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Education and changing production patterns with social equity

*Presentation by Fernando Fajnzylber at the Seminar on Education and Knowledge:
Basic Pillars of Changing Production Patterns with Social Equity, organized
by ECLAC and OREALC in Santiago, Chile, 5 December 1991.*

The underlying basis for this presentation is the proposal on Changing Production Patterns with Social Equity which ECLAC submitted for the consideration of the Governments of the region in May 1990,¹ and which has since been debated in various national and regional forums. I should therefore like to mention very briefly, by way of introduction, one of the main messages of that proposal, so as to give a clear idea of the role played in it by the topic with which we are concerned at this meeting. This message could be summed up as follows: in order to attain the two central objectives of development in the 1990s –authentic competitiveness and equity– many institutions and many policies are needed. However, we will attain neither competitiveness nor equity if we fail to take care of human resources and their education, training, and incorporation into scientific and technological knowledge. Talking about equity, or about competitiveness, or even more so, talking about both aims at once without making a substantial and consistent effort in this direction is nothing more than fine words. No country can be competitive nor equitable unless human resources are given their due importance.

For ECLAC, the questions of education and science and technology occupy an indisputable leading place. Consequently, in conjunction with the UNESCO Regional Education Office for Latin America and the Caribbean (OREALC) and with the support of consultants from various countries, ECLAC set about the task of going more deeply into this issue, taking three main questions as its starting point: What are the strategic guidelines which should inspire the promotion of this activity which is defined as being of the highest priority? What policies and institutions are needed to progress in this process of change which will give priority to human resources? What kind of order of magnitude are we talking about in terms of mobilization of resources, and what are the potential sources of financing for making this project viable? These are obviously outstandingly important questions which cannot be answered once and for all, and much less by each of the countries alone, through regional-level reflection.

Consequently, the new proposal on education and knowledge as the basic pillars of changing production patterns with social equity² which we shall deal with in this Seminar is merely a first effort to outline a response to these three questions. It is an initial effort which seeks to help set in motion systematic reflection on strategic objectives, institutions and policies, and resources and possible sources of financing.

In this presentation, I shall refer only to the first of these questions, since the other two will be dealt with later on in the seminar. Before describing the essential content of the proposed strategy, however, I should like to highlight some of the fundamental elements which served as a source of inspiration in its formulation. Basically, there are five of them: i) analysis of past Latin American experience of the relationship between development and education; ii) outside experience and the international debate on this topic; iii) recent theoretical contributions concerning the human resources/development aspect; iv) specific experiences at the level of individual cases, enterprises, regions, countries and policy instruments, which show up the real trends in this decade of painful learning, and v) the perceptions of the leading actors, as collected in the interviews which were carried out during this study and which we wish to supplement with the present encounter. I shall then proceed basically to review the first three aspects (that is to say, what happened in the past, what the debate is about, and recent theoretical contributions), after which I shall conclude with a description of the proposed strategy.

¹ ECLAC, *Changing Production Patterns with Social Equity*, Santiago, Chile, March 1990. United Nations publication, Sales No.: E.90.II.G.6.

² See ECLAC/OREALC, *Education and knowledge: basic pillars of changing production patterns with social equity*. LC/G.1702(SES.24/4), Santiago, Chile, 1992.

A diagnosis of the Latin American situation as regards the relationship between education and development

Between 1960 and the end of the 1980s, there was a great expansion of educational coverage, and the index of illiteracy in the region went down from one-third to one-sixth of the population. The figures in table 1 show the spectacular and truly epoch-making magnitude of the expansion in the educational system of the region over the last four decades: from 27 million students in primary education the coverage rose to 73 million, that is to say, from 58% of the population to 88%. In secondary education, the number of students rose from four million to 23 million, representing progress from an enrolment ratio of 36% to one of 72%, while in higher education, the number of students increased from half a million to seven million, so that the enrolment ratio rose from 6% to 27%. The effort to increase educational coverage made by the region has thus undoubtedly been on a very large scale indeed.

Table 1

LATIN AMERICA AND THE CARIBBEAN: ESTIMATED SCHOOL ATTENDANCE AND ENROLMENT RATIOS

(Thousands of persons and percentages)

Level	1960	1970	1980	1985	1986	1988	Annual or average growth rate				
							1960-1970	1970-1980	1980-1985	1985-1988	1980-1988
Preschool education											
Population served	983	1 728	4 739	8 264	8 619	9 491	5.8	10.6	11.8	4.7	9.1
Service ratio ^a	2.4	3.3	7.9	12.8	15.0	14.0					
Primary education											
Number of students	26 653	43 983	64 795	69 646	71 419	72 741	5.1	4.0	1.5	1.5	1.5
Net enrolment ratio of population aged 6-11 ^b	57.7	71.0	82.4	85.2	85.0	87.6 ^c					
Gross enrolment ratio ^d	72.7	90.7	104.8	106.4	107.3	109.3 ^c					
Secondary education											
Number of students	4 085	10 662	17 595	21 318	22 054	23 434	10.1	5.1	3.9	3.2	3.6
Net enrolment ratio of population aged 12-17 ^b	36.3	49.8	62.6	66.2	...	71.6 ^c					
Gross enrolment ratio ^d	14.6	25.5	44.9	50.7	51.6	57.6 ^c					
Higher education											
Number of students	573	1 640	4 872	6 363	6 784	6 978	11.1	11.5	5.5	3.1	4.6
Net enrolment ratio of population aged 18-23 ^b	5.7	11.6	23.6	23.8	...	27.2 ^c					
Gross enrolment ratio ^d	3.0	6.3	13.5	15.9	16.8	18.7 ^c					

Source: UNESCO, Regional Education Office for Latin America and the Caribbean, on the basis of data from UNESCO and CELADE.

^a With respect to the population from 0 to 5 years of age.

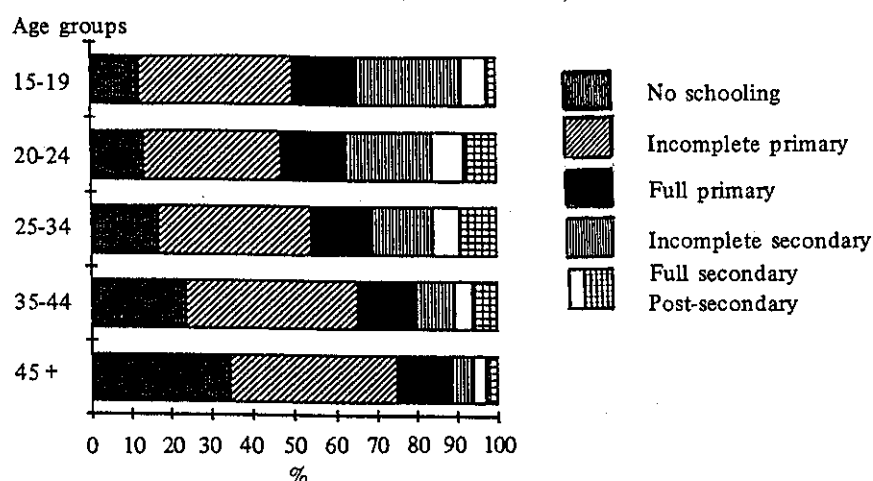
^b Number of students in an age group (regardless of grade of studies) divided by total population of the same age group.

^c 1990.

^d Total enrolment in grade (regardless of age) divided by total population age group corresponding to that grade.

As the growth in demand was even more spectacular, however, the real situation in the 1990s continues to be serious. As may be seen from figure 1, half the young people between 15 and 19 years of age in Latin America and the Caribbean do not have even six years of formal schooling. And what about those who, one supposes, are the source of experience in the region: that is to say, people over 45 years of age? The fact is that 75% of them do not have six years of schooling. This is the real educational situation, in spite of the enormous effort made.

Figure 1
**LATIN AMERICA AND THE CARIBBEAN: DISTRIBUTION OF POPULATION
 AGED 15 OR MORE, BY YEARS OF STUDIES COMPLETED**
(Percentages, around 1980)



Source: Joint ECLAC/UNIDO Industry and Technology Division and UNESCO Regional Education Office for Latin America and the Caribbean (OREALC), on the basis of official data.

How does this situation compare with that of other economies which are also of late industrialization? Table 2 shows that in Latin America, impressive rates of coverage were achieved at the primary and higher levels, but a very special feature of the region is that the big advance in university education took place side by side with a serious lag in secondary education. There are countries in Latin America which have rates of coverage in higher education similar to those of the developed countries, but which display serious shortcomings in their secondary education.

Table 2
**SELECTED COUNTRIES: NET ENROLMENT RATIOS IN PRIMARY,
 SECONDARY AND TERTIARY EDUCATION, 1975-1987**
(Percentages)

	Primary level		Secondary level		Tertiary level	
	1975	1987	1975	1987	1975 ^a	1987 ^a
Argentina	96	...	42	...	27	41
Brazil	71	84	9	15	11	11
Chile	94	90 ^b	34	56 ^b	16	18
Ecuador	78	...	28	...	27	29
Guatemala	53	58 ^c	10	13 ^c	4	9 ^c
Mexico	98	100	33	44	11	16
Venezuela	81	89	35	44 ^d	18	27
Japan	99	100	...	95	25	30
Korea	99	99	52	...	10	36
Thailand ^a	84	95	25	28	4	16
Italy ^a	105	95	71	75	26	26
Spain	100	100	63	...	20	32
Portugal	91	100 ^d	29	37	11	14 ^d

Source: Joint ECLAC/UNIDO Industry and Technology Division and UNESCO, Regional Education Office for Latin America and the Caribbean, on the basis of official information.

^a Gross ratio. ^b 1988. ^c 1980. ^d 1986.

The region faces serious problems in the world of production, too. Its biggest contribution to the international economy and to the world in general is made in terms of population. If we look at what this population does, however, the situation is seen to be less encouraging. Latin America has 8.3% of the world's population, but it only generates 6% of the product, produces only 3.2% of capital goods and provides only 1.3% of the scientific authors of this planet (table 3). In other words, a leading feature of Latin America has been its poor capacity to add intellectual value to its people and its natural resources. Consequently, our differences from the developed countries and the Asian countries, or even the Mediterranean countries, are to be seen not so much in terms of educational coverage as in terms of our limited efforts at innovation and the dissemination of technical progress and, above all, in terms of the region's achievements in the sphere of production. Latin America spends less than the developed countries on research and development, and moreover, very little of the knowledge generated in the region is channeled towards the area of production (table 4). As Ricardo Lagos, the Chilean Minister of Education, said only yesterday, this lack of bridges between the world of education and the world of work is a central feature of our continent. Moreover, the fact that the region's educational effort has had motivations and channels different from and independent of the world of production is further compounded by the fact that the world of production has not had much incentive, either, to consider the addition of intellectual value as a basic pillar of its growth.

Table 3

**LATIN AMERICA AND THE CARIBBEAN: ECONOMIC AND
TECHNOLOGICAL POSITION AROUND 1985**

(Percentage share of world total)

Population	8.3
Gross domestic product	6.0
Manufacturing product	6.0
Capital goods	3.2
Engineers and scientists	2.5
Exports of manufactures	1.8
Resources spent on research and development	1.3
Scientific authors	1.3

Source: F. Fajnzylber, *Industrialization in Latin America: From the "Black Box" to the "Empty Box"*, "Cuadernos de la CEPAL" series, No. 60, Santiago, Chile, 1990 (United Nations publication, Sales No. E.89.II.G.5), table 11.

This has been changing, however, both with regard to the world of education and that of work. This is why the document we have before us asserts that we are at the end of a cycle. Why have we closed this cycle? Because in both the economic and the educational fields the sources of dynamism have been depleted. Even so, however, this is a favourable moment because we see at least three indications that there is a clear disposition among most of the leading actors to give the transition a constructive character.

What are these three indications? The first one is the fact that in the 1980s, even though public expenditure on education went down, total expenditure on education was not reduced to the same extent. This was because families, enterprises, local and regional authorities, non-governmental organizations and the middle-level institutions of society made a big effort which reflected an implicit decision to give priority to this issue. The scanty information available suggests that this represented a concrete expression of the desire to make up for the shortcomings displayed in the public sphere. The second indication was given at the Fourth Regional Meeting of the Intergovernmental Committee on the Main Educational Project in Latin America and the Caribbean (22 and 25 April 1991), at which the Ministers of Education adopted a declaration expressing their desire to make substantial institutional changes so as to build a bridge between the world of education and that of work. Finally, the third key indication is the reaction which is to be seen among the leaders of the Latin American

Table 4

**SELECTED GROUPS OF COUNTRIES: SCIENCE AND TECHNOLOGY
INDICATORS FOR VARIOUS YEARS BETWEEN 1988 AND 1990**

Indicator	Latin America ^a	OECD countries ^b	East Asian NICs ^c	Southern Europe ^d
Per capita research and development spending (US\$)	10	448	23	4
Research and development spending (%)	0.5	2.5	1.4	1.0
Research and development spending/engineers and scientists (US\$)	34 858	141 861	50 160	60 647
Engineers and scientists/100 000 economically active persons	99	650	115	185
University graduates/100 000 inhabitants ^e	156	592	478	191
Engineering and technology graduates/university graduates (%)	19.5	15.6	19.6	17.5
Research and development expenditure, by origin (%) ^{e f}				
i) Public sector	78.8	43.1	35.6	46.4
ii) Business sector	10.5	52.5	61.4	49.5
iii) External funds	3.4	0.4	2.9	3.9
iv) Other	7.3	4.0	0.1	0.2
Research and development expenditure, by activity (%) ^{e g}				
i) Fundamental research	20.9	14.1	21.1	19.0
ii) Applied research	52.4	28.5	30.4	39.7
iii) Experimental development	26.7	59.5	48.6	41.2

Source: Joint ECLAC/UNIDO Industry and Technology Division, on the basis of official information.

^a Member countries of the Latin American Integration Association (ALADI), plus Cuba.

^b Excluding Greece, Portugal, Spain, Turkey and Yugoslavia.

^c NICs (Newly Industrialized Countries) comprise Hong Kong, Korea, Singapore, Philippines and Thailand.

^d Including Greece, Portugal, Spain, Turkey and Yugoslavia.

^e Data for the mid-1980s.

^f Data do not include Turkey.

^g Covers only Argentina, Cuba, Mexico and Venezuela; Spain and Portugal; and the Group of Seven (except Canada), in the respective regions.

countries in various fields: those who are responsible for guiding politics or economics or, in general, carry some weight in Latin American society are clearly convinced that we are at the end of a cycle and must make significant changes.

To sum up, the diagnosis we have just made reflects quantitative expansion, serious lags, the end of a cycle, a disposition to make changes, and finally, proposed broad lines of change which are relatively convergent.

The international debate on education and the training of human resources

With regard to the international debate, I should like to highlight what seem to be the main lessons to be drawn from the extensive discussion taking place in the world on the subject of education.

It is worth noting that all the countries acknowledge the truth of the following two assertions: i) competitiveness is increasingly based on knowledge, technology and human resources, so that the place countries occupy in the world depends on what they do in this field; and ii) the State does not have the capacity to provide significantly greater resources than in the past. Although these assertions are accepted by, *inter alia*, Japan, the United States, Korea, France and Germany, the problems involved are very different in

each country. For some countries, the main thing is to make higher education more creative (Japan, Korea). For others (the United States, for example), the main issue is to strengthen a fragile, makeshift and heterogeneous type of basic education. For some countries, such as France, the need is seen for decentralization. For others, such as the United States and, to some extent, England, it is considered necessary to introduce a minimum degree of centralization in order to provide greater rationality. All the countries agree that it is necessary to achieve greater convergence between enterprises and the world of education, but while some countries consider that there is still a great deal to be done in this respect, others are afraid that they may have gone too far. In Germany, which is a paradigm for the relationship between the world of education and that of work, there is perhaps some concern to reduce the degree of specialization and not bring forward so much the moment when young people take separate paths. In all the other countries in general, but especially in the United States, England and France, the aim is to unite the efforts of the world of education with those of the world of work.

In short, although starting from two common initial assertions, the problems that come to the fore are very different. It may be gathered from the international debate, however, that all the countries have arrived at least at the following conclusions:

i) education and human resources represent a priority issue which is not sectoral but national. Assigning due importance to it is not an option, but an imperative for survival.

ii) No country innovates outside the range of its traditions: that is to say, no country does so on the basis of stereotypes stemming from theoretical frameworks. All the countries innovate on the basis of the recognition of their specific institutional characteristics.

iii) Although resource availability is important, the really decisive factor is the institutional aspect. Studies have been made (the most complete investigations have been carried out in the United States) which indicate that the availability of greater resources is not always reflected in better results, the decisive factor being the system of institutions through which the educational issue is processed.

iv) Since the central aspect is that of the institutions, social and political agreements are of decisive importance for education. If the problem were only one of resources, it would not be necessary to establish broad agreements, but if it is a question of making institutional reforms, social and political consensuses and agreements are of decisive importance.

v) In educational matters, it is necessary to take action well in advance, since the efforts made today will only give results in the long term. Consequently, political and social agreements and consensuses must not be of a merely circumstantial nature, but must have solid foundations and broad scope to give them stability.

vi) It is of fundamental importance to evaluate educational achievement. Education is not measured only by the amount spent on it and the number of people working in the sector, but above all by its real results: it is not possible to make judicious changes in institutions without measuring these results.

vii) Since, generally speaking, the issue of coverage has now been overcome, the outstanding issue is that of equity. But in what respect? It is no longer a question of making it possible for everyone to go to school, since virtually all the population already goes to school; what is important is that what young people learn in school should be equitable. In modern knowledge-based societies, the equity of education depends on its quality and content: that is to say, its appropriateness. This, then, is a brief summary of the central elements of the international debate which are described in the document.

Recent theoretical contributions

This reference to recent theoretical contributions does not mean taking an academic approach but instead has a strictly practical purpose, for such contributions exert a great deal of influence on the convictions and behaviour of particular groups of society which, in turn, may have a decisive role in the educational process.

The contributions of neoclassical economics. We shall look first of all at the recent theoretical contributions made by the neoclassical school of thought with regard to technical progress. Some may feel that it is not appropriate to incorporate these in a proposal of a general nature. But the fact is that economists as a body and economics as a discipline have a great deal of influence on what happens in the field of education, human resources and science and technology. Moreover, these recent theoretical contributions mark a watershed

in the conception of development held by the neoclassical school (the economic tendency most in vogue at present). Why? Because they give a more endogenous character to technical progress by highlighting the fact that the production of knowledge is an activity just as important as the production of goods and other services.

Furthermore, at least four important concepts derive from these theoretical contributions: firstly, the idea that knowledge and technical change are not aspects foreign to economics, which are manifested through the system of prices or new goods, but on the contrary each economy has the duty and ability to exert influence in this field. Secondly, if we consider that the production of knowledge is a leading economic activity, then policies on knowledge, such as those regarding education and science and technology, become important issues for public policy. Thirdly, as the benefits of knowledge are not necessarily received by those who make the effort in this respect, it is highly probable that there is underinvestment in education, science and technology, and this must be corrected; international experience is perfectly clear in this respect: knowledge is of decisive importance for the growth rate of countries (those which do not make investments in education do not have high growth rates) and their competitiveness. Fourthly, in the process of the production, use and dissemination of knowledge, a crucial role is played by the various agents involved (enterprises, families, local communities, middle-level organizations of society).

The recent theoretical contributions made by neoclassical economics will undoubtedly exert a decisive influence on the way economists approach this issue, concerning which they remained quite distant for a long time past. Indeed, some changes have already been noted. In the last World Bank report, for example, for various reasons, considerable importance is attached for the first time to the question of technical progress and education. Recent theoretical contributions in the field of economics are therefore not just an academic footnote to these reflections, but may result in decisive changes of conception and behaviour by economists with regard to the question of knowledge.

The contribution made by specialists in business management. The studies by specialists in business management, which are regularly reported in the press, magazines and even news bulletins, are also important because they exert considerable influence on the business world, the world of professionals, and similar activities. I shall not try to make an exhaustive analysis of these studies but simply try to summarize the main points of the contributions made by some distinguished academics such as Peter Drucker, Omae and Michael Porter, on the subject which concerns us. What have they said in this respect? They have said a great many things, but on this occasion I shall try to summarize the central argument of each of them. Peter Drucker, after highlighting the importance of education and training for business management, emphasizes the decisive civilizing function of education and notes that if the transcendental value-laden function of education is set aside and attention is focused only on its workaday functions directly linked with the interest of the enterprise, there is a risk of giving rise to "educated barbarians". This is how this researcher, who has great influence on the big corporations of the world, has emphasized that the real importance of education goes far beyond its immediate contributions.

Omae, for his part, urges his readers not to cherish any illusions about the possibility of improving business management unless they do the same in the area of education. He argues that Japan has been successful in horizontal, flexible forms of business management, with alliances, work groups, quality control, etc., because these activities are correlative with the values inculcated in the area of education: team work, respect for the values of the group in which one works, exactness, a concrete approach, and honesty: all elements on which the success of business management rests. Consequently, the efficiency of enterprises cannot be substantially improved merely by the introduction of organizational practices similar to those used by the Japanese, if this correlative action in the area of education is missing. Omae thus highlights the bridge between education and work in its purest expression.

In the case of Michael Porter, I shall mention two central concepts: i) the comparative advantages of enterprises are connected, *inter alia*, with their human resources, so that enterprises which do not train their staff are putting themselves at a disadvantage in a competitive world in which all the other enterprises engage in training; ii) the world of education and training is an area of convergence on which the main pillar of the alliance between the public sector and productive sector must be erected. The contributions of these gurus of

advanced business management are of great importance, since there are some indications that the messages they are transmitting have had a great deal of success not only in the world of business but also in the world of professionals and similar activities.

The contribution of prospective studies. Finally, we must consider prospective studies, which have far-reaching influence on public opinion in general and create a suitable climate for the penetration and spread of certain *idées-force*. I shall only highlight some of the main ideas emerging from these studies. First of all, they emphasize the fundamental imbalance which exists between the conception of the educational system—established according to nineteenth-century principles—and the demands of the society of the future, and they point the way to imminent changes of the greatest importance. Secondly, they repeatedly stress the idea that the way countries are incorporated in the world is connected basically with what people know rather than with what people have, and the countries whose people know most will be the countries which have most. Thirdly, they emphasize that we are in a world where there is a proliferation of agents, so that the world of education will cease to be the world of educational agents as such. Instead, there will be an interaction between three groups of agents: the educators of the world of education, the educators of the world of work, and the educators of the world of communication. The nature of the links between these three types of actors will be of decisive importance for fixing the new model. Finally, taking a rather apocalyptic view, some prospective studies suggest that technical change will produce profound exclusion, not only between countries, but also within countries and even within enterprises, and that this differentiation will be between those who know and those who do not know. In other words, even those who take this dramatic view see education as the decisive element in the weight people will have in the future, and they consider that raising the level of education is the only way of guaranteeing social inclusion.

To sum up, both the theorists of the world of economics and management and the prospective studies and conclusions arrived at in Latin America on the basis of the diagnosis which has been made take fully convergent views and open up the way for a set of *idées-force* which come from different sources, but regarding which there is growing consensus. This is the basis for the proposed strategy to which I shall now refer.

The proposed strategy

This proposed strategy,³ whose basic aim is to help set in motion a debate designed to create consensus in Latin America, contains both the *idées-force* which inspire it and the conditions for putting them into practice.

What are the essence and content of the proposal? As indicated in figure 2, we have two guiding objectives: citizenship, and international competitiveness. Let us dwell for a moment on these two goals. What is the real meaning of "citizenship" or, more specifically, "modern citizenship"? It means that every person has the capacity for his full development, not only in the world of work, but also in the family and in the worlds of social relations, political affairs and culture, while at the same time having links that provide social cohesion, access to the codes that permit him to feel that he belongs, and pluralistic, systematic and informed participation in the world of political affairs. Thus, "modern citizenship" is much more than the right to the vote and equality before the law: it is the right to the full development of persons, cohesion and fellowship among persons, solidarity, and also access to a set of common codes. All this makes up modern citizenship: the central objective of the proposed strategy. And there is no doubt that we have made a good deal of progress in Latin America towards this objective, although there are still obvious and sometimes even dramatic lags in the face of the great breadth of the concept.

However, to imagine that we can build societies in which modern citizenship is fully operative without making an effort to attain international competitiveness would be a sheer illusion, because, as already noted on other occasions, the aspirations of the Latin American population run parallel with those of the developed world. Consequently, societies which are hypothetically very well placed with regard to the practical likelihood of modern citizenship will very soon lose their strength and legitimacy if they are not capable of moving in keeping with the aspirations of the population. Moreover, this modern citizenship also involves practical,

³ See ECLAC/OREALC, *Education and knowledge...*, *op. cit.*, Part Three.

Figure 2
THE PROPOSED STRATEGY

Objetives	Citizenship	Competitiveness
Policy guidelines	Equity	Performance
Institutional system	Integration	Decentralization

workaday, economic, prosaic requirements. If these are not pursued at the same time, we will find ourselves once again in a situation of speaking fine words about modern citizenship but facing a reality which will not correspond to it at all. There is undoubtedly some degree of tension between the concepts of modern citizenship and competitiveness. Seeking to heighten competitiveness at the expense of modern citizenship is an obviously outdated attitude, however, while giving priority to modern citizenship but ignoring competitiveness is a rather ingenuous approach.

In order to progress towards the objectives in question, two types of policy instruments are needed: on the one hand, instruments designed to tackle cases of lack of equity in terms of coverage, quality and appropriateness of knowledge, and on the other, instruments to measure the performance of the system. Seeking to solve the problem of equity without verifying how far the purposes of the process of education, training or scientific and technological research are being effectively fulfilled would be just as illusory as evaluating the performance of the system without paying any attention to whether or not it fulfills the objectives of promoting greater equity. Once again, there is a certain degree of tension here, but it cannot be avoided.

In order to apply these policies with the purpose of attaining the proposed objectives, the system of institutions requires far-reaching changes which, paradoxically, point in two different directions. On the one hand, they must seek to strengthen national integration, which in many countries of the region is still only in an embryonic state, or at least not yet fully realized. On the other hand, they must promote decentralization, with emphasis on the autonomy of the individual establishments. In order for there to be citizenship and competitiveness at the same time, it is necessary to develop spaces within education, training and science and technology which provide room for identity, projects, initiative and some degree of boldness, so as to be able to face up to the demands of the real world in which the establishments are located. Autonomy can help to generate creative capacity, but the idea that it will solve the problem of integration alone and unaided is not borne out by experience. There must therefore be a parallel integration effort in order to ensure the national integration of autonomous bodies with their own projects and identity.

This, basically, is the essence of the proposed strategy. We now see, however, that there is tension between citizenship, equity and integration, on the one hand, and competitiveness, performance and decentralization on the other (figure 2). The traditional line has always been that education, training and scientific and technological effort will further citizenship, equity and integration. To some extent, this has been the inspiration for the effort we have made in the region. In practice, however, we have lagged behind in some respects: we have not advanced to the full in either citizenship, equity, nor integration. And part of the reason for this is that we have not made a simultaneous effort to ensure that the knowledge attained is fully relevant to competitiveness; we have not evaluated the performance achieved, and we have not given the individual establishments sufficient autonomy to ensure full development of the capacities of those working in this field.

In the 1980s, partly in response to the unsatisfactory nature of previous results, proposals began to be made which put the emphasis basically on competitiveness, performance and decentralization. Thus, some circles give priority to the concepts of citizenship, equity and integration, while others stress competitiveness, performance (efficiency) and decentralization. What we are suggesting here is that it is not possible to advance towards the first-named objectives without making a decided effort to attain the latter ones. Equally, it would be a crass error to pursue the latter objectives while ignoring the fact that important tasks connected with the first-named aims still remain to be accomplished. Obviously, the feedback operates in both directions.

I shall now deal with the criticisms that usually arise with regard to the three terms that appear in the third column of figure 2. The inclusion of the term "competitiveness", for example, does not always bring favourable reactions. The first objection is almost on the aesthetic level. How, it is asked, can one place a transcendental conception such as that of citizenship, which has social, political and cultural connotations, on the same level as competitiveness, which is workaday, economic and financial? The truth is, however, that in real life the transcendental and the commonplace exist side by side, and it is difficult to uphold the legitimacy of transcendental conceptions without also taking account of everyday considerations. Moreover, in this context competitiveness is understood as being based on the addition of intellectual value, that is to say, on the full development of citizens.

Objections have also been made to the use of the term "competitiveness" because it is seen as an extension of the orthodox economic approach and therefore has nothing to do with the world of education. This interpretation limits the concept of competitiveness to its simplest expression, forgetting that it means not only greater exports and openness, but also the intellectual development of the people.

Finally, it has been said that competitiveness is competition, and competition means the market, so that what is proposed is that education, knowledge, science and technology should all pass into the hands of the market. It is true that there are spaces for the operation of the market in the field of education, but there are also areas of values, ethical considerations and a sense of belonging which have nothing to do with the market. Consequently, in the case of the proposed strategy this view is also unfounded.

I have highlighted these objections because there probably will be reactions like these, since our approach so far had more to do with the concepts of citizenship, equity and integration (second column of figure 2) than those of competitiveness, performance and decentralization (third column of that figure). There have also been similar objections to the concepts of performance and decentralization, but I shall not enlarge on them here. Generally speaking, all these objections are connected with the need for change in institutions and a new perception of how to promote the region's growth. We cannot simply fall back on nostalgia, but neither can we base our approach on a sudden change whereby vice is transformed into virtue, and virtue into vice: the situation is much more complex, and involves the tension observed between the two columns referred to in figure 2. This tension exists and appears inevitable in each of the three main fields of action—objectives, policy guidelines, and changes in institutions—so that the task ahead is by no means a trivial one.

We now come to the question of the conditions for the application of the proposed strategy. In this respect, there are basically two things to note. Firstly, the starting point is different in each country. Consequently, there can be no question of a single uniform recipe for the whole region. If the countries are grouped according to the demands of their production system and their educational supply, this gives four basic situations as shown in figure 3. There are countries in the region with a complex and highly developed production base but serious educational lags (for example, Brazil). Others have a highly advanced educational system but substantial lags as regards the level of complexity of their productive system (as in the case of several small countries of the region). Finally, there are others which are backward in the fields of both production and education. So far, however, there is no country in the region which is advanced in the area of production, with a complex productive system, together with competitiveness and a notable educational effort. This is the goal we should aim for, but as the initial

Figure 3

REQUIREMENTS OF THE PRODUCTIVE SYSTEM AND EDUCATIONAL SUPPLY

		REQUIREMENTS OF THE PRODUCTIVE SYSTEM	
EDUCATIONAL SUPPLY		-	+
	-	1	2
	+	3	4

Source: Joint ECLAC/UNIDO Science and Technology Division and UNESCO Regional Education Office for Latin America and the Caribbean.

situations are so different, what we say in this article is on the level of general reflection and must be decoded, translated and enhanced in each particular situation.

Secondly, the application of the proposed strategy also involves the building of consensuses. Why? Because when we look at the present situation we see various sub-systems (figure 4, section A), each of which has its own institutions, leaders, gurus, referents and forums, but very little internal consistency and very little relation with the other sub-systems. In theory, the formal educational system can lead all students to the university, but in practice many casualties fall by the wayside and find themselves without a future. Ultimately, what is proposed here is to move towards another system in which the sub-systems do establish and develop mutual links (figure 4, section B). What this system reflects is not a theoretical aspiration but a real situation towards which progress is being made, more notably of course in the developed countries, but also in Latin America, in spite of the crisis of the 1980s. This is reflected, for example, in the many concrete links of enterprises with basic, secondary and higher education and with technological research centres, as well as middle-level training institutes (ECLAC, 1991, various boxes).

The policies for putting the proposed strategy into practice may be grouped in line with the following objectives:

i) Opening up the educational institutions to the real needs of society: that is to say, establishing suitable institutional conditions to help or at least permit each educational, training or science and technology system to develop horizontal and vertical links with the others.

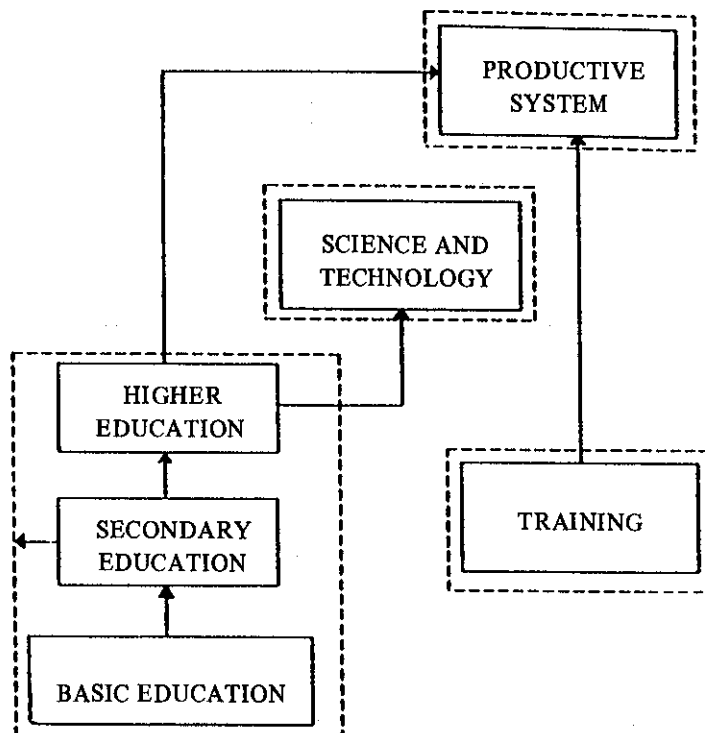
ii) Ensuring universal access to the codes of modernity: this is connected with the coverage and quality of both primary and secondary education and training, because thinking that it is possible to train people without having earlier made a corresponding effort at the level of basic education is a mere pipe dream.

iii) Furthering access to knowledge and taking measures to generate and spread it.

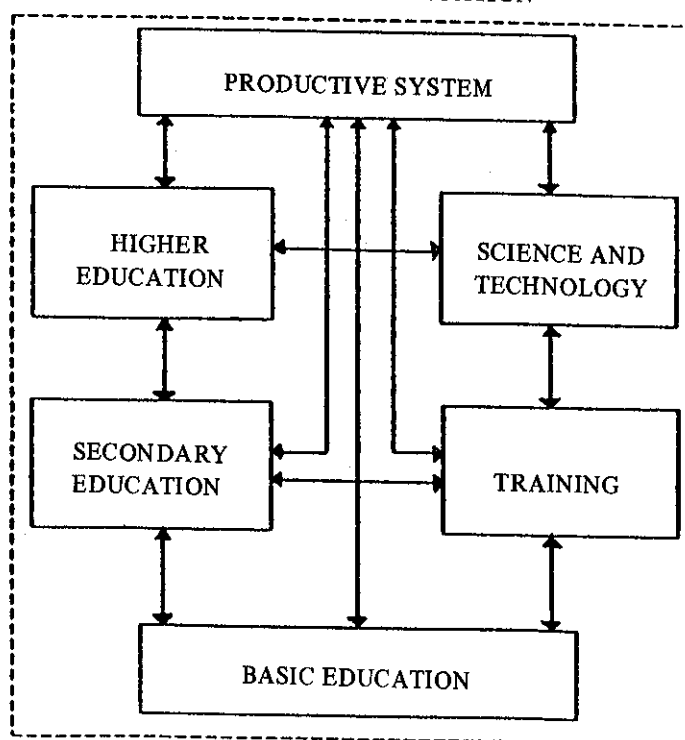
iv) Promoting responsible management, for it is no longer a question of the traditional educational system, nor traditional training, nor traditional science and technology, but a complex system with a host of actors, perceptions, forms of conduct and aspirations, which make it vitally necessary to have a system of evaluation and information which does not exist at present.

Figure 4
RELATIONS BETWEEN EDUCATION, TRAINING, SCIENCE
AND TECHNOLOGY AND ENTERPRISES

A. PRESENT SITUATION



B. PROPOSED SITUATION



v) Raising the professional level and status of teaching: a vital requirement without which the proposal will remain merely at the level of good intentions.

vi) Ensuring that support really is provided and that it comes from all the main actors. The educational system will no longer be financed solely by the Ministry of Finance, through a budgetary allocation to the Ministry of Education. This allocation must be increasingly large, but many other contributions will be needed if the question of education and human resources is viewed from this integrated standpoint.

Conclusions

In conclusion, I should like to highlight three elements in the proposed strategy which seem to me to be most important for the discussion. First of all, this proposal is not the outcome of a beguilingly simple theoretical scheme, but has been constructed on the basis of a learning process taking account of the real situations in Latin America and other regions, the perceptions of the leading actors, and the new visions arising out of the convergent theoretical contributions of the various actors in society. Thus, the first feature of the proposal is its inductive nature.

The second feature of the proposal is its systemic nature. The term "systemic" implies that there is a considerable number of actors, that there must be agreements, and that these agreements must be of a long-term, stable nature. When we speak of a systemic proposal, we are in fact entering a number of fields of great complexity. This proposal is not going to be applied by decree: consensuses must emerge between social actors who have so far not often assumed their parts in the dialogue. The experience pointing in this direction is only of a partial nature, so that while it shows the viability of this approach, it does not guarantee that such viability is general.

The third feature is the existence, at the normative level, of a strong institutional change component, together with a component involving significant additions of resources. In this respect, the proposal diverges from two lines of opinion which currently exist side by side: one of them considers that everything that is being done today in education, training and science and technology is so inefficient that all that is needed is to make institutional changes to solve the problem; the other believes that such institutional change unnecessarily complicates the situation because the real problem is that there are situations of insuperable inertia, and the assignment of more resources would be sufficient to get out of the difficulties.

The proposal which has been formulated recognizes the contribution of each of these components. It takes the view that changes in institutions are inevitable and desirable, but not enough, because when we speak of changes in institutions we are talking about something that affects the culture, history and particular features of the countries, and the proposal does not offer a set institutional formula for all these elements. The specific institutional forms in each country will be the result of the creative effort made on the basis of each country's particular conditions.

In short, the proposed strategy is inductive, systemic, and links institutional change with the provision of extra resources. Ultimately, what it maintains is that education and knowledge are indeed the basic pillars of changing production patterns with social equity.