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*The Twenty-first Century Challenge to Learning**

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The capacity to learn will be the principal determinant of the viability, autonomy and integrity of the developing countries in Asia as they approach the twenty-first century, for the future holds for them new and unfamiliar challenges in total discontinuity with their past experience, as a result of a confluence of major changes — demographic, economic, technological, educational and cultural. The educational systems that these societies build will have to prepare for an entirely different world of industrial and social development in which new lessons apply. The task is not only to catch up with the new technologies, but also to develop capabilities in the frontier areas of knowledge. The challenge is rather to develop both in individuals and in communities a capacity for continuous learning, for creative responses, and for critical assessments. The forward edge of educational innovation lies in collective social learning — to assimilate new information as a collectivity; to develop ability to make collective moral and ethical judgments that ring true for the whole community, and to devise and build confidence in new ways to function as collectivities within the changing parameters of our times.

In looking to the future, I believe that it is the capacity to learn that will determine, perhaps more than any other single factor, the viability, autonomy and integrity of Asian societies. We cannot afford to look toward the future merely in terms of continuing advances along the conventional lines developed by certain disciplines or areas of expertise. The discontinuity with past experience is the result of a confluence of major changes that are having a synergistic impact on our region, Asia. These changes reflect the combination of various factors: the impact of population increase (as is well known, by early in the twenty-first century Asia's population — excluding China — will have doubled, adding almost a billion people to the region), the impact of economic developments, the impact of technology, and the very profound impact of cultural and value changes that have already started and are bound to exert an even greater influence in the future. The cultural changes are in some ways responses to rapid development, though they also contain powerful elements of reassertion of basic indigenous values and world views. Such values have been considered irrelevant to the development process, which has itself led to major shifts in the configurations of values in our societies. The synergistic impact of these changes forces each discipline to review its current state and to

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determine the extent to which pursuing conventional lines of evolution is or is not still relevant in the light of the very rapidly changing societal context.

There is, of course, a common view, primarily outside the field of education, that the major challenge to learning is mainly demographic in origin: a matter of providing formal schooling to the huge numbers of children who will reach school age in the years ahead, as well as the number of adults who have still not attained the basic skills of literacy and numeracy. While the problem of numbers is a forbidding one in itself, it can obscure the fact that what is needed in preparation for the twenty-first century is not just more education but also different kinds of education. The challenge to learning is really the challenge of a rapidly changing set of circumstances that touches every facet of society. It goes far beyond the field of education proper, demanding an expansion of the learning capacity of the nation as a whole.

We already know how large the population increase is likely to be and that lowering the median age will put tremendous pressure on the labour market. There are estimates that, before the year 2000, 500 to 700 million new jobs must be created in the Third World just to keep unemployment from rising. Such figures paralyse the imagination; nobody really knows how to deal with a problem of this magnitude. But one thing is certain. We will be forced to rethink, in a very fundamental way, the concepts of work and non-work. We will have to develop new concepts that take into account the desires of people to express the significance of their lives. Linked to this also is the aging of the population which is taking place in Asia, which again will bring different and new educational needs to the fore. Obviously, therefore, the demographic pressures are not only being expressed in numbers, but also in the kinds of education that need to be considered.

We have some idea of the intended goals and purposes of the development process. In the last 30 years we have also become familiar with the unintended social, political and human costs of development efforts. But even outside this large area there are other processes of change going on which are almost autonomous, in the sense that the power of governments to control them is very limited. Nevertheless, these processes, do change our societies in a very profound way. Let me refer briefly to some of the most important of them.

There is, of course, the impact of education. Whether good, bad, adequate or irrelevant, education has an impact. It changes perceptions, as well as expectations. When it is combined with easier access to information, the expansion of communications and the impossibility of controlling transborder information and data-flows, the societal impact of communication is tremendous. Add to this the impact of industrialization, urbanization, rapid technological change, the erosion of old social structures and the emergence of new ones — all lead to structural changes within our societies that take place almost without regard to the kind of development strategy a government pursues. Such powerful forces affect people's expectations, their time horizons. their political awareness, and their willingness to accept the *status quo*. One great challenge to learning is to give people the tools to live with this dynamism rather than succumbing to disappointment.

Demographers make projections about our cities very easily, and I am sure you have read projections of the future size of the primate cities in Asia, ranging from populations of 14 to 25 million, if you include Shanghai. It is an illusion however to assume that we have the capacity to live in such conglomerations at the level of income that is most likely to prevail in our societies. We will have to learn new ways to make our communities function. That is to say, we will not only have to look at how these large conglomerations can be assured of their food and energy and housing needs; we will have to think of ways in which human communities of such size and density can function effectively and with civility, avoiding too much conflict and retaining their creativity.

We will also have to think in new ways about rural development. The concerns of education relating to rural development are concerns that were defined in the 1950s. They will be obsolete ten years from now because the application of information technology now makes new urban-rural configurations possible and likely. Within the next 20 years, increase in population density will require the provision of urban services to what used to be rural viliages. We will have to learn new ways of thinking and new ways of educating people to feel comfortable and to manage living in such vastly different conditions.

Increasing density in rural areas is driving people to exploit marginal lands more intensively. The communities that have traditionally lived there have worked out their own ways of working productively within ecological limits. But larger numbers of people will stretch the ecological carrying capacity beyond its limits unless the new communities learn to organize themselves to use available scientific knowledge. So far scientific knowledge has not reached them. One major educational challenge that we have to face is how to make it possible for the fruits of the continuous knowledge explosion to reach those whose survival will depend on being able to use new knowledge. In a sense, the ecological future will depend not on what the experts in the cities think, but on the decisions of the hundreds of millions of peasants in the poor countries. So it is not only in their interest, but in the interest of all of us on this globe to make sure that we find more effective educational methods of delivering scientific knowledge to the end-users.

We are now in a situation in which a large segment of the powerless, the marginalized and the poor in our societies no longer accept their condition as inevitable. Where they are incapable of doing something about it directly, they act indirectly. And so, millions and millions of people in our part of the world are on the move, either to the larger cities or across national boundaries or even across continents. Unemployment, of course, is often coupled with a sense of despair that leads many into escapism, criminality, or purposeless rage. Urban criminality has become a major problem in the larger cities in Asia. And this is simply the tip of an iceberg, the beginning of a process of implosion of our social and political systems, whatever their ideological orientation.

There are other factors, also lying to an extent outside the control of our governments because of the manner in which our societies are meshed with the international economic and industrial system. A third industrial revolution is now taking place, based on advances in biotechnology, microelectronics and information technology, and materials technology. If the countries of the South do not develop

the capacity to participate in this revolution, they will become even more vulnerable and dedendent on the North than they are now. We can no longer afford to think in terms of closing a knowledge gap. Rather, we will have to leap over a whole generation of outmoded technologies and theories of organization. We do not have time to repeat the mistakes of the North, or even to follow passively in their footsteps picking up techniques that they have outgrown and discarded. We must cultivate the art of innovation, or invent it in a form that is consonant with the real needs of our societies.

Certainly the countries of the South, the latecomers is industrialization, will have to reconsider their industrialization strategies. The original assumption that marginal industries would move from the North to the South in order to be closer to cheap labour or to natural resources no longer applies, because new forms of automation now make it economically possible for such industries to stay in the North. The South will have to consider in what areas it will compete with the roboticized North and, at the same time, devise ways to deal with the massive unemployment that is affecting its societies.

The complexity of the social changes I have referred to is one of their most daunting features. Learning to deal with complex phenomena is not something that we can leave to the experts and the machines. To do so would be to move the power to shape society beyond the grasp of the people who must be directly involved in creating positive responses to change.

No one has the answers to these problems. Only a handful of people are beginning to think about the fundamental review of the processes of industrialization that will be required for us to avoid developing new kinds of dependencies as a result of the third industrial revolution. To take one other example, the green revolution was based on research results that were freely available from the international institutes that did research on rice, wheat and maize. Now, in the wake of the decision of the US Supreme Court that allows for patenting of advances in biology, the Third World — whose future viability will, to a large extent, depend on a second green revolution — will have to buy such information unless it develops its own capability in the areas of biotechnology. The same kind of challenges apply to microprocessors, communications and materials technology. To meet them will require a revolution in the orientation of the educational system.

This is the context, I believe, in which we will have to review the progress being made in educational innovation. It is no longer enough to look back and see how far we have advanced in building educational systems. No educator can afford to think about educational reform or about educational innovation without putting this effort in this changing context of his or her own society. We have to prepare for an entirely different world of industrial and social development in which new lessons apply. We will not only have to learn the technologies invovled — that goes without saying — but we will have to develop capabilities in the frontier areas of knowledge, in addition to all the other areas in which we are trying to catch up.

Both the context and the content of learning are changing together and mutually reinforcing each other. This really imposes on us, the

Third World countries in Asia, the need to have a hard look at our efforts at educational innovation, to see how they relate to changing societal parameters, and then to figure out what kind of course corrections are necessary. Can our educational systems assimilate the very rapid change in the rate of accumulation of knowledge? It is no longer adequate to think of the acquisition of knowledge as the endpoint of learning. Rather, the challenge is to develop, both in individuals and in communities, a capacity for continuous learning, for creative responses, and for critical assessments. Obviously, this process of learning is not confined to children or the unlettered.

Educators and educational systems will have to continually ask themselves to what extent the education that they are giving remains relevant to new requirements. What we will have to develop in our societies is the capacity to learn and to educate for an unforeseeable future. If we keep educating people in the old ways, we run the risk of making them more and more ignorant about the evolving needs of their own times. Without a forward-looking orientation, even the more pragmatic approaches to education fall short. There is now, for example. a rather widespread appreciation of the need to relate the skills taught in school to the demands of the labour market, which has led to a renewed emphasis on vocational education. But in today's extremely fluid job markets, vocational training is trying to hit a moving target; the jobs for which people train may no longer exist at the end of the training cycle. The emphasis therefore should be on retrainability rather than on training for specific jobs. The training should cultivate the capacity for innovation, for improvisation, for recognizing emerging opportunities in new social and technological situations that we cannot exactly foresee now. This gives a different dimension to our efforts in educational innovation. The premium will be on adaptability, on creativity, and on the refusal to submit to despair.

Traditionally, efforts in educational innovation have focused on the application and critical examination of new methods and technologies, and the training of people to handle them. There has been something of a tendency to look at education statically as if society was not changing in its needs, in its psychology, in its aspirations and in its options. We must henceforth try to build up a sensitivity to change, strengthening our efforts at educational innovation. Unless we do this, we will be training for obsolescence. The capacity and the willingness of educators to take a hard look at their own educational systems over and beyond marginal criticism is going to be essential. Critical assessments must take into account the changing societal parameters for education. In other words, innovation must be relevant.

Innovation for its own sake displays some of the same weaknesses found in static systems: notably, that little attention is paid to the needs of the community being served. It is not difficult for educators to become immersed in didactical and pedagogical issues, or to succumb to a fascination with new, imported equipment and techniques that are not designed to address specific needs. The participation of the community in designing and monitoring educational systems is one of the most reliable safeguards of relevance. In adult learning, especially, the teacher must also learn — to function more as a guide and consultant serving the student than as a didactical authority.

What is required really is a much wider and deeper capacity for learning that is not limited to the educational system. When we think of learning capacity, we must not think only in terms of the individual. We have to think of the learning capacity of institutions, both governmental and non-governmental. Government bureaus are often far behind in perceiving the changing realities in which they have to operate. Similarly, trade unions, business corporations, voluntary associations all have to increase their learning capacity, in order to ingest a much larger amount of information and respond to it creatively. It is only by mastering this process that we can transform our societies into learning societies, capable of responding to the rapid transformations that face us — that are, in fact, upon us.

The forward edge of educational innovation lies in this kind of collective learning, in instilling the capacity for continuous learning in whole communities and whole nations. This involves not only the ability to assimilate new information as a collectivity, but also the ability to make collective moral and ethical judgements that ring true for the whole community, whether it be a single village or an alliance of many nations. Most importantly it involves social learning: the ability to devise and build confidence in new ways to function as collectivities within the changing parameters of our times. Here, I believe, is located the greatest challenge to learning in the twenty-first century. No one can doubt the urgency of the task.

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Note: Some of the ideas discussed in this paper are reflected in an article by the same author published earlier in this journal. See Soedjatmoko, Development as learning. *Perspectives in Education*, 1985, 1 (4), 211-229. —Editors