

Edgar Faure
Felipe Herrera
Abdul-Razzak Kaddoura
Henri Lopes
Arthur V. Petrovsky
Majid Rahnema
Frederick Champion Ward



Learning to be

The world of education
today and tomorrow

Unesco

Learning to be

The world of education
today and tomorrow

Also published by Unesco . . .

EDUCATION ON THE MOVE

A collection of the key background papers which served in the preparation of the report of the International Commission on the Development of Education. Drawing on the experience of internationally recognized specialists representing different political and cultural viewpoints, these studies explore in detail the most significant aspects of education today: statistics, trends, achievements and the forces working both for and against progress and innovation. An original and highly useful companion volume to LEARNING TO BE.

Learning to be

The world of education

today and tomorrow

Edgar Faure

Felipe Herrera

Abdul-Razzak Kaddoura

Henri Lopes

Arthur V. Petrovsky

Majid Rahnema

Frederick Champion Ward

Unesco Paris 1972

First published in 1972 by the United Nations
Educational, Scientific and Cultural Organization
Place de Fontenoy, 75700 Paris,
and George G. Harrap & Co. Ltd. 182-184 High Holborn, London WC1V7AX
First edition, August 1972
Second impression, November 1972
Third impression, January 1973
Printed by Arts Graphiques Coop Suisse, Basle

Fourth impression, September 1973
Fifth impression, September 1974
Sixth impression, December 1975
Seventh impression, August 1982
Printed by Offset Aubin

ISBN 92-3-101017-4

The designations employed and the presentation of the material in this work do not imply the expression of any opinion whatsoever on the part of the Unesco Secretariat concerning the legal status of any country or territory, or of its authorities, or concerning the delimitations of the frontiers of any country or territory.

Presentation of the report

Letter from the Chairman, Edgar Faure, to
René Maheu, Director-General of the
United Nations Educational, Scientific and
Cultural Organization

18 May 1972

My dear Director-General,

I have the honour and the pleasant duty of submitting to you the report of the International Commission on the Development of Education, of which you appointed me chairman at the beginning of 1971 and which has now concluded its work.

This is not to imply that the content of the subject has been exhausted or that its scope would not have justified our spending many more months on further studies or longer reflection. Our task was an immense one, and the very considerable work my colleagues and I have put into the production of this modest-sized report could have been continued and deepened for a long time. However, you wanted not so much an exhaustively erudite study as a critical reflection by men of different origins and background, seeking, in complete independence and objectivity, for over-all solutions to the major problems involved in the development of education in a changing universe. If reflection aimed at action is to be fruitful, we must know when to call a halt to it: the Second Development Decade is under way already, and if this report was to be of use to the international community its publication could no longer be postponed.

It would be presumptuous of me to try to predict how far the report will come up to your expectations or how much it will contribute to the progress of education in the world, but I believe it is faithful in spirit to the terms of reference you set the commission.

We were entirely independent and free in formulating our ideas, and therefore did not feel obliged to be neutral.

Four basic assumptions underlay our work from the start. The first, which was indeed the justification for the task we undertook, is that of the existence of an international community which,

amidst the variety of nations and cultures, of political options and degrees of development, is reflected in common aspirations, problems and trends, and in its movement towards one and the same destiny. The corollary to this is the fundamental solidarity of governments and of peoples, despite transitory differences and conflicts.

The second is belief in democracy, conceived of as implying each man's right to realize his own potential and to share in the building of his own future. The keystone of democracy, so conceived, is education—not only education that is accessible to all, but education whose aims and methods have been thought out afresh.

The third assumption is that the aim of development is the complete fulfilment of man, in all the richness of his personality, the complexity of his forms of expression and his various commitments—as individual, member of a family and of a community, citizen and producer, inventor of techniques and creative dreamer.

Our last assumption is that only an over-all, lifelong education can produce the kind of complete man the need for whom is increasing with the continually more stringent constraints tearing the individual asunder. We should no longer assiduously acquire knowledge once and for all, but learn how to build up a continually evolving body of knowledge all through life—'learn to be'.

As you wished, we decided to begin with a critical assessment of the educational situation in 1972, that is, looking at the world as a whole, to try to discern common features, many of which can only be accounted for in terms of the past, like the new trends which seem to be emerging in most countries and systems, and the factors which, for the first time in history, are now determining or accompanying educational development; this led us to the idea of 'dead ends', to which we have devoted part of this report. Traditional formulae and partial reforms cannot meet the unprecedented demand for education arising out of the new tasks and functions to be fulfilled. We accordingly rejected timid, half-measures which are, in fact, costly because of their very inefficiency and turned our attention to discoveries and other factors holding promise for the future: recently developed intellectual procedures, conceptual approaches and technological advances—to the extent, of course, that these were set in the context of over-all innovation, corresponding to that broad ultimate aim of education to which I referred earlier: that of educating the complete man. National policies must give detailed expression to this aim, which may be common to all

educational systems, in terms of objectives adapted to each country; their strategies must indicate the suitable combination of ways and means for achieving these and, finally, be incorporated in a system of planning. We have tried to make a contribution to the methodological effort necessary to the development of national strategies by analysing these ideas and presenting them as an interlocking sequence. And since our task was being undertaken at the level of the international community, we concluded by examining the tangible expression of international solidarity, namely, co-operation and aid.

The report we are submitting to you shows that there is broad agreement among the members of the commission: Felipe Herrera, Abdul-Razzak Kaddoura, Henri Lopes, Arthur V. Petrovsky, Majid Rahnema, Frederick Champion Ward, and myself—although reservations on some points are indicated in certain parts of it.

But I should not like to give the impression that it contains nothing but our own contributions and a record of the frequently animated discussions that took place in the conference rooms you made available to us. This report is of a practical nature; it is meant to lead to action, and it owes a great deal to the missions we carried out in twenty-three countries, thanks to the facilities which you yourself and the governments concerned afforded us. Much of the realism which, I hope, this report contains is due to this direct contact with the realities of education and the people who deal with them day by day. Furthermore, we have drawn abundantly on the experience which Unesco has acquired in the course of twenty-five years of reflection and operational action; without that experience, a report of this kind could not have been prepared, and in this sense, too, it is timely. We also owe much to the large quantity of preparatory documentation assembled for us, which enabled us, especially at the beginning of our work, to benefit from the reflections of eminent thinkers and specialists in education, and from their original studies.

My colleagues on the commission have asked me to draft a preamble to serve as an introduction to the report as a whole, and I intend to send this to you in the immediate future.

It goes without saying that we would have been unable to carry out our task successfully had it not been for the high degree of competence and the indefatigable labours of the Secretariat, under the direction of Aser Deleon, which, despite the constraints of a rigorous timetable and the difficulty of the job itself, never failed

us, either in the organization of our work or in the exact and scrupulous interpretation of our intentions. To them I extend my heartfelt thanks.

To you personally, I should like to express the gratitude that my colleagues and I feel for the complete intellectual independence you gave us. I regard this as a mark of your confidence, and I think it also secured the objectivity and even temper which, I may assure you, prevailed throughout our work.

With kindest regards,

Yours sincerely,

EDGAR FAURE

Reply by René Maheu,
Director-General of Unesco,
to the Chairman, Edgar Faure

29 May 1972

My dear Chairman,

I have pleasure in acknowledging your letter of 18 May by which you submitted to me the report of the International Commission on the Development of Education.

May I first express once again my deep gratitude for all the work which, under your chairmanship, the commission succeeded in completing so quickly, considering the magnitude of the undertaking.

The report, which I intend to study more closely, seems to me on a first reading both to answer its purpose and to meet the needs of the hour.

Under your leadership the eminent persons forming the commission, differing in cultural and professional background but united in a common concern for objectivity, have given an account of present-day education and defined a global conception of education for tomorrow that are without doubt more complete than any formulated hitherto.

Nor need I tell you how pleased I am that a survey of such high competence should have confirmed ideas already guiding the work of the Organization, namely that education should extend throughout life, should not only be available to all but be a part of every individual's life, and should have as its aim both the development of society and the realization of man's potentialities.

Your work, however, has not been confined to reflection upon education, however remarkable in quality. I am glad to see that, as I had hoped, it has led to practical recommendations which should provide guidelines for action by Unesco, governments and the international community.

Such results amply justify the decision taken by the General Conference, following my suggestion, to establish your commission.

I propose to submit the report, together with my comments, to the Executive Board at its 90th session and to the General Conference at its seventeenth session.

I also intend to have the report widely distributed for the information of the general public and of all people throughout the world who are concerned with and working for education.

Finally, I consider it essential that the report, stressing as it does the importance of the ties between education and social progress, should be made available to the institutions which in one way or another are concerned with development. I shall therefore bring it to the attention of the executive heads of the organisations and agencies of the United Nations System and of various financing institutions.

In conclusion, may I ask you to convey to the members of the commission my sincere gratitude, which I know will be shared by many institutions and persons in all countries.

Yours sincerely,

RENE MAHEU

Members of the commission

This work is the collective effort of the International Commission on the Development of Education, established by Unesco, whose membership is as follows:

Edgar Faure (France), Chairman, former Prime Minister and Minister of Education.

Professor Felipe Herrera (Chile), University of Chile, former President of the Inter-American Development Bank.

Professor Abdul-Razzak Kaddoura (Syria), Professor of Nuclear Physics at the University of Damascus.

Henri Lopes (People's Republic of the Congo), Minister of Foreign Affairs, former Minister of Education.

Professor Arthur V. Petrovsky (U.S.S.R.), Member of the Academy of Pedagogical Sciences of the U.S.S.R.

Majid Rahnema (Iran), former Minister of Higher Education and Sciences.

Frederick Champion Ward (United States of America), Adviser on International Education, The Ford Foundation.

Secretariat of the commission:

Aser Deleon (Executive Secretary), Paul Lengrand, Le Than Khôi, John G. Masee, John G. Slater, Peter R. C. Williams, Louis Ziegler.

With the collaboration of Nicolas Boudart, Henri Dieuzeide, François Furet, Sylvain Lourie

Editorial co-ordination: Marc Gilliard

English translator: Patrick W. Bowles

The main purpose of the footnotes that appear throughout the report and the passages quoted in Epilogue II is to illustrate the many varied opinions and tendencies that exist in connexion with the subject under discussion. It is evident that these quotations do not necessarily reflect the views of the commission as a whole and even less those of each individual member.

The 'Illustrations' to be found throughout this report and especially in Chapter 8 have been chosen as examples expressing the commission's theses or suggestions in concrete form, but are not for all that intended to be in any way exclusive or even to be considered as 'recipes' to be followed. Equally interesting and significant examples could have been taken from other countries and other fields of educational activity. Experiments and innovations under way are already so numerous and varied that it is impossible to make a completely representative or satisfactory selection. However, those 'Illustrations' which have found a place in this report will have served their intended purpose if they stimulate research on other possible innovative solutions, or help spread information on successful innovative experiments.

Contents

Preamble xvii

Part One: Findings

CHAPTER 1 The question of education 3

The heritage of the past 3

Education as biological necessity - Education as social necessity - Primitive society - African tradition - Birth of the school - Written tradition Masters and pupils - Asiatic tradition - Graeco-Roman tradition - The Christian school - Islamic education - Mediaeval model of the university - Advent of modern times - The industrial revolution - Transplanted models - Entering the modern age

Current characteristics 12

Three new phenomena - Education precedes - Education foresees Societies reject school leavers - Common trends - Educational reforms Structural transformations - Radical criticism - Dissent

CHAPTER 2 Progress and dead ends 24

Needs and demand 26

Definitions - Four remarks - Demographic factors - Economic development requirements - Political considerations - Effects of pressure from the people - Sociology of the demand for education - Regional distribution of demand

Expansions and limits 35

Expansion speeded - Towards universal school enrolment - Recruiting teachers - Out-of-school potential - Partly deceptive figures - Literacy and illiteracy - Lessons from literacy campaigns

Resources and means 40

World expenditure - Budgetary expenditure - Educational expenditure and GNP - Comparative increase in costs - School wastage - Distribution of financial resources - Special financial treatment for schools - Slower rates of increase - Criteria: rigid or variable? - Restructuring expenditure

<i>Imbalance and inequality</i> 49	
Regional inequalities - Distribution of teachers - Education for girls and women	
- Information media - Setbacks	
CHAPTER 3 Education and society	55
Education and society: four schools of thought	
<i>Traditions and constraints</i> 57	
Self-perpetuating function of education - Use and abuse of civic training -	
Hierarchies - Elitism - Blocked societies - Education an image Education	
renews	
<i>Methods and content</i> 61	
Cultural communication - The spoken word - The written word - Pictures -	
Misusing media - Subject hierarchies - Anachronism and omissions in pro-	
grammes - Outdated curricula - Social education - Scientific education -	
Technological education - Artistic education - Vocational training - Manual edu-	
cation - Physical education	
<i>The path to democracy</i> 70	
Progress in democratizing education - Persistent privilege - Equal access—une-	
qual opportunity - Inequalities at university level - Palliatives - Internal obs-	
tacles - Marking systems, selection, examinations and diplomas - Teacher-pupil	
relationship - Co-management and selfmanagement	
EPILOGUE I Old concepts and new needs	81
Part Two: Futures	
CHAPTER 4 Challenges	87
<i>The leap</i> 87	
The dizzying future - Exciting and terrifying prospects - A scientific frame of	
mind	
<i>Gaps</i> 92	
Disparate factors - Unemployment - The least favoured - Widening gap - Need	
for economic expansion - Search for solutions - A world approach - New mea-	
ning of 'gap' - Inspiration for education	
<i>Environment in peril</i> 99	
Disorderly expansion - Ecological disequilibrium	
<i>Threats</i> 101	
Fortunes and misfortunes of democracy - Upheavals in private life	
CHAPTER 5 Discoveries	105
<i>New findings from research</i> 106	
Brain research - Infant malnutrition - Contributions from psychology -	
Behaviourism - Genetic epistemology - Forming the cognitive process -	

Algorithms - Structuralism - Pedagogical applications of psychological research - General and applied linguistics - Contributions from anthropology - Theory of information - Semeiology - Cybernetics

New developments from science and technology 116

Pedagogy, ancient art and new science - From initial to continual education - Psychopedagogic phases - Psychology of early childhood Psychopedagogy in adulthood - Group pedagogy and personalization Group techniques - Institutional pedagogy - Theory and technology of communication - Direct-wire television - Radio - Space communications - Data processing - Computer-assisted teaching - Intellectual revolution - Ergonomy - Operational research - Systems analysis - Interdisciplinary links - Changing educational action - Integrating technology into the system - Intermediate technologies - Using the people's energies

New inventions from practical applications 134

Innovating from practice - Individualized teaching - New clients Modification of the teacher's role - Changing school architecture - School and society linked-Freedom from constraint-Education as liberationFunctional literacy - Developing the concept of lifelong education Over-all educational process

CHAPTER 6 Goals

145

Towards a scientific humanism 146

Scientific thought and language - Rules of objectivity - Relativity and dialectical thought - Training scientific minds

For creativity 148

Security and adventure - Quest for new values - Thought and action

Towards social commitment 150

Political education - The practice of democracy - Politics in school - Participation - Education in economics - International education

Towards the complete man 153

Man's powers - Man divided - Dimensions of the complete man - Abstract man and concrete man - Unfinished man

EPILOGUE II A learning society: today and tomorrow

160

Part Three: Towards a learning society

CHAPTER 7 Role and function of educational strategies

169

Policy, strategy, planning 169

Choices - Orientations - Methods

Characteristics of educational strategies 172

Quantitative expansion Specificity - Interrelationships - integrated educational objectives - Over-all vision

CHAPTER 8 Elements for contemporary strategies 177

Dual measures - National characteristics - International inspiration

Improvements and reforms 178

Motivations - Infinite range of internal modifications - Encouragement from the top - Initiative from below

Innovations and search for alternatives 181

Guiding principle for educational policies - Over-all perspective - Less formalism in institutions - Mobility and choice - Pre-school education Basic education - Broadening general education - Maximum vocational mobility - Educational role of commerce and industry - Variety in higher education - Selection criteria - Adult education - Literacy - Self-learning - Educational technology - Application of new techniques - Status of teachers - Teacher training - Conventional and non-conventional educators - Learner's place in school life - Learner's responsibilities

Ways and means 223

Diagnosis of systems - Identifying disequilibrium - Choice of options Experiment - Logistic element - Networks for change - Seemingly contradictory requirements - Functional reorganisation - Participation Financing - Increasing expenditure - Diversifying resources - Reducing costs - General orientations and particular applications

CHAPTER 9 Roads to solidarity 235

Solidarity among all countries - Combination of all efforts - Making aid unnecessary - Crisis in international co-operation

Causes and reasons 236

Traditional forms of co-operation - Enlarging scope - Aid supplements national resources - Aid promotes innovation

Co-operation and exchange of experience 238

Intellectual co-operation - Student and teacher mobility - Equivalence of diplomas - Programmes for international understanding - Exchange of experts - Training abroad - Brain drain - Unesco

Sources and modes of assistance 250

Technical and financial aid - Loans for education - International aid: distribution and conditions - Tied aid - Correlation between aid to education and global development strategy - New terms for action - The spirit of invention - Political determination, exchanges, resources International Programme for Educational Innovation

Appendixes 265

Index 301

Preamble

by Edgar Faure

Education and man's destiny

Very many countries regard the education of modern man as an exceptionally difficult problem, and all countries regard it as one of the greatest importance. And for all those who want to make the world as it is today a better place, and to prepare for the future, education is a capital, universal subject. When Unesco set up the International Commission, it made a timely move, in keeping with the contemporary world's political calendar.

Wherever we find a traditional educational system which has stood the test of time and was generally thought to need no more than a few occasional minor improvements, a few more or less automatic adjustments, it is currently unleashing an avalanche of criticisms and suggestions which often go so far as to question it in its entirety. Some young people are now more or less openly protesting against the pedagogic models and types of institutions imposed on them, although it is not always easy to delimit the influence of this particular phenomenon, with its vague uneasiness and flashes of rebellion.

Serious anomalies appear where the educational system has been set up only recently, and is copied from foreign models— usually the case in developing countries. When they emerged from the colonial period, the Third World countries flung themselves whole-heartedly into the fight against ignorance, which they quite rightly viewed as the all-important condition for lasting liberation and real development. They believed it would be enough to snatch the instrument of technical supremacy, as it were, from the colonizers' hands. They have now become aware that these

models (often obsolete, even for the people by and for whom they were devised) are adapted neither to their needs nor to their problems. Their investments in education have become incompatible with their financial possibilities. The production of graduates is greater than the capacity of their economies to absorb them, giving rise to unemployment among certain particular groups, the drawbacks of which are not confined to that of unprofitability; it also causes psychological and social damage which is so extensive that it is imperilling the balance of society. Since it is out of the question for those concerned to give up one of their fundamental aspirations for which they have sacrificed so much, suffered and fought, an 'agonising reappraisal' becomes necessary. This is the kind of situation which calls for an effort by the better-endowed nations in favour of solidarity.

Finally, it should be noted that certain States consider that their own educational systems are satisfactory, broadly speaking at least, and no authority is empowered to tell them they are right or wrong. They may possibly be deluding themselves, unaware of some deep-lying deterioration. In that case, the awakening, when it comes, will be a rude one, as happened in France in May 1968. But equally possibly these countries may have succeeded, through particularly good management or some other concatenation of circumstance, in achieving this kind of adaptation to conditions which others seem to find so difficult.

None the less, those modern States which consider themselves in a fortunate position and accordingly safe from the risks of crises or pangs of conscience do not for all that deduce they have no problems and no worries. On the contrary, they generally pay great attention to modernising and ceaselessly improving their institutions and methods, and are not frightened of innovative experiments. They appreciate that fresh progress is possible and desirable, by making the highest possible level of knowledge available to the greatest possible number of 'learners'. Nor can they be unaware of the fact that constant developments in scientific discovery and innovations will make this requirement more urgent as each day passes, while at the same time the prospects of reaching that goal grow increasingly distant.

Even if they take their own interest fully into account, it can hardly fail to occur to them that enhanced international co-operation and far freer, more systematic exchanges of documents and experiments would help them to make far cheaper and quicker

progress in an undertaking of this kind. Yet achievements in this field remain weak and sporadic.

But above all, they cannot turn a blind eye to the rest of the world.

At a time when they are advancing towards the heights of knowledge and power, how can they fail to feel some anxiety and even anguish over those vast, sombre areas of the planet which constitute the geography of ignorance—like the continuing geography of hunger and of premature mortality? Not only is it desirable to prevent economic, intellectual and civic disparities from becoming more acute, in the radically changing modern world, and to see a certain level of welfare, education and democracy become accessible to all peoples; it is something which we can no longer regard merely as a matter of philanthropy, charity, benevolence or loftiness of spirit.

The great changes of our time are imperilling the unity and the future of the species, and man's own identity as well. What is to be feared is not only the painful prospect of grievous inequalities, privations and suffering, but also that we may be heading for a veritable dichotomy within the human race, which risks being split into superior and inferior groups, into masters and slaves, supers men and submen. Among the risks resulting from this situation would be not only those of conflict and other disasters (for present-day means of mass destruction might well fall into the hands of destitute and rebellious groups) but the fundamental risk of de-humanisation, affecting privileged and oppressed alike. For the harm done to man's nature would harm all men.

The scientific and technological revolution: education and democracy

Some people think that these considerations are permanently valid, that they could have been formulated in other times and that there is consequently no reason to 'melodramatize' the present problem. This is an extremely mistaken view. The situation we are considering is entirely new and has no discoverable precedent. For it does not proceed, as all too often repeated, from a simple phenomenon of quantitative growth, but from a qualitative transformation

affecting man's most profound characteristics and, in a manner of speaking, renewing his genius.

If we take an over-all look at the evolution of educational activity through time, we soon see that progress in education accompanies economic progress and, consequently, evolution in production techniques, although it is not always easy to discern the respective causes among the complex, interacting elements.

In stable, agrarian-type societies, education is concerned with the transmission of professional skills, of traditions and values. It gives rise to few special problems of its own in isolation from social, political and religious problems.

When economic progress assumes a certain pace, the educational system naturally tends to dispense an increasing amount of knowledge to an increasing number of people, since more elaborate processes of production require more highly skilled labour, while the labour force itself sparks new technical improvements, and people with inventive and innovative minds emerge from it.

In addition, over a long term, education stimulates, accompanies or sets a seal on social and political development, as well as on technical and economic development. More highly educated people tend to assert their claims as citizens, and when there are large numbers of them they tend to make demands for democracy. The view which consists in presenting educational institutions as purely conservative and even repressive is not accurate. Every institution probably exerts some stabilizing influence, by its very nature ; and the very activity of teaching involves, furthermore, a tendency to repetition, to seek out and cultivate forms, formulae and formulations, like juridical activity. This dual trait becomes more striking in times of rapid change: education then seems at the same time to run counter to and stimulate social change.

This dual evolution has continued throughout history, whether long-drawn-out, and making hardly perceptible progress, or, at other times, in quicker and more important social changes, capturing attention and marking significant turning-points in history.

Until the present day, however, there has been nothing comparable in its consequences to what we now call the scientific-technological revolution.

For in fact, much technical progress was made in earlier days through scientific observation and the discovery of 'recipes' which involved no special intellectual grasp of the secret forces of nature. Only in relatively recent times have conquests through funda-

mental research penetrated to -the core of the problems examined, while at the same time their ever-quicker practical application has led to their introduction into the daily lives of the masses.

In contrast to the eighteenth-century industrial revolution and the first machine age, which replaced and multiplied the physical and muscular aspects of the human faculties, the scientific-technological revolution has simultaneously conquered the mental world, with its immediate transmission of information over any distance and its invention of increasingly perfected, rationalized, calculating machines.

This is a phenomenon which necessarily affects all of humanity.

While the effects of economic expansion differ greatly in different regions and among different social groups, the revolution in mass media and cybernetics affects everyone everywhere. Hardly a single human being is now unable to clamp his ear to a transistor radio, transmit sounds through a microphone, or by merely pressing a button unleash an infinite series of mechanisms of the greatest complexity and trigger the most varied and most significant effects. The scientific-technological revolution therefore places problems of knowledge and training in an entirely new light, giving man entirely new possibilities of thought and action; and, for the first time, it is truly universal.

Its communicational nature—in the broad sense of the term—makes it unique in enabling us to apprehend the greatest dimensions of space, the most infinitesimal measures of time and the entire scale of numbers. In this way it may be differentiated from all the historical changes to which it is sometimes compared, such as the Renaissance or the industrial revolution, whose messages could only be distributed at a very uneven speed to different parts of the world and even to different sections of the population.

This fact inevitably comes to mind but it must be stressed that people do not always deduce its logical consequences.

Earlier periods of development, whether slow or sudden, set off (even at the cost of passing crises) semi-automatic mechanisms which kept the balance of supply and demand between the three fields of education, the economy and political rights. Heavy demands for education were not felt in the backward countries, nor was there any great demand for democracy among the uneducated peoples. These adaptation systems, reminiscent of a market economy, have become obsolete in a world characterized by spontaneity and the communication of models.

So far as the economy, welfare and standards of living are concerned, people no longer resign themselves so easily to inequality dividing class from class, or to frustration afflicting entire nations, as in the days when all was seen as an arrangement by the Almighty of the natural order of things. Nor do they resign themselves any more readily to educational underdevelopment, particularly since they have been led to believe that the universalization of education was to become their absolute weapon for the achievement of an economic 'take-off' and the recovery of lost ground. Finally, democracy itself has become a more impressive problem than ever. For, on the one hand, the peoples now aspire to democracy quite independently of their GNP and their rates of school enrolment ; but at the same time, they aspire to a different kind of democracy from the one to which we have until now been accustomed.

This is a domain in which no nation feels really satisfied with its progress and development, and it is a domain in which personality-training has a decisive part to play.

For the development of mass-communication media has provided political and economic authorities with extraordinary instruments for conditioning the individual, in whatever capacity we consider him, and especially as a consumer and as a citizen. The latter must therefore be able to combat the risk of personality-alienation involved in the more obsessive forms of propaganda and publicity, and in the behavioural conformity which may be imposed on him from the outside, to the detriment of his genuine needs and his intellectual and emotional identity. Meanwhile, machines designed to carry out rational operations are ousting him from a certain number of areas in which he used to feel able, at least, to move freely and pursue his ends after his own fashion. However, this innovation should be to the individual citizen's advantage, shielding him from a great many mistakes and freeing him from a large number of chores and constraints. Awareness of necessity may lead to freedom from constraint, provided that it is consciously assimilated and interpreted; at this point, it becomes indispensable for the individual to be able to solve his own problems, make his own decisions and shoulder his own responsibilities, in his own particular, irreducible field of action.

What is known as formal democracy—which it would be wrong to deride, for it marked great progress—has become obsolete. The delegation of authority for a fixed period had and still has the advantage of protecting the citizen from the arbitrary exercise of

power and of providing him with the minimum of juridical guarantees. But it is not capable of providing him with an adequate share of the benefits of expansion or with the possibility of influencing his own fate in a world of flux and change; nor does it allow him to develop his own potential to best advantage.

The technological era brings undeniable benefits and opens vast new prospects, but not without disadvantages of its own. Scientists are currently warning us against a variety of dangers, the somewhat picturesque presentation of which tends to camouflage their hallucinatory nature: the human race multiplying in profusion to the point where population density becomes absurd, the soil and land devastated, the towns suffocating, power and food resources exhausted, the melting of ice in the polar regions leading to another Deluge, the atmosphere polluted with intelligence-destroying chemicals, etc.

Some people go so far as to propose entirely halting the growth rate—'zero growth'—on the grounds that this would limit the damage, while others, without openly adopting such an extreme position, recommend a revival of Malthusianism in the form of an ecological policy. Solutions of this kind are likely to consolidate inequality among the peoples and even to accentuate present-day distortions still further. Growth must accordingly be continued, but to avoid its dangers and reduce its harmful effects communities must organize their requisite priorities and disciplines democratically. This presupposes that the people concerned will be sufficiently educated, informed and aware.

The new man must be capable of understanding the global consequences of individual behaviour, of conceiving of priorities and shouldering his share of the joint responsibility involved in the destiny of the human race. Growth oriented towards the quality of life and the search for balance in human affairs cannot be a task for governments alone, entangled in their problems of management and, often, in systems shot through with prejudice. Only public opinion, if it manages to become world opinion, will be able to impose such simple, obviously necessary yet continually elusive measures as the renunciation of nuclear weapons and the allocation of a portion of the credits, which now go to sterile investments in preparation for wars, to the enhancement of life. If the people are to use their own intelligence for such a purpose, and they are quite capable of doing so, then they must become conscious of themselves, of their aspirations and their strength; they must

shed their fatalism and, if we may use the expression, 'deresign' themselves, and they can only gain such psychological self-assurance through an education readily available to all.

Strong support must be given to democracy, as the only way for man to avoid becoming enslaved to machines, and the only condition compatible with the dignity which the intellectual achievements of the human race require; the concept of democracy itself must be developed, for it can no longer be limited to a minimum of juridical guarantees protecting citizens from the arbitrary exercise of power in a subsistence society furthermore, and in conjunction with this, more support must also be given to educational requirements, for there cannot—or will not—be a democratic and egalitarian relationship between classes divided by excessive inequality in education; and the aim and content of education must be recreated, to allow both for the new features of society and the new features of democracy.

For these reasons the commission stressed the fact that education must be regarded as a domain where political action is of especially decisive importance.

Since these requirements, at least so far as their new-found force is concerned, are themselves among the results of the scientific and technological revolution, any educational action must lay stress on: A common conception of what may be described as 'scientific humanism'. It is humanistic in that it is mainly concerned with man and his welfare as an end in itself; and it is scientific to the extent that its humanistic content remains defined—and thereby enriched—by the continuing new contributions of science to the field of knowledge about man and the world.

Technology, that is to say the systematic application of science and, in more general terms, of organized knowledge, to practical, concrete tasks, enabling man not only to gain a better understanding of the objective processes taking place in his environment, but, above all, to enhance the effectiveness of all his activities.

For these reasons the commission considered that it was essential for science and technology to become fundamental, ever-present elements in any educational enterprises for them to become part of all educational activities designed for children, young people and adults, so as to help the individual to control not only natural and productive forces, but social forces too, and in so doing to acquire

mastery over himself, his choices and actions; and, finally, for them to help man to develop a scientific frame of mind in order to promote the sciences without becoming enslaved by them.

The qualitative change: motivation and employment

We believe that laying stress on the universal nature of the basic facts underlying the education problem provides further justification for the commission's decision not to approach the situation in developing countries in isolation. These countries probably are facing special difficulties and have more stringent obligations than others, and we shall often have occasion to refer to them in this report. However, apart from the fact that it is always risky to adopt a classification based on necessarily rough-and-ready criteria, it seemed to us that the broad distinctions between the categories in question derived mainly from quantitative evaluations or from practical application (which, besides, should be defined not in relation to huge groups of nations but to each particular nation, without prejudice to regional similarities).

As far as the principles determining major options are concerned, both the industrialized and the developing countries will have to devise closely comparable strategies, while making use of different means.

The industrialized nations' educational system retains—at least in very many cases—its dual nature; the education dispensed is pre-technological, while recruitment, socially speaking, is elitist (we are of course referring to high-level studies). This selfsame system, with the same characteristics, has, in general, been introduced into developing countries, where it has the additional disadvantages of being adapted neither to the cultural environment nor to the social and human setting.

The problem in both cases is therefore, first, to move from the pre-technological to the technological stage and second, to build up an educational system catering to the broad mass of the people, while beginning with one which remains restricted to the minority, to which it more or less guarantees high-level economic and administrative employment. Logically this dual change should be

part of a single process. But this has not always been the case. Certain industrialized nations which have attempted to institute mass education without at the same time setting up a modern, technological system have, to greater or lesser extent, met with failure. Their failure is evinced by the small proportion of working-class pupils managing to gain access to higher education ; while all evidence, both from the experience of certain countries and from reliable scientific research, indicates that intellectual capacity is more or less evenly distributed among the various social classes and levels of wealth.

From the educational standpoint, this means that the so-called 'developed' countries are—surprisingly—facing an internally underdeveloped situation. In these countries, faulty adaptation and failure are, comparatively speaking at least, symptoms characteristic of pupils whose origins lie among the people, a state of affairs similar to the one found in formerly colonized countries whose pupils are products of a western-style education imported lock, stock and barrel.

Both cases highlight the related problems of motivation and employment which govern, respectively, entry and exit from the educational cycle, by determining inflow and outflow and conditioning success.

The study of motivation is the key to every modern educational policy. This depends—either cumulatively or alternately—on the search for employment (at a level and with benefits corresponding to the level achieved in studies) and on the desire for learning, the *libido sciendi*. It is, however, striking to note that the first aspect (the search for employment) generally outweighs the second, which, besides, is often regarded as of negligible importance.

And yet curiosity, the desire to understand, know or discover, remains one of the deepest drives in human nature. And 'the notations developed in science today enable the least-gifted people to assimilate concepts the discovery of which required the greatest genius'.

This would ordinarily be the strongest kind of motivation, if it were encouraged, which, precisely, it is not. Conversely, stimulation through ambition and the search for employment is not enough to guarantee higher education in a number of industrialized countries becoming democratic, nor is it enough to ensure that school-attendance in developing countries remains constant.

We accordingly find the paradoxical situation, in certain regions

where only half of all children are able to enter school, that half again of that half fail to adapt to it, and become discouraged even during primary education.

Motivation deriving from employment, on the other hand, seems unable to ensure true democratization. It also has the great disadvantage of giving credit to the idea that every degree brings with it the right to correspondingly qualified employment. The consequence of this is that graduates unable to find work corresponding to their qualifications feel cheated, and prefer to settle into unemployment rather than demean themselves by practising a less-reputed skill which—furthermore—the system has omitted to teach them.

It is typical of the logic of the traditional system that a specific educational level should have its corresponding and guaranteed professional level and remuneration, since access to the system is limited and since, furthermore, education is regarded as hard, even boring work, the joy of which is not its own reward and which must accordingly be paid for once completed.

Modern democratic education requires a revival of man's natural drive towards knowledge. At the same time it should dismantle the diploma-employment mechanism which the economies of many countries (even the industrialised ones) will not always be able to satisfy.

It is not difficult to define the main obstacles to the free play of motivation or, correspondingly, the main lines of a reform designed to reduce the drop-outs, the repeating and the lack of direction which lead to so much failure on both the academic and the human levels.

Because today there is a science of education, and because this science has a technology, we know that from the very earliest age the child's experience plays an essential part in his training, and we can also promote pre-school education, which is all the more valuable as it can compensate, in the developing countries, for the handicap suffered by the mass of the people through lack of cultural support in the family environment.

It is well known that cultural and, above all, linguistic estrangement in the child constitutes an equally serious, if not more serious, handicap. It is essential that the language spoken in a child's family be used during the first stages of his education.

At a time when abstract knowledge is part of a continual process, acting on and reacting to daily life, it should be accepted that the

common stream of education at elementary schools and, the case arising, at secondary schools, must combine theory, techniques and practice, intellectual and manual labour; that schools must not be separated from life; that the child's personality must not be split between two worlds, each out of contact with the other—one in which he learns, like a disembodied creature, and the other in which he fulfils himself through some anti-educational activity.

One implication of the scientific and technological era is that knowledge is being continually modified and innovations renewed. It is therefore widely agreed that education should devote less effort to distributing and storing knowledge (although we should be careful not to exaggerate this) and more to mastering methods of acquiring it (learning to learn). Since knowledge will have to be revised and completed all through life, we may accordingly suppose that studies may be shortened while the relationship between introductory theory and professional practice in higher education—which is sometimes inordinately protracted—may be revised. It would indeed seem an extraordinary anomaly that in an age when theory is, in essentials, combined with practice and human beings, biologically speaking, reach maturity earlier, students are left marking time until the age of 25 and more, in a kind of waiting-room, where they are held at a remove from real life, productive activity, independent decision-making and responsibility.

It is also generally agreed that the academic model which is still highly regarded in so many countries, and which, under certain social and temporal circumstances, has produced the results expected of it, is today out of date and obsolete, not only so far as the working classes are concerned, but even in its utility to young people from the bourgeois class for which it was originally devised. It implacably reproduces the quirks of preceding generations. It relies excessively on theory and memory. It gives a privileged role to conventional, written and repetitive expression, to the detriment of the spoken word, of spontaneity and creative research. It arbitrarily isolates the humanities (considered as non-scientific) from the sciences (considered as non-humanistic), and persistently fails to recognize the advent of the 'scientific humanities'. It divides so-called general education from so-called technical education, displaying a preference for abstraction which would appear to embody the social prejudices of the aristocracy against practical application, regarded as servile—just as Plato condemned the founders of mechanics. It remains extraordinarily allergic to all practical work.

Finally, it has the serious disadvantage of preparing people only for a limited number of professions, and of ruling out the possibility for its graduates, when jobs are scarce, of turning, even temporarily, to the technical and practical activities they have been taught to despise.

The democratization of education might be reconciled with rationalised economic procedures by stimulating motivation and organizing polyvalent education. But those who benefit from it— and their numbers are increasing—must appreciate the opportunity given them for learning and training themselves; they must not consider they owe the State an absolute debt of gratitude.

The fact that a graduate may fail to find the kind of employment corresponding to his own particular or optimal qualifications should not be regarded as scandalous. But the fact that such a person cannot or does not want to take over a socially useful function and personally accept that function is, however, a sign of the bankruptcy of the educational system.

Given an over-all conception of this kind, it becomes possible to reject the neo-Malthusians' view that instruction should be rationed and kept closely in line with employment prospects. A universal *numerus clauses* system, which in the richer countries would maintain existing social injustices in education, and perpetuate the under-equipped intellectual condition of the poorer countries, would nowadays be regarded as intolerable. Still more strikingly, the neo-Malthusian theory is untenable even when we accept its own purely utilitarian assumption. Drafting a graph of correlations between the levels of general education and professional activities would, indeed, be a thorny undertaking: in a changing economy, we have few means of forecasting, with any certainty, the number and nature of jobs likely to become available; few means of setting these against specific professional qualifications, and even fewer when we come to deal with economies on the point of being launched into development.

For these reasons the commission has suggested that any neo-Malthusian trend and any attempt to slow down educational development be excluded from educational policies and strategies, on cultural, political and economic grounds. The aim of education is to enable man to be himself, to 'become himself'. and the aim of education in relation to employment and economic progress should be not so much to prepare young people and adults for a specific, life-time vocation, as to 'optimise' mobility among the professions and

afford a permanent stimulus to the desire to learn and to train oneself. In brief, without abandoning the expansion of education, its objectives, methods and structures should be thoroughly reappraised.

Schools and the learning society

Yet we find certain educationists drawing far more radical conclusions than those we have broadly outlined above, although in many cases they set out from the same basic principles.

Some critics propose abolishing the educational system rather than reforming it, on the grounds that it is often antiquated and sclerotic. And since schools must be brought closer to life, others propose quite simply suppressing them. Views of this kind are usually presented as progressive and even revolutionary, but if they were put into practice on any scale, their effects would certainly be of a reactionary nature, like the economic ideas of the partisans of 'zero growth' to which they are often linked.

The scientific and technological revolution, the enormous flood of information available to man, the existence of gigantic communication-media networks, together with many other economic and social factors, have considerably modified traditional educational systems, brought out the weakness of certain forms of instruction and the strength of others, broadened the scope of self-learning activities and enhanced the value of active and conscious attitudes in the acquisition of knowledge. The prestige of teaching based on reflection is constantly increasing. The problems involved in instructing and educating pupils of all ages, adults included, require us to use a multiplicity of out-of-school forms of learning. Out-of-school education comprises a wide range of possibilities which all countries should use productively. Disdain for it is merely a relic of times past, and no progressive pedagogue can subscribe to this. Schools, that is to say establishments devised to dispense education systematically to the rising generations, are now and will remain in the future, however, the decisive factor in training men to contribute to the development of society, to play an active part in life, men properly prepared for work. Especially in modern society, processing a huge volume of information received through

an ever-greater number of increasingly varied channels requires systematized knowledge, aptitudes and skills. Scientific knowledge, and ideas, regarded as a distillate of what is general and essential in things and phenomena, and more especially, systems of knowledge and methods enabling individuals to form their own personal interpretation of this mighty flow of information, and assimilate it in positive fashion, almost always require organized education, dispensed by properly designed educational institutions.

Admittedly, certain kinds of school and certain forms of teaching must be strongly criticized, if on different grounds for different countries, and many aspects of school education call for thorough-going reappraisal and reformation. None the less, abandoning the idea of school as an essential, if not exclusive, element in education would be tantamount to surrender in the struggle to introduce hundreds of millions of human beings to the kind of education which involves systematic assimilation of knowledge. And while human culture may not be limited to knowledge, knowledge remains today an integral and indispensable part of it.

The position adopted by the commission accordingly involves a dialectical approach comprising, on the one hand, improvements to be made to existing systems and, on the other, alternatives to these. It therefore marks itself apart from the limited approach of those who remain straitjacketed by existing structures, and also from those who dream of some radical structural upheaval, flinging themselves into the unknown without considering realities and possibilities.

For these reasons the commission laid stress above all on two fundamental ideas: lifelong education and the learning society. Since studies can no longer constitute a definitive 'whole', handed out to and received by a student before he embarks on adult Life, whatever the level of his intellectual equipment and the age at which he does so, educational systems must be thought out afresh, in their entirety, as must our very conception of them. If all that has to be learned must be continually reinvented and renewed, then teaching becomes education and, more and more, learning. If Yearning involves all of one's Life, in the sense of both time-span and diversity, and all of society, including its social and economic as well as its educational resources, then we must go even further than the necessary overhaul of 'educational systems' until we reach the stage of a learning society. For these are the true proportions of the challenge education will be facing in the future. It is by no means certain that

conservatism of a cultural nature will be easier to overcome than economic or political resistance. But once in a position to measure the stakes against the price, how can we refuse to fight the fight? And the weapons we need for that fight are available.

The instruments of change

The 'age of change' has provided us with the instruments needed to meet the quantitative and qualitative demand for education which it has stimulated. It remains for us to recognise them for what they are and to be able to use them for that purpose.

The two great innovative systems most characteristic of the technological era, the mass media (the transistor radio and television) and cybernetics, are both linked to information, transmitting it instantaneously, coding it, discovering and using it, and are in consequence adapted by their very nature to the activities of learning, education and training.

And yet today we find comparatively little development of programmed education, while radio and television are insufficiently used for educational purposes, and computers even less so. Apart from exceptional cases, radio and television are put to use outside and parallel to education strictly speaking.

There is a widespread belief that radio can only be used to advantage to excite interest and that it can play only a negligible part in properly educating and training people. And we find authorities merely inserting television into existing educational procedures, instead of thoroughly reorganizing these so that they benefit from this modern technological aid. Meanwhile programmed education is confused with the utilization of very modern and costly methods with which most educational systems are unable to equip themselves. The result is that applications of advanced pedagogic methods remain very limited. It is commonly felt that computerized data processing should be restricted to higher studies; yet, on the contrary, it is most important to plan to give very young children some introduction to the elementary language of machines. First, because algorithms correspond to a remarkable logical method. Second, because contact with this 'mysterious' power often greatly strengthens motivation towards knowledge.

It is necessary, even indispensable for all countries, whatever their level of development, to use educational technology and technological principles on a large scale, or in other words, to use post-machine-age intellectual technologies.

This is true of the developed countries, even of those which feel that their economies are flourishing and that they can afford to make every necessary contribution to achieve their educational objectives. Whatever their circumstances, recourse to these new methods would certainly enable them to obtain greater efficiency from the same investment. The essential problem for such countries is to combat routine, arouse public interest and, above all, to have their teachers co-operate in this undertaking. This latter condition is indispensable, not only in order to tranquillise susceptibilities among certain sections of the population, but in particular, because the use of new technologies in education requires them to be integrated into the educational system.

These technologies are therefore a very valuable asset for developed countries ; but for the developing countries they would appear to be the basic pre-condition for dealing with the entire problem. So far as developing countries are concerned, or most of them, at least, the firm introduction of innovations in this area is the only way they can hope to advance towards a satisfactory solution within a reasonable period of time.

Current procedures can solve neither the illiteracy problem, when this affects a large proportion of the population (notwithstanding undeniable progress through functional literacy) nor, in many cases, can it guarantee universal school enrolment or the yield therefrom. Finally, these procedures are unsuitable for creating opportunities for training adults and gradually applying the concept of lifelong education. Generally speaking, a few additional allocations of credit or aid would not markedly improve this situation, for the countries in question would fairly quickly develop other bottlenecks (insufficient teacher-recruitment or supply of textbooks, etc.).

The field of possibilities takes on a very different aspect once we decide to make use of educational technologies on an appropriate scale, and, above all, of the dual method of programmed education (it may be recalled in passing that this procedure is not confined to computer-programmed education, which we emphasised earlier because of its extreme importance) and of educational radio and television. We would then find ourselves in a situation comparable

to the transition from a subsistence-level economy to a rapidly expanding one.

So far as the choice of methods for modernising education is concerned, it would appear to us that developing countries should make simultaneous use of advanced technologies, so far as possible, while paying greater attention to intermediate technologies and the application of technological principles likely to increase efficiency and generally contribute to education, without, for all that, introducing sophisticated and costly technological or mechanical aids.

The commission accordingly underlined the fact that despite doubts and differing orientations, and whatever the progress or saving which might be obtained from certain changes in the traditional educational system, the very heavy demand for education due on the one hand to the gradual prolongation of school-attendance to optimal age, and, on the other hand, to the institution of a genuine lifelong education, can only be met if instruments derived from modern technology, with its limitless possibilities, are put to use on an adequate scale and with appropriate means.

International co-operation

If we agree that the time has come to overhaul education, that education today is facing a critical challenge and that we must think it out afresh in its entirety, then international solidarity and world co-operation become more clearly necessary than ever before.

To begin with, we must maintain intellectual and operational co-operation among all countries: the industrialised countries must co-operate with each other, so must developing countries ; so, too, must countries close to each other, for demographic, linguistic or social reasons; and each country must co-operate at various levels with educational, scientific and cultural institutions whose experience, attempts at innovation and reflections on the future of education must be regarded as part of the same world treasury. Exchanging shares in this jointly owned wealth is, today, both an urgent duty and the best way to international co-operation.

Another requirement is operational, technical and financial solidarity in relation to developing countries. The renewal of education calls for experiments, and since these involve the risk of

failure, resources must be made available correspondingly. Public expenditure will in many cases, however, be found to have already reached (or exceeded) the ceiling acceptable to the economy and the budget. Furthermore, many educational systems are embroiled in contradictions of a nature more likely to discourage than stimulate potential suppliers of aid, who may be prompted to lend a sympathetic ear to the neo-Malthusians' unfortunate counselling, and to other pessimists, certain of whom have even made their constrictive theses and disenchanted warnings known to the commission.

These were the fundamental reasons which led certain members of the commission to envisage setting up an international Programme for Educational Innovations. Dealing with innovations in all fields, or more precisely, with over-all educational renewal, a programme of this kind could be particularly useful and effective in introducing educational technologies. Any productive investment requires an initial outlay of capital, but management at a later stage could become less costly and far more profitable.

The less-developed countries could not, alone, find the necessary capital; the developed countries would therefore have to help, in new but specific ways. They would intervene, for example, if the installation of a television network were to require communications-satellite relays, which usually cover several countries at the same time.

There are various reasons for believing that the more-favoured countries would agree to this renewal of solidarity ; for they could then be sure that their help would be effective while their initial expenses would be amortized, management-assistance becoming less indispensable once the process of technological re-equipment began to yield its first positive results.

However, the duty of solidarity goes much further than this defence of it on the grounds of its utility to the recipient country: it also has a kind of feedback effect on the donor countries, and a beneficial influence on the entire international community.

The research organizations which would have to be founded or developed to work on the various forms of technological aids to education could be useful to all countries ; for many developed countries are presently faced with the need to innovate. Essentially, and fundamentally, their problems are hardly different from those which they should be helping the less-advanced countries to solve. Nor is there any reason why we should not envisage one and the

same organization working for some customers at a price and for others freely or cheaply. Work carried out in the framework of aid would enlighten the donors as to their own needs and inadequacies, and would probably move them to organize their own exchanges and relationships better, to avoid wastage and other inconveniences.

The enhancement of intellectual achievement among the peoples of the Third World benefits the industrialised nations in many ways (sometimes excessively, in the form of the brain drain).

More important still, nations which only acceded to independence recently have often remained closer than others to traditional modes of culture, and are all the more concerned to safeguard or regain their own particular 'authentic' qualities after experiencing fears that it might be obliterated beneath the alien veneer imposed in the days of colonialism. Thus, they may be able to contribute the richness of their many-sided culture to the world community, and help it to build a defence against the obsessively monotonous forms of life and patterns of thought which may so easily accompany an expanding economy if it becomes synonymous with a civilisation based on the profit motive.

The commission noted that neither present forms of bilateral and multilateral aid, nor the resources available for it, nor, even, the conceptions on which it is based are capable of meeting the world community's present educational needs. and they will be particularly inadequate if renewing the educational enterprise becomes an overriding consideration. Ways of broadening and strengthening solidarity must be found. Some of these emerge from our analyses and suggestions. Others must be developed later. But we remain convinced that this can be done, given initiative and expertise among the nations, the peoples, the educators and researchers and also with the help of international organizations, especially Unesco, which has a leading role to play in this field.

Knowledge is not all that a culture requires. The commission was not in a position to extend its field of study, in the breadth and depth which might have been desired, to all those functions which are extrinsically educational, and to bring in the whole range of family, vocational and urban relationships, and those of social groups and professional and spiritual communities. However, all our observations helped to confirm our certainty that all these different intrinsic and extrinsic functions together make up a

whole, and that the various sectors of human development and social life are inseparable from each other. If we suppose that technological means—and more especially, machines reproducing mental operations—represent the equivalent, for the human brain, of what might otherwise have been obtained by some biogenetic mutation, then we may say that it will be necessary for the new man to be capable of achieving a balance between his increased capacities for understanding, for power, and the potential counterpart of these in his emotional and moral personality-structure. Uniting *Homo sapiens* and *Homo faber* is not enough; such a man must also feel in harmony with himself and others: *Homo Concors*.

This will be necessary if he is to overcome the dangers and other harmful consequences of the exponential growth rate and the material aspects of development. It will be necessary if he is to shoulder his civic and social responsibilities and react to contradictions and injustice. Individuals must be able to use the power inherent in consciousness through the agency of historical and group consciousness, through research, through preserving their authentic identity and, finally, through each individual's feeling that he fully belongs to the entire species. In this way, the twin poles of the singular, which is irreducible, and the universal, comprising diversity within identity, will achieve expression.

This age, which has been called that of the finite world, can only be the age of total man: that is to say, man entire and all of man.