

HIGHER EDUCATION AND THE BIO-ENVIRONMENTAL CHALLENGE

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The world is all the better for it because of the ever-spreading realization that man's biosphere has come under increasing threats of destruction. Thus far, all the evidence marshaled points to the urgent need for both national and international action to arrest and, better still, to reverse the destructive processes set in motion following decades of unrestrained misuse and exploitation of life-supporting ecosystems throughout the world. To address the problem effectively, there must be a minimum of rancour and foot-dragging. Instead, a workable approach encapsulating plans, strategies and targets should be quickly formulated to tackle the problem at its root. In this connection, the concept of 'sustainable development' must, perforce, be both the end as well as the guiding principle of human existence and well-being for the future.

The term 'sustainable' is itself subject to various interpretations and therefore controversial. It is a concept that is imbued with quantitative and qualitative dimensions. Certainly, it would challenge the best minds to come up with an acceptable interpretation even if given the goodwill and best intentions among all parties concerned. We shall, however, have occasion to hear more about it when the UN-sponsored International Conference on Development and the Environment meets in 1992.

Biopolitics-the educational challenge

The term 'sustainable development' represents not only a physical state or condition of being but equally a frame of mind. The latter, in turn, implies an educational dimension. In other words, the term 'sustainable development' is as much an existential state regarded as imperative as it is a value system. There is no doubt that education has a direct role in shaping the value system conducive to the achievement of a sustainable level of development-a level that would safeguard earth's biotic or ecological system. The moot question is, can such a value system be constructed, transmitted, and made universally acceptable? If so, what are the educational and extra-educational prerequisites necessary to realize it?

National priorities and international obligationöthe dilemma of choice

Every country or nation-state is saddled with the dilemma of choice. Should one look after one's own needs and interests as a matter of first priority? If not, what international commitment can one make and at what economic, political and social cost? How can one ensure a commensurate response from other nation states?

These are obviously complex questions with no ready answers. Certainly, developing countries or countries of the Third World are much more hard put to come up with satisfactory answers. For most countries of this category, education is expected to achieve a number of fundamental objectives, among the more important being (a) the need to attain a progressive economic or material well-being through investment in training and education; (b) the need to create a shared value system through education to serve the purpose of nation-building; and (c) the need to achieve full literacy for intellectual and cultural enrichment. Given their modest material and human resources, most developing countries have found the educational challenge daunting.

Nonetheless, the value of the benefits of education are fully recognized. Indeed, if the expression 'educational planning' means anything at all, it is in the developing countries (in particular, the New Industrialized Economies or NIEs) that one find its most manifest form not only in terms of the ever-increasing rise in student enrollment at each level of study every year but also in the quantum of investment on educational infrastructure. Needless to say, the practice of education has tended to emphasize its utilitarian value more. In a sense, this is understandable because the very concept of 'development' is clothed in material terms: in the growth of the GNP; in the balance of payments; in the success of industrial projects; in the increase of productivity of labor; in the quantum of investment on infrastructure and R & D facilities; in the number of skilled workers and graduates produced each year and so on. The logic of economic rationality seems compelling that even human worth is quite often measured by tangible contribution to the productive process. It is not surprising then that the arts and humanities including to some extent the social/human sciences have over the last few decades suffered in public regard.

The utilitarian thrust in education is not without sound judgment. Emphasis on the production of skilled manpower constitutes both a development imperative as well as an insurance against perceived economic and technological submersion in an increasingly competitive age. It makes good sense, therefore, to invest in human resource development as a first priority in education. As with the developed countries, the

developing countries too are caught in the same mental bind which stresses material advancement as the measure of human achievement. Increasingly, as if inexorably, countries are propelled by an ideological force that lends credence to material production in ever expanding proportions. The net result is over-production and the rapid depletion of the earth's natural resources.

Developing countries are not averse to the need for bio-environment protection. However, efforts made to promote it, as seen by them, should not jeopardize their development plans nor should it constitute a double burden on them-the latter entails both the need to forego the use of valuable natural resources on the one hand and on the other the expanding of human and financial resources in the maintenance or protection of vital ecosystems for the common good. In order to solve such problems, an acceptable method of ascertaining responsibility seems necessary. Furthermore, some compensatory mechanism must be worked out in order to achieve equitable outcomes for all parties concerned. Moreover, some kind of limit should be set on the use of natural resources either through compensatory or punitive measures. Economic calculations alone cannot be allowed to determine resource allocations.

The importance of being bio-environmentally sensitive

Given these facts, how can one engage the developing countries in the common task of bio-environmental protection? What kind or form of education can/should be constructed in order to make its beneficiaries more environment- or, more appropriately, bio-sensitive?

To be sure, the key term or catchword is bio-sensitive. As a term, its practical consequences can assume various forms in educational practice. By experience, the term 'sensitive' suggests the power to feel readily and acutely. It is not carnal, in which case one speaks of being sensual, but is more correctly intellectual and spiritual. To be sensitive suggests a state of being, a concern for appropriateness, harmony, mutuality, interdependence, moderation, balance, good sense, reason, regard for the common good and of course purposefulness guided by a clear conception of ends and means.

Therefore, the term environment sensitive or bio-sensitive would imply the existence of a mode of relationship between man and his bio-environment - a mode of relationship underlined by the aforementioned concerns. These concerns may be conceptualized collectively as a value-system, a set of attitudes or simply a compendium of existential principles.

The need to structure, transmit and universalize a common and feasible value-system conducive to bio-environmental protection goes beyond the many activities, programs and international treaties thus far initiated to deal with the environment and its challenges. The value system as envisaged is both a formula for life and state of being to be achieved.

The foregoing implies that bio-environmental protection or the maintenance of vital life support systems requires a radical re-orientation in life-style including the manner in which productive and reproductive processes are currently managed. For some this might mean a drop in the standard of living or a limitation in choice of goods and services. The question that arises then is whether nation-states are prepared to re-order their life-styles to an extent that ensures both their continued well-being and the survival of the earth's ecosystems.

Given global differences in levels of economic development, differences in the circumstances of existence that need to be coped with to survive, differences of scientific-technological know-how and expertise, differences of political systems including religious-cultural values, differences of resource endowment, and differences of development priorities etc., is it realistic or feasible to expect a significant collective response? In the short term, one can reasonably expect a continuing series of stop-gap measures being adopted to deal with the more immediate threats to the environment. The recent signing of the Montreal Protocol banning the use of CFCs in order to protect the ozone layer is a case in point. In Asia and the Pacific, efforts by multinational groups to protect mangrove forests in the tropics is another. In the Cameroons, there is a novel idea that involves the cultivation of rare plants with proven medicinal properties for the curing of cancer for export-the proceeds from its sale being ploughed back for further enhancement of the environment. Such efforts at homeostasis could be replicated elsewhere.

However, over the long term, only a total or comprehensive effort can hope to arrest and alter patterns of production damaging to the bio-environment. Hitherto, human efforts to solve resource shortages (food, fuel, fiber, minerals etc.) have been to rely on revolutionary advances in technology. The ever-increasing investments made to promote bio-technology exemplifies this trend. However, as the Global 2000 Report (1980) emphasizes, the world will have to solve the staggering problems of population growth; depletion of fossil fuel; decrease of arable lands; shortages of fresh water; deterioration of agricultural soils; atmospheric concentrations of carbon dioxide and ozone-depleting chemicals; extinctions of plant and animal species; and significant loss of primeval forests. Failure to address these challenges would lead to ecological imbalance and with that the destruction of delicate ecosystems. Given this fact, one could envisage a dual role for education. Education in this connection should at all levels be based on what I shall term a bio-sensitive curriculum. The principle purpose of such a curriculum is to inculcate appropriate and positive value-orientations toward bios or the environment in general. In other words, the educate at whatever level of learning must be made to be environment conscious - to be cognizant at the same time of the moral, legal and political dimensions involved. Education in this connection is concerned with the shaping of the mind or the formation of appropriate attitudes conducive to bio-environmental protection.

However, education at the higher level should also attempt to provide technological-scientific know-how as well as skills in bio-assessment and bio-design to cope effectively with bio-environmental challenges. A bio-sensitive curriculum then has two essential components: the first is a value and cognitive component and the second a means component. More pertinently, the bio-sensitive curriculum envisages the creation of an educational product, the educare, who at the end of his/her educational experience is imbued with a value system that is both rational and appropriate to the requirements of bio-environmental maintenance.

To be sure, the concept of a bio-sensitive curriculum envisages the creation and inculcation of a common universal culture transcending ideological and political boundaries. It must be so in order to ensure that the efforts made in bio-environmental protection gets the full support of all levels and sectors of the international community.

The role of universities in shaping the new cultural system

Technological advancement will continue to be the basis for enhancing human civilization as it has been in the past. However, technological competence or prowess must perforce be matched by technological wisdom.

Each epoch in man's history has its own educational characteristics and challenges. This implies that educational practices or philosophies can get out-of-date. Should they be retained uncritically, dire consequences are likely to ensue. In this connection, one could cite numerous examples of maladapted and maladaptive educational systems. For example, classical Confucian education emphasizing as it did authority and hierarchy was blamed for China's political and economic woes by early 20th century Chinese intellectuals and reformers. Europe too did not fully escape the inclination toward mental rigidity in educational practice. In the Middle Ages, the power of the Church coupled with a rigid social hierarchy dominated the character and purpose of education. However, with the coming of the Renaissance, new intellectual horizons emerged. Man became self-confident, indeed almost arrogant. Individual worth was judged by the effects of one's actions on others. At the same time magnanimity and sympathy were also valued qualities. Protestantism's role in educational practice subsequently was to move it irrevocably from a church-centered and dominated world-view to one based on science and experimentation. In England, by the 19th century, a gentleman's ideal crystallized in educational practice an ideal composed of elements of medieval chivalry, Renaissance humanism and a belief in the upward progress of the British middle class. Clearly, education's role is not merely conservation. A relevant educational system has to determine for what aims or purposes it is relevant and in what manner it fulfills historical and contemporary perspectives. Education then, must be a fundamental component in the over-arching cultural system.

As centers of excellence for teaching and research, how can universities contribute to the creation of the new cultural system stressing bio-environmental sensitiveness? Can universities develop unified strategies as well as a shared value-cognitive system to deal with the environmental challenge thus providing thus form and meaning to the new cultural system? Can the imperative of achieving national developmental objectives through higher education somehow merge with the demand for international commitment in environmental protection?

These are hard-pressing questions with no easy answers. Yet at the same time practical steps are urgently needed to address the various permutations of the problem. In the long-term there is no doubt assuming the earth will remain home for future generations to come that a new culture, one that is sensitive to the bio-environment and its intrinsic properties, is needed. Only then can the concept of bio-environmental maintenance mean anything. In this connection, the universities must play the leading role in the construction of this culture. Universities are generally seen as public-spirited and less self-centered compared to other institutions. Fundamentally, the university should have a 'dominant integrated motif' in the sense that it should "educate for an appreciation of the essential unity of our experience." Perhaps equally pertinent is the fact that humankind also shares a unity of conditions. This sentient fact points once again to the need for a university culture that is bio-sensitive. In other words, there is an interconnectedness in all the disciplines and sub-cultures of the university. No more should nature be considered as forces to be tamed but rather to be treated with respect or even reverence: co-opted if necessary for the enhancement of human well-being. Mankind in this respect must be both gardener and shepherd. Universities currently recognize that knowledge or experience is unified. The promotion of multi-disciplinary research exemplifies this awareness. However, such research efforts are fundamentally to achieve greater methodological rigor on the one hand and better explanatory power on the other. They are by and large not bio-environmentally sensitive. Also, a disturbing feature of university education currently is that the curriculum seems to be influenced by market demand for skills and expertise, in other words "an intrusion of programs of ephemeral knowledge" as the Association of American Colleges put it.

Given the complexities of the bio-environmental problem and the dilemmas faced specifically in higher education the latter involving a number of dichotomous demands such as education for individual fulfillment vs. education for social commitment; education to meet national development priorities vs. education for international responsibility; education for national life vs. education for world citizens; liberal education vs. specialized education how best can the concept of a bio-sensitive curriculum be instituted and in what form?

What is obvious is that all universities and educational institutions should immediately commit themselves to a bio-sensitive university culture. This should be reflected in their teaching programs, research projects and service contributions to society at large. This then serves as a unifying value system or cluster of attitudes. How the concept of a bio-sensitive culture is to be operationalized is best left to the milieu served by the university local, regional, national or trans-national as the case may be.

In doing so, the traditional functions of the university viz., teaching, research and service, should somehow be logically and meaningfully integrated, each reinforcing the other to bring about the optimum effect. Fundamentally, therefore, the university's over-all objective is not only to promote a set of values but equally to bring about a mode of existence that promotes bio-environmental objectives. It should not be presumed that a bio-sensitive university culture is meant to be a panacea for all human ills for all times. However, to give the ecological or bio-environmental enterprise a true meaning, a bio-sensitive cultural system must not be concerned merely with what F. Turner) terms "horizontal relations between entities in systems." Equally one should take note of "the downward vertical relation of a system to its past roots (as well as) its upward vertical relation to its future, the greater whole of which it is a part." The bio-sensitive university culture must therefore have a profound way of determining relative and comparative worth in human action and processes having a bio-environmental impact by taking into account the past, present and future development of man and his environment.

On a more practical plane, collaborating universities should work out measures which could serve as a basis for determining environmental well-being nationally, regionally and globally, taking into account population size, economic activities, rates of environmental depletion or rejuvenation, climatic type and so on. In this connection mechanisms must be instituted to ensure co-operation and mutual consultation. At least a clearing house for information should be instituted as a first step.

Since the maintenance of environmental health requires trans-national or regional collaboration, universities located in poorer developing countries would need the extra assistance to be effective. One such way is for universities and other relevant organizations in the industrialized countries to make available their scientific, technological and perhaps even financial resources to help formulate workable solutions both to uplift the technological capability of these countries as well as to devise programs for bio-environmental protection. Equally, law departments of universities should work closely with each other to develop a legal framework that would give teeth to agreements and other international commitments. Somehow or other, the task involved in bio-environmental protection must go beyond self-interest if it is to succeed. For poor and developing countries struggling to improve their standard of living, bio-environmental protection is meaningful only if they see evidence of economic improvement at the same time.

Keeping in mind the variety of demands and expectations pertaining to development and the environment, what then are some of the feasible short- and long-term planning needed for the creation of a bio-sensitive university culture?

To begin with, the UN should both extend and formalize current and projected plans and strategies aimed at dealing with the environmental challenge. The next decade should be declared the decade for the Repair, Regeneration and Enhancement of the Environment. At the same time formal protocols should be constructed for ratification at the regional and trans-regional/global levels to give them the necessary form and substance.

Universities within a country or within the region(s) of a country should be encouraged (if necessary with technological and other inputs from advanced countries) to set up collaborative research projects, multi-disciplinary if possible, and positioned to solve bio-environmental challenges unique to the country or region concerned. This is to ensure that the research initiated is relevant to both local or regional needs and concerns.

Given the current conditions as well as resource limitations of most developing countries in education, it is likely that they would prefer to set up programs on environmental studies or incorporate environmental studies as a sub-area of study in such faculties as architecture, science, engineering, social science and perhaps business and law. In some more advanced universities or universities better endowed financially, a full fledged department/faculty on bio-environmental studies may be a feasible proposition. Obviously, to do justice to the demands of the subject, a multi-disciplinary, in-depth research orientation would probably be necessary. For environmental studies to grow and develop, it would be necessary to ensure that such expertise, when obtained, receive a commensurate recognition in the form of pay and emolument.

In developing countries, university enrollment or course preference is directly related to market demand for various categories of professional skills. A subject like environmental studies will face an uphill task in gaining support. Perhaps, such a situation could be solved to an extent by adopting the practice of most Architecture faculties, viz. to make environmental studies an obligatory sub-area of study for all disciplines/faculties. However, the content of the subject must go beyond the conventional. In the National University of Singapore courses in the Architecture Faculty touching on the environment include the following: Environmental Control and Theory of Landscape Architecture, the former extending over a period of three years. In universities in S.E. Asia, environmental studies as a subject continues to be subordinated to the more immediate concern to produce more doctors, engineers, lawyers, accountants and architects. In such a situation, a compulsory course on Bio-environmental Ethics will serve to sensitize students to their future responsibility in maintaining a livable environment. In this respect, the projected course should take the cue from medical practice where a course on medical ethics constitutes a normal requirement for doctors under training. The guiding principle, however should induce the university into progressively evolving better structured programs to create a bio-environmental sensitive culture as the ultimate goal.

The creation or development of a bio-sensitive university culture should not be conceived in exclusive terms in the sense that it would displace all other sub-cultures associated with a university system. Hitherto, the persisting and pervasive over-riding culture of the university has been to develop an open, logical and critical mind. This is not in conflict with the need to develop a bio-sensitive university culture. Similarly, the various professions developed by a university will continue to retain its respective vocabulary, theoretical or epistemological

slant and value assumptions. Education as an open institution would require that the university adopt a polymorphous culture—a culture of multiple layers each stamping a unique characteristic on the educatee. A bio-sensitive university culture should be regarded as a moral-ethical culture or a culture stressing efficient management of bio- or ecological systems guided by appropriate moral-ethical values. Such a culture attempts to harmonize individual needs with social needs and national needs with international needs.

In extension, regional research centers on bio-environmental issues need to be created. Such centers should perform functions that go beyond mere coordination. They should among other major concerns focused on (a) the development of a regional plan for bio-environmental enhancement, (b) provide high-level expertise on bio-environmental matters, (c) serve as catalysts for environmental research and development (d) provide training for bio-environment personnel working at the local level and (e), serve as clearing houses for information on environmental issues. Bio-environmental research centres need not be separate institutions. Indeed, a university under an appropriate faculty with the requisite basic infrastructure of resources and personnel would serve the purpose equally well. However, once a university is designated as a regional research centre, a formal structure of procedures would have to be worked out among the regional university authorities concerned which, among other things, would touch on matters of policy, finance and legal status. In developing countries in the Asia-Pacific region the common practice in recent years has been to establish policy and security research institutes—many of which have a connection with the legally constituted government concerned. Such institutes are meant to serve as government think-tanks (besides promoting research) on security matters. Most receive direct funding from the government. Such centres could expand their concerns to include matters pertaining to the bio-environment which certainly is an aspect of human security, that is to say security from extinction should the earth's life support systems be destroyed.

In order to make the regional centers on bio-environmental research effective, it might be necessary (although not likely to be easy) to arm them with some power of sanction to ensure that proper conduct is forthcoming in efforts made to preserve vital life support systems at the national or regional level. For example, a developing country desirous of receiving financial assistance for development projects could be made to obtain a clean bill of health (from an environmental point of view) before the prospective lending agency considers the application. If accepted, this would be an extension of the practice already put into force by the World Bank.

It can be seen, that the creation of a bio-sensitive culture entails a symmetry of efforts and initiatives in ever-increasing concentric layers beginning at the level of the ordinary citizen. All long-lasting results in bio-environmental protection begin with the individual, in the habits of cleanliness inculcated in him/her through formal and informal education; in the values of frugality he imbibes regarding the use of nature's resources; and in the willingness on his/her part to act the part of a responsible care-taker for the sake of future generations.

The role of universities in this respect is clear. They should be the yeast in efforts to maintain a healthy and livable environment for posterity by forging a common ethos both in the pursuit of knowledge as well as in the application of scientific-technological know-how.

Conclusion

Although this presentation has focused more on university education and its place in bio-environmental protection, the task required to achieve the objective is not only multifaceted but also entails a total approach. Since the university is both a center for teaching and research excellence, it is expected to perform a leading as well as far-reaching role in bio-environmental research.

As argued, the university should aim at evolving a bio-sensitive university culture: a culture that emphasizes the interconnectedness between man's survival and the survival of earth's ecosystems. Such a culture should cumulatively govern the heart and mind of every individual. A bio-sensitive man, therefore, has within him a moral law one which suffuses his every action and thought in his relationship with nature or the environment. A university culture that is bio-sensitive implicitly requires the enlargement of our conception of morality: not merely individual or social but life (bios) in all its varied manifestations and forms. In this connection, there is a great deal that one can learn from the nature philosophies expounded by the seers of the past. Man's frantic clamber toward modernity, hitherto based on a technocentric culture, has to a large extent led to the present predicament. The future, therefore, depends on the internalization of a bio-environment sensitive culture—a culture combining both technological and moral-ethical principles. Universities must, in this regard, play a central role.

References

1. Wilkinson D., (1989) "One Culture - True Liberalism" in *New Perspectives on Liberal Education*, (H. Costner, Ed.), p. 72. University of Washington Press, Seattle
2. *Integrity in the College Curriculum*, (1985), p. 2. Washington, D.C.
3. "The Gardening of Mars" in *Harper's Magazine*, August 1989.
4. Kant, I., *Critique of Pure Reason*.

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