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Ad Agenda Item I

Confidential

BILDERBERG MEETINGS
17 - 19 april 1970

TRANSFORMATIONS IN SOCIETY AND THE REPLANNING OF EDUCATION

by Edgar Faure

It is generally agreed that the primary aim of an educational system is to help man to achieve happiness. However, this subject is itself a source of confusion if the relationship between man and his society is in the process of complete transformation.

For a long time, he seems to have been in harmony with society. Not long ago, helping him to achieve happiness meant helping him to understand the world, to fit into it intellectually and to participate in its work.

For those accepted, school was a place of privilege where classified knowledge was transmitted and one acquired a definite behaviour which ensured happiness throughout life. This, then, was what might be called a subsistance society which evolved so slowly that it was unnecessary to accumulate stocks of knowledge or to modify behaviour from one generation to another; knowledge acquired during infancy or youth was sufficient for a lifetime.

Today, however, it is no longer a subsistance society, but a dynamic one; crises no longer being considered inevitable, a large part of the population is able to acquire goods of lasting material and cultural utility. This revolution has produced new anxieties and possibilities, and new requirements. Youth's fear of losing its liberty in a materialistic life or in a culture which it feels will not bring it freedom is part of this anxiety, democratic teaching of these new possibilities, and permanence in the teaching of these new requirements.

Today's society is not only one of expansion, it is also one of technicology. We obtained unlimited potential power from the industrial revolution, unlimited communication possibilities from the revolution in transmission techniques, and the computer

revolution has brought us unlimited means of organising, teaching and reasoning. Here again, we are faced with new anxieties (the fear of competition between man and computer), new perspectives (all those offered by educational technicology), and new requirements (the technicological society imposes new habits and new ways of thinking).

This growth and mechanization of society has brought about a disagreement between society and man, as if the double evolution of the former, triggered by man, but unwittingly, had taken control of him. Having become a passenger in a vessel which he launched but of which he is not in control, will man be dragged into a mad race towards a destination which he does not even know, or will he be able to regain control of the machine? This is the great question of our day.

If man is to be master of the inevitable evolution, our educational system will have to be radically modified, and this calls for careful thought.

However, even this appears insufficient to those concerned with the future. There is no point in gaining control of the present evolution unless we intend to choose the subsequent one and bend it to our will, rather than suffer what it offers us. But what is to be our goal?

This question is made even more disturbing by the fact that we are approaching one of the most serious transformations in the history of mankind. With the passage of time, the great human transformations appear as a victory of residual capabilities. Man has always sought power, intelligence and pleasure. The success of each quest for power - tools and energy being available to all - have made the man of today, compared with that of the Gro-Magnon age, a physical weakling; what medal winner of the Olympic Games would be capable of capturing a runaway goat? Being physically deficient, man has naturally given priority to his search for intelligence. Just as he had developed and was continuing to develop his physical power, not within himself, but outside himself, he developed his intelligence outside himself (or at least intelligence

as we now understand it; a combination of memory and reasoning power), for which he invented poetry, writing and, more recently, computers; during the past few years their ability to store and analyse information has ridiculised the ability of their creator, and with the arrival of self-adapting models we can already observe the emergence of a certain form of thought and judgement. Will the man of tomorrow, when compared with ourselves, be deficient in memory and in the type of reasoning familiar to us? If so, what residual faculties unknown or barely suspected by us will he exalt? Will he give first place to intuition, to the development of conscience or to the quest for pleasure? The transformations of society are merely pointers to change in man.

We sense that this change in man is inescapable and that failure to allow for it when planning - as today's educationalists have to do - for the year 2000 or 2010 would be criminal.

Nevertheless, the course it will follow is doubtless still undefined. We are no longer in the ages when societies sought to achieve everything possible, their entire feeling of liberty being dependent on the rate of achievement. We are now in the era of possibilities and thus of selection, it is we who increasingly often choose which possibility we shall transform into reality. The question to be decided is whether we still have time of choose our transformations. If so, helping man to achieve happiness by making a good choice becomes the major aim of our educational system. In reality, in order to be in a position to make this choice, we must first of all gain control of our evolution; to navigate, one must be seated at the controls. Without losing sight of the final aim, the following thoughts are expressed with a view to tracing out some of the transformations in our educational system which are essential to enable man to direct society's dual advance towards expansion and technology, instead of being swept along by it.

Education and the dynamic society

Current events seem to invalidate the pessimistic theory that our economies, powerless to avoid an imbalance between indefinitely expanding production and a consumption incapable of keeping pace

with it, are bound to go through crises. In reality, in several highly developed countries, the producers have become consumers and the consumption curve follows the production curve so closely that crises endangering the life of society have disappeared since the beginning of the century. Even if we agreed with Marx that there can be no revolution without economic crises, we must relegate to the attic the myth that social progress is achieved by revolution.

It is true that the new perspective of unlimited growth in societies with indefinitely expanding economies and social structures enables us to advance towards this growth without recourse to a costly revolutionary procedure, provided that we understand how to organise, not a sharing out of the goods at present available to mankind, but a corrective sharing of goods not yet created. It is not revolution which will bring greater justice, but the application of a policy which might be termed "the socialism of acquisition".

This implies the need for a new social contract. Not a contract to shield against catastrophy or arbitrary decisions, as conceived by 18th century philosophers, but a promotion contract granting each one his share in the profits resulting from expansion and his share of responsibility in directing the system which brings it about.

We are, of course, talking of cultural expansion, as well as economic expansion. If we wish to transform the dynamic society into a promotion society, we must ensure that everyone, and not merely an elite, shares in the results of cultural development. Everyone must have the benefit of equal chances of individual promotion through education; such is the meaning of what might be called cultural democratisation.

Whilst offering this possibility, the dynamic society obliges us to stop limiting education to a specific period in life and to stop restricting its dissemination to schools and universities. Education of the man of the 21st century, who will move in a world constantly swept along in an overwhelming expansion, must be

continuous. We have to organise it throughout life, from birth to old age, and throughout the sphere in which man is active, not merely at school, but also by means of mass communication - press, radio, television - and by individual means giving everybody increasing opportunities to learn, at his own rate and within his own abilities, whatever he wants to learn, when he wants to learn it.

At a moment when our societies are entering a period of indefinite growth, man cannot hope to master the evolution process unless he can succeed in the democratisation and perpetuation of his learning.

The democratisation of growth

In order to be able to accept increasing numbers of pupils and schoolchildren and the majority of young people of school age into secondary schools and, soon after, into the universities, the public authorities in France have made considerable financial and material efforts since the middle of the century, and continued with a psychological effort to convince the taxpayer that it is in everybody's interest to increase considerably the sums devoted to education.

The improvement in quality, unfortunately, has not kept pace with the inprovement in numbers. This no doubt explains why the crisis of May 1968 occured mainly in France; the weaknesses of a sickly educational system were made more apparent by a huge increase in the number of students.

The uniformity of the teaching received by all students and the obligation for all of them to pass the same examination, for a long time masked with a veil of equality and democracy the basically unequal nature of most of the educational systems. This inequality can be seen even at the kindergarten stage. France endeavours to teach children to handle objects, then to convey ideas and then to reason. In reality, the State and the municipalities do not possess the means to accept all children from the age of 2 or 3 years in the kindergartens. They therefore

usually enter when older. The begin learning to handle objects, but start late to express themselves and reason. Those who have hearnt to do so within their family circle, because they are culturally privileged, do not suffer, but those who do not possess the same background are, with a few exceptions, handicapped throughout their education. The handicap is all the greater because expression and reasoning subsequently play an essential role in the school tasks and most examination results reflect ease of expression much more than acquired knowledge or ability to acquire it. In these examinations, children from culturally privileged backgrounds easily lead the others. The latter are outpaced, fail their examination, repeat school terms and are finally eliminated without completing their secondary education.

Society will not have been made truly democratic until we have eliminated this inequality, and this will be achieved less by a generous policy of scholarships and grants than by a cultural policy which, instead of giving priority to literary education and presentation, is designed to compensate the differences in family cultural background, particularly in kindergartens and primary schools. This is now so clear that it is unnecessary to dwell on it.

Continuation of education

In our dynamic society, we shall also have to ensure that education is a continuing process. This is a point to which little collective thought has been given, yet what task is more obviously necessary than that of adapting the timing of man's training to the requirements of the society in which he will be living?

We can feel quite clearly that this society in a state of evolution, calling for constant change in man, is completely modifying the status of the school. It calls for new timing of his educational pursuits; he must be able to improve his skills at any moment. Education can no longer be restricted to a period in one's childhood. It must be capable of extension, removal or commencement at any stage in life. We must immediately and seriously organise a system of adult education which is not just training or a series of refresher courses (acquiring culture is obviously quite a different

matter to acquiring professional qualifications). The fact that this education is still at the experimental stage in many courtries does not justify dangerous procrastination on our part.

Having decided this, we must review our school and university system. Knowledge and skills which now have to be acquired before leaving school or university can be obtained later in a society in which education is continuous and in which we shall be able - or even obliged - to renew our knowledge periodically and enrich our culture. Why not reduce right away by a few years the duration of full-time university education? What does it matter if a law student has to spend 3, or even 2, years studying instead of 4, if in the subsequent 20 years he is going to spend a tenth of his time completing his training and bringing it up to date, whilst extending the theoretical teaching of his peers by the addition of all that which experience brings to the person undergoing it?

We must be able at any moment to change course; both during and after school. In the light of present forecasts, it is impossible to state what demands our society will make of us in 10 years' time. It is even more obvious that a 18-year-old adolescent cannot choose his course once and for all for half a century. Would it be desirable to continue, as in the Middle Ages, devoting an entire lifetime to the task? In any case, we can foretell without much risk of error that changes in orientation will be necessary increasingly often in the study courses for adolescents and during professional life.

We must therefore facilitate these changes by organising for as long as possible a common path, which had the great advantage for human understanding of developing the acquisition of common languages. Why specialise before the baccalauréat? Why not a common baccalauréat for all, thus ensuring a common language in mathematics, French, foreign languages, technology? Why should higher education not extend as far as possible along a common path? Why not postpone, for example, the parting of the ways for students in medicine, pharmacology, dental surgery, biology teaching or veterinary medicine?

Did those in France who advanced the moment when specialities have to be chosen, at a time when the rhythm of society was increasing, calculate the cost in money and human effort which reorientation of training would involve? If anyone has made a mistake or life has evolved in an unexpected manner, he has to turn back and start all over again. Moreover, what a wastage, when the victims find the road too long to return to the starting point.

The reforming of man and his knowledge and skills is not something necessarily bound up with school. Without thinking about it, we accept the idea that pupils go to school and students to the university. But why is the movement in that direction? In some adult training systems, it is the teachers who go to the students and move from town to town, or village to village to bring something to adults sho, living far from a university city, feel the need for a fuller culture giving them better qualifications for their various occupations. Today, school must go to the man and not demand that all go to it. Let us encourage this movement of the teacher towards the taught and create a whole network of adult, and perhaps adolescent, education. Let us also remember that education uses all media which can convey it to man: the press, television, the cinema, administrative arrangements (administrations at present have considerable counter-educating effect; every citizen is well aware of it and vainly endeavours to obtain information and understand the esoteric mechanisms in which he has been enmeshed), etc. This extramural education must be directed mainly at the evolving areas (undergoing town development or industrialisation), where men most need to learn and get experience, and benefit the categories of person who are least well prepared (craftsmen, women, etc.). It must penetrate the factory, games and leisure activities.

Every citizen, wherever he may find himself, must be aware of his responsibility in securing continuing education for all. We must at least mobilise all men in a position to aid their contemporaries to develop their abilities and take advantage of the wealth of information which our society is continuously disseminating.

The continuing nature of education thus disrupts the status of

the school which loses the privilege of being the sole place of education. It becomes but one of the places of education, at the time when education itself must cease to be linked with one specific period in each man's lifetime, to become a way of living for everybody.

The perpetuation of education thus transforms teaching also. No longer can there be confusion between teaching and the transmission of knowledge.

What appeared true for centuries becomes a dangerous mistake at a time when culture is in constant development and professional requirements are constantly changing. In addition to acquiring the knowledge of a given time, we have to learn to learn. Man must be able to assimilate not only a set of facts accepted at the time of his training, but also constantly bring his knowledge up to date.

This is true as regards culture. He must not merely acquire the culture of the moment, but be able to participate in future cultural developments and especially extend his culture, particularly in his spare time, which will constantly grow.

It is also true - although more often denied by those attached to the past - as regards his professional activities. The laeders of tomorrow may well completely change profession five or six times. Even today, how many adults are obliged to change their manner of life suddenly because of the exodus from the country, town planning or industrialisation. All must be able to adapt themselves to new occupations instead of being adapted to suit present ones.

Moreover, one cannot force an adult to do work which he hates. He must want to do it and must therefore have been given the taste for it.

Let us therefore abandon the idea, dear to many families and teachers, that teaching is of necessity boring and sad. Through all stages of the development of our society, knowledge appears to have been bound up with unpleasant effort and relative suffering. This is

because teaching has been instruction and not education; lessons learnt, and not means of training. Memory is the supreme faculty which has to be used and to which intelligence and reason have to give way. Programmes based on an accumulation of knowledge and methods devolving upon an effort of memory thus seem to imply that knowledge can only be acquired by suffering. For many, suffering and boredom are considered not merely as inevitable, but even as the aims of knowledge. If questioned, most French families would confirm this unpleasant concept of culture. Learning is inherently ascetic, disciplinary and testing. The examination is the triumph of this outlook; it is part of the punishment.

This also explains the instinctive mistrust surrounding all methods capable of arousing interest. As soon as one talks of using the cinema to transmit knowledge or of opening children's or adolescents' minds to the economic and social realities of the world, the numerous good souls become anxious. The only method of teaching which they can imagine consists of courses and lessons, i.e. the most simple, austere and sometimes fastidious teacher-to-student relationship. If physical exercise and the teaching of the arts have not reached their due place in our society, it is mainly because they arouse interest, keenness, pleasure and a clear affirmation of one's personality, a clear confirmation of individual progress.

This voluntarily repulsive form of teaching must be rejected once we decide that education is to be a continuing process. A pedagogy which creates joy and a desire to learn is needed to give man the taste for constant refreshment of his knowledge and a means of keeping pace with the constant changes in a dynamic society.

Education and the technological society

The technological development of society affects man not only in his visible manner of living and his behaviour, but also in his very being; it raises new problems, produces new hazards and calls for new efforts. In solving these problems, avoiding these hazards and successfully making the new effort demanded of him, man will undergo a transformation. He will have to overcome his fears, in

the first place, the fear of change. Yesterday, he was afraid of overproduction and the workmen destroyed Jacquart's looms; today, the fear is of intellectual over-production and the development of a university Malthusianism almost amounting to the selection of a small elite against collective promotion.

Technology must be used to free man and give him the advantage of all its educational potential. Not for the sake of novelty, but because teaching is easier to make individual when modern facilities are used. For example, teaching by means of magnetic tapes used in conjunction with television sets enables us today to give each one his own work programme which he can complete when he is ready to do so and because he wants to do so. Similarly, teaching programmed with a computer has the great advantage over classic methods of teaching that it can be adapted to the individual. In the classroom or lecture hall, the teacher or professor offers the same information to all pupils or students, whatever their interests or levels (so that it is subsequently necessary to subject them to a restrictive examination which sorts them out according to their levels) and this teaching is received by all at the same rate, slowing down the progress of the faster ones, and discouraging and finally eliminating the slowest. Mechanically programmed teaching, on the other hand, will enable all those who wish to do so to put the questions of their choice and receive the best answers, i.e. to put questions corresponding to their own level and particularly at their own rhythm. One will take two years, where another will need three weeks. This is of no importance. The main thing is to learn and to make the teaching system proficient by adapting it to the desires and capabilities of each individual.

Finally, man must change if he wishes to escape from being su subjected to a technological society. To secure control of the movement in which he is involved, he must bring himself up to date, open his mind to a fresh culture, acquire new ways of thinking and adopt new ways of life. Our educational system is bound to be completely transformed.

A new conception of culture

The current changes in culture, which is becoming a culture for

the masses in our consumer society, have undergone violent attack from the intellectuals. For the conservatives, mass culture is merely dulling and stupifying - a degrading and degraded culture; for the left-wingers, culture can only be a disrupting influence, the reflection of a bourgeoise society, which must be ended.

It is obvious that we are faced here with a double risk. However, it is extremely debatable whether the denounced evolution is a reality today or at least inescapable tomorrow. The vogue of non-figurative painting and the modern novel show that the creators in our society do not seek to flatter the baser instincts of the public, or the instincts of the baser public; that art continues to be a hard and demanding quest. It may be objected that the more difficult works still have only a limited public. But is not so limited as that, and is certainly much larger than that which existed in the past for works much easier to understand.

The counterproof is provided by the communist society, where the type or consumer society is much less in evidence in economic exchanges; there, we find little wastage of goods, little durable equipment for the masses and cultural activities are very restricted. In the artistic field, the results are undoubtedly poor. The prevailing style of painting is extremely conventional. It is true that the literature does not depend on murder and vice, but it is almost always extremely boring.

Thus, the present evolution is far from proving that the development of a consumer society automatically involves a devitalisation of the most traditional forms of culture - literature and the fine arts. This is especially true if we agree that in our scientific and technological age science is culture, technology is culture and engineering itself is culture. The development of the human sciences, exploration of the depths of the subconscience, investigation of the dynamics of our societies, the discovery of the immense secrets of organic matter and life, penetration of the atom and the new familiarity with outer space are as authentic forms of culture as Latin grammar, Quattrocento painting and the understanding of Robbe-Grillet. Is not the appearance of a new mental tool, the

huge advance in the representation of the world permitted by the new mathematics, an example par excellence of cultural accomplishment, as it now makes available to everyone, and for all, possible new techniques, the algorithmic techniques and operational research?

Moreover, this culture in the course of transformation is no longer limited to an elite, but is available to all. Current reproduction techniques and means of communication give many interested people access to works of art which they could not have seen some years back; this amounts to the discovery at home of the museum seen in the mind's eye by some, travel and true contact with the world for others. What is true of the plastic arts is also true of the ideas conveyed by books; new popular collections appear every day, making available literary or scientific works hitherto difficult to consult. This is even truer of the ideas expressed on the radio and television.

It is wrong to claim that this mass production degrades culture; cheap literature does not deprive Hegel, Sartre, or even Marcuse of readers; it is non-reading which does so, but the habit of easy books gradually leads them to more serious things. The interest in art exhibitions has increased considerably amongst people who have possessed a television set for more than five years.

Neither is it true that this mass production necessarily brings about uniformity and conformism. On the contrary, we can see that the press agencies, radio stations and TV networks are constantly increasing and diversifying information, like the publishers. Are not the car manufacturers obliged to diversify and renew their production lines all the time? As for conformism, we merely have to consider the student movements which have shaken the world, especially in France, in 1968, to see that the consumer society does not necessarily succeed in taming consciences. It is more in the traditional societies that conformism is to be found; behind us, and not ahead of us. If these obvious facts do not strike the conservatives, it is because they systematically refuse to consider culture in its new form. For them, to-day's culture is measured with the yardstick of their childhood - or the childhood of their masters,

for them, culture cannot exist outside the realm of literature and the fine arts. This explains their pessimism and this is why they constitute a menace within our educational system. They congeal culture in a rigid tradition, thus justifying the reproaches of the left, and by congealing it make man unable to master the contemporary evolution. Under their influence, the educational system resists all modernisation; they ensure the immobility of transmitted knowledge. In their eyes, the classical culture, mainly in the hands of the humanists, is all we need ever hope for. Thus, the past is attempting to impose on the future the limits of its knowledge.

This resistance was not seriously harmful so long as knowledge developed only slowly, i.e. until the middle of the nineteenth century, but the diversification and acceleration of scientific and technical progress have placed our educational system before ultimatums. Teaching programmes have had to give way before new forms of knowledge. Generally, they have done so by accumulation. However, this has not been sufficient to destroy the resistance of a certain concept of culture, it has merely changed position. This tends to root education in all fields, i.e. to grant the title of knowledge only to old, checked knowledge, shielded from all controversy. The constant renewal of the sciences and the mutations which it imposes on the literary disciplines are thus postponed or neglected in the name of caution and faithfulness, which is sometimes a disguise for ignorance and sometimes an exclusive attachment to old forms of knowledge, or even a deliberate rejection of the modern world.

It is for technology, the natural offspring of science, that the conservatives reserve their greatest contempt. This contempt is based, whether openly or not, in the need for a distinction between noble studies and inferior studies more suited to the children of the lower classes! Social prejudice thus handicaps the literary and legal studies of children whose tastes or abilities would naturally lead them to the technical trades. How could the son of a professor, doctor, lawyer or notary devote his life to a mechanical or electrical trade without suffering a loss of prestige? It is better for the son of a director to slave for years for a useless diploma

than to suffer the humiliating usefulness of a technical job. It is the old struggle, constantly renewed, between general culture and applied knowledge, to which our societies are indebted for millions of square pegs in round holes, practically devoid of general culture and condemned to waste their lives.

This disregard in most of our schools and faculties for technology's transformation of the world is made more serious by the fact that the need to understand technology is growing and will continue to grow during the decades for which they are working. A century ago, only a few engineers needed to know the integration theory. To-morrow, nearly all workers will need to be able to read an organigram, to possess some idea of data processing and some notion of management. The overqualification of yesterday is the underqualification of to-morrow.

Moreover, this indifference is becoming a source of conflict between youth and the older generation as the numbers of students increase. New myths have sprung up which are all the more dangerous because they englobe poorly understood facts. Business profits, the hold of industrial economy on human liberty and the dehumanisation of modern collective life were denounced in 1968 by many students rich in literary and classical training, but completely ignorant of the technological world which they were criticising. Nothing is more urgent than to reestablish communication between society, more and more confused by the technical revolution, and university thinking.

We must not wait until university level to do this. The process must be started in the infants school and primary school, where the child must trained to make the effort of thought necessary to understand the world in which it lives. Technology must be brought into education at a very early age. What child does not know how to operate a radio or television set or is not used to entering a car? Yet neither radio, television, nor car have penetrated training programmes. This also applies to many forms of political and economic knowledge and some experience of civils, which are needed from a very early age. Doctors have often stressed the biological

maturity of to-day's boys and girls, who are much more precocious than they used to be. However, the same is true of their cultural maturity. They are perhaps weaker in mathematics or spelling than before, but they have a much wider knowledge of the world's problems than their parents had at the same age, because the television, radio and press are constantly extending their field of experience. This makes it all the more essential to teach them discernment in handling the mass of information and they therefore must acquire at an early age a certain habit of political and economic reflection and some practice in civics.

Inversely, much of the knowledge which was essential in the past no longer has a place in our culture. An example is provided by the changes which have already taken place in the teaching of history and geography. Yet look at how many children still clutter up their minds with useless fact concerning sepals, pistils and etamines; how many future engineers spend months studying the steam engine? how many chemists are prepared for a task which has been out of date for half a century; how many medical students uselessly learn how we diagnosed and set fractures before the advent of X-ray apparatus! What a lot of time those who imagine that culture is immobile make others waste!

One expression of all this is the belief that knowledge is composed of disciplines and that we must teach disciplines or groups of disciplines - as if they were not simply the result of an arbitrary university division of teaching, not corresponding to any cultural reality or any professional requirement.

It is obvious that culture demands of the modern man that he shall keep his mind open to disciplines which are artificially, but always, in opposition, such as science and letters. What researcher in the human sciences to-day would not benefit from a good grounding in mathematics? Inversely, current advances in mathematics are certainly due to a large extent to the efforts made to apply them to the human sciences. Culture is no longer either scientific or literary, it is both scientific and literary; the sciences are fecundated by the letters and the letters by the sciences.

As for the professions, each calls on increasingly varied disciplines, more numerous than those included in our curricula. In France, for example, medical teaching suffers from an almost total absence of psychology, yet more than three-quarters of the patients who consult a general practitioner are "functional" cases, less in need of surgical or pharmaceutical treatment than of psycho- or sociotherapy, to enable them to settle or support a conflict with husband or wife, boss, staff or colleagues. Yet future doctors are in no way prepared for this role, which will be the most important they will fulfil, because psychology is taught in France in the faculties of letters, and not those of medicine. The traditional partitions between the disciplines result in grave errors in training.

It would be easy to pursue the demonstration. We would find that the leaders in all the professions have rarely studied communication and cooperation techniwues, that in France at least secondary teachers and professors who are entrusted with millions of children and adolescents, themselves have never received any economic or teaching training, etc.

Generally speaking, training to-day calls for a koowledge of science, the means of transferring science to technology, of technology and economics; it implies a constant ability to renew one's knowledge; it is taking place in a world in which the development of means of communication inevitably increases the mass of information. In such a world, man obviously cannot do without means of handling general ideas; he must be capable of conceiving the historical evolution; he must be familiar with and be able to deal with knowledge from abroad, to extract a certain philosophy from events. This requires what is generally referred to as general culture, which is sometimes quite wrongly set in opposition to scientific and technical culture. Our task is not to synthesise an up-to-date humanism by assembling the monstrous accumulation of disparate knowledge, but to produce man who, even if specialised in their professions, are not the devotees of a single discipline.

Modern teaching cannot accept the premise of a petrified

culture and we must react vigourously against such an idea. All the more because, although decades of accusation have given social conservatism a bad conscience, cultural conservatism is not so afflicted. Although those responsible for training others are often progressive in their political views, they frequently adhere to an out-of-date concept of culture. We must refuse to encapsulate man in "his" specialised knowledge, in "his" knowledge of the moment. We must prevent this strangulating hold in which man is destroyed by his knowledge and in turn destroys it.

New approach to thinking

We must also renew our ways of thinking if we hope to master the technical evolution of our day. It is not sufficient for modern man to know and understand technology, to be able to absorb the knowledge of the moment and other knowledge later. He has to acquire something else: the technological approach, i.e. the ability to pass from the practical application to theoretical knowledge and vice versa. This new approach to phenomena pre-supposes new ways of thinking bound up with the three revolutions which have been referred to: the industrial revolution, the transmissions revolution and the computer revolution.

As a result of the industrial revolution, our activity and thoughts to-day are often directed to production. However, due to the development of this revolution, we shall soon have to control, rather than produce; to react to possible difficulties, rather than merely act. Another manner of thinking must come about, more universal and capable of rapidly calling on accumulated knowledge. Knowing how to control calls for other faculties than knowing how to do and calls for careful training from childhood.

In this connection, the development of mathematics is of capital importance. Both by its power of abstraction and the development of probability calculations, it provides a means of thinking in terms of possibilities and not merely established facts. By inculcating the habit of studying the general before the particular, the possible before the established, it prepares adolescents so that they can find their way in a world in movement,

where the instant ahead is merely one of the possibilities at present in gestation.

The instantaneous transmission of information, especially by mass media raises a problem quite independent of the information itself, that of the extraordinary imbalance between the mental functions of emission and of reception. At one time, each of us spoke and listened. In the dialogue, each party could be heard or reached by the other. To-day, everything is changed; equality between the other party and oneself no longer exists. The theme of the confrontation between the individual and the water differs according to whether the water comes in the form of a carafe or a flood. We are subjected to a flood, a constant agression from the emission which assails us from all sides with tremendous energy. It does not altogether depend on us whether we receive or not: we can keep a book in front of our eyes and not read, but is is difficult to remain in front of television and not look. Social conformism, imitation and habit, the obligation and use of being informed, all add to the constraint.

We are assieged and the combat is unequal. However, it is not desperate provided that we wish and learn quickly enough how to use the transistor and television as instruments of liberation. For this to come about, those responsible for the broadcasting stations must cease using them for political or economic conditioning and develop instead all their educative potential, especially by awaking man's curiosity in branches of knowledge not familiar to him and in raising him above his social, economic and psychological level. It implies, in particular, that, from their youngest age, children must be led by education to lose the timidity which paralyses the modest man in the face of intrusion. He must be taught not just to receive, but to choose and judge the reception. The apprenticeship of choosing is one of the most difficult. We must acquire the habit very early of resisting the temptation to listen and see all the time; to hear and see everything.

Finally, we must attempt to restore a certain balance between emission and reception in everyday life and, for this purpose,

teach man to express himself. We must first of all ensure that education does not mutilate him in his infancy already. We cannot hope to develop his ability to express himself if we try to force him into a mould in childhood. All forms of expression must be encouraged, especially artistic expression.

There is a country where almost all children can draw, where all children like drawing, music and the theatre. This country, at present undergoing one of the most spectacular transformations in history, is Japan. It would take too long to analyse why and how Japan has achieved this artistic education. All we need do is to note that achievement is possible. We also must help all children to express themselves during their primary or secondary education, so that they will also do so at the university and in life.

The children in French kindergartens express themselves wonderfully well, but look at the situation in the primary schools! Is it not tragic to think that a youngster of four or five is able to produce designs bursting with poetry, colour and richness and that two or three years later, having passed into a school which instils behaviours, he will have learnt to copy and forgotten how to express himself? He will copy the jug placed in front of him, and a little later the Corinthian capital, but will no longer be able to express what is inside himself; he will not even know that he has something inside him. Yet knowing how to express oneself is a way of compensating for the constant waves of information.

It is not sufficient to protect the faculties of expression in the children. To rebalance emission and reception in everyday life, the new man must intervene, if not more often, at least with more authority and greater influence. He must therefore learn to play roles previously refused to him. This is one of the reasons why we believe that is is essential for him to participate increasingly and as soon as possible in the decisions committing him; not just in the school or university councils, but slso in the decisions concerning the teaching he is to receive. The nature of this teaching, the choice of subjects and the activities within the general frameworks must depend less and less on imposed programmes

and more and more on joint decision between the teachers and the taught. It is thus that we may be able to compensate the flood of information which the transmissions revolution has released onto the individual, by greater ability to express ourselves.

As for the computer revolution, it also creates a very important problem for the educators concerned with the years 2000 or 2010. Man must not detach himself from the machine. It would be terrible if he did not know how to communicate with it. Unfortunately, machines do not use the same language as us. Theirs is more precise and we need to make a considerable effort to achieve the same precision in our thinking.

Let us take a specific example. Anyone wanting to develop his plant usually asks himself where he should concentrate his effort, should he increase his stocks, should he cycle his capital more rapidly, or should he increase his publicity? These are the business-man's questions, but they are not those of a computer, The computer demands that we begin by defining the aim of the business. If anyone is able to do that, it indicates the consequences of the definition. To obtain the information required, we therefore have to formulate the problem, beginning with this very difficult question: what is my ultimate aim? Man must become accustomed from a very early age to this upheaval in ways of reasoning.

We cannot teach the same lesson about things to children who will be adult in 1990 as to those who were to be adult in 1890. What was taught about the candle, for example, in the last century? The master described it as a vertical cylinder of whitish wax on which one could press one's thumb (thus leaving an impression if the heat was great enough) and traversed by a wick which could be lighted to produce heat or light. This manner of teaching will have to be changed completely for the men whose dialogue will be with machines. We shall have to begin by asking ourselves what light is and make the idea understood; which children can do much more easily than adults believe. Once the meaning of lighting is understood, we can add that light is obtained from an electric light

bulb, a candle, a glowworm or a sun.

New ways of life

It would be unwise to attempt a detailed description of tomorrow's technological society, but is is not presumptious to predict the development of some contradictions and consider how education can help to eliminate them.

The first contradiction concerns the models which we propose to our young and their feeling that we leave them no choice. We endeavour to make knowledge accessible to all and state that it permits understanding and action. But the possibility is not enough: each one wants to avail himself of it, use his knowledge for his own purposes and himself choose his objectives and destiny. Paradoxically, the development of mass education is accompanied by the need for a form of education directed towards personalisation.

The school and university therefore have to teach not only the possibility of freedom, but also its use: they must reject any form of pedagogy which imposes models, sets of cut-and-dried information and types of behaviour. In the technological society, their duty is to contest. It is right to ask constantly: for what purpose?

In this connection, the role of pupil and student is very important; but that of the masters is no less important. In a personalised education system, the teacher cannot be the dispenser of knowledge, the distiller of the programmes, as the technocrats of education would like him to be. He no longer informs; he exposes and explains; he proposes aims - that is his responsibility as an adult -, but he exposes himself to contestation as soon as his pupils are able to propose other ideas and defend them. He does not draw his authority from his title or his knowledge, but from his ability to propose knowledge, ideas, forms of action, and from his ability to undergo discussion. In any case, teaching can be efficient only in fields and on subjects in which both master and student take equal interest.

The second contradiction which arises in the technological society is between the increasing tribalisation of that society and its deep-rooted need for communication. Technology certainly does not generate uniformity nor the school, unity. On the contrary, the technical development of society, the generalisation of education and its specialisation, the traditions of the great schools all create languages and circles of increasing diversity, closed on themselves and each barred to the other. Lost in this society which isolates them, individuals are starved of human relationships and true contacts. The hippy phenomenon, the action of May 1968, the new parishes which refuse to build the church until the church community is well established, and the criticism of systems and administrations which impede human contacts, like many other reactions, reflect the deep need for communication.

The first remedy offered by teaching should be an immense effort to restore communication: between research and itself, between the arts and knowledge, between theory and practice. Instead of fencing themselves round with increasingly specialised languages having no bond, pedagogues should try to understand and find common languages. Teaching should then meet the deep need for communication by abandoning the selective system of individual promotion, which ruthlessly eliminates the less privileged before they have begun life, in favour of collective promotion, which attempts to eliminate nobody, but to let all citizens enter life with the same chances. The struggle should not be before, but after, the beginning of life; it should not be individual, but collective. For those not familiar with the technological society, success is individual, effort is individual, and classification and competition confirm and amplify victory and defeat. Each, allotted to his place, copies his text, prepares his lesson, and receives his reward or punishment. This system, exploiting to the maximum the spirit of aggression and competition, pride of success and the natural egoism of those to whom it is directed, finds its full expression in the major competitions to recrute the elites and often marks for ever those who had to sacrifice their childhood and adolescence to it. This organisation is manifestly in conflict with modern technology, whose large undertakings are collective, and which constantly calls

for the joint action of additional forces, the team spirit, to unite matching abilities. Collective action is suspect to our cultural system, itself founded on emulation. We want to measure each one's contribution to the joint effort; we are afraid of encouraging laziness in those willing to lean on others, of weakening the great individual virtues: inventiveness, imagination and determination. These and other arguments are used to sustain the illusion, well reinforced by contemplation of the past, that knowledge is individual and great human achievements the work of the individual. Between the epic of Alexander and Apollo XI, man's destiny was thrown into confusion; but our minds turn to Alexander.

The third contradiction arises to-day between what has been called the technostructure of our States and the mass of citizens. It may even turn out to be the major contradiction and perhaps the driving force of our technological societies. This conflict is gradually replacing other well-known conflicts: that opposing the landowners and those who had to cultivate it in order to live, in the middle ages; that between the industrialists and the workers, in the nineteenth century. Now we are faced with the conflict between the technocratic owners of the future and those who have to support the effects of their decisions in order to survive.

Power lies less in the capital than in the hands of the planners, the men who decide what economic and cultural investments are to be made and whose choices decide the future of all of us. The fact that a few men in a country possess the monopoly of power because they have the knowledge, and can retain their position in spite of a widespread desire for democracy, constitutes a considerable risk for the societies which permit it. In the coming decades, this conflict will have to be settled by allowing all citizens to take part in determining their destiny.

However, this possibility of participation is not merely a matter of laws and State organisation. It calls above all for reorganisation of our educational system. It is the educators who will be deciseve in determining whether men learn or do not learn to understand others and make themselves understood, to get their

hopes shared, but above all to push some of their aspirations aside in favour of the aspirations of others, to reach joint decisions on their common problems.

This is not a natural thing. Man does not know instinctively how to express himself. He tends rather to be self-dependent, to turn a deaf ear to others and to speak for himself. The apprenticeship in expression is a laborious one. We have to learn to live in the company of others, to serve on boards however painful it may be to encounter opposing views, and precisely to learn to reconcile opposing views. We must learn to decide together on our activities. Modern democracy will be achieved only if we are all determined not to leave the choice of the common destiny to the State technostructure, but to take an active part in it. This democracy has to be prepared; it is not a gift from the Constitution, it has to be learnt. Thus, access to a new culture, to new ways of thinking, to new ways of life, requires an education consisting of new matter, presented in new ways. This is the price which man must pay to-day to live in the technological society of to-morrow. Thus, the double movement of society towards expansion and technology implies upheaval in our educational system. Without this upheaval, man will never be able to gain control of the evolution which is sweeping him along.

However, the transformations in education recommended are not conceived merely to change man's position by giving him the means of achieving his ambitions; they are designed to change man himself. Continuous access to education for everyone, the thirst for learning, the renewal of culture, more precise thinking, and a simultaneously more personalised and more collective life will produce a new man.

The evolution of man by internal development seemed to be complete with the biological evolution which produced us. Unlike other species, we have evolved outside ourselves. We increased our power by means of tools and then machines, and the scope of our intelligence with poetry, writing and the computer. But now these external riches are obliging us, in order to remain men, to bring about an internal improvement comparable to that achieved in other

species by biogenetic transformations. Shall we be able and willing to accomplish it by transforming our education?

If man succeeds in creating himself, in renewing himself continuously, like the future society, he will not necessarily be the master. But if he does not succeed, he is certain to be its slave.

QUESTIONS FOR SUBMISSION TO THE CONFERENCE

Who is to receive education?

Should we limit the number of adolescents who can reach the highest levels of teaching (in terms of employment, professors, credits, etc.)? Or should we accept them all and take them as far as they are capable of going?

Should we correct the educational systems which favourise children from certain cultural backgrounds at the expense of the others?

Is it the universities' task to prepare the individual for the struggles of life, or to ensure collective and coherent promotion of youth?

When, where and how is education to be given?

Should we reorganise our training system to ensure the continuity of teaching?

Should we, for the same reason, replace austere pedagogy by a pedagogy which stimulates the desire to learn?

What are we to teach?

Should the universities switch to a modern culture, i.e. to a mass culture and a culture fecundated by science and technology?

What languages are needed for communication in the modern world? Words, mathematics, technology, the arts?

Should teaching by disciplines be abandoned in favour of inter-disciplinary teaching by systems?

How are we to develop the personality of students which modern communication techniques are tending to suffocate?

How are we to create the communities wanted by the students and prepare them for collective life and work?

How are we to prevent a break and revolt between the technocrats and the mass of the citizens?