Human Resources and World Economic Development: Frontiers for Research and Action

Charles A. MYERS [1]

TODAY, national leaders, development planners and technical assistance agencies all over the world recognise the overriding importance of the development of human resources. They are trying to meet the continuing shortages of trained people as some countries strive to throw off the bonds of economic stagnation and others continue to achieve social and economic gains for their citizens.

The aim of this paper is to provide a framework within which to consider some of the research into human resource development carried out to date, in an attempt to single out possible areas for further research and action. It draws upon recent research on which the author has collaborated with colleagues from other universities in the Inter-University Study of Labour Problems in Economic Development.[2]

The current concern for human resource development is a fairly recent phenomenon in the literature of economic development and, indeed, in some economic development planning. The notion that investment in human resources (or " human capital ") should be considered along with investment in physical capital, such as railroads, harbours, hydro-electric

[1] Professor of Industrial Relations and Director, Industrial Relations Section, Massachusetts Institute of Technology, Cambridge, Massachusetts. This paper is based on a talk given by the author under the auspices of the International Institute for Labour Studies in Geneva in June 1966.

[2] Frederick HARBISON and Charles A. MYERS: *Education, manpower and economic growth. Strategies of human resource development* (New York, McGraw-Hill Book Company, 1964); idem. (eds.): *Manpower and education: country studies in economic development* (New York, McGraw-Hill Book Company, 1965). An earlier book by Clark KERR, John T. DUNLOP, Frederick HARBISON and Charles A. MYERS: *Industrialism and industrial man: problems of labor and management in economic growth* (Cambridge (Mass.), Harvard University Press, 1960) dealt with some of the same issues more briefly as a part of a broader analysis. Studies under the Inter-University Project began in 1952 and have had financial support from the Ford Foundation and the Carnegie Corporation of New York.

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projects, plant and equipment, is relatively new. To be sure, such great political economists as Adam Smith and Alfred Marshall understood the significance of human resources. Marshall emphasised the importance of education " as a national investment " and said that " the most valuable of all capital is that invested in human beings ". But subsequently economists became more concerned with capital-output ratios (meaning physical capital), and considered education and training as a " social welfare expense " secondary to the more important physical capital investments. It was somehow assumed that if hydro-electric power stations or steel mills were built, there would be trained people available to run them.

The importance of " investment in human capital " was stressed by Professor Theodore W. Schultz, of the University of Chicago, in 1960.[1] Schultz and his associates have attempted to measure the stock of human capital in the United States and the probable returns from investment at various levels of formal education.[2] But these data are not often available for many other countries. This was one reason why Frederick Harbison and I chose a different approach in our research on the relationship between human resource development and economic growth. We concentrated on high-level human resources and attempted to construct, from available and often inadequate data, an index of human resource development for 75 countries at different stages of economic growth. It may be useful here to summarise this approach and some policy conclusions derived from it.

High-level human resources

Most countries have enough raw, untrained human resources—the masses of people seeking work—but they often lack sufficient high-level manpower. In this group we included the following occupational categories:

(1) Entrepreneurial, managerial, and administrative personnel in private firms, public enterprises, government agencies, and educational institutions.

(2) Professionals such as scientists, engineers, doctors, agricultural specialists and economists.

(3) Qualified teachers, with a minimum of 12 years of education.

(4) Sub-professionals of all kinds, such as agricultural assistants, nurses, technicians, supervisors, skilled manual and clerical workers.

[1] Theodore W. SCHULTZ: " Investment in human capital ", in *American Economic Review* (Evanston, Ill.), Vol. 51, No. 1, Mar. 1961. See also idem: *The economic value of education* (New York and London, Columbia University Press, 1963).

[2] For full citations see HARBISON and MYERS: *Education, manpower and economic growth*, op. cit., Ch. 1. Also Gary BECKER: *Human capital : a theoretical and empirical analysis with special reference to education* (New York, National Bureau of Economic Research, 1964).

(5) Top-ranking political leaders, labour leaders, judges, and officers of police and armed forces.

It had been hoped to find measures of the " stock " of these categories of high-level manpower for a large number of countries, as well as data on annual net additions to the stock. However, except for a few categories such as scientists and engineers (especially for countries that are members of the Organisation for Economic Co-operation and Development), teachers (but not all qualified), and doctors and dentists, these data were not available at the time. But reasonable comparable data were available through the United Nations Educational, Scientific and Cultural Organisation (U.N.E.S.C.O.) on proportions of each age group in a country enrolled at each of the three levels of education—primary, secondary, and higher education (referred to as first, second, and third levels of education). It therefore proved necessary to draw the index of human resource development for the 75 countries from this type of data.

An index of human resource development

The index is a composite of the second-level enrolment ratio (adjusted for differences in length of secondary schooling in different countries), and the third-level enrolment ratio (weighted by five to give emphasis to the importance of higher education in developing high-level manpower). The resultant ranking showed countries such as Niger, Ethiopia, and Malawi at the bottom, and countries such as Canada, France, Japan, the United Kingdom, the U.S.S.R., and the United States at the top. Arbitrarily, when a gap appeared in the rankings, the 75 countries were divided into four groups, characterised as different levels of human resource development. Level I included 17 countries with " underdeveloped " human resources. Level II comprised 21 countries with " partially developed " human resources. In level III there were another 21 countries with " semi-advanced " human resources, and finally level IV had 16 countries with " advanced " human resources.[1] These levels of human resource development were used to consider the differences required in strategies or policies, as will be mentioned shortly. Some regressions were also run on the human resource development index with G.N.P. per head (in U.S. dollars), and several other sets of data for these countries.

The results were not surprising, as the following illustrations show. We found a correlation coefficient of .888 between the composite index of human resource development and G.N.P. per head, and a negative coefficient (−.835) between the composite index and the percentage of the

[1] For complete data, and their limitations, see *Education, manpower and economic growth*, op. cit., Ch. 3. Several subsequent reviews of our book have also pointed out limitations in the statistical analysis. See, for example, the review by Mary Jean BOWMAN in *Journal of Political Economy* (Chicago), June 1965, pp. 315-317.

active population engaged in agriculture. For such measures as were available of stocks of high-level manpower, there were correlation coefficients with G.N.P. per head of teachers (.755), physicians and dentists (.700), and engineers and scientists (.833). Admittedly, these measures of stock are not too good, but nevertheless the statistical relationships are significant.

However, these data do not necessarily prove causal relationships. They do not show that an increase of X per cent. in the enrolment ratios in second- and third-level education (the composite index) will lead to or bring about an increase of Y per cent. in G.N.P. per head. It could be argued that only a wealthy country (with high G.N.P. per head) can afford to educate a large proportion of its young people. Obviously, the relationship is interdependent. But it is equally in error to conclude in terms of policy that a country " cannot afford " investment in education or human resource development because other capital investments are more pressing and require all available resources at the margin. Some sort of marginal calculation has to be made, even with presently imperfect data and knowledge.

A forthcoming study of Japan's human resource development and economic growth is instructive regarding the probable relationship.[1] The authors conclude that " Japanese manpower strategy may be chiefly characterised by its tendency to accumulate educated human resources in advance of national economic growth ". Data they have collected for the period 1885 to 1960, inclusive, show that Japan's composite index of human resource development (similar to the index discussed earlier) increased from 2.2 in 1885 to 34.3 in 1915, while income per head (in 1960 U.S. dollars) only doubled (from 56.8 to 110.7). By 1960 the composite index was 148.2 (slightly more than a fourfold increase over 1915), while income per head had reached 351.4. Economic progress in Japan has been particularly rapid since 1955. Public expenditures on education were 5.2 per cent. of national income in 1960, as compared with 1.8 per cent. in 1885 and 2.1 per cent. in 1915.

Strategies of human resource development

The statistical analysis of levels of human resource development, together with other information about the experience of different countries drawn from our own studies and those of our associates, helped us to outline some appropriate policies or strategies for human resource development in typical countries at each level. For example, in newly independent countries where indigenous human resources are underdeveloped, the replacement of trained expatriates in key positions requires a crash pro-

[1] Solomon B. LEVINE and Hisashi KAWADA: *Human resources in the industrialization of Japan*, Ch. IV, to be published as one of the studies sponsored by the Inter-University Project.

gramme to expand the output of secondary schools and to send graduates abroad for specialised training and higher education, rather than the expenditure of all available finances first to achieve universal primary education. Countries at the second level need to continue to expand and reform secondary education, to develop sub-professional and technical institutes, and to reorient higher education towards scientific and technical fields and away from over-concentration on humanities, arts, and law. Third-level countries can move far towards universal primary education, but even more important is the reorientation and expansion of higher education to meet critical high-level manpower shortages. At each level, training on the job within employing enterprises and government agencies is essential, and in some countries revision of pay structures would help reorient the kind of training and education which is sought by young people.

There is much more to a balanced strategy for each level of country than has been outlined here, but perhaps this brief summary will emphasise the point that what is an appropriate policy in one country is not necessarily appropriate in another. It depends, first, on the level of human resource development already attained; and, secondly, on the particular demand and supply considerations applicable to high-level manpower in each country, in relation to its economic development plan. There must be close co-ordination of economic development planning, investments in education and manpower planning.[1]

Problems facing advanced countries

These considerations also apply in the advanced countries. The appropriate strategy of human resource development for such countries will differ from that for less developed countries; and it must be related to each country's specific needs, resources, and objectives. In general terms, however, we can indicate the imperatives which most advanced countries face if they want to stay in the forefront of economic and human resource development.

First, they are under continuous pressure to innovate and make new discoveries in science, technology, management, public administration,

[1] For a somewhat critical review of the " manpower planning " approach, as developed first in Professor Harbison's writings and subsequently in our book, see Webster C. CASH: " A critique of manpower planning and educational change in Africa ", in *Economic Development and Cultural Change* (Chicago), Vol. XIV, No. 1, Oct. 1965, pp. 33-47. Despite his attempt to propose an alternative approach, I do not disagree with the author's proposal that " *the scarce resources available for educational development in each nation should be husbanded according to a scale of priorities which reflects, however crudely, the rate of return to society from enlargement of different educational services* " (italics in the original). This does not seem inconsistent with many of the conclusions summarised above.

For an excellent account of the role of the foreign adviser in educational planning see Adam CURLE: *Planning for education in Pakistan* (Cambridge (Mass.), Harvard University Press, 1966).

and social and economic policy. Secondly, they are committed to a policy of full employment and the elimination of discrimination and inequities in economic and educational opportunities. Thirdly, they are under pressure to provide universal secondary education and even to offer some form of higher education for all who are qualified.

These imperatives or pressures suggest a strategy of human resource development based on certain priorities. Higher education at the post-graduate level must expand, and must emphasise quality above quantity. Sub-professional training is essential if scarce professional talent is not to be wasted on jobs that can be performed by persons with lower qualifications; in most advanced countries there are still too few technicians and technical assistants in relation to the number of scientists, engineers, and other professionals.

While higher education needs to provide professionals of all types, these should not be narrowly trained. This applies to the future scientist and engineer, as well as to the future manager, public administrator, social scientist, or humanist.

Furthermore, in the advanced society, no less than in those less advanced in the development of their human resources, managers and administrators need to acquire skill and competence in running large organisations of people. All successful managers have to co-ordinate the efforts of other people in achieving an organisational goal. Effective management of human resources, in other words, though often neglected, is part of a well-rounded strategy.

I have taken the time to mention the special problems of advanced countries, because presumably this is the level to which countries with less developed human resources aspire. Therefore, these are some of the problems that will later face all developing countries. There are others, too.

Problems facing developing countries

The " brain drain "

Just as economists have pointed to the widening gap between rich and poor countries in national income per head, a recent study has highlighted the drain of some scarce high-talent manpower from poor to rich countries.[1] The term " brain drain " has been used to describe the loss of scientists by Britain to the United States, but the study found that there were 4,000 foreigners (many of them Indians and Pakistanis) practising medicine in Great Britain. There are also 20,000 foreign physicians in the United States, as well as many engineers and other professionals. Argentina lost 708 engineers to the United States between 1951 and 1961,

[1] Study for the United Nations Special Fund by Dr. Ehsan Naraghi, reported in the *New York Times*, 10 Apr. 1966, p. 1.

and a total of over 3,000 other professionals and technicians.[1] The explanation probably lies in differential opportunities, in terms of both salaries and job interest. But we need more research to point towards a solution.

Training outside educational institutions

In any case, the development of human resources is the responsibility not only of a nation's educational institutions, but of other institutions that can perform a training function.

The enterprise, whether public or private, necessarily does considerable on-the-job training, some of it good, much of it haphazard. If employing institutions took more responsibility than many of them do for investing in training human resources, the less developed countries would be able more rapidly to supplement the slower-to-evolve educational institutions. Japan's educational progress was mentioned earlier. Before adequate public educational facilities could be established, public enterprises in Japan started programmes to train skilled workers and technicians.

International organisations such as the I.L.O. have contributed to the training capacities of employing institutions in less developed countries. First reports on the new International Centre for Advanced Technical and Vocational Training in Turin, an agency of the I.L.O., indicate how technical know-how from the advanced countries can be taught to people from the developing nations so that they can in turn transmit these skills to their own people, presumably in enterprises there.[2] This is in the great post-war tradition of technical assistance efforts by the I.L.O. within the developing countries. One of the earliest of these, which I had occasion to witness in India in 1954-55, was the training-within-industry programme—an adapted and greatly expanded form of the programme developed in the United States during the Second World War for the rapid training of skilled workers and foremen in industry.

The trade union is also a training institution, since it prepares some people for positions of leadership and awakens its members to the possibility of responsible participation in determining their terms and conditions of employment. Not all trade unions in developing countries have seen the importance of their training responsibilities, and the same comment could be made of some in advanced countries. Preparation of its

[1] Morris A. HOROWITZ: "High-level manpower in the economic development of Argentina", in *Manpower and education : country studies in economic development*, op. cit., pp. 8-9. See also Enrique OTEIZA: "Emigration of engineers from Argentina; a case of Latin American 'brain drain'", in *International Labour Review*, Vol. 92, No. 6, Dec. 1965, pp. 445-461.

[2] "New I.L.O. centre teaches teachers", in *New York Times*, 10 May 1966, p. 2. Also Paul BACON: "Turin: a new name", in *I.L.O. Panorama* (Geneva), No. 17, Mar.-Apr. 1966, pp. 2-14.

members for new skills and new jobs, sometimes in co-operation with employers, is a legitimate trade union function and will better serve the development of human resources than will blind opposition to technological change.[1]

Research on some of the successes, as well as the failures, of on-the-job and union training programmes, would add to our understanding of how this essential type of training can be made more effective.[2]

Managerial responsibilities for personnel development

Reference has been made earlier to the importance of competent management in any organisation, including the enterprise, and the need for management training. Good personnel relations within the organisation are the responsibility of operating management, with the assistance of staff specialists called personnel or industrial relations directors. In addition to training, the effective utilisation of already employed human resources depends on the recruitment, selection, placement, motivation, evaluation, compensation and constructive discipline of people at work. This is the essence of personnel administration viewed broadly.

In 1964 I had the privilege of serving as chairman of a technical meeting concerning certain aspects of labour-management relations within undertakings, convened by the I.L.O., which prepared a report representing the unanimous views of 18 experts from 17 countries.[3] In this report the experts attempted to distill the best research and experience dealing with (i) recruitment, selection, placement and induction of workers within the undertaking; (ii) promotion procedures; (iii) grievance procedures; and (iv) communications within the undertaking.[4] These seemingly mundane, procedural matters may be the essence of the work environment in which human resources will contribute their best efforts to the achievement of organisational goals.

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[1] The Director-General of the I.L.O. has observed: " Greater involvement by the unions in the training and retraining of displaced workers will underscore the need for specialists in establishing and operating training programmes." See " Industrial relations in the next decade ", editorial in *I.L.O. Panorama*, No. 16, Jan.-Feb. 1966, p. 1.

[2] One such study, under the direction of Professor Frederic Meyers of the University of California (Los Angeles), is nearing completion. In collaboration with research institutes in England, France, the Federal Republic of Germany and Italy he is evaluating the experience of a number of enterprises as " educational institutions ". The research was financed by the Inter-University Study of Labour Problems in Economic Development.

[3] See *Certain aspects of labour-management relations within the undertaking*, Labour-Management Relations Series: No. 25 (Geneva, I.L.O., 1965) (mimeographed), pp. 356-388. The report of the technical meeting has been reproduced separately as *Technical meeting concerning certain aspects of labour-management relations within undertakings, Geneva, 5-14 October 1964* (Geneva, I.L.O., 1966) (mimeographed).

[4] An item entitled " Examination of grievances and communications within the undertaking " was included in the agenda of the 50th (1966) Session of the International Labour Conference, which adopted conclusions with a view to the subsequent adoption of two Recommendations on the subject.

Good communication, in particular, is the key to the development of better human resources within the enterprise or organisation. But it is the managerial or organisational climate, for which top management bears such a major responsibility, that will determine whether communication media are effective or ineffective. Communication occurs through actions as well as words. A management which basically distrusts its subordinates and withholds important information will not be listened to or believed when it tries to communicate other information. But in an atmosphere of trust, which comes from past experience with managerial behaviour, communication with employees will be genuinely two-way and hence effective. There is a growing literature of research in the behavioural sciences concerned with the importance of managerial philosophy or behaviour, and managers who seek to improve the development and utilisation of human resources within their organisations would do well to study it.[1]

Implications of the increasing pace of change

It has already been mentioned that one of the " imperatives " facing the advanced countries is the " continuous pressure to innovate and make new discoveries in science, technology, management, and social and economic policy ". As these innovations occur, they tend to spread more rapidly than in the past to the developing countries, which want to utilise modern science, technology and management so far as they can. The relationship between a strategy of human resource development and the ability to utilise new discoveries is obvious.

This is the age of science and technology. The time between new discoveries and their successful implementation and application is growing shorter. Technological change and its newer manifestation—automation (including electronic computers)—provide the basis for higher productivity and higher living standards. But, if past experience is any guide, it is difficult to forecast what science and technology will bring in the next 50 years. For example, in commenting on flying machine experiments around 1909, Simon Newcomb, the astronomer, said:

> The demonstration that no possible combination of substances, known forms of machinery, and known forms of force can be united in a practicable machine by which men shall fly long distances through the air, seems to the writer as complete as it is possible for the demonstration of any physical fact to be.

[1] Examples are Douglas McGregor: *The human side of management* (New York, McGraw-Hill Book Company, Inc., 1960); Rensis Likert: *New patterns of management* (New York, McGraw-Hill Book Company, Inc., 1961); Chris Argyris: *Integrating the individual and the organization* (New York, John Wiley, 1964); Warren G. Bennis: *Changing organizations* (New York, McGraw-Hill Book Company, Inc., 1966); Cyril Sofer: *The organization from within* (London, Tavistock Publications, 1961); Robert R. Blake and Jane S. Mouton: *The managerial grid* (Houston (Texas) (Gulf Publishing Company, 1965); and Abraham Zaleznik: *Human dilemmas of leadership* (New York, Harper and Row, 1966).

The recent report of the National Commission on Technology, Automation, and Economic Progress, submitted to President Johnson in 1966, pointed to " a substantial increase " in output per man-hour reflecting " some increase in the pace of technological change ". It added: " But there has not been and there is no evidence that there will be in the decade ahead an acceleration in technological change more rapid than the growth of demand can offset, given adequate public policies." [1] These include fiscal policies designed to achieve full employment, together with labour market policies and educational programmes designed to facilitate adaptation of human resources to change. As the report stated: " The responsibility of government is to foster an environment of opportunity in which satisfactory adjustment to change can occur." Private policies of firms and unions operate best within such a favourable environment. This is where the training and retraining responsibilities of firms and unions can supplement human resource development strategies at the national level, in the effort to provide people with the capacities to benefit from technological change rather than being threatened by it. No nation can afford to have obsolescent human resources.

Some areas for further research

Some suggestions for further research in human resource development as related to economic and social development have already been made. It is now time to summarise these and add others which should be high on the priority list of any research institution concerned with the broad subject of this paper.

1. Better statistical measures are needed of the level, and changes in the level, of human resource development. Some efforts have been made in this direction by the Statistical Analysis and Human Resources Assessment Section of the Department of Social Sciences of U.N.E.S.C.O. [2] Clearly, as has been pointed out earlier, we need data on stocks of critical high-level manpower groups, and changes in these stocks over a period.

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[1] *Technology and the American economy*, Report of the National Commission on Technology, Automation, and Economic Progress, Vol. 1 (Washington, D.C., Government Printing Office, 1966), p. 109. This report discusses many of the issues dealt with in the papers presented at the research conference on employment problems of automation and advanced technology, organised under the auspices of the International Institute of Labour Studies and held in Geneva in July 1964. See *Employment problems of automation and advanced technology: an international perspective.* Proceedings of a conference held in Geneva, 19 to 24 July 1964. Edited by Jack STIEBER (London, Macmillan, 1966).

[2] See its preliminary report " Towards a system of quantitative indicators of components of human resources development ". This presents a system of educational attainment indicators based on analysis of school enrolment by grades. When these indicators are applied to 30 countries included in the 75-country index discussed above, a linear correlation coefficient of .937 was found, comparing the two lists.

Data on levels of educational attainment would be better than data on enrolment ratios by age groups, since the latter take no account of drop-outs. Better information on the composition of the "educated unemployed" or "school-leavers" would be helpful. To my knowledge, there are only a few studies of subsequent employment experience of university graduates, by fields of study, in less developed countries.

2. Statistical measures should be supplemented by qualitative information about other means of human resource development, particularly training efforts by international technical assistance agencies, firms, and unions. What is being done in particular countries to upgrade already employed manpower? To what extent have employing institutions, public or private, assumed the training responsibilities I have mentioned earlier? How effective are existing programmes? Can the results be evaluated quantitatively in terms of categories of skills acquired on the job, or qualitatively in terms of new attitudes and initiative for self-development? More case studies would be instructive on how particular firms or unions, working independently or with the help of government or international agencies, have met their most pressing manpower shortages.

3. Since managerial manpower is so critical in economic development, further studies should be made of the results of the recent spate of executive training programmes or national manpower or productivity centres. It sometimes seems that these give rise to much activity but little discernible result. Perhaps short-term benefits are difficult to determine; and we tend to take on faith the promise that these efforts will be beneficial to an economy in the long run. But surely some "feed-back" studies of the performance of managers on the job, after exposure to training programmes, would be useful. It might be found, for example, that management training programmes succeed best when they are supplementary to an effective management development programme within the enterprise and to a top management climate that is favourable to self-development. Perhaps the same comments could be made about the probable effectiveness of other types of off-the-job training programmes for trade unionists, government specialists, etc. At least, this point would be worth further study.

4. Economic development planning requires decisions on the optimum allocation of scarce financial resources to alternative uses. Educational investments must compete with other investments. Consequently, more research on the rate of return from investments in education is needed. In the past most studies have been confined to the advanced countries, particularly the United States, where time series data were available. As other countries improve the quality of their statistics on education, earnings, employment, unemployment, national income, and the like, studies of the economic returns from education may be possible.

In the meantime, cost-benefit studies of particular education and training programmes would also be desirable.[1]

5. The importance of adapting human resources to the increased pace of technological change and automation calls for research to determine what policies and programmes are most appropriate for the purpose.[2] What may work in an advanced industrial country may not be so suitable in a less developed country with cultural and social factors which tend to inhibit change and increase human resistance to it. It has been my observation in many travels in the less developed countries that some enterprises and some unions have succeeded better than others in meeting the human problems of change. But there have been relatively few good studies of this experience. Too often the temptation is great to attempt a global study, based on a rehash of already published general studies, to the neglect of a careful narrower study of the experience in one industry or even in one firm.

6. More research attention should be given to the growing segments of the labour force as economic development proceeds. Wage earners, particularly those represented by labour organisations, have long been the concern of many studies of the problems of workers in the industrialising society. But what about the growing proportion of technical and professional employees, including those in the administrative and managerial hierarchy of large organisations? What about first-line supervisors? Office workers often feel the impact of technological change and skill obsolescence as much as do manual workers, especially in the age of the electronic computer. Research organisations that confine their efforts to the manual worker group have missed the significance of changes in the composition of the labour force in most countries.

Areas for action through new policies

The research suggestions just outlined drew upon the earlier discussion in this paper. Discussion and research serve useful purposes in the real world if they lead to better policies aimed at action to improve the ability of countries to raise the standards of living of their citizens. Some of the policies outlined here have already been mentioned earlier; some grow out of the preceding analysis.

1. A balanced strategy for the development of human resources within each country is needed. Some countries have moved farther in

[1] For other suggestions concerning research needs in the economics of education see Mary Jean BOWMAN and C. Arnold ANDERSON: " The role of education in development ", in Robert E. ASHER *et al.*: *Development of the emerging countries: an agenda for research* (Washington, Brookings Institution, 1962), pp. 163-180.

[2] For a recent distillation of research and experience, principally in the United States and the United Kingdom, see Arnold S. JUDSON: *A manager's guide to making changes* (New York, John Wiley and Sons, 1966).

this direction than others, and the most successful are those that have tried to integrate educational and manpower planning with economic development plans. To emphasise one without the other will mean that a country fails to maximise the use of its total resources in development. Although it is useful to outline general directions for countries at certain levels of human resource development, it must be emphasised that each country should develop its own strategy in the light of its own resources and needs. And within each country different strategies may well be needed in different regions, since some regions are more advanced than others.[1]

2. The better integration of human resource development plans with economic planning has some additional values. The controversy in the United States between those who stressed the structural factors limiting employment expansion and those who emphasised the need for increased aggregate demand missed the point that both are necessary, and must go hand in hand. And, within the province of human resource development, action by education ministries is sometimes at cross-purposes with training programmes designed in labour ministries, or with labour market information provided through the public employment exchanges, or with action by defence ministries—not to mention other government agencies. Better co-ordination of those programmes within government is often desirable.

3. But government cannot do everything in developing human resources for economic and social growth. The formal educational system and government manpower policies may establish the environment, but it is the employing institutions which take the fresh graduates, and the unemployed, as well as those seeking new opportunities, and develop them on the job, for better or for worse. Much more attention has to be given by employers and unions in every country to training and retraining of new and present employees. The possibility that a skill or a process learned early will remain unchanged throughout an employee's working life is much less than it used to be. Self-renewal through the learning of new skills and ideas will face every employee in the years ahead. Enterprise management and trade unions cannot escape the responsibility for assisting in this form of personnel development.

4. The so-called " brain drain " from less advanced to more advanced countries results from freedom to move from one country to another in response to better opportunities. Governments which see their high-level manpower resources leaving may be tempted to limit emigration, and indeed some have done this. Perhaps such drastic methods are seen as necessary to protect an " infant economy " just as tariffs on imports

[1] For a study in one country see Charles Nash MYERS; *Education and national development in Mexico* (Princeton (New Jersey), Industrial Relations Section, Princeton University, 1965).

are justified to protect " infant industries ". But people are not goods or services, and they resent the lack of opportunities to utilise their talents in their own country. The mis-match of manpower needs and supplies explains in part the lack of opportunities, but the primary explanation lies in the slowness of economic growth in many of the countries that are losing their trained manpower. Of course, advanced countries tend to practise restrictions, too, by limiting the immigration of untrained or less-employable people from the developing countries. Acceptance of the latter type of manpower may relieve the pressures that countries of surplus populations have to contend with, and may even provide training and skills that may be returned to the original country later.[1] But it is hardly feasible for advanced countries to deny admission to high-talent manpower, so the pressure remains on the developing countries to advance their rates of economic growth in order to hold these people.

5. Increased productivity makes possible the economic growth that most countries desire. Governments and private groups, including trade unions, should therefore exercise caution in limiting technological change by restrictive methods. In periods of unemployment the temptation to adopt this " solution " is very great, in order to reduce the human impact of change. But the " silent unemployed "—those who are never hired because technological change and productivity are slowed down—have no one to defend their special interests. Trade unions still have a constructive role to play in demanding that public authorities and employers accept responsibility for retraining those affected by technological change and automation, and in helping to provide it for their own members when they can. They can also demand other types of assurance—such as severance pay—for those likely to be displaced, and press for the distribution of the gains from higher productivity among all employees, not just those on the particular jobs affected. Unions and their members will more often respond in these ways if the general level of employment is rising with economic growth, with the help of governmental policies which best stimulate this growth.

This last point brings my discussion back to the starting point. Nations seek to improve the condition of their people through economic growth and human resource development, which are interrelated. This goal, which is an enduring one never completely attained, requires the co-operative and co-ordinated efforts of governments, employers, trade unions, international organisations and all the people who strive for a better life for themselves and their children.

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[1] For a case study of migration between Puerto Rico and the United States see Stanley L. FRIEDLANDER: *Labor migration and economic growth : a case study of Puerto Rico*, M.I.T. Monographs in Economics (Cambridge (Mass.), and London, M.I.T. Press, 1965).