

## Some Aspects of a Strategy for Technical Education in Sri Lanka

H. Sriyananda

*This paper is a follow up on the author's "Technical Education for Development" published in the IEE Conference Publication No. 115 (International Conference on the Frontiers of Education, London 1974.) The author is grateful to Dr. J. R. Lucas and to Mr. A. S. Induruwa for many helpful discussions and to Professor S. Karunaratne for his encouragement. H. Sriyananda is with the Department of Electrical Engineering, University of Sri Lanka, Katubedda Campus.*

Education in general, and technical education in particular, has been regarded as one of the most effective media for the transformation of the traditional subsistence economies of the underdeveloped part of the world into modern consumer oriented ones. With few exceptions, the desirability of such a transformation has been taken for granted as a basic axiom by most economists, both of the political 'right' and of the 'left'. Much of the early criticism of the educational system in Sri Lanka was, in fact, that it emphasised 'social studies' at the expense of 'technical studies' and that this contributed to the continued state of underdevelopment of the country. It is contended that there are a number of fallacies in the above arguments that need to be corrected before an effective educational strategy can be formulated.

### On the Desirability or Otherwise of "Development"

Most people would agree that the present socio-economic conditions in the underdeveloped countries are unsatisfactory, the major factors being 'inadequacy' and 'inequality'. These are equally true with regard to material goods as well as with regard to the other human requirements such as education. There is only an appallingly inadequate supply of almost everything, and what there is, is very badly distributed. Thus, there is hardly a need to make out a case for the need for change. However, the question of what we should change to, is quite another matter.

The conventional view of "development" was one of continued (unbounded) economic growth. It was implicitly assumed that this would give rise to a corresponding increase in satisfaction. However, the possibility of the first and the truth of the second of the above are both, open to question. A large literature (1,2,3,4) has grown up mainly during the last ten years, on the theoretical objections to unlimited growth. A very simplified explanation of its impossibility was presented at the 1974 annual sessions of the Institution of Engineers, Sri Lanka<sup>5</sup>. These arguments are also related to those that invalidate the second assumption.

A mathematical model which corresponds to the basic assumptions of the traditional development process has been presented, together with a modified system much closer to reality. The modified model may be interpreted to illustrate that:

either (1) unlimited exponential growth is impossible in a limited environment due to such factors as raw material exhaustion and ecological imbalance.

or (2) even if this was made practically possible, it is not conducive to human satisfaction.

The literature already referred to (1,2,3,4) has dealt with the first of these interpretations in detail.

The second concerns the sociological problems associated with dense urban settlements, organisation of production for mass consumption and the questions of work and leisure.

It has been argued that the goals of an egalitarian society are not compatible with the hierarchical organisational structure required to maintain a very urbanised intensive production system. The failure of the industrialised socialist countries in the achievement of a better distribution of wealth and power may be at least partly due to this inherent contradiction. The unnatural dichotomy between work and leisure may also be explained in this context.

### Immediate Objectives vs. Long-Term Goals

Most of the above analysis is equally applicable to developed and underdeveloped societies. However, when they are presented in Sri Lanka, the general response is that the problems raised are so remote as to be of no significance in the immediate future. It is pointed out that we have no urbanisation problems, pollution or other ecological problems or problems regarding the exhaustion of raw materials; and that we should concentrate on increased production by whatever means available. Even those who advocate the new fashionable doctrine of "intermediate (or appropriate) technology" look upon it as a short term solution necessitated by an excess of labour and the deficit of capital.

If we are to develop in an orderly manner without unnecessary wastage of effort, what is required is a completely new attitude to development arising out of a definite commitment to agreed goals. These goals should of course be revised from time to time in the light of new knowledge. It is true that it is not possible to have a consensus of opinion on questions of this nature, but it should at least be possible to agree to face the prob-

1. Meadows, D., "Limits to Growth", Earth Island 1972.
2. Ward, B. and Dubos, R., "Only One Earth", Penguin, 1972.
3. The Ecologist, "A Blueprint for Survival", republished by Penguin in book form 1972.
4. Edward Goldsmith (Ed.), "Can Britain Survive?", Tom Stacey Ltd., 1971.
5. Sriyananda, H., "System Dynamics for Development Planning", 1974. Annual Conf., I.E., Sri Lanka.

lems squarely and study the effects of different causes of action, rather than dismissing them as irrelevant to immediate objectives.

### The Place of Education and the Distinction between Technical and Social Sciences

Countries like Sri Lanka are in fact at an advantage vis-a-vis the developed world in that we would not have to retrace our steps, since we are only at the beginning of the development process. Since knowledge is universal, we have access to all the 'hindsight' of those of the already advanced societies. It is a great tragedy that knowledge gained by man through the ages has not been used to revise his model of the aims of development, but only to help him achieve the aims that were defined a long time back. It is the contention of the author that one major reason for this is the compartmentalization of knowledge resulting from the specification inherent in modern educational systems. Most social scientists are unaware of the limitations of science and technology, and have been taught to view it as a sort of new religion capable of delivering almost anything demanded of it. On the other hand, scientists and technologists are trained to view their problems in a very narrow perspective. It is only very recently that scientists have started to think of the social consequences of their creations. The type of world view that is envisaged can only result—on a sufficiently broad base—from a completely new system of education that does away with the distinction between the technical and the social sciences.

The new scheme of secondary education that has been recently introduced in our schools appears to be a step in this direction. However, it is too early to assess how it would work in practice, and there are severe limitations to the success of such a scheme that arise from other sources. For example, even though it is expected that the nine year course from grades 1-9 should be a minimum course that should be followed by every child, there is a drop out rate of about 50% in this range. Not enough effort has been expended to correct this situation either through reforms of the society itself or through conscious commitment of the society itself or through a reorientation of the course so as to

Within the last four or five years there have been several attempts in the developed countries to look at the developmental variables of the world through large-scale world system models. The most well known (or the most notorious as the case may be) is the 1972 study "Limits to Growth" and its follow-up last year. Dr. Sriyananda has used the same general approach to analyse local development problems. This article is a follow-up in the field of education to an earlier attempt of his in the development field excerpts of the latter which are given below.

"Traditionally, 'development' has been taken to mean economic development. In the case of most countries of the world outside the USA, whatever their political ideology, it has come to be associated with the creation of an economic system capable of producing an American type pattern of mass consumption, and the only differences have been in the means employed (for example, privately owned or state owned capital) to achieve this objective and in the degree of success. In the USA, the aim has been to outdo itself, and to stay 'ahead' of the others. This commitment to a mass consumption society has led to a number of other inter-related developments with deep significance, such as the development of the techniques of mass production—the assembly line, the exploitation and the wasteful "consumption" of natural resources, urbanisation, the growth of hierarchical organisations, the global division of labour, etc. Most of the above are areas with which engineers have been intimately involved, but until quite recently they have been content to let others decide on the overall objectives".

"Let us now see whether the current meaning of "development" is a movement towards or away from such an ideal society. Mass consumption necessitates mass production, and mass production led early engineers—Taylor and others—to workstudy, time and motion study, etc., and Henry Ford introduced the assembly line as the most economical means of production. This innovation caused a revolution in production techniques and was doubtless the most desirable improvement on the then existing

methods, given the basic fact of their inability to produce sufficient goods. But, is it the most desirable method under present conditions? Human knowledge and therefore resources—have advanced considerably during the intervening period and it should now be possible to manufacture sufficient goods to meet the requirements of all people—not only those in the rich third of the world—without recourse to this outmoded practice, provided we dispense with the creation of artificial needs and the practice of "built in obsolescence". The objection to this method of production is a social one. Man is an intelligent animal, and it is a crime to degrade him to the level of a machine. Recent surveys have established the basic cruelty of making him do unthinking tasks of a repetitive nature, and it is known that a large number of assembly line workers in the USA and in Europe get through their working day under sedation—using drugs and alcohol. It may even not be the most "economical" method of production today, and some firms (for example, Volvo, the Swedish car manufacturer) are experimenting with methods of production that give at least a certain amount of satisfaction and involvement to the workers in an attempt to reduce the very high turnover of labour. But we in Sri Lanka continue to think in terms of methods evolved in and suited to, the nineteenth century".

"A discussion of the objectives of development led to the deduction that conventional economic development is really a retrogressive step, and that a complete rethinking of the goals of development is necessary".

make it more meaningful. It should be remembered that the interaction between the educational system and the social system at large is a two-way one. Broader education results in more social awareness, and in turn causes changes in the educational set up. It is significant that social revolutions in some very backward countries (e.g. Cuba, China) have succeeded in eliminating adult illiteracy within a very short period of time whereas much more advanced capitalist countries have failed to do so. Even though this is only a short step in the very ambitious scheme of total education proposed in this paper, it has been achieved in the face of great difficulties because of a conscious commitment of the societies involved. The educational reforms in these countries too, suffer in the end from the reluctance to view

global problems as such and to reconsider long-term and short-term objectives.

The need for a stable, sustainable, decentralised society in the long run has already been advocated. This is of course only true if we are unwilling to tolerate the present situation of intolerable poverty and deprivation hand in hand with an affluence that has never been achieved before in human history. A comprehensive education of natural processes and systems covering both the technical and the social sciences should be envisaged if such a stable society is to be achieved. It may be possible to do this as much of the specialised skills (it may be a misnomer to call it knowledge) required to operate today's world would be redundant in such a society.