we have knowledge of fundamental processes in physics, or of evolutionary processes. Rather, in these latter cases, we have a variety of theories, some well-established, and others rather less well-established. Nor is there anything equivocal in the concepts of truth and logic. An argument is valid or invalid by the same criteria whether it is couched in the terms of theology, sociology, economics, or nuclear physics.
5. They also overgeneralise. There are many routes to personal development, and it can be argued that the route favoured by theorists of liberal education is one among others, suitable perhaps for some learners for some of the time.
6. Some British universities are now moving towards offering such provision. Programmes in human ecology are well established elsewhere in Europe, though still only in a handful of universities.

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