Studies and surveys in comparative education

Education and the world of work

Michel Carton

A study prepared for the
International Bureau
of Education

unesco

Titles in the series 'Studies and surveys in comparative education':

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Published by the
United Nations Educational,
Scientific and Cultural Organization,
7 Place de Fontenoy, 75700 Paris

Printed in Switzerland by ATAR S.A., Geneva

ISBN 92-3-102220-2

Preface

The fact that the training of young people for productive work was the special theme of the thirty-eighth session of the International Conference on Education (ICE) is evidence of the great interest this subject has aroused in recent years. Some saw in this interest the direct result of the economic crisis which has been sweeping the world for more than a decade now. Although important, this issue did not have an untoward influence on the Conference's debates, neither did it sway the manner in which the interaction between education and productive work was perceived by the Member States of Unesco. The historical origins, the political situation, the socio-economic circumstances and cultural context — and what they mean in terms of the type of society for each nation — imposed a comparative view, despite the obvious links between the economic context and the widespread scientific and technological progress and changes which influence not only what has come to be called the world of work, but also the actual conception of work in its economic, philosophic, moral, even aesthetic, elements.

Not the least of the capacities of Michel Carton, a lecturer and researcher at the University of Geneva, is his ability to trace the discussion through different epochs and across various cultural, political and economic contexts. This permits us to deal with not only 'the interaction between education and productive work', but with the practically complete symbiosis which imparts to all human occupations an obvious educational element, and to all worthwhile education a commitment to the preparation of young people for the world of work. The range of the subject, the quantity of documentation on this theme, as well as the interest aroused during the debates during the thirty-eighth session of the ICE allowed the author the prospect neither of covering all the aspects nor, even less, of exhausting the subject. Hence, reading certain parts of this study one has the impression that the entire story has not yet been told. Perhaps this is the best guarantee, both for the author and for the IBE, to reflect further and in greater depth on this problem which is increasingly attracting attention.

In repeating our thanks to Mr. Carton, we draw readers attention to the fact that the ideas and opinions expressed in this book are those of the author and do not necessarily represent the views of Unesco. The designations employed and the presentation of the material throughout the publication do not imply the expression of any opinion whatsoever on the part of Unesco concerning the legal status of any country, territory, city or area or of its authorities, or concerning its frontiers or boundaries.

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VARIOUS CONCEPTIONS OF WORK

The French word for work — *travail* — originated about the year 1200 from the Latin term *tripelium*: a device consisting of three stakes which was used to shoe unruly horses or to operate on them. By its etymology, therefore, work is closely associated with the idea of suffering — as is also true in the case of women 'in labour'. When we talk about interactions between education and productive work, it is not irrelevant to recall the weight of the meanings given to the concept of work: it is, in fact, on the basis of a particular historical and geographical origin that the term is used in an apparently neutral way throughout the world today. Over the centuries, however, all civilizations, societies and cultures have often taken very different views of the whole combination of operations carried out individually or collectively for a certain purpose. We therefore have to try to bring the meaning of the word up to date if the world of education is not to misunderstand the development of its connections with the world of work.

The French encyclopedists of the eighteenth century said that 'work is an everyday occupation to which man is condemned by his needs'; workingmen 'are men who are destined by their occupation to do laborious work, to carry heavy burdens or to engage in other strenuous exercise.' This attitude is not a new one: in ancient Greece[1], beginning in the sixth century BC, all work activities, even including some farm work, were performed by slaves. In the fourth century BC, Aristotle condemned all activities aimed at acquiring property and wealth, including paid labour. The Roman citizen enjoyed his *otium*; whoever worked lived by his *nec/otium* (*negotium*), i.e. something defined by the negative. Greco-Roman antiquity, therefore, considered the workman's manual labour to be the sign or cause of moral decay, of a warped existence: one could not be considered as a man if one worked with one's hands for other people; the slave was not and could not be a man.

Christianity was to develop that conception of work by picturing it as the reflection of a world which might, indeed, be unjust but which had to be accepted as a necessary evil to remind man of the Lord's curse: 'In the sweat of thy face shalt thou eat bread', as the Old Testament says. But gradually, in the Middle Ages, the 'natural' division of society into those who made war, those who prayed and those who toiled tended to become blurred as the result of certain elements in the New Testament. 'He who does not work shall not eat', as Saint Paul said. 'Force yourself to do manual labour and the fear of the Lord will dwell within you' was the counsel given by Saint Anthony. In that way, work gradually acquired a redeeming value

because it was a penance and a means of physical and spiritual discipline. 'Idleness is the enemy of the soul', as Saint Benedict asserted. Some of the Church doctors went even further by distinguishing between work as punishment (*labor*), work as creation (*opus*), sin and Nature.

The Reformation accelerated this reversal of the value of work by giving it a social dimension, for it placed the active life before the contemplative life: the practice of a trade became a religious act in itself and not because it prepared one for the contemplative life.

As Weber says, 'The treatment of labour as a calling became as characteristic of the modern worker as the corresponding attitude toward acquisition of the business man.'[2] Later, in order to struggle against the state of nature, which is a state of conflict, Hobbes (1588-1679) looked for a natural law which was the most powerful of all the passions: the will to self-preservation, protected by a power guaranteeing peace, and that will was based on freedom of trade and the struggle against idleness.

Over the centuries, therefore, the rejection of work, which used to be considered a virtue, has become an evil to be overcome, especially since work has become the essential basis for the production of goods — the purpose of the emerging capitalism. As Adam Smith said, work can be the source of wealth. 'A man grows rich by employing a multitude of manufacturers: he grows poor by maintaining a multitude of menial servants.'[3] Everything tends, therefore, to make work a duty for the purpose of mobilizing productive forces at the social level and ensuring a profit from the individual point of view. In this context, the idea that work is creation, liberation, is a utopia reserved for the few: work becomes an interiorized duty, but one having the value of a duty after having that of the sacrament. Nevertheless, this duty can be felt to be a servitude, as was noted by Marx. 'Work is foreign to man, he rejects it and only feels well when he has finished it and can engage in his animal functions of drinking, eating and procreating.' And later, 'work is not spontaneous, which is something only non-productive activity can be.'[4] But in another place he claims that 'man can only give a meaning to his life by being productive' and that 'work is man's act of creation.' Today, Jacques Delors[5] has expressed himself in the following words: 'Work is dignity, and a society which is no longer capable of basing itself on work will lose its pleasure in living, its pleasure in fighting and its pleasure in innovation.'[6] Work as degeneration, work as contamination, work as a curse, work as a duty or a value, work as creation — those are not just a succession of stages, for those different conceptions replaced but did not obliterate each other. Rather were they different patterns stamped on the generations by the mould of Judaism-Christianity and the Industrial Revolution.

There was some talk about desire. But it was work which became the most important value in our ethical systems. At first, necessary for survival, the opportunity for masterpieces or collective celebrations, it became a social constraint and, as it became more and more physically painful, acquired the final legitimacy of a moral purpose with many individual justifications, since today it is health, creativity, self-transcendence, or collective justification — it is no longer thought that anybody will forget the law any more and, above all, not work.[7]

THE DIVISION OF LABOUR[8]

As we have just seen in connection with various cultures, although the conceptions and values attached to work have differed greatly, these ideas were the reflection of a certain social division and technique of labour at a given moment - a division which ensured the cohesion of those cultures. To deal with the interactions between education and productive work, therefore, we must now refer to that other general aspect of the reality of work which, after all, cannot be reduced merely to the division between intellectual work and manual labour — a division popular with teachers — but which also brings us to the problems of the reproduction, regulation and transformation of the relationships of power and production in societies. That is one dimension of the 'work phenomenon' which educational practitioners should take into account when they claim to be interested in productive work.

If we go back to the great men of antiquity, it is interesting to see how Plato plans to achieve social efficiency and coherence in his Republic. Through the division of labour, it will be possible to obtain maximum production in the easiest way and with the highest quality of both the product and the producer. Social coherence will be achieved by a hierarchic system which will adapt social functions to the different social classes; each class will be assigned to each function by selecting individuals according to their particular aptitudes.[9] At that same time, Xenophon pointed out that 'in great cities ... one art alone suffices for the maintenance of each individual; and frequently indeed, not an entire art, but one man makes shoes for men, and another for women; sometimes it happens that one gets a maintenance merely by stitching shoes, another by cutting them out, another by cutting out upper-leathers only, and another by doing none of these things, but simply putting together the pieces'.[10]

This reference to Greek conditions in the sixth century BC was intended to reveal the nature of the phenomenon of the division of labour, which tends both to increase labour productivity and at the same time to bring about a regulation and adjustment between the forces of labour and the material forces of production. However, besides studying the functional aspects of the division of labour at a given time, it will be helpful at this point to refer to those periods during which the transformation of this division took place, for, as we shall see later on, they all had an impact on the relations between education and productive work.

In Europe in the Middle Ages, for example, there was a distinct separation between the socio-economic groups, one group living in the city and the other in the country. The feudal system in the country was matched by the guild system in the city — the latter being characterized by a highly organized division of labour between the different guilds. However, this social division of labour and the relations of subordination which it involved only separated the different processes for the production of goods without splitting up the work process itself. Producers continued to own their tools and the products of their labour, and the social hierarchy existed as a constraint outside work itself as, for example, the bond of personal dependence which attached the serf to the lord. Within the process, the division of labour hardly existed: the differences between workmen and employers were not the result of different relations to their working tools; every man's work combined manual

activity and mental activity, execution and design, and a workman could become an employer. The lords, for their part, owned certain means of production and organized a part of the production process, but they had little ascendancy over the work of the peasant and throughout the feudal period their function of organizing production gradually declined. However, that was not an 'idyllic' situation, for over the years the workman's chances of becoming a supervisor became increasingly small. The guilds fell increasingly into the hands of the merchants, and it became more and more difficult for a workman to become an employer unless he was the employer's son. Moreover, there were entire groups of the population, such as pedlars, day labourers, home workers and farmers who had no control over their production.

Two phenomena were to upset the balance of that period of the Middle Ages in Europe and gradually to culminate in capitalism: the low income of the peasants was to force them to take in work at home, and the expansion into foreign markets became blocked by the limited productive capacities of the guild system. The work process itself was then affected by those relations between social classes which made it possible to achieve production without influencing the organization of labour. After the age of the guild, which was an association of paid workmen, the latter no longer had anything to do with the functions of co-ordination and management. The rise of manufacturing introduced a strict division of labour which was still based on the trade, but with increasing sub-division. In this way, the concentration of labour gradually resulted in a social division between the work of mental co-ordination, on the one hand, and the sub-divided executory tasks, on the other.

However, even in the manufacturing industry there were still some trades which refused to be sub-divided. In society, the consequences of the new social division of labour (appearance of a well-to-do middle class) created the need for new products which the manufacturing industry was unable to satisfy: the general spread of mechanization was to solve those two problems. The division of labour was then no longer linked to individuals and their specialities but became technical: there was a pronounced differentiation between the functions of the co-ordination and design of tools and the executory functions.

Nevertheless, in spite of the growing specialization of machinery, the rhythm of production was still controlled by the workman: that was something which F.W. Taylor, and subsequently Henry Ford, would attempt to change at the beginning of the twentieth century by an extreme specialization of machines and workshops, and by speeding up working tempos. Management methods were then perfected, causing the appearance of a three-fold process of production, while increasingly sophisticated techniques invaded the production processes, especially by way of automation and data processing.

We have just roughly outlined the phenomena which characterized the division of labour of the mainly industrial and capitalist type in Europe after the Middle Ages. We were not trying to analyse it in detail, but rather to place the debate around productive work in a socio-historic perspective. We consider this point of view to be important, for, although some countries are taking explicit account of it in their experiments or programmes concerning the interaction between education and productive work, the persons involved in our education systems, such as parents and pupils, do not always seem to be aware of it.

WORK AND TECHNOLOGY

Among the preceding thoughts about the division of labour, we would like to single out the questions raised by the phenomenon of technology. After all, the introduction of technology is often cited as one of the justifications for the development of interactions between education and productive work. These justifications are based on the increasing interest taken in the study of the impact of technology on all levels of the environment, on the appearance of new concepts such as those of alternative, intermediate, soft, appropriate and other technologies, and on the problems raised by the transfer of technology. But these debates too often tend to make technology an ahistorical and solely material reality which becomes a fact in itself, whose functional advantages and disadvantages are analysed and for which education should be a preparation. However, if man is considered as a historical figure, as a producer both of material goods and of social relations, technology is not a reality in itself but rather something produced by men who are producers within certain social relations. Technology can then be considered as the introduction, into empirical and intuitive techniques of production, of abstract reflection linked to a formalized thought. For example, it could be the introduction of logical mathematical operations into production of the artisanal or workshop type, or in the processes of trade. This presupposes the ability to theorize certain technical problems on the basis of scientific concepts, thus creating an organic link between science and technology[11]. If we go back to European history since the Middle Ages, it is possible to analyse the development of the concept of work and the division of labour in terms of the gradual rise of the movement towards the technicalization of the processes of production and trade. It was after the appearance of nation-States that the requirements of production and the development of a powerful merchant class in search of new markets managed to destroy the framework of the technical and social relations handed down from the Middle Ages.

It was also that epoch which saw the appearance of the first outlines of empirical science: what was done in the workshops was to be subjected to intellectual examination. But it was necessary to wait until the seventeenth century before theoretical intelligence was really transformed into genuine technology, before technology would make its appearance as the technical revolution. For example, the telescope and the clockwork watch were at first only devices — gadgets — roughly constructed by craftsmen who either knew them through technical tradition or else invented them. A scientific instrument is only developed at the meeting-point between some device and a scientific need — such as to measure movements with precision. As soon as Galileo learned of the existence of the telescope invented by Lippershey and Janssen, he could calculate the grinding and strength of lenses. The technical result was therefore maximum accuracy in prescribing — and therefore manufacturing — lenses, hence the need for accurate and mathematical grinding tools. All this enabled that same Galileo in 1636 to present before the Parliament of the Netherlands his studies on determining the longitude at sea by observing the satellites of Jupiter. In that case, therefore, technology — considered as a combination of science and technique — was to serve the art of navigation in general and the Dutch merchant marine in particular. In that way, the developments of science and technique, and then of technology, gradually reinforced, by their mutual interdepen-

dence, a social division of labour. With increasing mathematical understanding and standardization of techniques and their exploitation there was greater differentiation in participation in the decision-making powers — linked to the decreasing social prestige of science, technology and mechanics.

If we now revert to the question of the interactions between education and productive work in so far as it refers to the opposition between manual labour and intellectual work, we can find an origin for the opposition in this approach to the technological phenomenon. We can also find the explanation for the downgrading of the former in favour of the latter, for one is technical and the other scientific. However, authors like Gille[12] have demonstrated that technical knowledge is not knowledge based on common experience but rather on experimentation, which enables us, like Bachelard, to talk about a genuine 'technical empiricism' which 'fundamentally has the same requirements as purely scientific experience' without being based on science. They are therefore a pair of parallels and not opposites, since experimentation consists of a junction between an activity involving the observation and quantitative reduction of technical phenomena and a reasoning faculty which regulates, for example, the dimensions of the parts of a machine.

This attitude towards technology also enables us to overcome the opposition between theory and practice which we likewise try to break down by developing the interactions between education and productive work. Although the opposition between theory and practice is based on a clearly defined philosophical problem by which the concept of practice very often goes back to empiricism, it should be noted that the Greek word *empeiria* expresses both what is derived from ordinary experience and what comes under quantified observation and experimentation. From this point of view, technical thought and culture are not only 'manual and practical' but also 'intellectual and theoretical'. It is perhaps through this reassessment of technology, which is necessary in the world of education as well as in that of production, that the question of productivity can be approached in a constructive way.

WORK AND PRODUCTIVITY

For several centuries, the concept of productivity — which is implicitly present in the whole subject of productive work — has given rise to much discussion. At this point, it would seem useful to sum up the matter, as was done at the thirty-eighth session of the International Conference on Education, which described productive work as 'goods or services that are useful to the individual or to society, not necessarily in return for remuneration'[13] — thus stressing the objectives and results of work without dwelling on the process. In the preceding chapters, however, we have just analysed certain components of this process, so what is the relationship between these components and the productive or unproductive nature of work?

Malthus had stated in 1836 that 'it is really rather difficult to give a definition of wealth and productive work'.[14] We can only share this opinion, especially since the interest of the Member States in productive work is based on economic, political and ideological frames of reference which are very varied and often contradictory. Accordingly, we are only going to review a certain number of approaches to the

question which go back to main currents in economic thought — our purpose once more being to enable those active in the world of education to find their bearings in the face of problems which they cannot always master. Once again, therefore, it is necessary to go back into the past in order to identify attitudes and debates about the concept of productive work.

In the 1750s, the physiocrats, such as François Quesnay in France, considered work to be a 'productive service', i.e. one object like any other in the heterogeneous number of objects which were thought to be exchanged depending directly on the intensity of the consumers' wishes. Since economics was only concerned with trade, production considered as not being an economic factor and work as only one marketable object in a whole list of objects which could replace it, it is pointless from such a point of view to know whether work is productive or unproductive. For the physiocrats, therefore, as for Adam Smith later on, the important thing was the existence of some product of distinct value which would be subject to social rules of distribution. It might then be said that work, for them, was productive if it produced some net value. However, those authors did not raise the question of the social origin of that net product because — as we have already seen — the social relations which determined the position and hierarchy of social groups were for them the manifestation of a natural order; what was important for them were the rules of distribution which permitted the reproduction of those relations. For Adam Smith, therefore, what counted was the manifestation of the net product as profit and its accumulation for the purchase of the means of production. From that point of view, work which was only paid for was productive if it was exchanged against capital, unproductive if it was exchanged against income.

The analyses of Marx were to break free from those of the traditional economists inasmuch as he no longer considered capital as an original datum but rather as the product of social relations. According to that line of reasoning, productive work was that which created added value — the concept of a relationship originating in the organization and social relations of production. However, the latter are characterized by the wage-earning element, based on the polarity of appropriation versus expropriation resulting from the division between the work process and the product (there is the appropriation of the means of work on the one hand and the expropriation of the workers on the other, who become forces of free labour). This situation creates a specific identification of productive work which is not on a par with its general identification as a transforming activity resulting in a product in conformity with the plan of some individual or collective worker. This identification is antagonistic to it and is the deepest root of the class struggle in capitalism.

In recalling these great classics of political economy, it was not our intention to set up a theory of productive work but rather to show that the way of approaching this subject might lead us to rather different approaches to work and the division of work and defining the problem of technology. Moreover, it is significant that the expression 'socially useful work' is also often used in connection with the interactions between education and productive work: i.e. there is here a reflection of the ambiguity of the term 'productive' in itself, since this term has only a relative value depending on the function of work in the production relationships of a given socio-economic system.

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CHAPTER II
A work crisis?

We have seen that — from the Judaic-Christian point of view — work was an inbred duty. Everywhere, however, there is more and more talk, including in educational circles, of the work crisis. And first of all, it is the notion of the purpose of duties which is referred to. For some people, in fact, the notion of duty, whether it concerns work, society or family, no longer seems to be a value. In the so-called developed countries, the lack of interest in work, the uncertainty of employment, the hierarchization of work paid by wages — everything which constitutes the general atmosphere of Taylorism — tend to degrade work, which to an increasing extent is only the means of earning one's living. This is the early stage of a whole movement towards a refusal to work, characterized by absenteeism, the voluntary spread of unemployment, the unwillingness to move elsewhere and a certain preference for temporary work.

One of the economic consequences of this situation is the development of the direct and indirect relationship towards wages, a relationship which tends to lean in favour of the latter[1]. In such a situation, dependence on work tends to be replaced by a dependence on the source of the indirect wage — mainly the State. Young people tend to think that there is only one virtue in work, that of bringing in an income. That is what is emphasized in the consolidated document presented at the twentieth session of Unesco's General Conference: 'Even those young industrial workers (whether migrants or not, and living both in the industrialized and developing countries) who are fortunate enough to find steady jobs feel that both work and society are offering them a bad deal. While performing essential productive tasks, they often feel that their age and their jobs give them little but insecurity and stigma'.[2]

In these conditions, how can we encourage the development of interactions between education and productive work if work tends to be no longer a duty and a value, and only income is left as a social objective? How to account for the fact that the right to work, which appeared in Europe for the first time with the Second French Republic ('The provisional government of the Republic undertakes to guarantee the worker's livelihood by his labour. It undertakes to guarantee work for every citizen'), has in fact, in growing, become a right to full employment? How can we fail to see that the developed economies are tending to separate consumption and work, so that consumption is the only area left for the exchange and satisfaction of needs, and so that work is deprived of its creative aspect and regarded as coercion to effort?

The right to work, which has become a right to employment, is finally seen to be a right to income, which tends to make the problem of financing unemployment an

absolute duty for society. In this way, the legitimate rights to work, security and life have been vested in goods: the right to work has become the right to subsidies in the event of unemployment; the right to rest and time off has developed into the right to holidays and leisure; the right to health has been transformed into the right to medical consumption. There are then a certain number of consequences resulting from the fact that people work in order to obtain an income and that self-realization takes place elsewhere than in work — in other words, that there is an 'allergy to work'[3], especially in the case of work for wages. Today, in fact, there is much talk about such notions as independent work, work not paid for by a wage, informal work, the underground economy, notions which correspond, in fact, to 'moonlighting', undeclared work, child labour[4], industrial work at home, the employment of clandestine foreign workers. Now, these activities, which are tending to increase, widen the gap between a market of protected and well-paid labour and unprotected markets; but at the same time they help to facilitate the movement of the industrial economies towards concentration, while simultaneously making it possible to maintain great flexibility for supplying certain goods and services. Behind this economic explanation, however, what we find is consumption and not work: it is because the new social hierarchy is defined by the level of consumption that we find an increase in unauthorized or clandestine markets. That is an important phenomenon because, at the same time that their economic function ought to be made clear, they cannot be freed from the domain of labour, since they are to a partial extent a challenge to the wage-earners and also aim at achieving greater autonomy in their work. It is in this context that the debates about work are being held in the industrialized countries, and educators ought to perceive what is at stake in them — whether in the world of education or in the various worlds of work.

A CRISIS IN THE DIVISION OF LABOUR?

If work is in a critical phase with regard to how it is looked upon in the industrialized societies, is not this phenomenon a reflection of the problems of the division of labour? Although Taylorism introduced practices in production aimed at economizing on manpower, increasing technical production processes and delegating other than financial responsibilities, it must be admitted that this method of handling the labour force has not achieved all of its objectives.

There are more and more difficulties in recruiting ordinary or unskilled labour, while the costs of this kind of manpower are increasing (due to losses in production, decline in quality, wage costs, fixed charges, etc.). Is this phenomenon not the result of a widening gap between jobs and working conditions, on the one hand, and the knowledge and aspirations of those who are called upon to fill them on the other? With regard to skilled labour, and quite independently of the rigidity of the training systems, we note a contradiction between Taylor's approach of the division and specialization of even highly skilled tasks and the necessity of the flexibility, adaptation and aggregation of production functions caused by the requirements of profitability and competitiveness.

It would seem, therefore, that the present division of labour is characterized by a certain number of contradictions between the point of view of Taylor, which is still

very much alive, and the actual conditions in the labour force, especially since unemployment is growing even faster and the division of labour is still strongly characterized by labour shortages (such as existed up to the beginning of the 1960s). Moreover, an acceleration of automation is predicted in the primary and manufacturing sector following the introduction of data processors and robots, a phenomenon which will result (as is already the case) in even more dismissals. Likewise, the tertiary sector, which had been only slightly affected by automation and had provided a refuge for the jobless created in the primary and secondary sectors, is also experiencing a technological revolution which will affect its ability to provide jobs.

These transformations, therefore, are affecting the structure of the labour market, which is becoming more and more segmented. Up to the early 1970s, in fact, it was possible to make a schematic distinction between an unskilled labour market, a skilled labour market for those holding a technical diploma, and an intellectual and managerial labour market — all of these markets being graded one above the other on the basis of income. The downgrading of jobs and raising of the school leaving age — to which we will revert later on — together with increased unemployment, have destroyed the structure of that job market. It is now increasingly structured by the type of work and by incomes. This has been pointed out by Jacques Delors. According to him, there are two major markets: a central labour market where the security of the workers is fairly well guaranteed thanks to legislation and collective agreements, while around it there is a peripheral market where there are growing tendencies to marginalization and a weakening of society, thus introducing destabilizing factors[5].

While many think that work and the division of labour are being called in question, the division and organization of the social time allotted to them are not undergoing the same fate. After all, the rhythms, tempos, timetables and different ways in which time plays a part in our lives have been so firmly integrated and are so widely shared that we have a tendency to consider them as a natural and universal datum. However, our present relationship to time dates only from the appearance of the industrial society: time, in history, is the history of an increasing mastery of time.

Between the High Middle Ages, when clocks did not exist and belfreys were used to regulate the working day in urban life, and the widespread use of clocks in cities after the fourteenth century and the beginning of industrialization, there was an ever-increasing struggle on the part of the employers of labour to control the time of their workers — including the time when they were not at work. Even today, the time devoted to productive activity has, by dividing time into individual slices, introduced a hierarchy of activities: all other occupations — and this includes education — are becoming dependent on it, without any possibility of adjustment or compromise. Moreover, the content and division of working life are leading to the disappearance of time, which no longer measures anything, since it is increasingly a question of carrying out tasks which no longer have either a beginning or an end and which are systematically interrupted by interference from the outside. This situation can then be reflected in extra-occupational life, in which, instead of being a valuable ally for useful and satisfactory activities, time becomes sheer uselessness and hence painful to endure.

These thoughts about the relations between time and work are also important for analysing the territorial dimensions of work. If, like Leroi-Gourhan, we define territoriality as the 'domestication of time and space'[6], time, as we have just seen, would seem to have a tendency to be no longer 'domesticated'. But what about space? Territoriality raises the question of autonomous work, i.e. that of the possibility of inventing one's own work, adapting it, applying one's energy to it in an area about which one has collected information. This knowledge of the area, combined with autonomous objectives, ensures the permanence of territoriality and of all the links created between men and space/time.

Territoriality, however, can be destroyed by the appearance of heteronomous work — work whose objectives elude men and where place no longer counts for anything except by way of its cost. 'Territory has become a support for activities; it is no longer the framework of a life. Human territoriality has been replaced by an economic habitability defined by technical and economic criteria on the basis of production units'.[7]

However, work, a natural category, ensured the coherence of territoriality so long as it was not a commodity. When it becomes a commodity and is transformed into an economic category, territoriality is replaced by the market as a regulating mechanism. Nevertheless, the political sphere, which comprises both the social and cultural elements, is in a relationship to work, as a natural category, and sustains the myth of the practical value of work, something which has disappeared, whereas the economic sphere is only interested in the trading work/commodity/value which is characterized by mobility and fluidity. The political sphere creates identifiable human beings, whereas the economic sphere depersonalizes them and produces 'anonymous men, having no name of their own, who are also atopical men — men without a place. Being individuals deprived of any individuality of their own — that personal quality which confers his own name on a man — throughout the whole habitable expanse of land they do not have one place which could be assigned to them as their own: socially, no place can be found for them in themselves, nor can any place be found for them in space'[8]. How are we to account for this temporal and spatial reality of work in connection with the development of interactions with education?

A CRISIS IN TECHNOLOGY?

Technology is often described as being responsible for the dehumanization of work, but at the same time as an inevitable phenomenon. In Jacques Ellul, for example, we can read the following: 'Technology has reached such a point in development that it is changing and progressing without any decisive human intervention, by a kind of internal force which impels it to grow, which by necessity drives it to incessant development'. Farther on: 'There is no choice between two technical methods: one is inevitably necessary because the results are counted, measured, seen and beyond dispute'. Or also: 'We are today at the historic stage of eliminating everything which is not technical'. And even: 'The power and autonomy of technology are so well assured that it is now being transformed in turn into a judge of morality'.[9]

All this might appear to correspond to reality if the processes of selection and decision which actually maintain this 'inevitability' were taken into account. 'The technological confrontation', Roqueplo writes, 'may be — and most often seems to be — an area where there is a dismissal and discharge of the social element. When technological necessities seem to take pride of place as a matter of incontrovertible proof, it may cover up the social action which such proof calls for and conceal the social forces which make use of these necessities to consolidate their power by providing it with apparently irreversible structural bases. While simultaneously acting at their own proper level, technological necessities function "as an ideology".'[10] At the same time, and in contradiction to this feeling of 'inevitability', the environment is shown to be a product of technical activity: it is therefore no longer imputable to God but to a diffuse power which releases aggressive phenomena directed against technology and science as such. At the same time, Nature also reappears, as a result of the concern with ecology, as a limitation on technological enterprise. It is then perhaps, according to Roquelpo, that there is a 'clash between the rationalist myth of Progress and the ecological apocalypse which is the ethno-technological characteristic of our contemporary age'.[11]

Questions, therefore, arise both about technical progress and the relationship with Nature created by technological enterprises and the social relations 'imposed' by technology, for 'the fundamental sequence underlying the practice of modern societies leads from technology, as a power of doing, and passes successively through economy and work to man's domination of Nature: a technology/-economy/work domination. It is opposed to the foundations of traditional societies, in which the sequence is the opposite: dependence on work/economy/technology'.[12] In relation to this discussion, what are the respective positions of the objectives of an introduction to technology included in many programmes of interaction between education and productive work?

A CRISIS OF PRODUCTIVISM?

What, then, becomes of the notion of productivity in this web of contradictions surrounding work? How can we justify a productive objective when work tends to be no longer a value, when the division of labour within the production process tends to deprive individuals of time and space, when technology is just as able to replace man's work as to destroy it? Is it not true that the objectives of a modern society are to be found today in consumption and leisure rather than in production? What can be the sense of the development of interactions between education and productive work in this context?

For about twenty years now, we have witnessed a gradual shift in the function of the worker — which was for a long time preponderant — towards that of the consumer. The economic system is less and less in need of men for production but requires more and more consumers in order for the machine to function. Therefore, the only incentive which individuals have to work is the possibility of a higher income which will make possible greater consumption, which, if any use is to be made of it, calls for more 'free' time. Unlike the pre-industrial period, when work

meant both an expenditure of energy and a duty, the present age assigns man the function of speeding up the circulation of money by consuming enough to absorb the entire production. We can therefore see a gradual gap between consumption and production, although the latter is taking place in a competitive and hyper-productive environment, in favour of a return to activities in direct contact with matter and the product and in favour of free time. Paradoxically, however, for a minority, 'it is now possible for work to become once more a mark of distinction and privilege: this is the affected bondage of the top managers who make a point of working 15 hours a day. We thus arrive at the paradox that the object of consumption is work itself, in so far as it is preferred to free time, and there is a "neurotic" demand and satisfaction through work'.[13] Thus, work, which is of use to nobody but nevertheless indispensable to all, has become abstract since it is subject to the same cycle as that of a commodity and an integral part of the logic of modernity which has especially developed the functional information that is necessary in order to produce, to extract, to build a visible and spectacular 'plus'. However, the functional information which work is supposed to provide, and which is entirely product-oriented, eliminates the regulatory information which is indispensable for taking account of the environment and its own logic. However, only actual work, in opposition to work as a commodity, makes this mediation on regulation with the ecology possible. It is because work is experiencing a crisis that there is also an ecological crisis at both the individual and collective levels.

We can illustrate these general ideas in connection with time — since time is one of the variables which is essential today for defining productivity and because it again appears to be primordial in the processes of education. Like work, time has become mainly an instrument, and an instrument of production: it is no longer of any value in itself. We find that in societies where consumption is becoming an essential driving force in society, the production of increasingly numerous objects leads to a decline in their marginal utility, whereas the utility of time, in comparison, is increasing. However, contrary to everything else, time is not subject to processes of trade or exchange and there are few possibilities for conciliation between objects and time. We are therefore faced with a contradiction in which the world of production is trying to rationalize working time more and more in order to increase productivity, while at the same time techniques are being developed to 'produce time' within the production process (absenteeism, sick leave granted as a favour, surreptitious work slowdowns, etc.) and outside of it (lengthening transport times, car radios, household equipment, lifelong education, etc.). However, these techniques very quickly reach their limit and in the long run become counter-productive: everybody, by trying to maximize his time and believing he can do so, contributes to the collective illusion, growing heteronomy and ...to the loss of time.[14] The objects leaving the production line are finally only an encumbrance and are no longer anything but signs while formerly they were symbols. Time is structured on the basis of productive organization rather than being lived. The question which then occurs to every educator concerned with introducing productive work into his teaching is this: is it my objective to prepare and improve the entry of my students into an activity oriented towards the product or towards the process? In so far as the socio-economic environment tends mainly to give pride of place to the product, it would therefore seem desirabale that his work as an educator should be directed

more towards questioning and creativity about processes, as this would be socially useful in many societies which no longer know what the place of work within them really is.

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CHAPTER III
The prospects

In the preceding chapters, we began with the various conceptions of work and their crises, and then made a few attempts to shed some light on the socio-economic factors determining them. It now seems necessary for us to speak about prospects, for, if the development of the interactions between education and productive work can only proceed through an evaluation of the actual work situation, this development must centre around a social policy aimed at going beyond the present problems or crises. It is clear that this policy will differ from one society to another, in the light of its political and economic options. However, at this point it seems to us possible to select a certain number of prospects on which educators, both in the world of education and the world of work, are already basing their activity, or else might do so, in order to give a dynamic point of view to their productive or socially useful activities. There is no point, however, in giving any universal recipes, for tentative answers will have to be framed within each separate educational activity on the basis of actual experience and the questions we have asked above.

The situation as we have described it can lead to two contrary attitudes which are both equally deceptive. The first would try to find in the past some golden age when work provided both pain and pleasure, a source of autonomy and of wealth; but in reality work has never lived up to this ideal, even in the Middle Ages or during the Renaissance. At the opposite end there is a utopia, such as the liberation of man by robots, which does no more than project the golden age into the future. The reality in most of the developed countries does not sanction this alternative, for the reduction in growth rates, like reconversions of the productive apparatus aimed at higher productivity, and the resulting increase in the unemployment figures, lead us to predict both a potential increase in under-employment and an increase in abstract and compartmentalized work. Prospects for transformation are to be found within these constraints, where it is work itself and not its form which is a problem for many individuals. And it is also within a social framework characterized by the preeminence of consumption that it is possible to conceive of modes of response which differ from the constraints of these value systems.

We have seen how the work crisis in fact triggered a time crisis: it is perhaps on the basis of the latter that new outlooks will be opened up on work. After all, although some persons consider that the solution of the socio-economic crisis of the developed countries calls for an additional effort to achieve higher production, others propose a reduction of working time, a suggestion which is associated, by the ecologists, with the struggle against technological monopolies and for a change in consumption patterns.

However, a reduction of working time can be conceived in two ways: either by extending the length of vacations and shortening active life (early retirement) or by

reducing the length of the daily or weekly working time. While the first solution only shifts the problem and strengthens the supremacy of consumption over 'freed' time, the second makes it possible to begin to move social and individual life away from paid — and hence abstract — work in order to give a new quality and richness to the time spent in different types of activities, including 'productive' work. At this point, we will not go into the various modalities by which time can be transformed into an object susceptible of choice (reductions in working time, part-time work) and action which would be the source of other than purely monetary enrichment. We will merely point out that it is possible for these modalities to be the subject of genuine negotiations, arbitrary decisions or technological recovery, depending on the contexts and relationships of forces. However, in all cases the question which arises in connection with the different ways of organizing work is that of the division of labour, since the end in view is both a liberation of time, equality before time and an enrichment of time.[1]

In connection with this new outlook on the division of labour, there is then the question of the relations between power and work: after all, if we agree with Laborit that work is an energy/information unit (*couple énergie-information*),[2] power can be identified as a force/knowledge unit. The same concepts, therefore, can be used to identify work and power — or as Lapierre says: 'The foundation of political power is not natural necessity, but the ability which men have, through their work, to transform both their natural surroundings and their own social relations.'[3] If power and work are therefore indissolubly linked, the question is — who has power over work and therefore over the energy/information unit? However, we note that the invention of the great energy sources and the great information collections has served to separate power and work and at the same time tends to dissociate the energy/information unit. Therefore, just as we now have the problem of power and control over the educational process and structures, the opening of new outlooks on work calls for an explanation of the phenomena of power attached to it.

To begin thinking in this way about the prospects of transforming the division and organization of work leads us to consider the phenomena of consumption, since we have shown that it is the loss of control over work which has triggered a transfer towards consumption. The gains of productivity have been transferred to the income and not to the quality of remunerative activity: income has been chosen as opposed to employment. However, the present situation, which would seem to impel us to struggle against under-employment, tends to be no longer compatible with this approach to consumption, which is assumed to satisfy all needs by the exchange of goods alone.

The combination of these two points of view, one linked to the organization of work and the other to consumption, leads to a more dynamic vision of the informal activities we have referred to above. In the developed countries, the latter correspond to perfectly functional phenomena, to the present division and organization of work, for they absorb their disadvantages (the commercialization of all activities, the development of unproductive work, the monetarization of daily and individual life, the multiplication of over-specialized services, etc.). The reduction of working time leads to another approach to its outcome, by which we also mean consumption enabling us to view so-called informal activities from another angle: those activities would provide the meaning and purpose which would be both individual and

collective and would be carried out in space and time which would be better organized.

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PART TWO

Work and training policies

CHAPTER IV

Trades and apprenticeship in Europe up to the age of manufacturing

INTRODUCTION

In dealing with the question of the interaction between education and productive work, it has seemed to us necessary to first refer to the problems raised by the world of work because changing fashions tend above all to depreciate the past and to present the future as beyond our control. The present infatuation of educational circles with work — whether productive or socially useful — might cause us to fear that we are confronted with a fashion. Therefore, we will now try to point out the links which have always existed, explicitly or implicitly, between the world of production, as connected with work, and that of reproduction, as associated with education. In other words, we are going to ask the question — from a historical point of view — what does work train people for and what is training working towards, since production must be responsible for the necessities of reproduction and vice versa. The difficulty of understanding the connection between these two spheres consists in the fact that each of them enjoys a relative autonomy, even if the relations between them are close. Depending on social, economic and historical circumstances, the evolution of the type of education may anticipate that of the type of production, or conversely: the type of production and the type of education go through an unequal but combined process of development in which each sphere tends to adapt itself to the other, although without ever achieving a complete adjustment.

Today, however, most requirements in education tend to be satisfied through educational institutions directly connected with the State, or else through channels controlled by the State and quite independent of the processes and structures of production. Such a system has not always existed and still does not exist in some countries where scientific and technical knowledge, know-how and experience are not transmitted through educational institutions[1]. The 'autonomy' of education in relation to production has therefore tended to be considered as 'natural', and it is perhaps the revelation of the fictitious aspect of this autonomy which has caused educational circles to raise the question once again of the interactions between education and productive work.

The present debate about the development of the interactions between education and productive work centres around this question of the fairly extensive but never absolute autonomy of educational processes and structures in relation to the world of work. These interactions have always existed, but they have varied in the light of what we have said about the conceptions of work, its division and its technological aspects, and also according to scientific developments. In this respect, the concept

of qualification[2] expresses at the individual level the relation between the processes of reproduction and production, since it covers the combination at a given moment of the knowledge, know-how and personal conduct which both education and work help to inculcate and to transmit. Indeed, we can speak of social qualifications and technical qualifications which correspond, in agreement or in contradiction, to the different kinds of the division and organization of work and education; their collective structure, as differentiated by social groups, will then be expressed in various technical and social sub-cultures.

THE GUILDS

At this point, it would undoubtedly be interesting to make a detailed analysis of the relations between work and education by going back to periods well before the industrial age. Besides the fact that this is not our present purpose, it should also be pointed out that very few studies have been made from this perspective, although there are a certain number of histories of education — which are in fact histories of teaching[3] — as well as histories of science and technology, which are solely concerned with the evolution of ideas or products, and economic histories which only shed light on the evolution of the structures of production. However, we cannot understand educational requirements in other than pedagogical terms unless we refrain from dealing with the sciences as a 'system of thought' and technical tools as a mechanism.

The first phenomenon to mark a far-reaching upheaval in the relations between work and production was the urban development which began in Europe in the eleventh century. It was at that time, in fact, that the communal movement made its appearance, i.e. associations in the form of communities of 'tinkers' and 'vagabonds', serfs who had left their land and lords, and who took to trade, among other things, in order to make a living. The movement towards emancipation, accompanied by violent conflicts, spread rapidly after the thirteenth century and marked the appearance of the free man who was, in contrast to the serf, separated from his lord and from the cultivation of the soil. The existence of free cities then strengthened the migratory movement despite the opposition of the lords, and these cities gradually acquired administrative and judicial autonomy within the feudal system.

Transformations took place in the rural areas during that time as a consequence of these movements: the productivity of work had to be increased to take account of a smaller work force which also had to feed urban producers who were no longer able to feed themselves. Ownership of the land changed hands and its nature changed according to regions and countries; new techniques made their appearance (improved ploughs and methods of harnessing, etc.).

Although in rural areas education generally preserved the forms it had taken on during the preceding centuries, in urban areas it adapted itself to the new economic activities which developed there, especially in relation to trades and professions, characterized by apprenticeship and the rise of the universities. The establishment of these education systems, which already marked a separation between training for

productive work and education for intellectual tasks, corresponded to the appearance of new socio-economic groups: the scholars and the master-craftsmen. However, as long as power remained concentrated in their hands, this did not prevent the great city families (merchants, money-lenders, nobles) from continuing to employ private tutors to educate their own children, while the Church, for its part, carried on its ideological work, together with the elementary education necessary for its perpetuation.

PROFESSIONS AND UNIVERSITIES

The accelerated urban development of that period led to the appearance or development of specific socio-economic activities, such as the organizational and managerial functions exercized by notaries, judges and administrators, the development of medical occupations to deal with a concentrated population, and the autonomy of certain teaching functions connected with the universities. At that time, in fact, we find the creation of faculties of teachers or universities responsible for perpetuating the work of lawyers and doctors. We might ask why those activities were not taught in the same way as those of the craftsmen, i.e. by on-the-job training. The main explanation would seem to lie in the movement towards autonomy by those social groups in opposition to the feudal nobility and the Church. Up to that time, of course, the latter had held a monopoly of scholastic learning.

> Medieval Christianity had had no difficulty in associating the theological constructions of the clergy with the pagan beliefs of a peasant people based on oral traditions. The very small ecclesiastical and urbanized élite which held the monopoly of written culture coexisted with a multitude attached to images, rites and incantations. Two worlds with no communication between them: the great doctrinal disputes of the universities never reached that fountain or that hill where generations of peasants had come to venerate their healing saint.[4]

It was between those two worlds that the lawyers, the doctors and the teachers were to assert themselves by showing that it was possible for free men to band together and educate each other and thus establish their own identity by giving to their own teachers, and not to the Church, the power of granting admission to their professions.

It was primarily a socio-political situation, therefore, which explains the movement towards the institutionalization, outside the work premises, of the task of teaching people the qualifications connected with urban development. Here we have our first illustration of the relations between the division of labour and the division of education, and the questions of power which are intrinsic in them: a social power obtained by the exercise of a professional activity led to a claim to power over the education needed for that activity.

However, this kind of education is not scientific, inasmuch as the teaching of theology, law and even medicine was based on a rigourous approach in which the scholar, by his discourse, proceeds from certain existing facts to what can be learned about them. At that time, therefore, so far as content and the approach to knowledge was concerned, the universities did no more than reproduce the dichotomy, inherited from Greek conceptuality, between the liberal arts, which were reserved for

citizens, and the servile arts, which were reserved for slaves and artisans, and, even more than that, the opposition between *techné* and *physis*, between nature and art, the latter imitating the former only as a superficial counterfeit.

TRADES AND APPRENTICESHIP IN THE MIDDLE AGES

We shall go into the question of apprenticeship at fairly great length, inasmuch as an analysis of its development from the Middle Ages on is an important element in the discussion about the development of the interactions between education and productive work. For some time now, educational circles, in formal education in particular, seem to have rediscovered the virtues of on-the-job training as a better way of passing on skill and knowledge. But educational circles sometimes have a tendency to forget that apprenticeship, as a process of initiation and guidance, has both a technical and a social side: in the case of formal education, the latter is represented by the power of the teacher; it is also represented by the power of the apprentice's master, who may be a parent, an employer or a foreman in the case of on-the-job training. Technical apprenticeship is therefore social apprenticeship at the same time, since the didactic assistance provided will depend not only on knowing how to transmit knowledge but also on the social framework within which it is transmitted.

This social dimension of the process of apprenticeship, which sometimes tended to be overshadowed by its educational framework, appears explicitly in on-the-job apprenticeship or training for production. The latter, in fact, combines the acquisition of abilities in the course of a vocational activity with apprenticeship in the social relations within which this activity takes place. More specifically, the division of labour and the organization connected with it are an integral part of the training, since the latter is closely linked to the apprentice's work. At this point we might draw attention to the components of the work process with which the apprentice was confronted: this was first of all the physical framework in which production took place; then the effort involved (the latter depending on the available tools, the nature of the raw material and the division of labour); the market value of the object produced; and finally the actual work skills which were the real subject of the apprenticeship.

During the Middle Ages in Europe, apprenticeships were served within the framework of the guilds — associations of master craftsmen which were recognized or established by the local authorities in the context of the urban development of the time. It is interesting to recall the etymology of the terms 'master'. The former goes back to the Latin word *magister*, which refers to the status of one possessing knowledge. Its use in the Middle Ages broadened that status to those who owned the economic means of production. In the term 'master', therefore, there are connotations of power which refer to both that of the teacher and that of the employer.

Masters of the trade were the owners of the means of production and participated in their productive activity. They were surrounded by paid workmen, who had not yet passed their master's tests, and by apprentices. The number and types of machinery were fixed by stringent rules, thus preventing the concentration of

capital and guaranteeing the quality and quantity of the products which were a monopoly for each guild. The guild, Pirenne reminds us:

> ...reserved for itself the exclusive use of the city market, which it closed off to products from the outside and at the same time took care that no member of the trade could enrich himself at the expense of the others. For that purpose there were increasingly strict and meticulous regulations to control the processes of a technique which was absolutely the same for everybody, and which prescribed the working hours and the amount of prices — in short, endeavoured to guarantee protection to everyone and at the same time the greatest possible equality.[5]

It was in this socio-economic context, therefore, that the on-the-job training of apprentices took place: it is clearly apparent that at that time a young man was immersed in a network of economic, social, professional, family and political relations which were just as much a part of his education as his apprenticeship in skills. Moreover, that apprenticeship was characterized by the division of labour which developed at that time, about which increasingly violent conflicts between masters and apprentices were to develop later. The movement towards the division of labour, in fact, took the form of a process of sub-division of trades: the resulting education was then reduced to its simplest expression and became repetitive. Parallel to that sub-division, however, there also arose movements towards the standardization, diversification and transformation of the structure of the trades at the time.

The apprenticeship system in Europe in the Middle Ages, therefore, made it possible both to transmit technical processes and to introduce the apprentices to the social relations of the guild. In a system of that kind it was unnecessary for education to take place in institutions which were separate from the production site. The development of processes and hence of skills was relatively slow; the small size of the workshops brought the apprentices into close contact with trained persons, both workmen and masters, while the employer's control over the socio-educational career of the apprentice was complete, as was prescribed by the guilds. With that system, it was also possible to make a structured combination of training and production one of the compulsory stages in the child's development towards adulthood, just as formal education, separate from the family and production, would later be considered as indispensable, hence compulsory and then 'natural', for that same development of the child. Now, compulsory apprenticeship as a condition for becoming a workman on reaching adult age created a real differentiation between groups, based on age and knowledge. However, that differentiation, based on an educational process recognized by all the partners, was not consciously felt by those persons themselves; it was therefore not expressed so long as the guild represented a homogenizing factor based solely on the trade. The transformations in the socio-economic environment caused by the expansion of markets and leading to the increase of work at home and factories were to help make the status of workman and apprentice the subject of frequently violent conflicts in which the production/education relationship was the centre of the debate.

APPRENTICESHIP FROM THE FIFTEENTH TO THE EIGHTEENTH CENTURY

The conditions of apprenticeship began to evolve in the second half of the fourteenth century, which was marked by pestilence and war. The stagnation or decline of markets, as well as the increased migration to the cities caused by these events, persuaded employers to reduce the production of their future competitors by prolonging the duration of apprenticeship and thereby making the indenture more expensive for the craftsman since he had to endure low wages for a longer period. These practices, which upset the internal balance of the guilds, began to mark the recession of that type of socio-professional organization. In fact, the differentiation between the status of master, workman and apprentice, which had been formally confirmed by regulations, was accentuated by the new practices of the employers: more and more workmen found it impossible to become masters, while power they had formerly shared in the workshop slipped away from them to an ever-increasing extent.

During the fifteenth century, the development of areas which concentrated almost exclusively on trade and the production of goods for export was to hasten the process of internal disintegration in the guilds. In the cities working for export, in fact, the guild system was transformed into a system of work in the home of the masters: artisans lost the ownership of both their tools of production and the goods produced and became master-workmen for the merchants.

Then their dependence on the merchants induced them to retaliate against the apprentices and workmen: apprenticeship lost its character as a path of advancement to mastership and became a source of paid labour (through the same system of prolonging the duration and therefore the cost of apprenticeship). The subsequent success of the workman now depended on belonging to the employer's family.

While apprenticeship conditions were changing, although they remained peculiar to each activity depending on the nature of its product, 'the future merchant', according to Wolff and Mauro, 'attended courses in arithmetic, which were generally provided by the municipalities or guilds. The curricula covered an elementary knowledge of currencies, exchange transactions, accounting; the students learned to solve the practical problems arising in business life.'[6] Attendance at these courses was preceded by the completion of primary school studies and did not excuse the student from having to spend several years working for an employer. This initial differentiation between the education of the producers and the education of the 'managers' can be explained by the increased size of enterprises, thus requiring more managerial personnel, the decline in training costs due to the grouping of pupils, the general types of knowledge and know-how in the business world, the need for a reservoir of skills which could adjust to the movements of the market, and by the concordance between the power of the merchants and industrialists at the political level and at the level of the educational institutions. This differentiation is very important when discussing the interactions between education and productive work, for it was associated with the distinction between intellectual work and manual labour which was to be gradually advocated, even if, in fact, the education of producers and that of managers both find their meaning in economic activity, in which all of them tend to become wage earners.

With the growth of activities requiring more capital, apprentices, and more espe-

cially workmen, found themselves in an increasingly difficult situation, for their work was the only justification for their existence.

> It is not at all surprising, then, if after the middle of the fourteenth century, when the apprentices, and especially the workmen, saw their hopes of ever improving their condition fading away, we observe a dissatisfaction among them which took the form of strikes, demands for higher wages, and finally the demand that they be allowed to participate in governing the trade side by side with their masters. ... The craftsman was transformed into a mere worker for wages[7].

Parallel with the evolution of the system of work, there was an increase in manufactures as the result of the gradual lowering of the barriers between cities and regions and the creation of national and inter-regional markets. The use of unskilled labour and the system of work in the home then spread to industries other than those for export. Although conditions differed from one region to another, this period was marked by the resistance of the guilds to the establishment of industries or by a 'perversion' of guild rules, as, for example, by assigning the task of training apprentices to a specialized teacher. This did not prevent the appearance of enterprises and entrepreneurs (sometimes the State) able to invest large sums in manufactures in which many different trades and machinery were assembled together. We therefore see the appearance of another mode of division of labour, since co-operation between workers became the basis of productive activity. However, that activity continued to depend on masters and workmen who had been formed and moulded by the guilds, with all the implications in terms of advantages and disadvantages for them, since sub-division does not exclude skill and know-how. Nevertheless, there was a downgrading of the work, as was mentioned in a memorandum by the master goldsmiths of Geneva in 1793:

> In small workshops, the workmen are obliged to be instructed in all branches of the craft they follow, because the master cannot sub-divide his work among a large number of hands. The result of this fortunate necessity is that the apprentices develop a larger number of skills and have much more extensive training. ... In the big workshops, on the contrary, the desire for profit causes the master to restrict the apprentice to a single, detailed task in order to make the best possible use of him. When his time expires, this apprentice knows only a part of his craft and in order to find work has to remain in his master's workshop and so becomes entirely dependent on him. It is easy to understand how in mechanical work of this kind the apprentice's ideas become narrower, his mental faculties diminish and his education proves ineffective.

Moreover, this same kind of education makes it impossible to meet certain requirements with respect to qualifications, quantity or quality. Even so, if the guilds did not succeed in supplying enough trained workmen, the manufacturers trained apprentices themselves by including them in the production process or by setting up separate workshops. The increase in the size of enterprises, together with the sub-division of tasks, also made it necessary to train skilled supervisory and executive personnel, a function subsequently exercised by specialized institutions.

At this point, we shall not enter into detail about the development of primary schools, secondary schools and universities during that period. With regard to primary schools, we refer the reader to Puret and Ozouf to show the importance of the Reformation in their development.

The Reformation confronted everybody, even the ignorant, with the problem of doctrine. For everybody, it replaced the traditional oral transmission of knowledge with the obligation of learning to read. ... In that way, everything conspired to attach a fundamental value to that elementary aptitude: the need for salvation, man's new relation to knowledge and the multiplication of teaching tools made the school an inevitable social investment[8].

As far as secondary schools are concerned, we shall merely mention that their creation and development in the sixteenth century by numerous municipalities or by centralized States, as in France, went hand in hand with the self-assertion of the bourgeoisie as a social class. That class had grown in numbers and had to find some unity outside the fluidity of its composition, the mobility of its members and the differences in them created by competition, as well as for the purpose of increasing its capacity for power in society. Education in the secondary schools at that time corresponded to what we would call a liberal arts education centred on the great men of antiquity and based on competition among the pupils: it thus aimed at providing what the family cell no longer provided, as was the case, on the contrary, with the nobility who could still afford private tutors.

The development of secondary schools, therefore, was mainly in response to the socio-educational needs of groups which were socially on the rise. The development of sciences and techniques, for its part, took place partly in the universities, where education was no longer restricted to the clergy and theologians, and in many other places, such as learned societies, academies and chemical laboratories, which were often financed by industrialists or the middle class.

A review of these different stages in apprenticeship from the Middle Ages to the eve of the Industrial Revolution enables us to understand one of the obstacles, which has perhaps not been explained, that certain educational circles placed in the way of the development of interactions between education and productive work. This was the fact that technical training, which in the framework of the guilds and apprenticeship had been a factor of socio-economic ascendancy, had been increasingly connected with the status of the man working for wages. However, this status was a degrading one, since the flourishing social situation of the rising bourgeoisie and its education of a 'general' nature was not connected with it. It is therefore understandable that today, in an educational culture which associates the school with social advancement, some persons consider a general education as the best means for obtaining the same results as those of the past. Unfortunately, conditions have changed, as we are going to see.

NOTES AND REFERENCES

1. We refer to the definition given by R. Barbier: 'The institution is a symbolic cell which contributes to social intercourse in favour of productivity, reproduction and the dynamic tension of the social system' *in: La recherche-action dans l'institution éducative.* Paris, Gauthier-Villars, 1977, p. 97.
2. Originating from the latin *qualificatio.*
3. Mialaret, G.; Vial, G., éds. *Histoire mondiale de l'éducation.* Paris, PUF, 1981. 4 v.

4. Furet, F.; Ozouf, J. *Lire et écrire: l'alphabétisation des Français, de Calvin à Jules Ferry.* Paris, Editions de Minuit, 1977, p. 70.
5. See Carton, M. Artisanat: décadence ou renouveau. *E + D: Entwicklung/Développement* (Berne, Direction de la coopération au développement et de l'aide humanitaire, Département fédéral des affaires étrangères et Office fédéral des affaires économiques extérieures, Département fédéral de l'économie publique), n° 12, 1982, p. 2-14.
6. Pirenne, H. *Histoire économique et sociale du Moyen Age.* 2e éd. Paris, PUF, 1969, p. 159.
7. Wolff, P.; Mauro, F. L'âge de l'artisanat. *In: Histoire générale du travail,* t. II. Paris, Editions Nouvelles librairies de France, 1960, p. 134.
8. Pirenne, H. *op. cit.,* p. 178-179.
9. Furet, F.; Ozouf, J. *op. cit.,* p. 70. See also: Volet, S. *Ecole, communes, canton: le cas du pays de Vaud (Suisse).* Genève, FAPSE, Université de Genève, 1982. (Cahiers de la Section des sciences de l'éducation, n° 29).

CHAPTER V

Wage-earners and education: from manufacturing to industrialization

In the preceding chapter, we have seen that the relations between education and production were undergoing profound changes after the end of the sixteenth century, with the expansion of trade, the development of work in the home and the setting up of manufacturing. It was at that time that the education of the producers (who to an increasing extent often worked for wages) found itself dependent on the fluctuations of the international markets and no longer on needs which were controlled by the guilds of the cities and regions. Then the establishment of reserves of skilled labour which could be used quickly depending on the market's production needs, came increasingly into the hands of specialized educational institutions which were created or taken over by the State.[1] That trend marked the definite end of serfdom and the appearance of the 'free' worker, who was free to sell his labour and to acquire the knowledge made available by the State. Thus, we again find a link between production and reproduction: when reproduction is governed by consanguinity (nobility), production is also (serfdom); when production is unconstrained, reproduction is also.

MACHINES AND TRAINING

We have seen above that the transformations of the division of labour coincided with the development of mechanical work beginning at the end of the eighteenth century: that development took the form of a shift from handicrafts to the factory, since machines replaced men in actually performing work and energy was of hydraulic or thermal origin and no longer the direct result of human effort. In that way, the questions of the division and organization of work were no longer presented in merely social but also in technical terms. This should not cause us to forget, however, that the development of machinery does not have a solely technical dimension: it also reflects the disappearance of corporative constraints upon the movements and accumulation of capital, the change in the relations between artisans and entrepreneurs, between nobles, industrialists and merchants, and the appearance of a working class.

The trend towards the downgrading of work, which we have already mentioned in connection with the handicrafts and goldsmiths' shops, became more pronounced in the case of the executory personnel in factories. We see the appearance of specialized and unskilled workers, representing the largest part of the labour force, side by side with skilled workmen, the only ones affected by manufacture and maintenance. On the other hand, new functions for supervising the workers and

controlling the manufacturing process also made their appearance, while the functions of technological design passed from the hands of engineers who were the owners of their machines and factories to those of engineers who had become workers for wages.

We therefore see the appearance of employment structures calling for increasingly diversified as well as stratified work qualifications; the educational structures of the preceding epoch were no longer able to meet those employment requirements. The widespread presence of the factory and mechanization required a widespread knowledge of reading, writing and arithmetic among the population: the response was the expansion of elementary education. However, that response was not accepted by all social classes, some of which (the big merchants and farmers) preferred the previous situation; on the other hand, the expansion of primary education occurred at a time when complaints were being raised against child labour and when schools made it possible to restore children to a protected environment which had disappeared with the extinction of apprenticeship to a craft.

The mechanization of production tended to create a technological sphere which was independent of the scientific field, for it was closely linked to constant modification in the production apparatus and was itself the object of trade. (At the same time, however, scientific practices were themselves directed in a contradictory way by the ideas of the time, such as the neutrality of science, the role of experimentation and its contribution to the 'progress of civilization'.) The consequence of this increased importance of the technological field was the creation of specialized schools for educating engineers, technicians and scholars (whom today would be called researchers).

These transformations are of capital importance for an understanding of the evolution of the relations between education and productive work. The sudden explosion of social classes and production techniques was, in fact, to be accompanied by a trend towards the segmentation of educational processes and structures, strongly marked by the development of the division of labour (school schedules, division of knowledge, competition, etc.). The role of the State with regard to education became more and more important, and, under its control, there was a movement towards institutionalization through the creation of a genuine system and the integration of the existing schools.

INDUSTRIALIZATION AND EDUCATIONAL INSTITUTIONS

During that period of the Industrial Revolution, the State was fated to play the role of an intermediary, either explicitly or implicitly, between the requirements of the production apparatus and the educational needs of the population. Depending, in fact, on the periods of crisis and growth experienced by the competitive capitalist system of the time, education appeared to be more or less necessary in order to make a full use of capital. Thus, while the sub-division of work required only a few skills for the population as a whole, that sub-division was not always able to cope with the constraints of competition, which called for new techniques and consequently new skills. What occurred at that time, therefore, was a socialization, at the national and international levels, of the problem of producing social and technical

skills and which was to be taken over by States, since that function could no longer be performed by families, guilds, religious, communal or business structures.

For business enterprises, on the one hand, the education of wage-workers in factories created more disadvantages than advantages, such as high costs, the risk of rapid obsolescence and the inability of small enterprises to provide such training, all of which encouraged recourse to the market for skilled personnel. On the other hand, the 'general' education provided by the secondary schools established in the preceding period, as well as the vocational and technical training (now considered an autonomous field), could no longer be provided in privately run structures which had become too heterogeneous, small, expensive and quantitatively unprofitable. Everything combined, therefore, to assign to the State the position of a mediator between social groups with regard to education. That field, therefore, which was strongly affected by power factors, depended on an authority which was formally characterized by its aloofness from such matters.

We then see the gradual establishment of State education systems which, in that context, became the exclusive instruments of education at all levels, for all categories of education and for all classes. That nationalization at first took the form of control over the appointment and training of teachers. That control, in turn, later took the form of a transformation of the teacher's status and image which was to characterize social conceptions of the formal connection between education and productive work. The reason was that up to that time and mainly in the rural areas, schooling had not yet been separated in space and time from the family and from the pupil's occupation. Ruffet cites examples of the complaints made by zealous school inspectors about the tradesmen-teachers on the basis of the law of 1833 in France. 'He makes it (the classroom) into a barbershop, a shoe-shine stand and a restaurant before the very eyes of his pupils' (1838). The question, then, is whether the teacher is not exercising some other profession or business which is incompatible with his teaching duties.

> ... The old-time school was not a foreign body, alien to village life: its rhythm proceeded in time with the work of the seasons, but in a converse direction. Its busiest time (winter) fell within a period of general lethargy, its slack time (spring, summer, autumn) coincided with the resumption and continuation of the work of the farm, with the uncertainty of rainy or sunny weather. The teacher, then, was accused of 'changing vacations arbitrarily'.[2]

Above all, however,

> ... with the beginning of the new industrial ethic which began to penetrate to the countryside, a decisive step was taken in the division of labour. Handicrafts, like any other form of manual labour, were downgraded by the appearance of the first factories and were henceforth considered incompatible with the exercise of the educational function, not only because they conflicted with the general organization of the days of the week, but because they involved a way of being, a style of life, a conception of the world, things and people which were contrary to the model of austerity, neutrality and strictness which was in the process of development[3].

The division of labour, therefore, which characterized the field of production, also affected the field of education, thus helping to make the latter just as much a civic and social obligation as work itself. That compulsory character was accompanied by the establishment of national systems of intermediate and final certification

(passing grades, diplomas) and curricula graded for successive levels. Now, these curricula continued to be characterized for a very long time — and still are in our time — by the predominance of so-called 'general' subjects. Throughout the nineteenth century, the sciences and technology were very slow in penetrating the different levels of education — and to a different degree in the various countries of Europe in accordance with guidelines which took account of the studies concerned and their usefulness for production.

However, the acceleration of the trend to industrialization, in the context of free-trade policies, required the creation of special educational structures to supply the managerial, and then the subaltern, personnel needed by enterprises. That led to the establishment of the polytechnical school in France and then in Switzerland at the beginning of the nineteenth century, and in the latter half of the century to the development of so-called specialized education. Those were courses separate from those of the universities and secondary schools, to which were gradually added so-called technical schools for training subordinate engineers and foremen. The trend towards structuring the education system in the nineteenth century therefore solidified the growing institutional separation of education from production, even if many characteristics of the education system enabled it to play its reproductive role in full, although with the inconsistencies we have already mentioned.

VOCATIONAL TRAINING

The far-reaching transformation of the relationship between education and productive work since the Middle Ages in Europe helps us to better understand the problems now confronting us in this field and which to a large extent explain the renewed interest in the matter. From the end of the nineteenth century and until after the Second World War, the continuous development of national education systems, combined with the practice of the free-trade doctrine in economic affairs, helped to complete the dismemberment of the vocational training structures connected with such social institutions as the guilds.

This situation can be explained by several mutually linked and mutually opposed phenomena. First of all, by its very nature the free-trade doctrine was opposed to the idea of any association of workers for economic and social purposes, in the name of freedom of trade. The Le Chapelier Law of 1791 in France (in force until 1884) provided that:

> When citizens of the same status or occupation, entrepreneurs, those with open booths, workmen and journeymen engaged in any craft meet together, they may not appoint a president, secretary or treasurer, keep records, take decisions or issue statements, or draw up regulations concerning their alleged common interests.

(England and Switzerland followed the same example, while Germany retained its guild system for a longer time.) It was in this context that the movements for organizations of workmen were to develop: those movements gradually led to widespread, prolonged and free primary schooling, as well as to laws fixing the minimum working age for children and limiting their hours of work. The vocational training of those who had not attended primary school or who dropped out could no

longer be carried out in a system of the guild or similar type, since they were no longer legal. Vocational training, especially in branches which were rapidly becoming industrialized, was then provided almost exclusively by the employers.

Up to the beginning of the twentieth century, apprenticeship could have taken one of the following forms:

- apprenticeship on the job, on the basis of involvement in productive practice, with the help of a skilled workman;
- apprenticeship by rotation, also of a practical type, but in accordance with certain stages of the production process;
- apprenticeship in a school-workshop attached to an enterprise, simulating certain activities in the enterprise, under the supervision of instructors;
- apprenticeship and instruction in the enterprise, combining primary education with vocational training, admission to which was generally reserved for children of the personnel.

It was only after the 1920s that other social factors, such as the State and workers' trade unions, began to participate in the organization and administration of vocational training. This resulted in the establishment of supplementary vocational courses, generally outside the enterprise, the compulsory signing of apprenticeship contracts, the holding of final examinations at different levels and in different areas, and the creation of posts to teach apprenticeship. These measures are carried out differently from country to country. While vocational training in an industrial enterprise has almost completely disappeared in some countries, others (Switzerland, Federal Republic of Germany) continue to consider it of great importance.

This differentiation was connected with varied approaches to primary education and the development of vocational schools. As soon as the secularization of primary education had been completed, towards the middle of the nineteenth century, the question arose of a possible sequel to elementary education, which was not originally an integral part of the secondary schools. What then took place, in various ways and with rather vague objectives, was the development of supplementary or extended primary education. In spite of everything, this quite often served a pre-vocational purpose, and was gradually to replace specialized education, which had become a modern and integral part of the secondary schools.

Moreover, vocational schools began to be established which offered an opening into higher primary education. Training in those schools took place completely outside a productive enterprise and was therefore of a pronounced educational character, unlike the compulsory vocational courses for apprenticeship.

The development of the relations between education and work in European countries up to the middle of the twentieth century enables us to begin to pinpoint a certain number of factors which are important if we are to understand the present situation. The transformations of the capitalist type which took place after the Middle Ages and during the industrial revolution reveal very clearly a certain number of fundamental differences between guild or corporative education and formal education:

- whereas in mediæval apprenticeship educational practices and the replication of the system were controlled by the 'instructors' themselves, the formal system was directed by the State and the social forces controlling it;

- whereas the guilds had undertaken the observance of the recognized conventions among themselves, today it is the State, the employment markets and the pressure groups, whether professional or not, which participate in this kind of regulation;
- whereas the mediæval apprenticeship met the needs of a particular workshop or trade, formal instruction is relatively non-specific in relation to these demands, which nowadays require further training more or less peculiar to each place of work or special group (which we shall mention again later). It should be noted, however, that this non-specificity of education does vary according to the technical and social division of labour — as is especially evident in the case of technical and vocational education;
- whereas guild education was directly connected with work, the rise of the school coincided with the appearance of employment markets which intervened between training and work and where the possession of a government diploma was currency which could be exchanged for paid work.

Side by side with these fundamental differences between guild instruction and formal education with respect to their relationship to work, there still remain certain resemblances today in the case of very special occupational groups. After all, ever since the Middle Ages, doctors, barristers, lawyers — not to mention teachers — have preserved methods of training which give their professions a monopoly which is guaranteed by the State instead of by the guilds. It should be noted that today the relation between work and training is still very close in these professions and that only very recently have we begun to see the establishment of a market of paid jobs for persons with these qualifications.

Lastly, it should be observed that ever since the Middle Ages, and probably even before that time, questions concerning the relations between education and work have been subject to tensions and social conflicts, whether in the case of revolts by apprentices and workmen against their exploitation in the fourteenth century, or the demands to limit child labour and to protect children with regard to schooling in the nineteenth century, or the tensions in the job markets during the last thirty years for which answers have been sought in educational planning policies for further vocational training.

ADULT EDUCATION AND EDUCATIONAL POLICY

At this point we shall not give a detailed historical account of what has been called, since the nineteenth century, adult education, except to briefly summarize its evolution together with that of school systems and policies, and its interaction with the systems of work. The parallel developments of the school systems and those of industry are all steeped in a traditional ideology which extols popular education. The latter exists in a socio-economic context characterized by liberalism, includes groups of former pupils, clubs, universities and social institutions, courses established by the churches, the State, municipalities and leading citizens. The objectives of these educational activities obviously vary considerably depending on their founders and the relations between them. Whereas at the beginning of the nineteenth century it had been a question of protecting the people against dissipation or

easy pleasures, and against any propaganda which was considered subversive — while at the same time contributing to the production boom — this objective of moral improvement became blurred in the course of that century and was replaced by socialization. However, that general trend took different forms in different countries with regard to technical and vocational education. While in the United Kingdom, for example, the State encouraged secondary, higher and technical education for adults, French policy favoured the development of primary education for children as a result of the debate about secularization.

Moreover, there was an evolution throughout the nineteenth century from popular education towards adult education: the former had been aimed mainly at making up for basic education which people may have missed when they were of school age, while the latter was based more on subjects of specific interest to an adult and an economically active population of citizens. Its ties with the economic trend then appeared more obvious. As Perdonnet reports in 1867:

> In Paris, the Polytechnical Association does not teach either reading or writing; it assumes that men who attend its courses come there knowing how to read and write. Workers who do not know how to read and write can learn to do so in the primary schools, which are open to adults in the evening.

The subjects taught in the Polytechnical Association included draughtsmanship:

> ...which has been rightly called the language of the engineer. ...It is very difficult, in some cases, for an engineer to make himself understood by a workman. Accordingly, in our workshops, we pay workers who understand working drawings one half or one quarter more than those who do not understand and reserve the best jobs for them.[4]

The case of this association illustrates the rapid evolution which was taking place at the end of the nineteenth and beginning of the twentieth centuries: the development, side by side with popular education, of individual social advancement linked to changes in occupational status.

The international economic depression which spread through the industrialized countries between the two world wars was to accelerate the development of systems of vocational education. For the individual, this contributed to his advancement, to his possible change of status, to his retraining and to his formation as a citizen. In the enterprise, it served as a concomitant means of engaging and training a qualified working élite. Lastly, within the economy during that period of depression, it was considered sometimes as an investment in the manpower reserve and sometimes as a solution to the problems of unemployment. If we now examine the connections between these practices of continuous training and the policies of formal education, we can note certain conceptual differences, for, in spite of the quantitative expansion of education to encompass increasingly broad strata of society, equality of opportunity was far from being an objective of that period between the wars.

On the other hand, popular movements or organizations which conduct advanced vocational training programmes called for a democratization and prolongation of school attendance with the following objectives in mind: (a) to cover the transitional period from the time when young people leave school to the moment they begin their working life; (b) to teach a larger number of young people to meet the economic needs of the depression; and (c) to form an intellectual and professional élite from the ranks of school graduates. Up to the Second World War, we were to

see the gradual satisfaction of these demands for the democratization of primary education. On the other hand, in the field of adult education, the ideology of individual professional and social advancement, thanks to the second chance for those 'deserving' persons who had been excluded from the education system — which was then considered as a first chance for everybody — was to be perpetuated in most of the industrialized countries up to the end of the 1950s.

NOTES AND REFERENCES

1. These institutions were set up in several parts of Europe as a result of the social and political changes at the time. In particular, the growth in the economic power of the middle class eclipsed that of the nobility; since the power of the latter was based on its 'natural' (divine) authority, the middle class was obliged to base its power on knowledge.
2. Ruffet, J. La liquidation des instituteurs-artisans. *Les révoltes logiques* (Paris), n° 3, 1976, p. 63-76.
3. *Ibid.*
4. Perdonnet, A. *De l'utilité de l'instruction pour le peuple.* Hachette, Paris, 1867. Quoted by Leon, A. Analyse de la demande de formation au 19e siècle. *Education permanente* (Paris, Université de Paris-Dauphiné), n° 62-63, mars 1982, p. 105.

CHAPTER VI

The last thirty years: policies of educational planning and lifelong education

EDUCATIONAL PLANNING

Beginning at the end of the 1950s, the massive appearance on the wage-earners' market of a flood of educational qualifications — primarily of a 'general' and secondarily of a vocational and technical kind — began to create problems of qualitative and quantitative adjustment to the needs of the production infrastructures. Three types of measures were then gradually adopted (with the emphasis varying according to countries):

- a forecasting system to predict the evolution of the socio-economic mechanisms and the quantity and quality of qualified manpower needed to accompany that evolution;
- institutional reforms affecting the courses, types of establishment, diplomas and guidance, all aimed at 'democratization'[1] (polytechnical secondary school, school mapping, integration of vocational courses, etc.);
- educational reforms which continued to provoke debate, already begun in the preceding period, between free culture, the transmission of a cultural heritage and a system of references and standards on the one hand and, on the other, functional and practical knowledge which can be put to use.

The introduction of these reforms then gave rise to exchanges of opinions which perhaps failed to take sufficient account of those elements of understanding which can be provided by a study of the history of the relations between education and productive work, since at least the Middle Ages. After all, we have seen a confrontation between the defenders of democratization and the reduction of the inequalities of access to education, at the same time as criticisms of the replication made possible by the transmission of a dominant cultural trait or the segmentation of the educational mechanism. This debate originated in the questioning of the myth peculiar to the nineteenth century of free school education; however, the establishment of a relation, once more explicit, between the economic and educational fields only led to the reappearance of the conflict of the interactions between the two spheres, which the neutrality of the employment market had failed to make fundamental.

Those debates, however, did prevent the adoption of educational planning policies in many countries. Unfortunately, as the Organisation for Economic Co-operation and Development had stressed in 1975: 'Attempts, during the 1960s, to determine "optimal" amounts and patterns of qualified manpower corresponding to specific levels of income and rates of economic growth were a chimera.'[2] This does not mean that the institutional and educational innovations to which we referred above were not implemented, but in general they failed to achieve the

overall effects aimed at (to equate the flow of graduates with socio-economic needs; to reduce staff in general education; to multiply technological courses and careers), in spite of the increase in the duration of school attendance and the first steps towards an internal rebalancing of the training system.

With regard to the relations between work and adult education, we might point out the complementarity as well as the contradictions in this field, together with the socio-economic evolution and the development of formal school systems. In fact, while the rhythm of industrialization was accelerating, popular education and adult education were also expanding. Paradoxically, the widespread diffusion of primary education, and then other forms and levels of school attendance, were going to make adult education of less importance and restrict it to the function of reproducing the processes of selection based on the school model.[3] That evolution was gradually to overshadow the question of the relations between education and work and came to concentrate on the debates on the pros and cons of formal and non-formal education. It would seem to have been in reaction against the pedantry of those debates and their failure to take account of the realities of work and economic affairs that we saw at the end of the 1950s the establishment by private enterprises of policies of recurrent vocational training.

RECURRENT VOCATIONAL TRAINING

Towards the end of the 1960s and in the context of a crisis in educational planning systems, we find the emergence of statements and practices concerning recurrent training, lifelong training and lifelong education — priority today being given to the first of the three.

The need to establish projects or systems of recurrent training, especially vocational training, has arisen in a certain number of countries as a result of the more or less successful achievement of autonomy by the formal education systems from their socio-economic context. The emphasis placed on the vocational aspect of recurrent training, to the detriment of a concept of lifelong education, results from the analysis made by the social partners of the feasibility of such a project. After all, lifelong education presupposed increasingly strong links between the formal and non-formal systems of general, vocational and cultural education, which it was hoped would all be transformed from within and rejoin each other as an integrated whole. However, the difficulties met with in transforming school systems, in particular, showed that this strategy of lifelong education was not practical in the short term. Other strategies were therefore proposed, either with or without the participation of those involved in formal education, aimed at transforming the school systems from the outside. Recurrent vocational training was then presented both as a questioning of the crisis in those systems and a remedy for it.

The questions asked mainly concerned the progressive increase in educational costs. We have seen the policies of democratization, equality of access to education, prolongation of the duration of school attendance and other educational reforms introduced in the 1950s. Those policies, which were based on a conception of the central position of the school in relation to the production system, were necessary

both for supplying skilled labour and selecting the élites, but gradually the function of providing the proper qualifications proved to be no longer satisfactory for everybody, while mushrooming costs brought about by those policies proved difficult to support in a period of economic stagnation. In other words, the production of a marketable value through education was possible only at the price of a rising social cost which was unprofitable in terms of exchange value.

Moreover, the relative autonomy of the education system in relation to the production sphere was sometimes accompanied by criticisms of the organization of that production, its ideology of technical progress and, at the same time, of similar doubts about the school's capacity to ensure access to work and of its claim to possess a monopoly of education.

The policies of recurrent education which began to be adopted in various countries at the beginning of the 1970s were attempts to remedy the difficulties caused by the administration of the schools at that time. It goes without saying that the positions of the different social partners involved in discussions about the nature and purposes of those remedies were bound to differ within each country and between countries. But the fact that other social partners than educationists took an active part in establishing and administering education systems or activities is of great importance in every respect for understanding the present interactions between education and productive work. In fact, the increase of the relative autonomy of school systems in relation to the production field, together with the gradual exclusion of the wage-earners from their function of self-education, had led to a strong domination by 'educational specialists' in determining the objectives and strategies of basic training. As the crisis in the school systems became obvious to the consumers and users of education, both trade unions and employers' associations, with or without State support, combined in proposing the establishment of systems of recurrent education in which they would be direct participants. This does not mean that trade unions, the State, employers' associations and communities had not already engaged in that kind of education: the innovation consisted in the fact that the realities of work and school posed too many interactions for them to be dealt with in a scattered and individual way.

From the point of view of the trade unions, recurrent education, which was mainly vocational, was able to achieve one or more of the following objectives at the beginning of the 1970s:

- to improve the wage-earners' standard of living by raising their qualifications, thereby having an impact on their income;
- to offset the effects of the inequality of opportunity which the school systems had proved unable to remedy;
- to improve the cultural education of workers by adding this dimension to vocational training (this, in particular, is related to our interest in the interactions between education and productive work);
- to encourage worker participation in the management and organization of work by raising their level of knowledge;
- to give the trade unions some right to supervise the processes of qualifying the labour force and the use of those qualifications in production.

We are therefore again confronted with the division and organization of work as the main centre of interest for the establishment of systems of recurrent education:

work, in both its technical and social aspects, once more becomes subject to confrontations and negotiations.

From the employers'[4] point of view, recurrent education should make it possible to channel and master a certain number of phenomena, which are themselves directly connected with work; among other things, it should help:

- to use recurrent education as a means for profiting by the periods of unemployment which occur from time to time in the population;
- to keep pace with technological changes and the trend towards higher education in both technical and social terms;
- to encourage social advancement and access to stable jobs by overcoming the concept of an unalterable social division of labour, which divides up wage-earners on the basis of membership in a social hierarchy of jobs.

These objectives, of course, are very general and will differ according to the types of enterprise in question (by size, sectors, markets, employment policies). For the big firms which already provide recurrent education for their personnel in order to adapt them to technological evolution and integrate them in the company, the widespread practice of a training programme raises the problem of the admission of other partners (trade unions and possibly the State) in the task of defining and administering such a policy. What clearly confronts us, therefore, is the problem of controlling the interaction between work and education. The development of recurrent education raises even more problems for small enterprises, where a large part of the labour force of the industrialized countries is still employed. Since they are more or less largely dependent on the market forces generated by big enterprises, they are unable to predict their medium-term needs with respect to skills and qualifications; it is also difficult for them to support the costs of recurrent education and there is the risk that it may well be the big enterprises which profit by this kind of education. Lastly, the possibilities of making use of this education are limited by internal conditions. Accordingly, various ways and means have been found in different countries for facilitating the reorganization of training programmes for small enterprises.

The role of the State in the field of recurrent vocational training varies considerably from one country to another. We shall merely mention that in some countries (such as France), the public authorities have underwritten by law the trade union demands for recognition of the right to educational leave which, in principle, does not have to be (but mainly is) of a vocational type. This legislation makes it possible to divide the expenses of recurrent education between enterprises and the State (for young people, the unemployed, etc.), authorizes formal intervention by the trade-union partners in prescribing and administering recurrent education and, lastly, enables the policy of recurrent education to be used as an instrument for the quantitative and qualitative regulation of unemployment.

RECURRENT EDUCATION AND THE DIVISION OF LABOUR

The fact that policies of recurrent education can help to regulate unemployment reveals their close connection with the division of labour, since employment and the stability of the labour force are assumed to depend on the distribution of an educational *corpus* which governs the employability of individuals. However, the

decision-making centres for this employability associate the partners in production in different ways, depending on whether they are employers, workers, trade unionists or the State. And this employability depends largely on the division and organization of labour. But since the labour market has become a buyer, its division and organization have to an increasing extent escaped from the hands of the wage-earners: the question which then arises — and differently in different countries — is that of the connection between training and the organization of work and the control that trained personnel/wage-earners have over them.

In a context in which the organization of work is defined jointly by several socio-economic partners, the connection between recurrent education and this organization may be considered as a mutual enrichment of both spheres, in which the trained personnel appear as a collective element. This was the case, for example, with the so-called '150 hours system' in Italy, which enables metalworkers to take 150 hours of training leave per year on subjects often connected with their work, under institutional instructors such as those supplied by the trade unions. On the other hand, in conditions where the type of management of the enterprises does not permit trained wage-earners to participate in prescribing and controlling the organization of work, a request for recurrent education is made on an individual basis. It then tests a worker's ability to integrate himself into a division of labour over which he has no control; it functions as a means of increasing the individual's value to the firm but also as a technique of selection for some use in an organization of work (in technical and wage terms) of which the individual is not the master. This training, however, may then become a power stake, for by manipulating a special skill as a critical value for practical use, it may raise the problem of its own function in the division of labour and challenge the hierarchy of tasks and the sub-division of responsibilities.

From the end of the 1960s to the middle of the 1970s, this evolution of recurrent education became widespread in most of the industrialized countries, i.e. during a period of accelerated growth. It therefore marks a break with the period following the Second World War, since the relation between education and work is no longer in reference to the school model, but on the contrary in reference to the enterprise. The object is no longer the individual request for education — something which is appropriate for social advancement and lifelong education — but rather an institutional offer of training, combined with an offer of employment, a choice of jobs, qualifications and the development of those jobs, which must be evaluated under the combined effects of technological change and economic depression.

The fact that emphasis is placed on further education, mainly of the vocational type, does not mean that the school has no role to play in this context. On the contrary, it should act as a filter and should broadcast 'signals' about the degree of adjustment of pupils by awarding them diplomas for different grades; it should serve to inform employers about the aptitudes of job candidates. That is, of course, an extremely broad conception of its role[5], but it represents a return of the balance towards solutions aimed at reducing the cost of basic training, the function of which is mainly informative and serves to enhance the value of apprenticeship within the production apparatus or under its control.

The acceleration of the employment crisis after the middle of the 1970s (which was, as we have seen, also a labour crisis) caused many governments to place

emphasis on out-of-school training projects intended for unskilled young people, unemployed young people and similar groups. These actions, which were called 'youth projects' and consisted of training courses in job finding and initiation, combined in various forms classroom teaching, industrial training courses, and information and guidance about the job markets.

Because of the increase of unemployment, the present period once more finds us confronted with the question of the relations between systems of education and systems of vocational training. Whereas, during the preceding period, the maladjustments of the school in relation to work were perceived only in qualitative terms, the unemployment among the young is revealing the extent of these maladjustments in quantitatively significant terms.

The seriousness of the situation, for young people in particular but also for many adults, is now making us aware of phenomena which deserve careful analysis if we are to understand the interactions between education and productive work. When confronted with employment problems, many individuals and social groups go through a process of education-plus-vocational-training which amounts to strategies for combining initial unskilled jobs, periods of apprenticeship, industrial training courses, new jobs, etc. These strategies in themselves reflect different combinations, which are connected both with the established position of the school system and the special and social structure of work or training. On the part of the individual and social participants, therefore, there is once more a questioning of the progressive and functional sub-divisions between school and enterprise, pre-service training and vocational training, and certificated training. Also questioned once more are the approaches to training by professional courses or streaming, by specific groups in the population, by employment requirements. Accordingly, the work crisis and its prospects for improvement, referred to above, have far-reaching repercussions on educational processes and structures, which make it necessary to look on the interactions between education and productive work in new terms.rk in new terms.

NOTES AND REFERENCES

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2. Organisation for Economic Co-operation and Development. *Education and working life in modern society.* Paris, 1975, p. 33.
3. See Fritsch, P. *L'éducation des adultes.* Paris, Mouton, 1974.
4. We use the plural because this group is never homogenous.
5. Arrow, J.K. Higher education as a filter. *In:* Lumsden, K.G. *Efficiency in universities: the La Paz papers.* Amsterdam, Elsevier, 1974, p. 51-74.

PART THREE

Work and skills

CHAPTER VII
Theories and practices

After this account of the institutional context of the relations between work and education, we have to deal with the question of the didactic and socio-educational dimensions of these relations. An analysis of vocational apprenticeship connected with production will first show us a certain number of differences and resemblances between the rationale of apprenticeship and that of the production process. This analysis will then give us a better idea of the debates about the points at variance between general and vocational systems of education — in both theory and practice. We can then have a clearer understanding of the notions of skill or qualification, terms which are often used by educators and teachers without a definition of either the limitations or the ambiguities.

VOCATIONAL APPRENTICESHIP: SKILL AND SOCIALIZATION

Apprenticeship is basically a process for trasmitting know-how, since, together with the transmission of knowledge, apprenticeship involves the practical application of this knowledge, i.e. the transmission of skills. It is a process of guidance in which the student has to pass through a certain number of stages and which are learned in a certain order. Most of the time this order corresponds neither to the historical order of the creation of the knowledge in question, nor to the logical order in which it is organized, nor to the order of the work process, but rather to the necessity of transmitting skills. This guidance involves relations between certain individuals, one of whom possesses certain knowledge which gives him power over the others. Although, in principle, this power disappears at the end of the apprenticeship process, it is nevertheless found to be a part of those social relations in which the teacher may also have been the father, a wage-earner, a member of the family or an employer. Technical apprenticeship is therefore at the same time social apprenticeship: education and teaching will depend not only on the know-how to be transmitted but also on the social classes in which they operate. The educational relationship will be obviously inseparable from the social relationship — contrary to what occurs in the school environment.

Technical knowledge and skill: apprenticeship in handicrafts

The practice of apprenticeship in handicrafts brings out the opposition between two forms of technical knowledge which are necessary for production: Barthélemy identified them as follows[1]:

- The first form of technical knowledge is based on an empirical approach to reality. The material provides the point of departure for a sequence of practical knowledge leading to its arrangement in the necessary and successive steps until the final stage is attained.
- The second form is derived from the application of a scientific approach to determine the different stages of production. It is based on an explanation of the principles in order to determine the method of procedure.[2]

Simondin brought out this contrast:

The knowledge of the craftsman is therefore opposed to that of the engineer. The apprentice who has become a craftsman and the engineer who has become a part of the social infrastructure preserve a vision of the finished product which surrounds them like an aura. In the case of the former, the product does not dominate, and in the case of the latter it does. Those are two very different sources of conceptions and judgements about the finished product. ... Up to the present day, those two attitudes have been unable to produce any common agreement, to such a point that they exist like two separate languages and two types of thought which are derived from technology and are not mutually compatible.[3]

We are therefore confronted with two types of knowledge and must keep the opposition between them well in mind when we attempt to analyse the interactions between education and productive work in terms of training.

If we analyse the case of apprenticeship in handicrafts, according to Barthélemy it can be said that:

... the special activity involved in craftsmanship is centred around the inclusion of empirical knowledge into the productive act by means of skill. This knowledge does not exist outside its use in some procedure or in some form. In skill, there is no dissociation between knowledge and power, since the knowledge of the craftsman includes the empirical technical knowledge which enables him to direct his work according to the overall complexity of the result to be achieved.[4]

Thus, as Lebas expressed it rather well, 'on the one hand, skill is seen to be the result of any concrete piece of work and ... on the other hand, it is the possibility of making effective use of a concrete piece of work.'[5] If we go back to Barthélemy, he says that, by its fundamental connection with work,

... the world of know-how is based on the notions of limitation, security and saturation — in one word, on a closed universe. Knowledge is defined by the possible, is determined by man's physical limits of intervention. Every technical system which is connected with a material substance gradually tends towards saturation, i.e. towards the maximum degree of integration of man and material in a given context of knowledge. The process of manufacture, the compulsory sequence of operations in an order determined by experience as being the only one possible, becomes the basis of a process of thought based on the certitude of the evidence. Lastly, just as scientific knowledge corresponds to a universalist-because-generalizing discourse, the reduction of sources to experience necessarily leads to reliance on situations which are already familiar and to the resort to accumulated experience.[6]

One of the first consequences of this definition of skill is its inability to be transferred elsewhere except by co-operation in the work process itself. Accordingly, the distinction between knowledge and skill is important in so far as the transmission of scientific knowledge ... is perfectly possible outside the work process, whereas the transmission of skill involves active participation in the work process. ... This characteristic of adaptability and transferability gives skill its specific quality of being the result of human experience resulting from work itself and confirmed in a social context.[7]

If we come back to the process of acquiring skill, we find that this kind of acquisition is often accompanied by a hierarchy of functions in work, based on greater know-how. Defence of the acquired power then leads to practices for limiting the spread of knowledge and aimed at maintaining ties of subordination. This practice is different from that involved in the acquisition of scientific knowledge, which may, theoretically, be accomplished without any reference to the work process or the social environment. However, it is often a confrontation between these two procedures which leads to the integration of productive work in training programmes, particularly in school. We will then have to ask ourselves how the different participants in these programmes — pupils, teachers, parents, trainers from outside the school — are going to react and perform in accordance with their attitudes, their training and their objectives.

Apprenticeship and the work process

If the example of craftsmanship has helped to shed light on the technical dimensions of apprenticeship, it has also shown that the acquisition of skill is closely linked to the organization of the work process itself.

Throughout apprenticeship there is the gradual inclusion of the future producer in the structure of labour appropriate for his trade. In connection with the socio-economic aspects of work, we have seen how this process of division of work had accelerated with the Industrial Revolution, but if this division seems to be undergoing a crisis today and new prospects are opening up, we must nevertheless admit that the present situation will continue to be dominant for many years to come. Now, since there are many programmes aimed at developing the interactions between education and productive work which refer explicitly or implicitly to handicrafts as a productive activity in the school, what is the situation in this field with regard to the organization and sub-division of labour? It is Barthélemy, once again, who provides an answer:

> Skill by definition refers to the overall process of transforming the objects of work and therefore presupposes the total mastery of this process, whereas the division of labour leads gradually to the appearance of partial skills. These kinds of skills, if they are to be compatible with respect to their common objective, must necessarily refer to some global knowledge outside themselves. The craftsman, on the other hand, possesses the thorough know-how and skill without which an autonomous manufacturing process is impossible: the presence of one or more workmen with him does not mean that they constitute a number of partial skills — it is simply a case of cohabitation or the affinity of several complete skills, including that of the employer, who himself is working in the workshop without there being any hierarchic division of tasks.[8]

For Jaeger, there is no doubt that the production process depends upon the craft.

> Within the production process itself, operations are diversified and discontinuous: it is necessary to change tools or machines, to go and look for parts or materials in the warehouse or at a dealer's, to wait for a welded part to cool, for plaster to harden or for paint to dry .... The wage earners enjoy autonomy in their work after discussing the organization of their tasks with the manager of the enterprise; they are fully responsible for the proper performance of those tasks without any supervision or control by their employer. The work they do is the same as

that done by the manager of the enterprise himself, except for his own administrative duties .... The work process of the production unit is firmly based on the craft.[9]

As for the craft itself, Barthélemy reckons that:

...it is based on the principle of an inevitable sequence of operations: the progression from one operation to another and their orderly sequence constitute an inviolable rule which could be justified, if necessary, by the evidence of mistakes. The order in which a cabinetmaker carries out his different operations — sawing and planing the wood, marking it out, making joints, sanding and assembling — has a certain inevitability about it and is a part of the design from the very beginning. This progression, which has been confirmed by experience, has the value of an absolute rule. The world of the craftsman is often the reflected image of this process — circumscribed, organized, articulated. Is not the image of the specific function of the caste in relation to an overall social purpose based on the sequence of complementarities — a kind of projection, onto society, of a technical behaviour of this kind?[10]

Hence a plea in favour of the working rhythm:

The autonomy which characterizes the manufacturing process corresponds to a contribution by each individual of complex elements, including knowledge and sensations the combination of which is inevitably individualized. In the case of an extreme sub-division of tasks, in assembly line work, it is the uniformity of the rhythm much more than the uniformity of the actions which is intolerable. In itself, the repetitiveness of the motions of the tapestry worker, the weaver or the stonecutter has never led to any special aversion to those trades as long as they remained autonomous. The power to determine one's own working rhythm creates a just balance between attention, fatigue and action in every individual. Even if they work together in large collective workshops, the only characteristic which is never shared in common by craftsmen is that of their working tempo: the last refuge of the individual expression of skill.[11]

One may wonder, therefore, to what type of work, whether artisanal or not, the productive activities in the school are to be related and how we should take account of the dominant modes of dividing and organizing work in society — which are the exact opposite of an artisanal approach. It may also be asked how these activities are to be viewed in relation to apprenticeship for production if they are to be distinguished from the 'practical exercise' categories peculiar to the school environment and which make work one subject like any other. The logic of apprenticeship for production itself almost never reproduces the logic of the work process, in so far as it sub-divides that process in a sequential and heterogeneous way. For example, the things which are likely to go wrong during the fabrication of the product may be the last ones learned, while the collective tasks are the first ones. What, then, will be the sequence of productive work organized as a part of educational programmes? Conversely, how should training activities be presented in the framework of productive work?

Apprenticeship and social relations

Whether it takes place in an industrial or an artisanal environment, apprenticeship is based on a social infrastructure through which men experience their social relations. As Le Play observed: 'Young people take up active service in the workshop and carry on their work there while becoming accustomed to obeying a boss, to getting along with their colleagues and giving orders to their subordinates.'[12] The

apprenticeship is therefore that of learning a technical discipline *and* a social discipline, which may vary at different times and in different systems.

In the guilds, for example, apprenticeship was a public affair in so far as the apprentice had no ties with the master but rather with the guild, while the master was not a member of the guild because he was a master but, on the contrary, a master because he was a member of the guild. With the Industrial Revolution, on the other hand, Adam Smith pointed out that: 'During the continuance of the apprenticeship, the whole labour of the apprentice belongs to his master. In the meantime, he must, in many cases, be maintained by his parents or relations, and in almost all cases must be cloathed by them. Some money too is commonly given to the master for teaching him his trade'.[13] The question of the cost of apprenticeship, which is very quickly understood by the apprentice and his family and connected with the young man's ability to be financially autonomous and/or to defray his parents' expenses, very soon and very clearly reveals the relation between training and the inequalities of the social structure. The cost, after all, is connected with the duration of the training, which itself is often connected with the social origin of the apprentices. In a wage-earning system, all this represents an apprenticeship to the wage-earner's future status, accompanied by ritualistic transitions and the appearance of both competition and solidarity among wage-earners.

Apprenticeship is a process of gradual vocational socialization, which a young man who has attended secondary or higher school will not experience until much later. If socialization is defined as a process of acquiring an identity in the working world by recognizing the values, standards and roles by which it is organized, one of the objectives of developing productive activities within the school might then be to confront the majority of children with the technical and social reality of work sooner than is now the case. It will then be interesting to study how school socialization is or is not compatible with a beginning of occupational socialization, in so far as these two processes often appear to be contradictory[14].

GENERAL AND VOCATIONAL TRAINING: IS THERE AGREEMENT BETWEEN THEORY AND PRACTICE?

The analysis of the influence of the technical and social aspects of apprenticeship on its teaching and learning has revealed a certain number of interactions between knowledge and work which would tend to oppose the process of production with the process of training. In many countries, the existence of vocational training of the formal type — the history of which we have analysed above — will enable us to improve our study of the interactions between knowledge and work and now show us their functional complementarities. Discussions about the development of productive activities in the school centre on the very heart of this contradictory and complementary dynamic, since they do not concern either apprenticeship or vocational training but both together. The same is true of the discussions about the further or recurrent training programmes connected with work, in which there is often said to be an opposition between 'general' or 'cultural' training and vocational training, although in practice there are in fact seen to be relations between these different kinds of training.

General education and vocational training

It has been often said that general education is to vocational training what the useful is to the practical, in the sense that the former would tend to develop an ability to stand aloof, to dissociate oneself from reality in order to appraise the diversity of its components and the potential implications, whereas vocational training would tend to develop an aptitude for adhering to reality in order to master its constraints and take action to transform it. However, as is well known, what is useful is not lacking in practical extensions and what is practical can on occasion prove very useful; for this reason the institutional cleavage between general and vocational education is much more closely linked to socio-political considerations — as we have seen — than to the object of knowledge or to the ways in which it is learned.

Nevertheless, diffuse and interdisciplinary, 'theoretical' knowledge can be opposed to focused, disciplined and 'practical' knowledge: theory will be associated with an area of freedom and sovereignty; practice with an area of discipline and servitude. But knowing how something is done is not the same as skill and vice versa: there is therefore a contradictory complementarity between formalized knowledge which has undergone the test of rationalization and the conceptualization of know-how, and the skill acquired by bringing together fragments of disparate processes in some real situation. Theory and practice thus constitute a field of reciprocal experimentation in which they justify each other. The opposition between theory and practice, therefore, is by no means justified by the decreasing social estimation of general education in relation to vocational training and apprenticeship. But it must be admitted that the present way in which vocational training is conducted often only goes to strengthen this opposition, as witnessed by these comments from Lucie Tanguy:

> Regardless of what form it takes, technical education is an area where there is an alienation/appropriation process of different kinds of knowledge: an alienation of the knowledge necessary for social life, but also an alienation of the foundations of the principles for different kinds of technical knowledge reduced to a knowledge of *established facts* or a knowledge of results. This alienation/appropriation is one of the necessary conditions for the appearance on the market of a labour force which is deprived of any general social qualifications but possessing special qualities needed for productive work: an apprenticeship in learning its relationship to machinery, the technical language and habits of thought leading to the assimilation of technology and hence to an acceptance of the domination of the established productive order ....
>
> If the education in the workshop conducted by senior workmen was potentially capable of transmitting cultural values and workman's stereotypes, what is the situation today when this education tends to be conducted by graduates from higher technical schools who have little or no experience in production and possess other values than those of the workmen, other ideas about work and other concepts of knowledge? From the preceding study it would appear that the branches of knowledge taught to future workmen are no longer the practical knowledge transmitted by workmen (and in part developed by them) but formalized technical knowledge belonging to the same body of learning as that taught to future technicians and that this technical knowledge is disseminated by processes of exclusion, separation and reification which are subject to the structure of the social hierarchy.[15]

Accordingly, the development of productive activities in the school system may help to restore the dynamics of the relations between theory and practice, as well as

to reproduce the distortions which we now find in technical and vocational education.

Further cultural and vocational education

The problems are the same for further or recurrent education, in so far as we often find a clash there between general and vocational subjects, individual advancement and collective advancement, which finds its expression in curricula that are often quite different and controlled by different social actors. However, the reality of work, in its technical *and* social aspects, stands in opposition to this dichotomy of subjects.

In situations where general and vocational training courses are kept quite separate, the training process is most often adjusted to the individual. In the case of training courses of the technical or vocational type, there is generally a separation between the process of acquiring and the ways and means of using those newly acquired skills within the particular framework of the enterprise. In this case, as in initial technical or vocational training, CERFI considers that:

> ...even when the training is directly aimed at production, it derives from the latter a role in accordance with a stereotyped social image. In an adult vocational training class, for example, future professional workmen will learn to use machines independently of the institutional and technical fabric which may justify or condemn them. This apprenticeship can then be carried out only by inculcating a certain number of rules of behaviour which are absolutely dependent on the organization which dictates them and of which the trainee perceives only an infinitesimal part, that concerning himself.[16]

Similarly, with regard to the so-called general or cultural training courses intended for a public engaged in some professional activity and organized by the enterprises, these courses are generally cut off from the reality of productive life. They then reinforce the myth of general culture as a means of personal liberation, according to the same model as that used in general formal education. In general, they have nothing to say about the organization of work; at the same time, they can improve integration in the enterprise by familiarizing the personnel with its language and disseminating its information.

This way of conceiving and practising further education brings to light the same dangers as those at the initial training level, namely a breakdown between the technical and social aspects of work, which are nevertheless experienced by individuals in an integrated way. In some countries, projects for further training are set up on the basis of an overall outlook on the world of work, and at the level of individuals and social groups. This is the case, for example, with the so-called 150-hours system in Italy, which is related, in fact, to the three principles of universality, equalization and participation which were suggested for schools by Schwartz[17], but which were actually adopted in the field of further education.

In the Italian school and social milieu of the 1970s, some questions arose concerning both the training of the population — fairly low in terms of schooling — and transforming the methods of managing and organizing work in enterprises. In this context, teachers, trade unions, employers and university professors suggested practices of collective further training, starting from work situations, passing through a stage of conceptualization and returning to the concrete consequences in

terms of organizing and managing production. The socio-educational objectives of these practices, therefore, were aimed at raising the level of the basic education of the underprivileged sectors of the population, acquiring skills for participation in enterprises and combining different branches of knowledge around these first two objectives.

QUALIFICATION: FROM THE JOB TO THE INDIVIDUAL

Pre-service or in-service training are included among the objectives (which we will explain in detail later on) of the establishment of productive activities within the framework of educational programmes, as well as of the development of systems of further training connected with work. However, this concept of qualification can be given different meanings depending on the social sectors who use it and, when operational, may or may not take account of the ideas we have just expressed about the socio-technical reality of work.

The traditional approach to qualification

One widespread image in industrial circles — in schools in particular — of qualification is that of the practice followed by many enterprises for 'job evaluation'. The methods used consist of classifying jobs according to the number of points obtained on the basis of criteria which, it is thought, describe the jobs. Each job is evaluated independently of the person holding it or who will hold it. The criteria are, for example, the necessary experience and training, the effort required, the responsibility and working conditions[18]. The implicit or explicit definition of the qualifications resulting from these practices is then stated in terms of 'job requirements'.

This practice of job evaluation has been subject to many criticisms, even though it continues to be widely used. In spite of its apparent objectivity, the weighting of the different criteria can vary from one method to another, from one enterprise to another and from one time to another. This approach consists of isolating each job from its environment and thus making it appear to be inevitable and unchangeable. In fact, job evaluation is often no more than a way to justify a personnel policy and wage scale adjusted to each enterprise. This practice of job evaluation then raises a more general question, which we have already mentioned in connection with the division of labour: is it possible to dissociate the characteristics of the labour force from the technology used and the method employed for the division of labour? The difficulties and failures met with in setting up fully equipped factories, designed without any regard for the characteristics of the local labour force, indicate that there must be a certain compatibility and coherence between job requirements and labour characteristics. Discussions then start to determine what has been neglected in such limited conceptions of job qualifications.

Contrary to the preceding approach, in which qualifications relate to the job, there is another definition of qualifications which is linked to the capacity of individuals. From this point of view, qualifications are considered to be attainments achieved

by training and professional experience. 'The essential element in the qualifications for a given job is the time required for learning it', this time being 'the minimum time necessary in a given position'[19]. This is the definition given by Naville. The scale of qualifications then tends to become confused with the scale of training times, and the job will be or will not be a qualified or skilled one depending on the amount of training. This attitude, which is closely related to the phenomena of universal and prolonged education, then tends to favour the downgrading of professional skill.

We should note that this notion of downgrading refers to two phenomena which should be distinguished from each other. The first is that of the under-utilization of knowledge or skill acquired through the education system or professional experience; the second is that of the 'downgrading' of jobs. As this second attitude is difficult to verify, in view of the development of raw materials, products, techniques and the division of labour, we are forced to abandon any comparison between jobs and return to that of the jobholders. We can then go back to the example of the craftsman's shop, inasmuch as the know-how of the craftsman was more complete than that of the modern workman, who no longer practices a trade but simply holds a job. Furthermore, as we have already seen, there is now a loss of interest and a lack of any specific meaning for workers. But this way of analysing 'downgrading' is in fact much more closely linked to the level of individual satisfactions than to the types and levels of education. If we now go back to qualification on the basis of this analysis of downgrading, we find that the definitions based on education or training alone are of only minor interest at the conceptual and operational levels.

New approaches to qualification

Compared to the two traditional approaches to qualification which we have just mentioned, there have been some recent attempts at clarification, which were all the more necessary because qualifications are now a central issue in bipartite or tripartite negotiations (employers, trade unions, State) concerning wage classifications. The first classification consists of an attempt to separate qualification linked to the job from qualification linked to education. The second is intended to show that there is a simultaneous interaction between the two spheres, but also to show its inadequacies and contradictions. There would therefore seem to be a classification concerning the qualifications for jobs and the qualifications of individuals which are not independent and whose significance lies in the work/man combination.

The relation between the qualification of individuals and the content of their jobs can first be demonstrated by an analysis of the real content of the jobs held by individuals. In fact, numerous studies show that there is a more-or-less narrow margin between the formal content of a job and how it is handled by an individual: individual characteristics cannot be left out when defining the content of jobs. Moreover, it is impossible to verify the statements which are often made about the inadequacy of the products of the education system when compared with the needs of the productive system, inasmuch as we cannot know exactly how education is going to be used in the job actually held. This fact then proves that the spheres of education and production are not autonomous, and there are therefore definite links between the qualifications of individuals and the content of jobs.

From this point of view, then, the concept of qualification is the expression of a two-sided social relationship between individual and job: in the case of production, qualification establishes a relation between the individual components of the labour force and the requirements of the owners of the means of production. Qualification then appears to be an inherent socio-cultural fact in the existing social system at a given time. If we now go back to the interactions between education and productive work, it is clearly apparent that this dynamic approach to qualification is at the same time much more stimulating and also difficult to apply, either in the field of basic or pre-service education or that of further or recurrent education. In fact, it explicitly shows that the education system plays a role in structuring work — something which many educators do not see — but at the same time it lays stress on the real bearers of qualification, who are the workers and not the teachers or adult education instructors. The question will therefore be how to bring out and improve, in initial and further education, the cultural phenomenon represented by qualification in its social and technical dimensions, and how to do this in a context of accelerated technological changes.

NOTES AND REFERENCES

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CHAPTER VIII
Towards a technological culture

In the preceding chapter we pointed out that programmes aimed at the development of productive activities, especially in the school environment, have often referred, explicitly or implicitly, to the work of the craftsman or artisan. In the last ten or twelve years, however, most of the industrialized countries have gone through an unprecedented technological revolution which represents a challenge to the productive system as well as to the education system. We might then ask ourselves whether productive activities in the educational environment which hark back to the artisanal model are not the reflection of ignorance and/or a utopian ideal, while activities which are centred exclusively on the technological revolution – and there are some – do not reduce the present situation to just one of its components. We shall therefore try to show that an original technical culture[1] does exist within the population, that this culture should be exploited and enriched and that new connections between education and production can facilitate its recognition and dissemination.

TECHNOLOGICAL CHANGE, WORK AND JOBS

Some care is necessary before tackling the question of the links between technological change, work and jobs. The idea of modernization, especially industrial modernization, has often resulted only in the development of new sectors (nuclear power, aeronautics, the exploitation of outer space and the ocean) and the disappearance of so-called traditional sectors. Fortunately, we are beginning to realize that there are no sectors which are condemned but only equipment which is obsolete; there will therefore continue to be sectors of activity based on traditional techniques which will continue to be competitive, depending on their economic environment, their products and their markets. The entire multiplicity of economic development in the industrialized countries will then have to be taken into account in defining educational policies in general and the development of productive activities in the educational environment in particular.

The new technologies[2], which we tend to encounter more and more frequently, will certainly lead to far-reaching changes in the internal structures of enterprises. The entire social and economic division of labour is in the process of being overturned in a context of savage competition between companies and countries, and of antagonism between social actors (employers, wage-earners, public authorities) with regard to the distribution of capital investment, wages, expenditure on renewing the labour force, prosperity and power.

What, then, are the consequences of these technological changes in terms of the organization of work and the content of jobs? Any answer to this question presupposes that we should first of all take account of the educational factors which have permitted these changes to take place. Indeed, as we have already noted with respect to qualifications, the education systems of the industrialized countries have for about twenty years supplied swarms of young people possessing special skills (a greater knowledge of the basic technologies involving automation, adaptation, mobility, etc.) which meet the 'needs' of jobs in the modern technology sector. One application of this procedure is to be seen in the reconstitution of the assembly line in a modern factory, which:

> ... makes possible a better adjustment of the present composition of labour forces .... The succession of broad tasks is able to take advantage of the 'vocational' aptitudes which have been increased on a vast scale by post-war schooling. In some cases, this is really 'complex' work which might be offered in special job areas. It is expected that this will make it possible to incorporate and stabilize 'young' segments of the Western working classes — which was highly unlikely in the case of the traditional assembly line. Above all, what is remarkable is that this productive utilization of the characteristics of new labour forms can be achieved by work, which although 'integrated', had actually nothing to do with a trade or craft. What it amounted to was an integrated sum-total of what were originally isolated activities, but a worker who is assigned to these new jobs does not have the advantage of any socially recognized 'qualification'. In this 'integration' of tasks, care is taken not to reconstitute those trades or crafts which are socially recognized and confirmed by and in the classification scales[3].

Therefore, although some analysts emphasize the 'disintegration' dimension of the integration/disintegration combination of jobs, accompanied by the completion of vocational training and the legitimacy supplied by the trade, others lay stress on the least possible sub-division of work, the greatest possible ability of the production personnel to control the development and use of their working tools, and the evolution of the authority/control role of the managerial staff in the direction of control by encouragement. We would then see the appearance of new trades or crafts in work systems which would favour new lines of vocational progress[4]. It is a process of internalizing the qualifications of each sector, branch or enterprise which explicitly reintroduces the organizational dimension of work along with its technical dimensions.

This synchronic characteristic of the special qualification structures of each type of branch or enterprise has to be toned down still further on a diachronic level: in fact, it is a constant phenomenon of integration and disintegration accompanying the development of industrial societies. Due to the effect of the widening of markets, the standardization of products and the application of organizational models of the hierarchic-functional type, there has been — as we have seen — a splitting up of crafts, and then of traditional trades, into activities which dissociate carrying out work, which is often considered manual, from preparation and managerial control which is described as intellectual work (but which is above all hierarchic).

The question which arises today, parallel with situations in which the preceding phenomena — including handicrafts — still persist, is that of the polarization or convergence of qualifications. With respect to polarization, there would seem to be an antagonistic development of medium and higher-level jobs on the one hand and of jobs calling for a low level of qualifications on the other, the majority requiring only low qualifications. From the point of view of convergence, on the contrary,

there would seem to be the maintenance and development of jobs for professional workmen and the appearance of new jobs for workmen needing greater knowledge in order to make use of the new technologies.

The debate about the consequences of the new technologies therefore appears to be very much open at this time, but although there seems to be an opposition between the approaches and concepts of the disintegration/reintegration of jobs, new trades, lines of professional progress, the convergence/polarization of qualifications, all of them reveal the centrality of the question of technological know-how and the control of its development and application. Indeed, there is a danger of perpetuating that attitude which considers technological development as inevitable and only studies its consequences in terms of the organization of work and the content of jobs. On the other hand, tackling the question of technological change in terms of different kinds of skill from the social and technical point of view we have mentioned above makes it possible to reintroduce the question of the socio-economic objectives of these technological changes[5]. The answers to the questions we have raised will actually centre around the problems of controlling the development, dissemination and application of these kinds of know-how.

TECHNOLOGIES AND SKILLS

Just as it is impossible to draw any 'consequences' (in the strict meaning of the word) concerning work and jobs from current technological changes, it is also impossible to draw any 'consequences' in terms of the content of educational content, for, as we shall see, there is a technical culture among producers which should be taken into account by the initiators of technological changes. However, the present situation does show up certain major lines which stress a solution of continuity with the preceding technologies, but with a new balance between skill and social behaviour. This balance should serve as a guideline for the promoters of productive activities in the educational environment.

Skill

The present forms of skill, of which it has often been said that they had become obsolete with the appearance of software and which, unfortunately, had often been prematurely removed from educational courses, are reappearing today with a catalytic function for the efficient development of new abilities. We find, in fact, that the new materials call for diverse associations of traditional and renewed technologies, that the new functions for controlling machines still require that their operators have a knowledge of what the machine can and cannot do, and that the technical significance of the variations in their functioning and the organizational structures of enterprises are undergoing transformations while casting doubt on the resulting functional specializations and forms of specialization, while still continuing to be characterized by the social infrastructure of past years.

Although the preceding trends might be considered to show that we are in a phase of the convergence of qualifications, it should nevertheless be noted that some

phenomena of polarization might develop, not directly because of the subsequent capacities but rather because of their role in the socio-educational selection process which might be attached to them, such as the following:

- abstraction and formalization connected with the importance of modelling and simulation as tools in many fields of activities;
- logical analysis and formalization connected with the construction of systematic procedures on the basis of specialized languages;
- parallel mastery of specialized and common languages;
- use of interactive rather than linear thinking.

Skill and collective qualification

Although the new technologies may bring about a re-equilibration between old and new forms of skill, they are accompanied, among other advocates, by a discussion of the changes in individual and collective behaviour. The ability to react to a gamble rather than to follow a pattern scrupulously, calls for an open-minded and tolerant attitude, autonomy and co-operation, curiosity and imagination which make it possible to achieve social reliability; it is the latter, after all, which is the 'consequence' of an increased interdependence of systems organized in networks of institutions and individuals.

In this way, the interrelations of these forms of skill reveal a collective dimension of qualification connected with the working environment and the social infrastructure developed there. This approach then brings out the interactions between individual and collective factors in work situations. These interactions, however, are only too often forgotten at the time when new technologies are introduced, for only individual technical qualifications are then taken into account. This approach also emphasizes the need to take account of the social dimension, outside work, which shapes professional relations. Co-operative behaviour on the work site depends largely on the functioning of such institutions as the family or the school, on cultural customs and on the social history of the group in question.

TOWARDS A TECHNOLOGICAL CULTURE?

Although distinguishing between general and vocational types of education is open to question on the basis of an analysis of actual working conditions, the trend started by the introduction of the new technologies shows that the worlds of work and social reality closely overlap. Can we not say, then, that these two spheres are in fact bathed in a technological culture which shapes them? The consequence of this point of view would be that the dichotomy, so often claimed between 'needs'[6] in vocational training which would correspond to the production sphere and 'cultural needs' associated with other places and other times in human activity, no longer has any objective relevance. It is perhaps around this new approach that the thinking of educators concerned about the development of the interactions between education and productive work might well be centred.

Technical culture — a sub-culture?

To speak of a technical culture which would play an active social role, at both the levels of education and production or other activities, presupposes a transformation of our ideas about this subject. We have already pointed out that the contrasts between 'manual' and 'intellectual', practice and theory, vocational and general were based on a value system in which technology was discredited and served as an instrument of social hierarchization. This is what Grignon stressed in 1971:

> Socially, and independently of the nature of its content, technical culture is defined as an inferior culture, as a substitute culture, or an 'imitation culture', intended for those who will occupy a subordinate position in the social hierarchy. Generally speaking, the social returns of the 'technical' culture are still much lower than those of the so-called 'general' culture. ... Because the 'technical culture' is, socially speaking, an inferior and illegitimate culture, it is impossible for those who develop and transmit it not to refer constantly to the hallowed model of the legitimate culture.[7]

This description of the technical culture is in fact transmitted and maintained by the institutions of technical education. Grignon goes on:

> It is not mere chance that those responsible for vocational training often speak of the pupils in their centres of learning and of the precautions which have to be taken in communicating with them in terms reminiscent of those used by missionaries when talking about the natives they are supposed to convert. Just as natives are human beings because they have a soul, apprentices are human beings because they possess intelligence; but just as the soul of the native is a 'primitive soul', the intelligence of apprentices is a 'practical intelligence'. If the conversion or semi-acculturation of these 'naturals' is to be successful, one must know how to impress their imaginations and do so wisely[8].

At the same time, however, the technical culture is held up as 'a good substitute for scholarly culture, for the use of those who cannot and should not acquire a mastery of the liberal arts; it is sufficient that technical culture should perform similar functions for them at less cost and less risk.'[9] For Leblanc, however, technical culture is perhaps more valuable:

> When they [children in technical schools] have acquired the scientific knowledge which is needed for industrial purposes, do you not think that they will have enriched their minds and cultivated their intelligence just as well and perhaps even better than if they had learned to tell us the exact date of some battle or the history of some reign?[10]

Handicrafts: a technical culture

A reminder of this attitude to technical culture, even if it has to be interpreted carefully in the context of individual countries and their approach to this subject, has been necessary in order to present a correct view of the possibilities of improving it. However, before turning to the prospects of innovation in technical culture which might lead to the inclusion of productive activities in educational programmes, we shall once more refer to handicrafts in order to illustrate the specific nature of this culture and its general character in relation to the productive activities and behaviour of craftsmen. Barthélemy has considered the point at some length:

The artisan's shaping of matter, the work he carries out directly on the material with his hands or by means of his tools gradually helps to transform his work into a very specific mode of perceiving and interpreting the world which takes on the dimensions of genuine cultural behaviour. The fundamental datum of this process is the material: its particularities, its physical characteristics, will determine a process of transformation for the purpose of some specific use. For example, wood possesses very special physical properties and, in view of the variety of species, it is considered in many different ways, such as by its colour, grain or smell. ... This accumulation of empirical data as the product of a sensory relationship helps to create a 'humanized' environment around the manual worker, charged with the significance of his senses as well as with the practical purpose or the sequence of technical procedures. ... The actual work, which calls mainly for empirical knowledge and skills, includes a certain number of mechanisms which in turn go to influence and form a genuinely mental type of behaviour, as stated below:

- Since knowledge is linked to what has been found to be possible, it is determined by the limits of experience and the physical intervention of man. In these conditions, every technical system tends towards saturation and, little by little, there is seen to be a world based on the notion of limits, security, saturation — in one word, a closed universe.
- The manufacturing process, the compulsory sequence of operations, constitutes an absolute, inviolable rule, in accordance with the pre-established experimental scheme of coherences.
- Reasoning itself tends to become technical by repetition and to base itself on the postulate of some active solution which is always possible (the affirmation of a demonstrated and demonstrable power over things through experience) and which one only has to know.
- The 'subjectivization' of know-how, which eludes any scientific explanation, makes the power of accomplishment dependent not on knowledge itself but on the knowledge of a very resolute man on whom it will confer, in addition, the power to control and direct.
- Lastly, as we have seen, the individualization of the manufacturing process leads to the phenomena of identification between the workman and his work, which, through the need for self-assertion inherent in the individual, leads to a desire for work which is well done — a common observation about artisanal work.

The direct participation of the senses and the muscular system in shaping material, the precision of acquired gestures which have become a refined expression of the body, the indispensable mastery of one's balance when in movement — all this effort which is guided and channelled by a purpose outside its own existence constitutes one of the fundamental elements involved in this type of productive activity.

Far be it from us to repeat, at this point, the old sentimental stories about the craftsman and his trade. We shall rather try to show that this coherent behaviour possesses the elements of a technical/manual culture peculiar to the craftsman or artisan. This culture has a tendency to become stabilized around a coherent approach to the environment based on a few key words like discipline, regularity, limited, assumption, power, mastery, balance, stability, etc., which subsequently raise problems when confronted with other words such as growth, development, evolution, mobility, openness, democracy, etc.[11]

Technical culture and economic depression

The reference to handicrafts has enabled us to show that technical culture was neither dependent on nor 'inferior' to general culture. More comprehensively, Barthélemy again thinks that 'an analysis of the behaviour connected with a manual trade takes account of resistances and adjustments not only at the level of skill but also at the level of the general behaviour patterns and modes of social integration

which may be brought about by changes in the techniques and modes of production. This aspect is hardly ever taken into account by the "developers" yet, it is worth recalling, trades and tecnniques are not only the product of a particular culture but are also carriers of that culture and therefore, to change technology or a production process, we have to think about encouraging some cultural change.'[12]

More generally, then, we can ask ourselves whether the work crisis, like the 'sociological sluggishness' which hinders modernization by the new technologies, cannot all be explained by this ignorance or downgrading of abilities which are the product of a non-formalized mixture of vocational and social life.

> These skills, which were worn out and destroyed wherever Taylorian attitudes of industrialization were adopted as the dominant model, have not been renewed by the educational, productive and social structures, whose trends seem to be ill-adapted to this purpose and are therefore approaching a state of exhaustion. So much so that in spite of a prolongation, in various forms, of technological and vocational training, the present period has been characterized, not by a widespread increase in the potentials of populations but, in many countries, by a regression of this potential. ... The holes made in these original skills, which are not recognized socially and economically for various reasons, and the gradual drying up of this hidden source of growth probably constitute one of the chief causes of this crisis and one of the main obstacles to overcoming it.'[13]

This explains the development today in the industrialized countries of movements concerned with research into workshop cultures, collective workers, the history of enterprises, comparisons between the structures of enterprises engaged in the same activities in different countries at the same industrial level, and the history of the tools of production. These different movements, in fact, aim at giving a new value to what Taylor had already discovered at the beginning of this century but which he had used in a different way. 'The management undertakes to receive all the elements of traditional knowledge possessed by workmen in the past, to classify this information, summarize it, and derive rules, laws and formulas from this knowledge.' His approach amounted not only to depriving the workmen of their skill but also to its destruction, since it was replaced by an abstract compendium which was transmitted outside of practice. However, for Roqueplo:

> ... in this way we arrive at a generalized process of delegating skill and know-how to formulas, methods, machines and automatons of all kinds. These formulas, as in the case of the scientific organization of work, are believed to bring out the optimum. But how this optimum is calculated is something which finally eludes everybody. ... In these circumstances, there is a kind of devaluation of real and subjective experiences (i.e. of technical culture) ... for the benefit of a 'skill'. ... Imitations of skill and culture in the long run lead to the disappearance of genuine skill and culture: the skill which is currently known and the living culture.[14]

Technical culture, innovation and school culture

The rediscovery and upgrading of a technical culture are very important phenomena for viewing the debate of the interactions between education and productive work from the right perspective. Have we not just noted that enterprises, as well as education systems, are each responsible for the disappearance of a technical culture? However, the present socio-economic situation of the industrialized countries tends to show that this disappearance is just as disastrous for enterprises as for education systems, and primarily, of course, for the population.

On the basis of this finding, Roqueplo states the following:

In a time of crisis, we will not succeed in coping with the problems of reconversion, in mastering other modes of consumption — and perhaps even autoproduction — without calling into question our cultural requirements, in particular our requirements with regard to school and university. I cannot help but consider the position of an enterprise baffled by problems of staff training, of flexibility in its production, hidebound authority, internal malfunctioning and cultural obstacles to negotiation. I do not think it can expect any salvation from the university. Hence the following conclusion: the industrial world must provide itself with those institutions (let us call them the internal cultural transmitters) which will enable it to cope with this kind of situation. It would also not be out of the question for these institutions to work in liaison with university professors so that in this way they might have a stimulating effect on the education system. I am fully aware of what might be said against such a point of view. But in the face of the unbelievable lack of any technical culture in the French education system and the socio-economic consequences of this lack, it would seem to me helpful to suggest that in this field industrialists should expect salvation only from themselves.[15]

This sums up the issue, although in a specific national situation, which teachers and educators perhaps do not appreciate at its true value. Nevertheless it is from this point of view that we have to evaluate the introduction of productive work in educational curricula.

NOTES AND REFERENCES

1. While talking about culture, we are refering to Durkheim's approach (*Les règles de la méthode sociologique*, 1895) and to that of Duverger (*Sociologie de la politique*, 1973) which cover, in what it is hoped is a coherent manner, different ways of thinking, feeling and behaving, rules of conduct, beliefs, and the material and intellectual techniques typical of a social unit.
2. For example: all automatic production processes (self-adjusting), manufacture of parts and their assembly (computer- or robot-assisted production), and ancillary services (office automation, electronic mail, computer-assisted learning). In administration, management and marketing: planning, managing (data bases, data processing, text processing). The use of these different technologies reduces the clarity of divisions between work in the industrial and service sectors.
3. Coriat, B. *L'atelier et le chronomètre.* Paris, Bourgeois, 1979, p. 259-260.
4. See Iribarne, A. d'. Technologie et système de travail: l'évolution du travail face au développement des technologies. *In:* Centre national de la recherche scientifique, France. *L'évolution des systèmes de travail dans l'économie moderne.* Paris, Editions du CNRS, 1981.
5. One example is the conception of a workshop containing equipment and organized in a way to take advantage of night work: either volunteers are found who are prepared to work at this time, or an entirely automatic process is introduced with a large storage area.
6. For a critical assessment of the concept of need, see: Barbier, J.M.; Lesne, M. *L'analyse des besoins en formation.* Champigny-sur-Marne, France, Robert Janze, 1977.
7. Grignon, C. *L'ordre des choses: les fonctions sociales de l'enseignement technique.* Paris, Les Editions de Minuit, 1971, p. 266-270.

8. *Ibid.*, p. 268.
9. *Ibid.*, p. 269.
10. Leblanc, R. *L'enseignement professionnel en France au début du XX^e siècle.* Paris, Cornély, 1950, p. 232; quoted by Grignon, C. *Op. cit.*, p. 271.
11. Barthélemy, G. *Les artisans et le développement.* Paris, Ministère de coopération et du développement, 1983, p. 58, 59, 60.
12. Barthélemy, G. *Op. cit.*, p. 61.
13. Iribarne, A. d'. *Le passage de la formation de base à la vie active dans le cadre des nouvelles technologies:* Rapport présenté à la Conférence européenne sur la maîtrise sociale des nouvelles technologies, CEE/CEDEFOP, novembre 1982. Aix-en-Provence, CNRS/LEST, juillet 1982, p. 12. [Ronéo]
14. Roqueplo, P. *Penser la technique, pour une démocratie concrète.* p. 219-220.
15. *Ibid.*, p. 225-226.

CHAPTER IX

Work and education: an economic and logical approach

Although Roqueplo calls upon the French industrialists to solve their problems by themselves, the trend of urging social partners not to look for a solution for all their difficulties from the State is tending to increase in many countries. At this point, we shall not enter into a socio-political analysis of this phenomenon, but shall adhere to the significant points relating to our particular problem. After referring to the historical evolution of the concept of work and the present consequences of the technological revolution, it is necessary to shift these analyses to the contemporary context of the discussion about the welfare state as opposed to the citizen as an actor. This point of view is necessary if we are to prevent the development of the interactions between education and productive work from referring to obsolete strategic approaches, or, on the contrary, from being perceived as a distorted way of accelerating a process of pseudo self-management[1]. For this reason, we shall first analyse how the concept of 'socially useful work' — so often used in connection with the education/work interactions — relates to the crisis of work and employment and the technological revolution. We shall then ask ourselves what is the relationship between this new approach to work and the prospects for an aggregation of educational phenomena which will enable us to recompose — from an economical and logical point of view — those elements which are today splintered in the time and space of productive, educational, cultural and social processes.

EMPLOYMENT, TECHNOLOGY AND SOCIALLY USEFUL WORK

In all industrialized countries, the work crisis is accompanied by an employment crisis which has become worse since the beginning of the 1970s. A recent study by OECD[2] predicts that by the end of 1984, of an active population which in 1982 was estimated at 328 million persons in the member countries, the unemployed will represent 9.4% or 34.5 million persons; the European countries would be harder hit than the countries of North America and Japan. The situation will be especially serious for young people and those persons who have been unemployed for a long time. In 1984, young jobless persons might, on the average, represent 19.5% of the young active population (although this percentage would be 34% in Italy as against 5% in Japan). Consequently, OECD states that it would be necessary to create 20 million jobs between 1984 and 1989, taking account of the increase in the active population. Above all, however, this report refers back to a certain number of subjects which we have already mentioned in connection with working time; we suggested, for instance, increasing the possibilities of part-time work, which should

be accompanied by a redistribution of income. A structural analysis of unemployment opens up several prospects which are relevant to our problems. If we compare the job situation, the proposed remedies for it and present technological developments, several questions appear, all of which refer back to what we shall call provisionally 'non-work'.

In societies where the rate of unemployment may reach 15% and where the technological revolution has become an integral part of daily life, there will be great transformations in the structure of activities. Some authors[3], for example, predict that these informational societies will show the following characteristics: fewer workers in factories and community services; compulsory leisure activities for those who have not been able to find a job in the labour market; the emergence of new types of complementary jobs which are not dependent on technology and deliberately make use of time (educational tasks, work at home, in the leisure industry, tourism, social activities). If these prospects raise a number of questions about the trend towards a dual society — as we have seen — they also raise a number of questions about the definition of work itself, about work when considered as a service to the community, and about the role of States in managing the productive activities of a society.

Indeed, how can we compare productive work, for which we have tried to find a theoretical framework in the preceding pages, with the activities connected with the control of time, space and information which are developing today? How should we refer to the periods of 'non-work', such as free time, social time and wasted time? How can we explain such apparently contradictory objectives as those which aim at reducing the role of governments in socio-economic life and at the same time ask them to underwrite the consequences of the resulting tensions? How can we encourage citizens to take more initiative and responsibility in the economic and social fields, while at the same time asking the State to act as policy regulator at the national and international levels, which to an increasing extent are escaping from their spheres of influence? These questions have been widely discussed for several years in most of the industrialized countries and are giving rise to shock formulas like: 'Help yourself and the macro-economy will help you'; and to suggestions encouraging greater interest in the consumers, who should be at the basis of 'task forces' and 'pilot projects'[4]. It is interesting to note that today this kind of suggestion no longer comes solely from the so-called 'leftists' and/or the proponents of 'self-management'. The discussion has spread to involve the role of the government in the process of individual and collective responsibility for all sectors of social and economic activity. While some people come out in favour of 'a liberal public involvement'[5], others demand 'less government'; while there are those who state that what we need is more government, more markets and a more varied society[6].

We may then ask whether what today is called the social economy is not already in the process of accomplishing some of the above objectives. If we look at the principles which Desroche attributes to the activities of co-operatives, mutual societies and associations, we find a number of ideas which appear new today, such as:

1. *Voluntary action* — referring to the term of 'association' on which the enterprise is based;

2. *Creativity* — and economic creativity in a business/employer (*Arbeitgeber*);
3. *Equity* — referring to support and re-distribution among the populations participating in this joint enterprise;
4. *Service* — that is, 'non-profit', regulating and limiting the flow of capital in accordance with the opposing influence of the workers and the clients;
5. *Encouragement* — hence cultural instruments for the benefit of the members;
6. *Solidarity* — assuming exchanges or possibly equalization between larger and smaller sub-groups;
7. *Autonomy* — in any case, deliberate aloofness from the authorities of the administration and/or public economy[7].

For a long time, these principles have been at the roots of many activities carried out by individuals and groups of every social origin in all the countries which concern us. In the United States of America, for example, 31% of the population engage in voluntary work within an organization, and this movement has existed for dozens of years. On the other hand, France, a country with a centralized system of government, is only today rediscovering the virtue of actions which often make up for the inadequacies of the public services[8].

An illustration of these different kinds of activity has been supplied by a study carried out by Huber in the Federal Republic of Germany on self-help projects and mutual-aid networks. Table 1 shows the types of activity which can be carried out in this context.

There is, writes Huber, a diversity of activities which 'tends, among other things, towards a kind of production which must be ecologically suitable and socially useful, towards self-limitation of needs and consumptions. It aims at ... the abolition of the extreme forms of the division of labour, at the reintroduction of work in everyday life.' We find, therefore, that production is once more one of the chief concerns of the promoters of these activities, with a goal of social service which would again give meaning to work by including it once more in an area of human dimensions. Is that not, as is stated by J.-P. de Gaudemar, a manifestation of the 'resistance of institutions, resistance of natural forces and areas, and finally resistance by human beings against allowing themselves to be reduced to economic objects' which impel them to make 'a collective demand for the right to immobility or also for the right to self-mobility'?

Then with respect to work which is individually and socially useful, we also see the reappearance of the problem of unemployment among young people, as well as the question of the State's role in coping with this problem and the functions performed by 'socially useful' activities in a time of economic restructuring. Our argument can be illustrated by an example from Belgium. The Employment Promotion Plan, created by the royal decree of 25 March 1982, proposes to open up jobs which will be reserved for persons who have been unemployed for at least two years during the four years preceding their engagement. These jobs will be in the non-commercial sector (non-profit activities of public utility to meet collective needs which would not have been met otherwise) and would be subsidized from the public funds. When the National Employment Office offers one of these jobs to an unemployed person, the latter is obliged to accept it under penalty of being deprived of his unemployment benefits. Concerning this programme, some persons such as Desmarez and Domb think that:

TABLE 1. Different types of self-help projects and mutual aid networks

Manual work ("Hardware Labour") 29%	Production 12%	Agricultural production 4%	4%	Agriculture (gardening, animal husbandry, market gardening)
		Handicrafts 8%	1%	Printing
			5%	Production and repairs by craftsmen (motor car workshops, bakers, carpenters, tilers, weavers)
			0.5%	Alternative technologies (bicycles, recycling, insulation, solar heating)
			1.5%	Artistics handicrafts
Intellectual work ("Software Labour") 71%	Services 70%	Circulation 9%	1.5%	Transport (taxis, waste disposal, removals, street cleaning)
			4.5%	Shops (food shops, coops, second-hand dealers, travel agents)
			3%	Bookshops (including delivery and distribution)
		Leisure industry 9%	4%	Restaurants and bars
			4%	Information centres for holidaymakers or meetings, communication centres
			1%	Cinemas, art galleries
	Politics 18%	Information and publications 17%	3%	Media (film, video)
			1%	Photography, graphic design (including typing)
			9%	Newspapers, magazines and other publications (such as calendars, meeting reports)
			4%	Publishing

(Self-) administration services 5%	5%	Co-ordination and organization projects (council offices, information, group projects, networks)
Social aid 22%	7%	Children (baby shops, parents associations, day-care centres, nurseries)
	3%	Schools (private primary schools, adult education)
	1%	Medical groups
	11%	Therapeutic projects, educational schemes, social assistance for adolescents
Culture 1%	8%	Art, sport (theatre, circus, music, dancing, karate, etc.)
Political activities 18%	9%	Environmental protection (including community development projects)
	8%	Civil rights movements (to combat professional restrictions, residents or migrants committees)
	1%	Political groupings and trade unions set up with "alternative identities"

Source: Huber, J. Projets auto-organisés et réseaux d'entr'aide. *Futuribles* (Paris, International Association Futuribles), janvier 1981, p. 31-45.

... by the institutionalization of a parallel work circuit based on the postulate of the existence of unsatisfied social needs, the measures recently taken with respect to employment are perhaps the harbingers of one of the sectors of the 'dual society economy' advocated by some theorists of technological innovation. ... [This] 'third work circuit' clearly directed towards a non-commercial (i.e. pre-capitalist and co-existential) sector ... would eventually be the only place in the productive area over which the State would retain a certain authority, thus abandoning the sector exposed to the laws of international competition.[12]

States can also take measures of the '15-20 service' type in Canada or 'young people between 16 and 18' in France — to which we shall return later — which are aimed at establishing a connection between professional socialization, training and job-hunting: the problem in both cases is the precarious nature of most of the jobs which are offered to young people after going through these procedures, provided that no efforts are made to create genuinely productive activities, such as handicrafts in particular.

In the latter case, we have the same problem as before with regard to the State's role in abandoning heteronomous work to the dominant economic circles and with regard to its support for the establishment of autonomous work. After all, as Jasper says:

The use of work paid by wages only becomes more efficient in proportion that it is reduced: there can be no technical progress except by economizing on labour; capitalist activities become more concentrated in order to achieve greater economies. However, it is necessary to continue taking care of all other needs, all those which are not profitable because they do not come under the heading of efficient use. There can be no productivity of wage-paid work except by eliminating the 'productive sphere' of all the other activities: State services, domestic labour, black-market labour and independent labour (handicrafts) appear like the great number of anodyne occupations whose shadow helps to cast a full light on the productivity of wage-paid labour.[13]

Huber, on the same subject, writes:

[If] autonomous, and independent, socially useful work, encouraged by States, can only be judged in relation to wage-paid work, the same thing is true of the activities carried out by the 'alternatives'. The latter lead to fewer changes in the system than are apparent. On the contrary, they are astonishingly faithful to the system. The economy on the services of the job-holders as well as the two-fold economy on the jobless are in perfect harmony with super-industrial growth; they are even a functional part of this new type of growth.[14]

In emphasizing the contradictions between the emergence of the concept of socially useful work and the determining factors in the crisis of the industrialized countries, it was not our purpose to downgrade the practices relating to it, but rather to show how the debate about the development of interactions between education and productive work cannot fail to deal with this kind of question: indeed, to talk about socially useful work in connection with training programmes brings us to the necessity of an apprenticeship in the management of activities which are objectively complementary to productive work. It is necessary, therefore, to look at work as a whole from new points of view and consider it as a process integrated with the other dimensions of individual and social life, over which the parties involved are trying to regain a real power of choice and decision. In Sainsaulieu's opinion:

It would seem that the fact, on the one hand, that many workers show a preference for small artisanal, co-operative or experimental organizations, and the fact, on the other hand, that

many other employees in big organizations show an aversion or resistance to hierarchic decisions underline the same phenomenon: the search for a social system whose structures would grant more recognition, consideration and expression to each of the parties involved.[15]

For example, we have the point of view expressed by Gelpi:

Overcoming the sharp separation, in children, between work and play is beset with obstacles in societies where leisure and play tend to be a response to maladjusted work and education. On the other hand, experiments in 'education and work' give to leisure and play another and an enriched dimension. The separation between these different human realities becomes less distinct and many new relationships are developed, while these various activities will be associated with creativity, the social instinct in production, the spirit of analysis and combination.[16]

But is this not simply a reformulation of the discussion about lifelong education in the 1970s?

SPACE AND EDUCATION

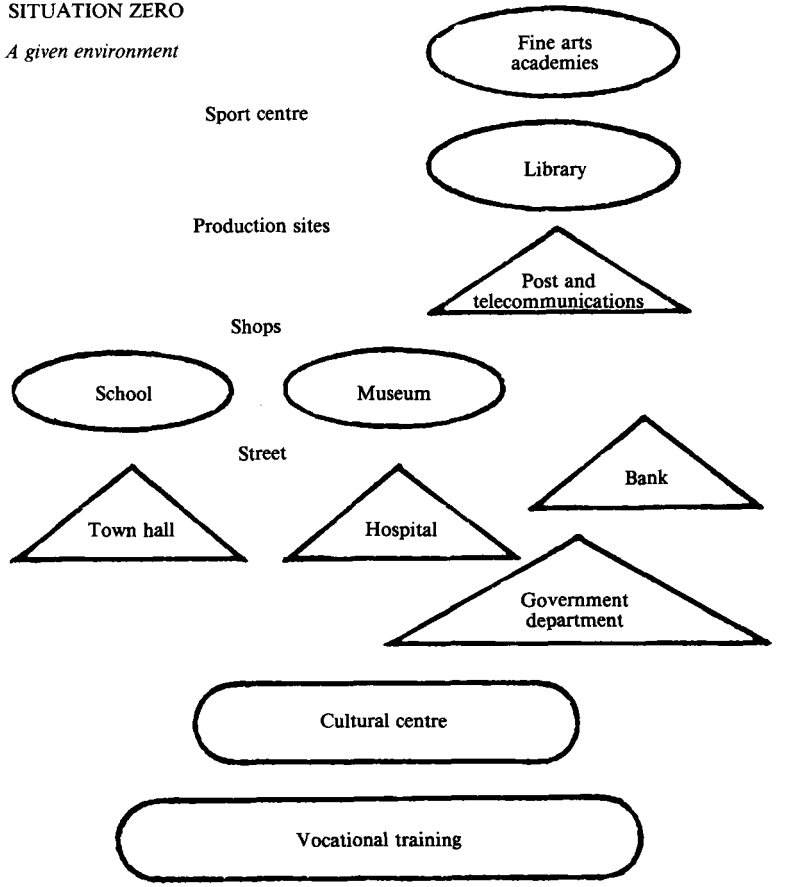
'Indeed, as the environment is constantly changing, education must be lifelong: that is its continuity in time. And as the environment is "universal" (having technological, social and cultural aspects), education could only separate these different aspects and give priority to one of them by completely ignoring the others: this is its continuity in space'. That is what Schwartz said in 1971 for Unesco[17] when outlining the spatial and temporal dimensions of lifelong education. Although the latter has not met with the response it was aiming for, the thinking around it has nevertheless — in connection with education — brought to light one of the objectives aimed at today by the development of interactions between education and productive work: the necessary reintegration in time and space of increasingly scattered processes and systems. The difficulties encountered in establishing lifelong education can perhaps be explained by the fact that the projects for its development concentrated too heavily on educational facts without taking sufficient account of the pre-eminence of the socio-economic sphere.

We shall not dwell on the question of the relations between time and education, except, together with Pineau, to ask the following question: 'Is not our knowledge of time simply that of its necessity, its inevitability, at the very most that of planning it in such a way as to make it less intolerable? Common experience certainly seems to conclude that it is. Utopia, the myth of lifelong education, is to claim that it is not'.[18]

The reintegration in time of the educational processes is necessarily accompanied by an identical movement with regard to space. However, there is a danger in this field of the same kind as that which consists of seeking refuge in 'autonomous work' and which Furter analyses as follows:

If small is beautiful, this still does not mean that that scale is less complex, more homogeneous, more consensual than the others. ... This is important, for educators — like other practitioners of social policies — have only too often allowed themselves to be tempted by the myth of the community, i.e. that elusive local and fundamental reality which is said to constitute the 'natural' environment in which educational and formative practices should take

FIGURE 1. The principal elements in the infrastructure of a school district.

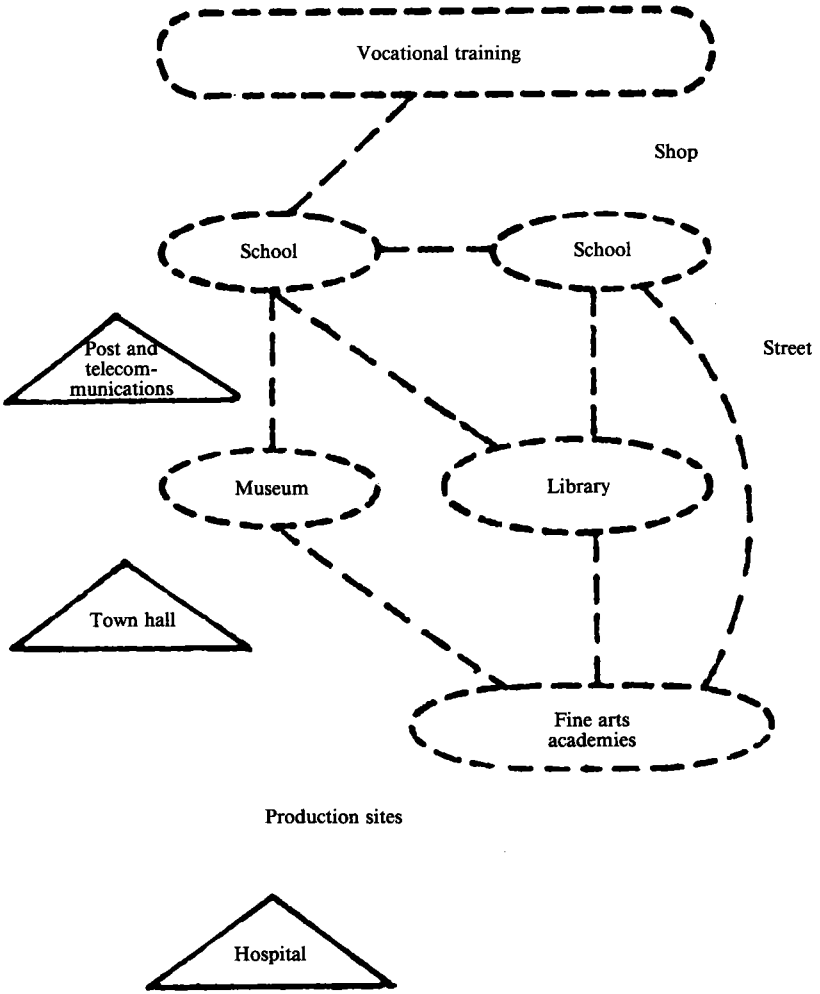


N.B.: These lists are not exhaustive.

Source: Schwartz, B.; Blignières, Anne de. *Final report of the Steering Group on Permanent Education*. Strasbourg, Council of Europe, 1977, p. 94. (CCC/EP (77) 8 revised)

FIRST LEVEL OF CHANGE

Educational and cultural services join together: one possible image



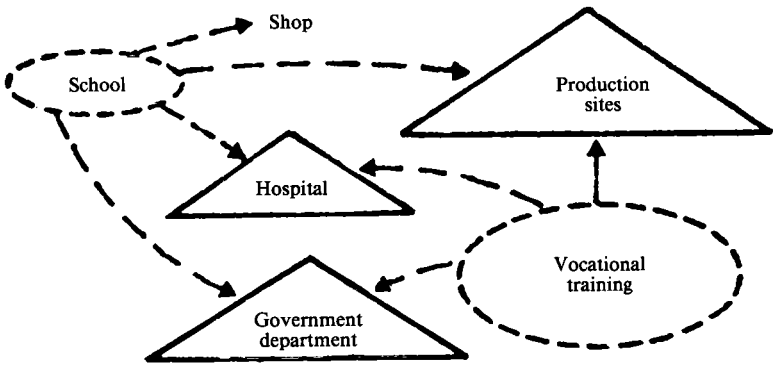
Key

▬ ▬ ▬ : Links forged between educational and cultural services.

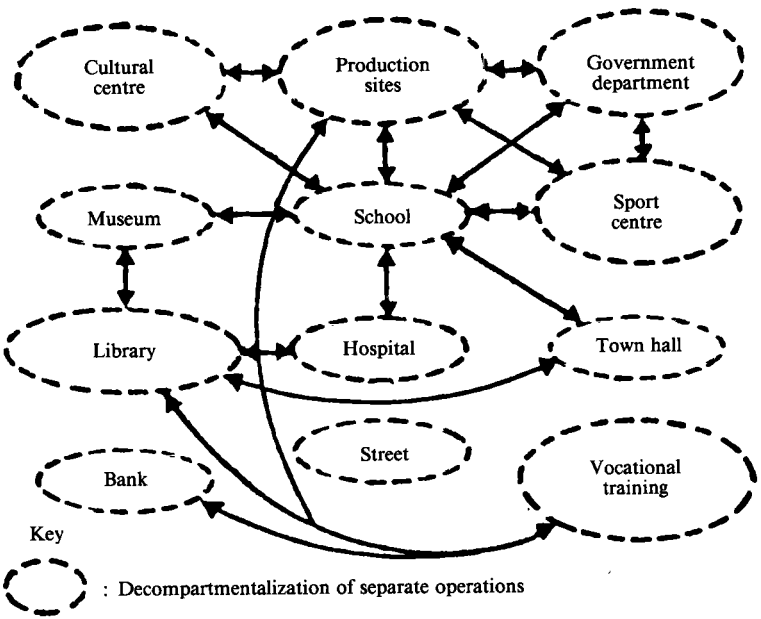
◯ : Separate activities are decompartmentalized.

SECOND LEVEL OF CHANGE

1. *Non-educational services become educational resources*



2. *They become educational: decompartmentalization of the education system with multiple and diffuse location of resources*



root.... No doubt one can always still believe in [the communities'] possible utopian existence in the form, for example, of an educational town which would be built up thanks to a system of lifelong education — but, even in that case, the community will be much more the place rather than the base for sociability.[19]

Some suggestions have been made for overcoming the ambiguities of a community approach: in particular, what Schwarz has called the 'school district', which is aimed at achieving objectives of globalization, equalization and participation in social and cultural processes, and not only in the educational field. Figure 1 shows the stages in the establishment of a district.

Fibbi considers that:

In our opinion the educational and cultural district of B. Schwartz has had an important influence. In fact, the Italian district is related to B. Schwartz's conception, if not as offspring then at least as a relative.... The district council — which is a reflection of the area and hence *in primis* of its economic activities — is composed of representatives of the workers' trade unions and the employers' associations, which helps to shed light on the interrelations between education and production. The communes are also to be found in it as a guarantee of views of a general nature.[20]

Furter expresses the question of the participation of parents — as producers, citizens and consumers — in the management of education systems more broadly.

It is not because the school is concerned with 'the children' that only their parents are affected by the problems of education; in principle, it is the responsibility of the whole population. For this reason, we must from the very beginning consider the sum-total of the associations, movements and groups concerned with the school, institutions for training as well as for cultural development, and ask ourselves whether their specific interests in the organization and/or operation of the school system are actually connected, whether they are constitutive, whether they are sources of movements for demands and/or approval which go much farther than the school.[21]

EDUCATION AND WORK: AN ECO-LOGIC APPROACH

We are now in a position to note that the approaches of the individual and collective parties involved in work and education are all aimed at the same goal: the reconstruction of *qualitatively* meaningful relations between spheres which have had a growing tendency to become abstract categories, such as work, leisure, school, play, space, time, etc. In connection with our problems, it is then interesting to note the agreement in the thinking of several specialists in labour and education about an 'eco-logic' (*éco-logique*) approach.

The economy must invent new forms of relations, connections and, in one word, the organization of work. It must question the use, in other words the processes, rather than the results: eco-logic is a process, not a product. For human work, it is necessary to create an economy of processes which will replace the present economy of productions.[22]

That is certainly a qualitative outlook. But Furter warns us that 'the notion of quality can first of all designate what something designates'. However,

...from this neutral usage, we have passed quickly to what ought to characterize an educational fact so that it will be recognized as such. Consequently, the quality of education is being

understood more and more as a sum-total of characteristics constituting the normative goal in relation to which educational institutions and interventions can be classified in order of precedence.... For this reason, quality can be understood, from an eco-logical point of view, as that which meets the expectations of a population in a place or region, which serves its development and which is in keeping with its system of values.[23]

Having noted the analytical analogies between these two authors on the subject of work and education, we can now conclude this general comparison of the two spheres, which are at the heart of our problem, by turning to its strategic, and hence political, dimension with Raffestin.

In order to subsist, the political sphere has to take root in some territoriality, it has to take account of a complete regulation in which the means are a dependent variable, such as work for example [we would add education]; its only real resources are work and the nature-culture interface whose economic sphere is taken over with the blessing of the State.[24]

Therefore, if it is a question of reinstating work in the political sphere in order to overcome crises in the latter, Furter's hypothesis is that 'the participation of the community in the administration of educational institutions can help to transform its cultural resistances into positive factors of regional development.... This is what we call the process of institutional appropriation.'[25]

There we have the premises of different types and levels which surround the problems of the development of interactions between education and productive work in the industrialized countries. It remains for us to examine how they have been taken into account in theories and practices.

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CHAPTER X

Education and work: from dualism to the system

The various approaches to the interactions between work and education which we have just mentioned all shed some light on the conceptual and practical impossibilities of continuing to use a dualist approach to these interactions: they are, in fact, networks of work and education which individuals pass through during their entire life. Unfortunately, however, the dualist approach, which has helped to create antagonistic pairs such as education and employment, school and business, initial education and further education, still taints and influences the approaches and behaviour of the social actors when dealing with education and work. There are contradictory elements in this reality which will have to be taken into account in strategies placing education and productive work in a systemic perspective and leading to a new 'vocationalism' of the population.

SOCIO-EDUCATIONAL NETWORKS AND QUALIFICATIONS

The acquisition of a genuine qualification means a combination of theoretical and practical skills. It therefore consists of different kinds of knowledge acquired in the school and at work, which requires us, in our analysis, to start from the networks of jobs and opportunities. These networks link together education and jobs through the vocational paths taken by individuals, both spatially and temporally. They are structured by the succession of sequences in education and jobs which are normally prescribed in time according to a certain logic. They are also structured by the following elements which go to form them:

- the types and content of education existing at different times;
- the content of jobs, likewise at different times, as they exist in work systems;
- the personnel policies followed by enterprises, with their preferences for special forms of recruitment and assignment;
- the individual capacities to be built up according to personnel policies.

In this network, an important part of qualification is produced by the activity of the work itself (the production of goods and services is therefore not entirely an alternative to the production of skills, but is largely connected with it), with the realization that this production, at every stage of professional life, is not independent of the stages gone through before and in particular of the kinds of education previously acquired. However, in order to succeed in really producing a qualified skill, the elements which go to make up the network must possess certain characteristics:

- in the case of work, the jobs must have sufficient content to constitute a training element; the infrastructure of the work system must permit advancement from one job to another, which raises the problem of gaps between different job contents;
- in the case of changes, this assumes that enterprises will be able to conceive and carry out systematic career policies or that management in the labour market will come to the same logical conclusion;

— in the case of education, there is a pedagogical problem, inasmuch as a simple juxtaposition of disciplines or skills cannot constitute the basis of know-how.

From what has been said above, therefore, it is clear that a real production of qualified skills cannot be the work of the school alone, that it depends on the sum-total of the elements which by their nature and their relationships go to make up the network. It is in relation to this sum-total that we must consider the problem of finding jobs for young people and the dynamics of their education in the face of technological developments. It is this sum-total which has to be taken into account in devising and judging policies.[1]

If we have considered it useful to reproduce this quotation from A. d'Iribarne *in extenso*, it is because it seems to us that it restores the debate on the interactions between education and productive work to a proper dynamic and global perspective. This point of view does not consider productive or educational structures as centres of priority interest, but is concerned with the areas of qualified skills as differing from one country to another and represented by modes of putting together the above-mentioned networks according to sufficiently invariable forms in the different countries to constitute at certain times special macro-social structures from their own macro-social structures. For the sake of simplicity, it can be said that the area of qualified skill of workmen in the Federal Republic of Germany is built around 'vocationalism' in the sense that the training acquired by them is generally vocational, that it is a basic condition for obtaining a job as a skilled workman; and that personal advancement is on the basis of the trade through inter-enterprise mobility. On the other hand, the area of qualified skill of Japanese workmen in big enterprises is strongly internalized, since the skilled workman has acquired a general technological education of the full secondary level and his personal advancement proceeds by seniority in the enterprise in accordance with a strong internal mobility which provides on-the-job training and is accompanied by specific technological training considered desirable for holding the jobs in question. As for the situation in France, it is characterized by the weakness of its systematization: there, vocational training is neither a necessary condition nor a sufficient condition for obtaining jobs as a skilled workman. Internal advancement by seniority in the enterprise plays a large role, but there are no elements of vocational training to systematically structure the stages in the course followed.[2]

This notion of a 'course' within networks is beginning to become familiar, in methodological terms, through stories of social life and the collection of descriptions of practices, which may include the educational biographies of individuals like the workshop studies we have already mentioned. Bertaux[3], for example, gives accounts of the practices of various socio-professional categories: thus, he talks about the different phases in the working life of bakers. On the educational level, the same approach can be used to study 'sections' of the educational process undergone by individuals. In both cases, the careers never proceed in a straight line and are composed of sub-units of sections, times and spaces in life which are different but yet complementary between the work situation and the training for it.

THE DEADLOCKS OF DUALISM

What helps to illuminate the analysis of networks and careers is therefore the inadequacy of a dualist representation of the links between work and education which makes antagonistic entities of each of these spheres.[4]

For a long time, education and employment have been opposed to each other, with all the consequences which this means for the 'transition' of young people in particular from the school to work. Although there is a tendency to blame young people for their failure to find a place in social and professional life, it must not be forgotten that the evolution of work and employment after the early 1970s has not been accompanied by equally far-reaching changes in the other sectors of society, education in particular. We note then that:

> ... those who leave school without a job find themselves in a vague state in which they are neither children nor adult workers. This experience can make them cynical and bitter, with a feeling of having been abandoned by the society which had promised them much but given them very little. As a result, they become alienated from the world around them, gradually losing all confidence in themselves and without any hope of finding work.[5]

> Many young people who are no longer able to find an active place in society are reduced to a state of passivity which the relief measures taken on their behalf only tend to encourage. The reaction of the adults is often to accuse the young people of not knowing how to look out for themselves. They fail to realize or pretend not to realize that, far from being an exceptional phenomenon, the marginalization of these young people is almost as normal as their integration.[6]

This situation of young people is a proof of the dangers of opposing such terms as the education/employment dualism, since it leads both to that desperate situation mentioned by Schwartz and to a polarization of the discussions about its consequences rather than about its causes and remedies. It seems difficult, therefore, to expect any spectacular results from educational projects in favour of the new technologies, inasmuch as they are to be found on the margin of the educational and employment structures, which continue to either ignore or attack each other.

In terms of structures, in fact, the education/employment dualism is again to be found in the school/enterprise dualism, with the same opposition of terms. 'I am not interested in what the schools are doing, they are completely irrelevant', said one responsible member of an employers' association during a survey, while a teacher in a vocational training school asked himself the question: 'When pupils preparing for the clothing industry spend three weeks stitching brassiere cups, do you call that educational?'[7]

This opposition appears to be inevitable, since it is based on the postulate that the school has a monopoly of theoretical and general education and the enterprise a monopoly of applied education. A closer analysis, however, casts doubt on such a statement and at the same time reveals the specific contradictory points which will have to be taken into account in programmes of productive work in the educational environment and in programmes of educational work in the production environment.

If it is true to say that school and enterprise stand in opposition to each other, this is only true provided that we specify the points where a contradiction arises between the requirements of education and those of production. First of all, although general

education continues to be functional in relation to what are predominantly so-called intellectual activities, it tends to run up against what we have called the phenomenon of the downgrading of certain manual or clerical activities, even if the whole process is being re-examined. In this situation, if there is a rise in the aspirations of young people, this may prove to be in contradiction to the evolution of work and accelerate a crisis in the latter. With regard to vocational and technical training, the school approach, which subordinates the technical act to the educational project and apprehends the knowledge of practice from the point of view of a practice of knowledge, may not coincide with the productive approach, which tends to limit the practice of knowledge to a knowledge of practice, especially in situations where practice tends to dissociate tasks of design from tasks of execution.

However, this should not cause us to forget — as we have seen in connection with the relations between skill and work — that the school is closely linked to the enterprise inasmuch as it furnishes know-how, speech skills and practices connected with the present state of the division of labour. As far as the entrepreneurs are concerned, and without it being possible to generalize in view of the differences between countries, branches and enterprises of different sizes, the latter are also more or less closely linked to the operation and products of the school systems, either through the varying importance which they attach to internal mobility as opposed to external recruitment to fill jobs requiring new qualifications, through their choice between young people and skilled adults, their use of internal or external training programmes for in-service training, or through their policy of according differentiated recognition to employees in terms of wages and status, depending on the qualifications acquired by them in in-service training.

If we continue this inventory of notions which have become mutually antagonistic through a dualist approach to the reality of work and education, we find that there is an opposition between pre-service training and in-service training. It is true that pre-service training, which is mainly of the formal type, has characteristics which place it in opposition to in-service training. For instance, pre-service training takes place in:

- the highly organized and structured environment of a dominant model.
- an environment in which young people are kept for many years and which cuts them off from their own surroundings.
- an environment which educates individuals who have no practical experience.
- an environment which ends with tests of technical and social acceptability.

In contrast, in-service training takes place in:

- an environment which is in general poorly organized, under the responsibility of different types of institutions;
- a transitory environment, with many possible interruptions in time;
- an environment aimed at training individuals who have some social or professional experience;
- an environment which does not necessarily insist on the authenticity conferred by a diploma.

We have seen, in connection with the history of the appearance of in-service training, that it emerged largely as a response by the world of work to the trend in school systems during the 1960s, and that, in this sense, in-service training is not

presented as being different from pre-service training. At the same time, however, some persons argue that these two types of training are both trying to cope with an educational demand which is seeking by its extension a solution for its own impotence.

> After all, it tends to suggest illusory solutions for what seems to be the boredom of productive life; it holds out the bright possibilities offered by a general culture which has no grasp of the mechanism of production; it fosters the humanist illusion of man's possible mastery over the machine (technology or computer); it presents as the freedom of the individual his subjection to the myth of knowledge and general education. Since the objective assigned to educational activities — to free the individual — is an impossible one, there is no longer any limit to the indefinite multiplication of educational activities. ... The demand for education can only continue to grow ... and its financing will very soon raise problems of the same kind as the financing of expenditures for health and social security.[8]

Moreover, whereas many of the practices of in-service training set out to mitigate the social and professional inequalities which pre-service training had only too often aggravated, attendance at many programmes of in-service training has shown that it is not always the educationally disadvantaged who follow these programmes since women, young persons without qualified skills, immigrant workers and labouring staff are less represented than management personnel and the medium and higher executive levels. Accordingly, any attempt to oppose pre-service training to in-service training only causes us to lose sight of their relations of interdependence in a given socio-economic system, as well as the dynamics which can be established at the level of individuals or social actors during their training careers.

Towards the end of the 1960s, this debate about initial and further education crystalized in educational terms around the confrontation between the notions of polyvalency and transferability. While this opposition was most pertinent in connection with vocational education and training, it also marked the field of general education, since the adaptability made possible by polyvalent education presupposes that the student will be prepared for a variety of tasks, as well as for different approaches to organizing work. Translated into educational objectives, it therefore involves the development of a knowledge of self as well as of skill, all of which is acquired by less specialized instruction (no longer based on a trade but on a 'vocational family') and includes a broader general education. However, the results obtained by educational streams based on adaptability through polyvalency have been unsatisfactory: on the basis of what criteria, then, can we define new qualifications, since the qualification recognized in the labour market is still subject to social constraints? On what basis can we translate these qualifications into skill in a school curriculum, since it is difficult to distinguish in a job what abilities are due to education, what to experience and what to the personality of the individual? It is the uncertainty of the answers to these questions which has enabled us to approach the problem of the downgrading of work as the result, among other things, of the poor preparation of pupils and the failure to recognize the value of diplomas from the point of view of polyvalency.

Since the adjustment of the problems raised resulted in a polyvalency conceived of as an accumulation of knowledge, the notion of transferability was then given first place. This notion no longer aimed at the acquisition of technical knowledge as an

end in itself but at the development of aptitudes concerning the methods, procedures and action strategies used in work systems; it was also supposed to encourage the ability to use vocational skills in collective working situations, which were increasingly important for qualification. The opposition between polyvalency and transferability, which we have just mentioned, only serves to conceal the complementarity of these two notions, which we again find when considering a technical culture.

VOCATIONALISM

After finding that a twofold analysis of the relations between education and work has only led us into blind alleys, both for understanding reality and for mastering and transforming it, we must now refer to the available prospects and strategies for drawing up realistic curricula which will combine education with productive work. If we hark back to the ideas we expressed about technical culture, it would seem that, with regard to our educational and production systems, this culture presupposes a new approach to the concept of vocation, which we prefer to call vocationalism: the recognition and appropriation by the social actors of a technical culture also presuppose that the methods of organizing the interactions between education and productive work will transform this alternation into a process in which the education work contradiction can enrich those two poles instead of impoverishing them.

The notions of vocationalism and vocational education are not new. Grégoire had already made them the subject of a report in 1967.[9] However, it was only towards the end of the 1970s, when the crisis of employment/education relations was at its peak, that fresh interest was taken in vocationalism on the basis of an analysis of the obstructions which were observed in both the educational and productive systems. What do we mean by vocationalism? Contrary to a dualist approach, it refers explicity to two social sub-systems: the organization of the economy and the school/labour market set-up. The difficulty of understanding this is due to the fact that its definition and implementation are constantly shifting between its role as a production factor and as a social institution. As an overall combination of know-how and the development of a knowledge of self, vocationalism is an important element in any production process and organization of work which belongs in its own sphere, but at the same time it is a model social institution, since it helps to organize men, their technical and social apprenticeship, their status, their roles, their personal, wage-bracket and collective relations... through certain structures (the school, for example), certain phenomena (the labour market, for exemple) and certain values. In what respect, then, is the notion of vocationalism different from that of the trade, the occupation or the vocation?

The trade

Looking at the organization of production in the Middle Ages, the trade can be considered as a sum-total of knowledge and abilities which were developed over the years to produce a technically and economically autonomous product by means of a

particular technology. The practitioner of a trade was a man who sold his product in the market, like a craftsman, or else sold his skills for a certain length of time in the case of the industrial trades. In both cases, the trade was closely connected with the organization of work, since it combined the abilities of an individual, the utilization of those abilities and the social groups in which that activity was exercised.[10]

An inquiry into the content of workingmen's trades compels us to question the proportion of this autonomous mastery — a mastery of skills and actions — inherent in some particular job. ... The workman develops a trade for himself by making his own use of regulations, effort, production rhythms, the relative autonomy of the empirical or learned descriptions and perceptions of his operational tasks, whether it involves work with tools or with machines.[11]

Our systems of vocational education were established, with reference to this vision of productive activity, since the trade related to an explicit world of knowledge and certainties. At the same time, however, once the big industries were established, the trades disappeared and were replaced by employment and jobs. Unlike trades, jobs, however complex or subdivided, involved no organizational element of their own; they were an integral part of the formal organization of the enterprise. Whereas the trade constituted a system which recognized social roles, established criteria and regulated apprenticeship, regular employment did no more than establish systems of remuneration and formal qualification (the changes in the organization of work, which led to a multiplication of tasks, are nevertheless too limited to be considered as synonyms of vocationalism).

The vocation

What is the situation, then, with the vocation, another term which might be confused with vocationalism? A vocation is characterized by technical knowledge acquired by experience, but mainly by preliminary training leading to certification backed by members of a professional association; the exercise of a vocation, moreover, depends on obligatory and legal standards which are defended by associations. From this point of view, the individual is fully responsible for the effects of his activity.

Unlike the trade, the vocation requires a theoretical approach to knowledge, and hence a specific form for the organization of culture, science and innovation. A vocational man, in fact, exercises a complex activity, but at the same time contributes, within this activity and not within the organization of which it is a part, to the development of theoretical skill and innovation. Likewise, unlike the job, the vocation concerns the work process inherent in the individual, whereas the job concerns only the inputs and outputs of the organization of the work in which that individual is engaged. Lastly, the vocation is a more portentous institutional framework than the trade, whether this framework is evident in professional associations or is of an informal nature.

Vocationalism

In what respect does vocationalism differ from trades, jobs and vocations? We have seen that Grégoire spoke about vocational education back in 1967, but at that time

it was perhaps utopian. Today, vocationalism seems to us a practical project which might be facilitated by setting up programmes combining education and productive work. In the present state of change in the organization of production and technologies, vocationalism can be equivalent to a 'rehabilitation' of work through a recovered complexity leading to identifiable profiles at the productive and social levels. More specifically, we have seen, for example, that there are two possibilities of dealing with the increased complexity of the processes of production: either by a polarization in which the functions of co-ordination, maintenance and innovation would be concentrated among a minority of professional workers (in the sense in which we understood it above), or by a diffusion of those functions, with all which that implies in terms of the division and organization of work and transferability in terms of education. This second trend is what we might describe as the new vocationalism, and there are signs, although not yet confirmed, that it is in the process of emerging into social reality.

The purpose of this vocationalism is to control and regulate the elements of uncertainty inherent in any work system: it seems to us that this definition can also be applied to the activity of a teacher in his classroom, or to that of an engineer or skilled worker. The vocationalism we are trying to define is, it seems to us, of a collective nature. This being said, we realize that we may trigger reactions of rejection based on the fear of a limited egalitarianism. It seems to us possible, however, to justify this approach by the reality of work, which is that of co-operation (contrary to education, especially formal education, which is based on competition: this is perhaps one of the major contradictions experienced by actors in programmes of productive work in educational circles). In fact,

- we have seen that it is impossible to understand the notion of qualification unless we place the activity carried out in its environment, which consists of sum-totals of individuals and groups;
- an individual's abilities are not fully used except at critical moments of control and decision-making conflicts during work, which are almost always collective moments;
- work is an implicit or explicit series of solutions for technical and social problems which are never dealt with exclusively at an individual level.

It seems to us, therefore, that this notion of vocationalism enables us to overcome the problems raised by a dualist approach to education and work. If this notion is to go beyond the stage of mere hopes, or that of previous suggestions which led to nothing, the strategic question now confronting the social actors in the spheres of work and education is to know how individuals can acquire this collective vocationalism: for they are, after all, the individuals who will experience the consequences of recognizing and making use of it in the labour markets, as well as the consequences of its obsolescence.

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PART FOUR

Initial education and productive work

CHAPTER XI
Alternation: a new idea from the past?

While the notion of vocationalism has enabled us to open up perspectives on new policies and strategies concerning the interactions between education and productive work, it must nevertheless not be forgotten that ever since the Middle Ages the evolution of the educational and production structures which we have referred to above has always been paralleled by the ideas of philosophers and educationists: the alternation between education and work is a significant example.

Alternation is one of the strategies most often mentioned today for overcoming the obstacles created by the dualist approach we have just analysed in its various aspects. Alternation in fact seems to receive the theoretical approval of all the social actors involved: all the speeches by teachers, businessmen, parents, the State, trade unions and professional associations agree in 'reconciling' theory and practice, general and vocational education, the school and the enterprise. But this agreement of views is very strange or even suspicious! During the 1970s, were not these same actors opposed to each other, with one or the other of them basing their argument on the notions of lifelong education, further education, the educational alternative, in-service training or on-the-job training? Alternation between work and education can also be understood as an educational process within one and the same institution (of production and/or education) and not as an institutional process combining the resources of different structures and actors. (This point of view fully justifies the importance of the notions of socio-educational networks and lines of action.)

At this point we will not go into the history of these notions, but it would seem useful to recall — as we have done in connection with work — the major currents of thought which succeeded and conflicted with each other since the end of the Middle Ages concerning the connections between education and work.

FROM THE MIDDLE AGES TO THE INDUSTRIAL REVOLUTION:[1] FROM UTOPIA TO REALITY

The emergence of capitalism in Europe brought about various reactions, some of a utopian and others of a functionalist type. Questions of education were raised in the utopias of Thomas More (1478-1535) and Francis Bacon (1561-1626). In the country of More's *Utopia*, all members of the community, who were said to be equal, participated in directly productive work, with the exception of government officials and scholars. In addition, apprenticeship to the agricultural and industrial trades was provided for every individual in order to overcome the separation

between city and country. Bacon's *New Atlantis* comprised a large technical school, a technological museum and laboratories for demonstrating the mechanical processes used in industry. In addition, children were also supposed ro receive theoretical and practical training there.

Although those projects continued to be utopias, the same thing was not true of those developed by the great men of the Reformation. We have already pointed out that the Reformation greatly helped to transform the conception of work, which became a vocation.

> Faithful labour, even at low wages, on the part of those whom life offers no other opportunities, is highly pleasing to God. In this respect Protestant Asceticism added in itself nothing new. But it not only deepened this idea most powerfully, it also created the force which was alone decisive for its effectiveness. The psychological sanction of it through the conception of this labour as a calling, as the best, often in the last analysis the only means of attaining certainty of grace.[2]

It is not surprising, therefore, that Luther (1483-1546), while encouraging people to learn to read so that they would know the Bible, thought that 'boys should be sent to school one or two hours a day and taught some trade at home during the rest of the time. It was desirable that those two occupations should proceed side by side.'[3] In that connection, it might be noted that vocational training as practised at the present time in both the German Democratic Republic and the Federal Republic of Germany is called *Berufsbildung* and that it is based on a close link between the school and the enterprise.

During the Thirty Years War, which was waged against the Protestants by the House of Austria, Comenius (1592-1670) developed a socio-educational project based on the application of the inductive principle. In his *The great didactic* (1630) we already find the 'idea that practical exercises during schooling help the pupil to acquire a general education.' Moreover, 'children of 6 to 12 years of age should learn the most important principles of the mechanical arts so that they will not be too ignorant of the world around them and so that any special inclination towards that kind of activity can be more easily developed later on.'[4] Those ideas were put into practice for the first time in the German *Realschulen* at the beginning of the eighteenth century.

> On the basis of the disciples of Comenius, Francke (1673-1727), a member of a sect of Lutheran Pietists, and Semler founded the first 'real' schools (*Realschulen*) at the beginning of the eighteenth century, in which an important place in the curriculum was given to the scientific disciplines and to technical education.
>
> In 1706, the Society of Sciences in Berlin declared that: 'some boys should be instructed in a real industrial school in order to familiarize their understanding and their senses with ordinary materials and objects, their value and their prices. [They should] know how to handle other useful instruments, including tools and levers, so that this knowledge would help to improve their understanding and their procedures and lead to the invention of new and useful methods. Pupils taught in this way would acquire a sense of just proportion and a sure hand, as well as other advantages thanks to a more intelligent use of their senses, which is the basis of every skill given by Nature and which can be improved by practice.'[5]
>
> The *Realschulen* in Germany multiplied and were taken as models in foreign countries. French legislators referred to them at the end of the nineteenth century and deplored our country's backwardness in the field of technical education.[6]

At this point, we might also briefly refer to John Locke (1632-1704), the author of *Some thoughts concerning education* (1693), in whose opinion technical education was simultaneously a source of general culture for gentlemen, a work of charity for the poor and a means of protecting society against vagabonds. So at that time we already find the same contradictory objectives for technical education which are still very much alive today.

THE EIGHTEENTH CENTURY AND THE MACHINE

The eighteenth century in Europe was influenced by, among others, the thinking of Jean-Jacques Rousseau. We will not go into an analysis of the contradictions between his ideas and the socio-economic trends of the time, which were influenced by the Industrial Revolution, except to observe that the first fears about the process of specialization and differentiation of productive activities appeared at the same time as the establishment of a national and international division of labour of the capitalist type. This explains why Rousseau wrote the following in *Emile ou de l'éducation* (1762):

> What will a child think when he sees that there is no improvement in the arts unless they are subdivided, unless the tools of each one are multiplied *ad infinitum*? He will say to himself: 'All those people are certainly very ingenious; one would think they are afraid that their arms and fingers are of no use, since they invent so many tools to do without them.' I think, therefore, that we should spend one or two whole days every week with the teacher, that we should get up when he does, that we should be at work before him, that we should work under his orders. ... That is how one learns several trades at the same time, and how one works with one's hands, without neglecting other kinds of learning.[7]

Do we not have here a system of alternation in terms of subjects, school structures, educational goals?

We shall not refer to the *Encyclopédie*, which was published between 1751 and 1771, except to stress its authors' interest in technical culture, which, as we said, was destroyed or exploited by Taylorism. 'We have applied to the most skilful artisans in Paris and the Kingdom', wrote d'Alembert in his introductory statement. 'We have taken the trouble to visit their workshops, to ask them questions, to write down what they said, to develop their ideas. Several times it was necessary to procure machines, to build them and to make bad products ourselves in order to teach others how to make good ones.'[8] We find the same interest in the 'mechanical arts' in Diderot (1713-1784), who proposed his *Plan for a university* (1776) to Catherine II of Russia, in which he wrote: 'In the most ordinary mechanical arts there is such correct, such complex and yet such clear reasoning that we cannot sufficiently admire man's depth of intelligence and genius.'[9]

THE NINETEENTH CENTURY AND INTEGRAL EDUCATION

The acceleration of the Industrial Revolution throughout the eighteenth century was to have an impact on the general conceptions of education, and more particularly on the way of viewing the relations between theory and practice, between

education and work. Two major trends were to come into conflict with each other throughout the nineteenth century, as illustrated by the names of Pestalozzi, Saint-Simon, Fourier and Proudhon. Pestalozzi (1746-1827) is considered to have been the first to carry out the principles of Jean-Jacques Rousseau. In his asylum for poor children at Neuhof, and then Yverdon, manual work had an important place in the pupils' day: drawing, herbariums, kitchen gardens, the manufacture of tools and furniture, dressmaking and cooking. In his *Opinion littéraires philosophiques et industrielles* (1825), Saint-Simon (1760-1825) was perhaps the first to express in educational terms the question of the rapidly increasing social division between those groups which possessed the abilities for managing economic activities and those who 'by nature' were unable to possess those abilities. What he encouraged, in fact, was the intellectual advancement of the 'proletarians', farmers and workmen who had become land-owners after the French Revolution, who had known how to manage their affairs with 'intelligence' and the 'ability to foresee the future', and what he made of universal education was a factor of productivity. In that way he prepared the way for the development of technical education, although the latter may have neglected social abilities in favour of the management of production. Charles Fourier (1772-1837) was to make his mark on his time by his radical criticism of the society in which he lived and by proposals which were to be described as utopian socialism. Among these proposals, an important role was assigned to education, but that was not to take place merely in the school or in academic education: body and soul, theory and practice, manual work and intellectual thinking were to go always hand in hand, so that knowledge would serve only to support occupations, 'to increase children's endowments and strengths'.

Pierre Joseph Proudhon (1809-1865) was the one who would make the strongest impact at this time with regard to the interactions between education and work.[10] After all, he was one of the first to denounce the education system based on the perpetuation of social relations and the division of classes. His proposals were strongly marked by a kind of workingman's humanism. In his opinion:

> Work is the plastic force of society, the model idea which determines the various phases of its growth and consequently its organization, both internal and external. ... The abstract idea is derived from the forced analysis of labour, and with it the symbol, metaphysics, poetry, religion and finally science, which is only the return of the mind to industrial mechanics.

But Proudhon was aware of the alien character of industrial work and the division of tasks. For that reason, he believed that apprenticeship should cover the entire industrial system instead of selecting only one sub-divided case from it. But what will be the good of 'this general education if the apprentice, once he has become a workman and has chosen his particular line, will have to pass the rest of his life in the boredom of mechanical work and industrial sub-division. Brought up for glory, he will have found nothing but martyrdom.'

We thus come to the notion of the polytechnics of apprenticeship: education and teaching must be provided in full, so that the workman, like the polytechnician, will choose his own trade or speciality after completing a full course of studies. Polytechnics, therefore, combine education and vocational training, but the latter is not thought of by Proudhon as narrow specialization, 'for the workman not only has to exercise his intelligence and store his memory with facts; he has to carry out with his

hand what his head has understood; it is an education both of the organs and of the understanding.' The achievement of those goals was to develop into the 'workshop-school', in the same way that every big production establishment is at the same time 'a shop for practical work and a school for theory and application'. 'If the business school is nothing else but a store, an office or a bank, it will be of no use for turning out businessmen, but only business tycoons and aristocrats.'

In a similar context, we are faced with the problems of the management and financing of such institutions for education and production. With regard to management, 'the governmental centralization of education is impossible for the compelling reason that education is inseparable from apprenticeship and scientific education.' Proudhon, for example, considers that the responsibility for organizing education should be shared between family, community, profession and trade unions: 'here the workingmen's associations are called upon to play an important part. Together with the system of public education, they will become both a centre of production and a centre of instruction.' With regard to financing, Proudhon suggests that civilian service performed by young people could yield revenue which could be allotted to education.

It is striking to note that many of Proudhon's analyses and suggestions have been repeated today in the debate about the interactions between education and productive work. In fact, what is proposed is an integrated education aimed at eliminating the distinctions between:

> ...noble professions and servile professions, between manual work and intellectual work. It therefore becomes a factor of social equalization; moreover, it enables the individual to grasp the unity of the fields of science and technology, thus facilitating his adjustment to changes and establishing a genuine culture (which is being rediscovered today as a workshop culture) on the basis of a particular technical activity. Lastly, it enables children to profit by their inclinations towards some particular activity, regardless of their social status.'[11]

Integral education was to be discussed again in a broader political context during the First Congress of the Socialist International of 1866: Marx, in fact, said that any educational programme should include intellectual instruction, gymnastics and 'technical training to introduce children to the basic principles of all the processes of production and at the same time to accustom children and adolescents to use the basic tools for all kinds of production.'[12]

Since that time, however, the establishment of a system of integral education combining instruction and production has led to a controversy about the role of vocational schools. Some persons, such as Corbon in his book *De l'enseignement professionnelle* (1859) feel that these schools protect young people from being exploited by their employers and also provide a polyvalent outlook for future workers. But to these objectives Proudhon replies that 'to separate education from apprenticeship, as carried out today, and, what is even more detestable, to make a distinction between vocational education and the actual, useful, serious and daily exercise of a profession is only to reproduce, in another form, the separation of powers and class distinctions, the two most powerful instruments of governmental tyranny and the degradation of the workers.'[13] Accordingly, nineteenth century thought is seen to have no uniform attitude to education and vocational training: it engaged in the same debate which was to continue at the beginning of the twentieth century.

THE FIRST HALF OF THE TWENTIETH CENTURY: THE CHILD AS KING

At this point we shall not summarize the socio-economic context in which the ideas and thinking about the interactions between education and work developed during the first half of the twentieth century; we shall merely recall that, in most of the countries with which we are concerned, the development of an industrial and technical society was accompanied by an increasingly open conflict between the champions of an idealistic, and therefore general, education and those of a realistic education, connected with socio-productive activities but primarily with the child's development.

Kierschensteiner (1854-1932), who for more than a quarter of a century was the educational adviser of the city of Munich and Royal Commissioner of Bavarian Schools, is considered to be the promoter of the 'active school'. This is because he took the practical interests of young people as the point of departure for education and applied that principle in the vocational schools; workshops, in which manual activities were carried out, were annexed to them.

In the Geneva Institute of the Sciences of Education, Claparède (1873-1940) developed what was called a functional conception of education: this consists of taking the child as the centre of educational curricula and methods and considering education itself as a gradual adjustment of mental processes to certain specific actions by means of certain desires. Consequently, the school must be active, i.e. it has to mobilize the child's activity; it must be a laboratory rather than an auditorium. And as the life awaiting the child when he leaves school is a life within a social environment, it must present work and the various branches of study from a vital point of view, and must also present them from their social point of view as instruments of social action. However, Claparède thought that the school had neglected that social aspect altogether too much and, by taking work out of its natural context, had made it into something empty and artificial.

John Dewey (1859-1952) greatly influenced educational thinking and practice in the United States by his 'experience' approach. Experience, which is the central topic of one of his most important books,[14] has a twofold aspect: one of doing, the other of undergoing. Experience as doing and undergoing is the key to an understanding of the nature of reality. But, when this experience is fossilized in textbooks or encyclopaedias, it is easy to forget that its principal significance is as a catalogue for the purpose of making something. In his experimental school in Chicago, therefore, Dewey suggested programmes relating to the child's daily experience in his home and in communities, either in connection with production or with aesthetic activities. More broadly, Dewey saw strong similarities between education and politics in that each of them is aimed at the intelligent management of social facts: from this point of view, the democratic society, conceived as a general way of life in association, makes possible the maximum sharing of experience and hence the education of everybody.

Celestin Freinet (1896-1966), who created an international movement for 'modern education', made the social dimension of education one of his guiding principles.

The school should give everyone an opportunity to discover and develop his personality, his

tastes and even his most practical aptitudes; it should not operate in isolation but get outside of life in order to return to life, as Decroly wanted it to. In one word, it should be functional. In all fields, a human being is animated by a principle of life which impels him to climb unceasingly, to grow, to improve himself, to provide himself with mechanisms and tools in order to acquire maximum power over his surroundings.[15]

In particular, the closest link with our problems is to be found in the practice of co-operation in the classroom between teacher and pupils. In fact, the phenomena of negotiation, regulation and power to be seen in the classroom cannot fail to impress us as an anticipation of what the children will experience later on in their professional or working life.

These references to the thinking of several great philosophers and educationists have shown us that the contemporary discussions about the interactions between education and productive work have their roots deep in the past of the countries which concern us here. As far as we know, however, one contemporary phenomenon has not yet been given much detailed consideration: that of the prolongation of the average life-span. The consequences of this situation have already been taken into account in relation to the active life of individuals, with projects linked to lifelong education, but there is not yet any overall attitude which takes account of the increasingly precocious coming of age of young people coupled with the need to restore some social meaning to old age. For this reason the analyses we are going to make in the next few chapters will follow the chronology of the lives of individuals and connect them to the corresponding educational structures. Although a division of this kind does not take sufficient account of the dynamics of the processes of education and production with which we are concerned, it is nevertheless by passing through compartmentalized and specialized structures that individuals form their conceptions of work and education - conceptions which will make them more or less favourable to the development of programmes combining the educational and productive spheres.

NOTES AND REFERENCES

1. For more detailed information, the reader is directed to the works of Antoine Léon on the history of technical education. See in particular *Histoire de l'éducation technique.* Paris, Presses universitaires de France, 1961. (Que sais-je, n°938)
2. Weber, M. *The protestant ethic and the spirit of capitalism.* London, Allen & Unwin, 1976, p. 178.
3. Quoted by A. Léon. *Op. cit.,* p. 27.
4. *Ibid.,* p. 29.
5. Artz, F.B. Les débuts de l'éducation technique en France (1500-1700). *Revue d'histoire moderne* (Paris), t. XII, 1937.
6. Léon, A. *Op. cit.,* p. 29.
7. *Ibid.,* p. 35.
8. *Ibid.,* p. 36.
9. *Ibid.,* p. 38.
10. The quotations by Proudhom are taken from Marc-Lipiansky E. le pédagogue libertaire. *L'Europe en formation* (Paris), n° 163-164, octobre-novembre 1973, p. 117-141.

11. Fournier had already provided an example of this point of view. 'Every child, even the son of a prince, from the age of 3 displays an interest in the cobbler's trade and wants to visit the cobbler's workshop, people who are as skilful as any other group. If you try to stop him, if you scold him for his cobbling passion on the grounds that philosophy is more worthy, he will reject everything else and will pay no heed to the work and studies towards which one is trying to lead him; but if you let him start at the point which drew his attention — cobbling — he will soon feel the need to learn about other aspects of the leather craft, tanning, then the chemical processes for the treatment of leather, then for animal husbandry because of the effect different diets and grazing have on the hides of animals. Slowly, he will learn about every type of industry as a result of his early stimulation by cobbling. It doesn't matter exactly where he begins, as long as during his youth he acquires a general knowledge of all closely associated industries'. Quoted in Léon, A. *Op. cit.*, p. 79.
12. Quoted by Léon, A. *Op. cit.*, p. 79.
13. *Ibid.*, p. 81.
14. Dewey, J. *Experience and education.* New York, MacMillan, 1938.
15. Quoted in *L'Education* (Montreux, Suisse), n°27, 14 septembre 1979, p. 842.

CHAPTER XII
From childhood to adolescence

Now that we have summed up the socio-historical elements which characterized the evolution of the relations between education and productive work, we can undertake an analysis of the concrete activities which are carried out for their development in many countries. In conformity with our approach, this analysis cannot be perfectly consistent, since it refers to different categories of social and institutional actors whose positions, interests and objectives may either complement or contradict each other. They are to be found at different levels, such as group and institutional levels or relate to different approaches, which may be ideological, political and economic, structural and functional, static and dynamic (in some countries, there are production activities which have been linked to education for several decades, which will lead us to an equally diversified analysis at the historical and geographic levels).

Accordingly, after outlining different types of activities concerning the successive age brackets in the life of individuals during their education and at work (or out of work) and describing them in terms of the institutions which are formally responsible for them, we shall adopt a systematic procedure which will enable us to introduce the above-mentioned levels and approaches. From the point of view of the establishment and subsequent evaluation of policies aimed at developing interactions between education and productive work, it is important to ask ourselves whether the multiple and varied projects now being carried out can be considered as systems. Whoever wants to establish policies and evaluate them systematically must have a precise knowledge of the nature and limitations of the projects which are undertaken, in addition to the definitions and practices of those responsible for them and the actors who are formally and directly involved in them. We shall therefore take up the problems of the identification, as systems, of educational activities which are linked to productive work at the different levels mentioned above. We consider it possible to use this systematic approach in spite of its limitations and the criticisms directed against it for failing to take into account the history of the actors,[1] since we have diachronically placed these actors in their proper perspective throughout the preceding chapters. Moreover, this approach might enable these same actors, the teachers in particular, to begin to grasp the ins and outs of activities which they do not always understand or to which they are sometimes strongly opposed. Throughout the following chapters, therefore, we are going to follow the principle of alternation with a view to developing a new vocationalism.

THE CHILD'S EDUCATION AND DEVELOPMENT

Before describing and then analysing the activities and programmes of production connected with education, it is necessary to define work as an element in the psycho-affective and psycho-sociological development of individuals. Although the elements of a socio-economic type which we have described in the first part are of decisive importance for understanding the present debate, work also plays a large part in developing the personality from the very earliest age. Through work, in fact, there is a co-existence of a 'socio-logic', a logic of the community which subtends the work of preserving one or more of the group structures, together with a 'bio-logic', a logic of living beings, which subtends the work of preserving life.

At this point, we shall not discuss the different schools of thought and theories which attempt to explain the child's development. We shall merely note that, as the child widens the circle of his movements, actions and perceptions, as he comes to engage in concrete operations and hypothetico-deductive thinking, he becomes a social being. In other words, the child passes from the state of a biological and non-autonomous being, in which his own work of growth and coming of age was supported by those around him, to a search for autonomy, which then often induces a dissymetrical relation between the individual, those immediately around him and society, for their respective intentions will not necessarily coincide, and this imbalance can become more pronounced owing to the fact that by passing from an individual structure to a social structure, the individual has to put in more work than is needed for maintaining his own structure, while the surplus has to be used for maintaining the collective structure.

Therefore, this bio-socio-logical development of the child will be accompanied by all activity of so-called 'productive work' connected with education. The preparation of a project for living, as a complement to a project for survival, which is already well begun when the child enters compulsory education, will be influenced by the socio-cultural stimuli of which the school and productive work are a part. Work, its functions and the conceptions of it in society, as we have analysed them, will therefore influence the child's development, as well as the conceptions of the child himself as moulded by his place in the social scale, mainly through his family, and finally the objectives which the initiators of work programmes themselves will assign to his activities. These activities will then be an additional variable determining the way in which the child makes his entrance into social life.

The child's manual activities

'There is no hand without a body, no hand without affectivity, no hand without intelligence, no hand without society.'[2] This was the statement made recently by a group of experts at a meeting organized by J. Moreau. The arguments of the promoters of manual and/or productive activities in the nursery school and primary grades often centre around the first three of these propositions. After all, 'the nursery school age is when the child passes from a stage in which the tool, in the broad sense of the term, is "part and parcel" of a hand which itself is part and parcel of the body, to a stage when the tool can be detached from the hand (a phenomenon which is assisted by the social need to share property in school.'[3] Manual activities

then play their own part in achieving autonomy as opposed to bio-logic; however, 'if manual education is based on the neuro-physiological potential, and while doing so gives it concrete form and develops it, it can doubtless have no other ambition than to reduce the limits of this potential to their minimum, but not to abolish them.'[4]

Parallel with these neuro-physiological dimensions, manual activities are closely linked to the affective development of individuals. In his *Conversations libres avec Jean Piaget*, J.-C Bringuier recorded the following dialogue:

Piaget: I gave up biology when I was 20.
Bringuier: Why did you give it up?
Piaget: One reason, a very practical one, was that I was clumsy. I made a mess of my microtome sections.
Bringuier: And did you know why you were clumsy?
Piaget: Oh! In fact, it was really because it bored me.[5]

Seen in the light shed by Piaget, this very ordinary conversation reveals the three affective dimensions of manual activities: motivation, success, development. During the child's school life, therefore, these dimensions become part of an attitude of affirmation towards the objective world, other people and himself; they enable the child to free himself from a relative affective dependence on a privileged person or group and to show his own reactions, to give evidence of assurance and initiative, if not creativity, in his behaviour.

Besides these neuro-physiological and affective dimensions of the child's development which can be influenced by manual activities, the relation between the hand and intelligence is a third field where the links between work and education become apparent. As Piaget observed:

Manual activities enable the child to multiply the motor patterns which will help him to choose the appropriate material fo his proposed action and subject that action to the effectiveness of the selected tool. They enable these different patterns to be gradually co-ordinated and translated into increasingly complex actions. They help the child to perceive in advance that duration is not merely the instantaneous moment of desire but requires patience in the face of the necessity (which is inherent in the properties of objects) of waiting until glue sticks, until paint dries, until green wood is seasoned. ... They help him to realize that time is a succession of operations which cannot be allowed to fall into disorder; it is the simultaneity, the reversibility of doing and undoing when a mistake cannot be repaired. Lastly, they help him to realize that space can be organized in different ways depending on the actions carried out in it.[6]

However, this link between manual activities and the development of practical intelligence is not the only one: manual activities also help to grasp elementary concepts such as permanence, invariability, transience, the notion of equivalence and that of cardinal or positional numbering, the organization and structuring of space and its measurement. More generally, the capacities for representation, schematization and language also need manual activities for their development.

Accordingly, hand movements in young children, which are then improved by increasingly complex manual activities, show us the functional equivalent of a logic which is not yet able to be exercised verbally and without the presence of objects. These patterns, therefore, constitute the first outline of what will be the categories of reflective intelligence, and the birth of intelligence requires that the world should provide a possibility for action and not merely a spectacle.[7]

This is the conclusion of Piaget, who goes on:

> Since it derives its instrumental function from belonging to the biological sphere and its expressive function from its connection with affectivity, the hand shares its relational function with the intelligence.[8]

But to disconnect the three functions of the hand in that way, for the convenience of analysis, is to risk forgetting that its relations are interdependent and that, more generally, there is a more overall relation between the hand and society. After all, the neurophysiology of a child and his affectivity and intelligence are stamped by the history of societies as well as of individuals.

In our time, when the individuals of the countries with which we are concerned have rejected on their own initiative numerous projects for transformation, programming and adjustment, we can ask ourselves what place the hand will occupy in this evolution — and, more precisely, what will be the role of manual activities in education. From another angle, we once more find the question we asked ourselves in connection with apprenticeship and the work process in the artisanal circles of the so-called 'post-industrial' societies: are not manual activities in the school an anachronism? There are two possible answers to this question. The first considers manual activities as a weapon against what some persons describe as the defects of 'modern' civilization (television, telephones, etc.). On the other hand, the second aims at using manual activities to accompany children's new modes of thought and new ways of being in a society of the future. Between these two replies is the question asked by most teachers: what is the sense of manual activities in the school when the way in which the socio-economic system operates gives priority to 'intellectual' work? One answer might be found in the example set by a Japanese electronics enterprise, which makes all its new engineers, during a six-months' training course, carry out sculpting, modelling and ... free-hand drawing from Roman plaster casts! Thus, in what is nevertheless a hyper-modern universe, manual activities are considered as a preliminary to productive work: our psychological detour has brought us back to our initial objects of concern by showing us why the debate about the educational field in relation to the socio-economic sphere cannot be buried in approaches which are too narrowly limited and adapted only to certain specific situations.

MANUAL ACTIVITIES AND PRACTICES IN PRIMARY EDUCATION IN FRANCE

The curricula established at the primary school level in most countries are based on the ideas we have just expressed concerning the role of manual work in children's development up to puberty. However, since the specific nature of the education system of each of these countries prevents us from making any generalizations, we shall refer to only one national case, the analysis of which is likely to contribute to the debate in other countries.

Origins and objectives

The general remarks we made above concerning the downgrading of technical culture and manual work in many industrialized countries are perfectly true of

France. This explains why it was necessary to wait until the mid-1970s for the appearance in primary school curricula of manual activities which were included as a stimulating activity throughout the six primary years. We have taken the case of France because it seemed to us that the clarity of the objectives and structuring of activities in that country enable us to make a sufficiently detailed analysis which serves to equate the situation in many industrialized countries.

The objectives of manual activities during the six years of primary education are summed up in Table 2:

TABLE 2. The specific objectives of manual activities for the three cycles of primary school in France

Preparatory cycle	Elementary cycle	Middle cycle
Manual dexterity	Skill with materials, tools, elementary technical operations	Technical training, choice and use of materials and tools.
Development of methodological skills	Methodological skills	Methodological training.
Aesthetic and creative awakening	'To consider, depending on achievements, different aspects, (especially) the aesthetic aspect'	'Various activities undertaken for play or for aesthetic or functional purposes...'
Socialization	'To organize the different aspects of work: division of tasks and ways of co-operation between several teams.'	'To design an activity project, alone or in a group.'
'Assistance in technological research'	'Skills in activities of everyday life. Knowing how to use various appliances (starting, regulating, observing safety rules, stopping).'	Notions of physics and technology.
'Assistance in intellectual approaches'		Intellectual training.
'Grasping the notion of space ... and time'		Notion of space. Notion of time.
	'Skills in activities of everyday life. Knowing how to conduct various operations involving the care and raising of animals, gardening, plant care and domestic tasks.'	

Source: Moreau, Jacqueline, ed. *Les activités manuelles dans l'enseignement obligatoire.* Paris, Editions ESF 1983, p. 21.

Attention is drawn to the evolution of the terms used throughout the school years, going from 'development' to 'training' and passing through 'awakening' and 'assistance'. However, some objectives are common to the three primary levels: the child's psycho-motor development, the development of methodological skills and socialization. Moreover, aesthetic activities are mentioned as a motor element of creativity, but with decreasing importance depending on age.

An evolution is also perceptible over the years of primary education with respect to the technological approach, which takes us back to our remarks about technical culture. While, in the preparatory cycle, manual activities can furnish the occasion — and support — for some investigations of a technological nature, in the elementary cycle, on the other hand, the teacher should make his pupils acquire certain skills. Lastly, in the middle cycle, they should be taught notions of physics and technology, thus preparing them for the activities which come under 'manual and technical education', a discipline of the first cycle of secondary education. In the preparatory cycle, therefore, they will be introduced to the use of a camera, a radio set and electric household appliances, while in the elementary cycle they will be taught to operate them. Finally, in the middle cycle, the pupils will have to acquire notions of physics and technology, such as the properties and phenomena relating to the use and effects of different forms of energy, or notions of the function of some manufactured object and its various parts.

Positions of the actors

In accordance with the systematic approach we suggested above, we must now ask ourselves in what respect these objectives and these proposed activities, which have been taken from ministerial documents, affect different social actors at the various levels and from different angles. By way of example, we are going to use Guigou's grid, a summary of which is given in Appendix II. Although Table 3, which is derived from it, is not exhaustive, it nevertheless enables us to ask a certain number of questions about manual and creative activities in primary education. We shall discuss some of them which relate to certain problems in the preceding chapters and which underline the diversity of the positions and analyses before us.

If we first raise the question of the relations between families, pupils, teachers, school administration and the inspectorate, as well as non-teacher instructors for manual and creative activities, it must be said that the implementation of these activities will modify one type of 'classic' relation in which the roles filled up to now have been the 'traditional' ones. For example, what judgement can an inspector form on the construction of an 'educational toy' in terms of the teacher's skills and proficiency? What information will he give to the parents? What impression will the parents have of their child's manual activities on the basis of this information and the account given by the child? There are then questions about the reproducibility and selectivity of activities, since they will become an integral part of a process of school socialization. In fact it is possible to assess in these terms the official texts which state that steps will be taken to evaluate activities and their results and 'make a critical comparison of similar activities carried out by others or in business', since 'in a good number of cases, the very nature of the activities is enough to draw an objective conclusion concerning their success or failure.'[9]

Accordingly, an analysis by a systematic approach of practical and/or manual activities in primary education in France has shown us, both with respect to the educational relations and organization of the activities or institutions concerned, that it is impossible to consider these activities outside their socio-economic context. After all, if production is not an objective of manual work, it is nevertheless possible to find in the official texts a reference to a conception of work which is not entirely clarified: we can then assume that each of the social actors concerned will refer to the official text which states that the objective of manual activities is 'to stimulate the child's curiosity about his cultural and social environment by making him aware of the realities of the work close to him and by opening up horizons for him about human activity in time and space.'[10]

PREPARATION FOR ENTERING ADULT LIFE

The opening up of spatial and temporal horizons takes place in adolescence, a period of transition which coincides with a change in the child's relationship to the group. Up to adolescence, the individual belongs to the children's group, but this relationship ends at the age when the youth makes a serious attempt to enter adult life by his attitudes, his plans for the future and his general style of life. At the cognitive level, the certainties of childhood give place to a feeling of a non-structured environment. Lapassade explains:

> From this methodological point of view the child's development might be considered as a gradual entrance 'into' unknown regions: in adolescence he is now forced to find his way without knowing exactly what should be done and what actually is done. His entrance into this new condition can be abrupt or, on the contrary, prepared far in advance, depending on the history of the individual. Therefore, the more the child has been kept apart from the adult world during childhood, the harder it will be for him to make the transition. ... Moreover, in his prospects for the future, he begins to make a clearer distinction between dreams and reality .... However, this new awareness of reality is put to a severe test by certain obvious contradictions in the behaviour of adults. ... An adolescent, who is especially sensitive to these contradictions, will be ready to follow an adult who offers him a system of clearly defined values.[11]

Curricula aimed at interactions between education and productive work will have to be organized in the light of these psycho-sociological factors.

THE SYSTEM OF 'WORK EXPERIENCE' IN LOWER SECONDARY EDUCATION IN THE UNITED KINGDOM

Origin

While the integration of manual and/or practical work in primary education is highly centralized in France, we shall now consider the case of the United Kingdom with regard to lower secondary education,[12] since it emphasizes the difficulties and constraints of practices found at the onset of adolescence. However, we shall consider it in particular because the term 'work experience programmes' (WEP)

TABLE 3. List of practical and creative activities in French primary education

	Teaching level and training process	Organizational level	Level of social group and users concerned by training
INTERACTION	— teacher/pupil relationship; — links with theoretical and practical knowledge of teachers and pupils; — training methods and agents.	— internal relations of the class; — links between programmes, means and results; — relationship between available means and educational activity.	— relationship between families, pupils, teachers, administrators, inspectors, and non-teacher trainers concerning manual and creative activities.
COVERAGE	— coverage of educational project; — total of training and evaluation units; — diversity of educational methods and techniques.	— sum-total of groups of knowledge during education; — integration of methods used at various times.	— unification of training at the formal level; — opposition by specific social groups to certain activities.
OBJECTIVES	— abstract or concrete nature of educational objectives; — ordering of objectives; — implicit and explicit objectives of education.	— organization of objectives in time and space; — links between objectives, curricula and content; — organization of training linked with educational objectives.	— informing group(s) responsible for choosing objectives; — decision-making methods; — group conflicts and objectives; — institutional objectives and constraints.
REPRODUCIBILITY	— stability and change in educational relationships; — stability in the mode of transferring knowledge; — changes in educational strategies and objectives.	— organization of activities in relation to technical and economic organizations; — connection between the organization of educational activities and organization of work;	— role of manual work in social reproduction; — articulation between the way work and practical skills are divided; — contradictions between the way social actors and model curricula are presented.

USEFULNESS	— social function of educational action; — pupils understanding of working and social relationships acquired through practical activities during education.	— organization of educational activities in comparison with technological and economic organization.	— conservative and innovative aspects of social functions; — integrity between objectives sought and training structures provided; — resistance by pupils who wish to see activities procede according to theoretical content.
SELECTIVITY	— objective selectivity of activities and subjective selectivity of teachers; — psychological, affective and cognitive differentiation of activities;	— selective organization of educational methods; — disparity between actual activities and evaluation methods within curricula;	— differentiation of proposed activities according to the socio-vocational category of pupils; — use of marks obtained by pupils for subsequent educational selection.

seems to reflect the various aspects of the relations between theory and practice, education and work, with regard to what is complementary in them and what is contradictory.

> Work experience is superficial and temporary; permanent employment is a worker's livelihood. Work experience cannot convey the pressures of having to go to work, to perform competently, to hold down the job. Work experience is a novelty; employment is a habit. Work experience cannot show to young people the pressures on workers any more than observing their own teachers in situations of stress.[13]

This is what a vocational guidance adviser had to say about the programmes conducted in the United Kingdom.

Although the WEP contain ideas which Dewey had expressed in 1938, the first official document mentioning this type of programme dates from 1963.[14] This report concluded that 'experiments enabling some pupils over the age of fifteen to participate to a limited extent, under the auspices of the school, in the world of work in industry, commerce, or in other fields, should be carefully studied'.[15] Without referring directly to the question, this proposal implied that WEP would be offered to young people in the last year of compulsory education, or between the ages of 14 and 16. The question then arises at to whether these activities were not contrary to the law prohibiting work by children at ages when they were subject to compulsory schooling, and the problem became even more acute when compulsory education was extended to age 16 in 1972. For this reason, children in the last year of compulsory education were permitted to participate in WEP by the Work Experience Act of 1973.

This official recognition had been encouraged by the 1972 Coleman Report, which in fact noted that the prolongation of compulsory education and the enforcement of the laws prohibiting child labour were depriving children of experience which was important for their personal and social growth. It therefore recommended that the barriers which isolated young people from the world of work should be abolished and that production institutions should be given a definite role in education. The 1974 'Panel on Youth' took the same line, and in 1975/76 it was found that 7% of the young people leaving school had gone through a WEP.[16]

Organization

When we now consider the method of organizing WEP, we will first of all observe a great diversity at the local level. The surveys conducted by Walton in 1977 and the Department of Education and Science (1979) show that the schools prepare a programme on the basis of either one day per week or else a series of days (over a period of two to three weeks): the first formula is aimed more at observation, the second at direct participation in productive work. Differences can also be observed in the way in which children are enrolled and assigned, since some schools offer only one possibility while others insist on a comparison between several jobs.

Differences are also observed with regard to the profile of children attending a WEP. We have already noted that, in 1977, 7% of young people leaving school had been enrolled in a programme. However, this fact does not take account of the diversity among schools or the criteria for selecting children for a WEP. Since these

selection criteria reflect the real objectives of the programme, some fears have been expressed by the trade unions, among others, that 'difficult' or 'less gifted' pupils would be the first to 'benefit' by it; that is to say that, since the academic pressure of examinations in the regular school system is first felt by the other students, teachers would direct less academic students to the WEP.

It is interesting to draw attention to the problems of organizing WEP, for they go back to the question of the relations between the social actors concerned. If the education system wishes to be in charge of a WEP, it has to provide itself with the necessary personnel and resources in order to negotiate with employers, consult the trade unions, integrate its activities with the work organization of an enterprise, and follow up the pupils during and after the programme. From this point of view, it is indispensable to adopt a decentralized approach enabling it to link up the existing economic and educational structures and to involve those actors who are directly concerned. This brings us back to our remarks about the spatial areas in which the school negotiates with its other partners about the WEP, thus preventing their activities from seeming to be attached to educational programmes without being integrated with them. In particular, this integration calls for follow-up within the school after the pupils return from work experience outside; there is a great danger, in fact, that the education of the pupils will continue without any change and that they will not have an opportunity to interpret and benefit by their experience, whether successful or not. There are, however, cases where school subjects have been reinterpreted in the light of a WEP, with a work project spread out over the whole year.

This project approach brings us to one of the major problems with which the school has to contend in order to develop interactions with the economic system: the problem of teacher preparation. How can a teacher who has never gone outside educational circles — as a child, a student and a professional employee — judge and make effective use of his pupils' experience in a WEP? This problem, which is of major importance and not only in the United Kingdom, takes us back to the history of an educational profession which has separated the exercise of this profession from the realities of the socio-economic system of production. Experiments have been carried out in the United Kingdom to familiarize teachers with the reality of the work in which their pupils will be engaged so that they will be able to benefit further by their participation in a WEP. For example, since 1966 the Confederation of British Industry has provided an introductory course for the benefit of teachers. While these experiments raise problems about the responsibility for organizing them and about their real impact on teachers, they are nevertheless important because they initiate a process of interaction between the fields of theory and practice, school learning and out-of-school learning, general education and vocational education, concerning which we have already seen that they have usually ended up by being mutually antagonistic.

Objectives

Watts has reclassified the objectives of the WEP into six categories:[17]

1. *Motivational* — to 'enable aspects of the school curriculum to become more meaningful and significant to the young person' and to show that 'perhaps for the first time the people

find that work has rules and that they are more strict then school: for dress, safety and general procedure'.

2. *Social-educational* — to enable pupils to acquire skills, knowledge and understanding which are more effectively learned in work-based than in wholly school-based settings. This objective can be divided into three sub-categories:
   (a) *Life-skills* — for example, applying for jobs; punctuality; independence; responsibility; collaboration; and social skills of relating to adults.
   (b) *Knowledge and understanding of self.*
   (c) *Knowledge and understanding of society* — for instance, the school exists for pupils, that is its *raison d'être*, whereas for the factory or firm, it is the product and not the worker that is the aim of the organization; 'through first-hand experience of the working environment, young people can learn ... to understand the social relations at work — including the role of trade unions'.
3. *Vocational* — to help pupils in choosing their future occupation.
4. *Anticipatory* — to enable pupils to experience some of the strains of work, [such as] 'the necessity for a young person to fit himself into a situation not organized for their benefit' [and to be prepared for] transitions.
5. *Placing* — to enable pupils to establish a relationshp with employers using work experience as part of a selection process.
6. *Custodial* — to provide an alternative for truants and to transfer some of the responsibility for disruptive pupils.

This typology of objectives is not exhaustive, but it helps us to take account, in a more homogeneous manner, of the multiplicity and diversity of the programmes set up. In addition to these objectives, there are those derived from activities similar to the WEP, but which presuppose other work structures. These are:

- *Simulation exercises*: more or less elaborate models are built for the pupils where they can 'play' with situations which are more or less close to the reality of work. These are used in simulation games, in pupils' co-operatives or in production workshops connected with the school. Concerning simulation games, we are aware that questions might be asked about their relevance to real situations of productive work, since the persons directing them are often strangers in this field. On the other hand, pupils' co-operatives are worthwhile because they put the pupils in the position of employers and not of workers, which can be important during an economic crisis when it is necessary to create new jobs.
- *Observation of work situations*: observation of this kind is generally of a purely passive nature.
- *Actually working at a job during vacations*: contrary to the preceding activity, this one calls for complete involvement in a productive process.

The attitudes of the social partners

If we now resume our procedure of analysing the attitudes and interests of different social actors in relation to production activities connected with education, we find that the general objectives we have just referred to are shared in various ways, depending on the circles concerned.

First of all, when parliamentary decisions were taken on the 1973 Education (Work Experience) Act, Lord Belstead, Under-Secretary of State for Education at the time, expressly refused to assign any objectives of vocational guidance and job

finding to the WEP. Nevertheless, those objectives had been widely accepted at the end of the 1960s by the Confederation of British Industry. From this point of view, it is interesting to analyse the position of the Trades Union Congress (TUC).[18] The TUC was at first strongly opposed to the principle of the WEP itself, since it viewed them as a means whereby teachers could get rid of difficult pupils and, more generally, to shift time from regular school attendance to vocational education. However, this attitude gradually changed and in 1979 the TUC accepted the principle of the WEP, while at the same time refusing to assign to them any objectives connected with vocational guidance and job finding.

These general estimates, of course, cannot cover the extreme diversity of the practices of the social actors at the local level, but it is at that very level that the educational and vocational authorities assess the overall objectives we have referred to and adapt them to the appropriate actors and special situations.

THE 'DUAL' SYSTEM IN VOCATIONAL EDUCATION IN THE FEDERAL REPUBLIC OF GERMANY

The points we have just made about the interactions between the completion of compulsory education and productive work in the United Kingdom can be greatly amplified in the case of the Federal Republic of Germany.[19] After nine years of compulsory education, in fact, slightly more than half of young people of age 17 are enrolled in a so-called 'dual' system of vocational education: in 1979, for example, 1.8 million young people, mostly males, were preparing for jobs in industry and business.

Socio-economic context

We have already pointed out that apprenticeship in its present form first appeared more than a century ago in Germany. At this point, we might repeat that the importance of this type of education can be explained by a certain number of socio-political facts to which we shall refer briefly.

We have mentioned above that for a long time, manual work and technology were given wider social recognition in the Federal Republic of Germany than in other countries. This recognition is characterized, in particular, by a much narrower range of wages for supervisors and skilled workers than in such countries as France[20]. Nevertheless, this situation should not cause us to forget that the education system itself functions in a very selective way since, after the fourth year of primary school, children are distributed between the *Hauptschule*, the *Realschule* and the *Gymnasium*. The first of these schools accounts for approximately 40%, while each of the two others receives about 30%. Moreover, this educational division is accompanied, as elsewhere, by a social division: we find, in fact, that large numbers of workers' children are educated in the *Hauptschule* and that they make up the majority of the apprentices in enterprises (although young people from the *Realschule* and the *Gymnasium* are also to be found there).

It should also be noted that, in conformity with the federal structure of the country, the education system is highly decentralized and is composed of a multitude of structures which are peculiar to each region (the creation of *Gesamtschulen* in 1969,

which was aimed at unifying lower secondary education at the federal level, met with very little response in the regions). The attempts made by the federal government since the early 1970s to reform vocational education as a whole, with a view to combining specialization and polyvalence, led to few results: the tensions between *Länder* and the federal authorities concerning educational policy are still very acute, as well as between political parties. Nevertheless, it is the ministries of education and economic affairs which define the general framework of vocational education and 'dual' apprenticeship in enterprises.

However, the implementation of these directives at the local level reveals the importance of the power of the employers' associations with regard to on-the-job training. In spite of the differences of interests between industries, compared with the relative standardization of vocational education which the federal government would like to impose, it is a common characteristic of the employers' associations that they become the principal actors when it comes to translating directives into programmes, drawing up apprenticeship contracts, laying down rules for the member enterprises, and supervising and evaluating apprentices.

Moreover, the enterprises are also the ones which finance vocational education, since the cost of the *Berufschulen* (schools for apprentices) is borne by the regions and the local communities. However, only 16 per cent of all enterprises organize, and therefore finance, any kind of vocational education, since there is no legal obligation to do so. Moreover, the enterprises' contribution towards financing vocational education varies according to their size and specialization. The different degrees of training provided in enterprises are also apparent here, since some of them train more apprentices than they subsequently retain, while others profit by this turnover.

The sectors, branches, activities and enterprises under this system of 'dual' vocational education therefore practice a policy of co-operation, so that there is a genuine system of alternation between education and productive work, which takes us back to the questions we raised in our account of the history of work. In a system of this kind, a young future worker is 'free' to leave the enterprise after his training and to offer his working abilities to the highest bidder. However, we have seen that it is partly this mercantile approach to work which led to the present crisis. Yet it must be noted that the management methods of the enterprises in the Federal Republic of Germany, as appears from the laws of co-management, officially permit the partners in education — representatives of the employers' association, workers and teachers — to be associated in regulating the system. The facts seem to show that, up to today, the trade unions are not much concerned about questions of education and that they do not take a very active interest in these matters in the company councils. Nevertheless, the 'dual' system reminds us of a certain number of general socio-political questions which we raised in connection with the interactions between education and productive work.

Organization

The organization of the system of 'dual' vocational education is greatly influenced by the socio-economic context to which we have just referred[21]. This system is organized around vocational schools (*Berufschulen*) subordinate to regions and

enterprises. The regional schools have to be attended for a minimum of 10 hours per week, the remaining 30 hours being spent in various ways and places depending on the enterprises. This method of organization therefore leads to great differences between the kinds of training provided, due to differences with respect to economic structures between regions, cities and rural areas. The differences between the branches, sizes and geographic locations of enterprises are therefore often increased during the three years of 'dual' education.

One of the chief differences between the kinds of training given to apprentices is caused by the size of the enterprises. While the big enterprises offer training which combines productive work, exercises in apprenticeship centres and theoretical courses in company schools, the small and medium ones are unable to offer these opportunities. Apprenticeship conditions are then much less satisfactory, which has led to problems with the apprentices and to a downgrading of the training provided by this type of enterprise. In recent years, inter-company apprenticeship workshops have been created — but with no great success — in order to remedy these problems for a majority of apprentices, since 70% of them work in enterprises employing less than fifty persons.

Together with the functioning of the education system, this explains the situation with regard to applications for apprenticeship and the methods of selection used by the enterprises. On the one hand, in fact, we find wide variations in applications for apprenticeship, depending on branches and on the size of enterprises, and, on the other hand, a selection process upon admission based on the educational level reached by the applicant, the result of which is the presence in vocational training courses of the artisanal type of young people who have failed in school. Thus, once again we find the functionality as well as the oppositions which characterize the relations between the education system and the productive system. Here we can understand the role of the federal government, confronted as it is with increasingly great imbalances between offers of apprenticeship opportunities and a strong, rising demand on the part of increasingly better educated young people.

In fact, a report on the education of young people presented to the Bundestag[22] in March 1983 predicts a great increase in the demand for apprenticeship and a decrease in the supply. This seems to be true in spite of the 1976 Act intended to promote offers of apprenticeship, which provides for financial assistance by the State to enterprises offering new jobs in regions where there is a need.

The condition and process of apprenticeship

We shall not dwell on the details about the multiple aspects of the apprenticeship system, especially since it operates in highly diversified ways. We shall only refer to the aspects of the conditions and relevant education/production processes in relation to the problems concerning us.

First of all, the relations between education and production become apparent when we consider the remuneration of apprentices. Here we touch on a delicate point in the discussions held in many countries about the 'exploitation' of apprentices. The work ideology, as we have described it in the countries of Western Europe, is an inevitable necessity in the Federal Republic of Germany, which explains why all apprentices are paid even if they contribute almost nothing to

production, as in the case of company schools. A few figures will be sufficient to illustrate what the enterprises derive from the productive work of their apprentices.

A study carried out in 1974 by a committee of experts on the basis of statements by employers (and consequently likely to overestimate costs and to underestimate profits) shows that:

- the costs of training in big enterprises — an average of DM 6,500 annually for each apprentice — are two and a half times higher than in artisanal enterprises, where they are on the average DM 2,500 per apprentice.
- 17% of these small enterprises (members of the Chamber of Commerce) said that they expected to earn profits by recruiting apprentices (because the value produced by their work was greater than the expenditures incurred for their apprenticeship), while that proportion was only 3.1% in enterprises with more than 1,000 wage-earners (belonging to the Chamber of Industry and Commerce). A total of 10% of the enterprises said that the profits derived from the work of apprentices was greater than the costs of training them[23].

These figures bring us to the heart of the problem of the relations between education and production, since they show the necessity of relating the present debates to their socio-economic as well as to their educational dimensions.

These are the same dimensions which we find in the programmes and content transmitted during apprenticeship. While the general framework of the programmes is determined by federal directives, their specific provisions and implementation are the exclusive responsibility of the enterprises. (It should also be noted that, in spite of the legal obligation to make the programmes public, few apprentices and their families are actually given any detailed information.) The skills taught during apprenticeship therefore vary from one enterprise to another: in general, they are more diversified at the technical level in big industry than in handicrafts, but generally speaking all of them avoid touching on questions which do not relate directly to their own production. More precisely, the teaching methods used, which are often centred on objectives, organization of work and teaching time, based on educational technologies, examination methods and favouring technical skills, all help to train the individual as a producer rather than the individual as a citizen.

Moreover, as we have already pointed out, apprenticeship in these kinds of know-how is closely linked to apprenticeship in social relations in the enterprise. This works through the direct participation of the apprentices in production, with the same methods of organizing work-time and discipline as those applied to salaried employees: this is therefore a very different means of socialization than that of young school students, with all which that means in terms of status and social recognition. Moreover, in the big enterprises in particular, these things are dealt with in specific courses. Lastly, it should be noted that the instructors of apprentices are all employees of the enterprise and producers at the same time.

The roles of the federal government and the Länder

In conformity with our approach, which consists in identifying the positions and roles of the social actors concerned with the interactions between education and

production, it now seems necessary to refer to the present role of the federal government in this field. If we go back to the eighteenth and nineteenth centuries in other European countries, we can see the development of nationalized education systems which to an increasing extent took over technical and vocational training. In certain respects, the present situation in the Federal Republic of Germany recalls this situation.

First of all, the *Länder* are responsible for education of the formal type which apprentices have to follow while at the same time working in enterprises. The *Berufschulen* provide general and vocational instruction, with a ratio of 2 to 3, which is mainly focused on the functional and technical aspects of the jobs, and taught by school-teachers and by apprenticeship supervisors. The general tendency in these schools is towards a progressive formal education.

With regard to the federal government, we have seen that it issued directives concerning the trades taught, the regulation of the demand for apprenticeships and the creation of inter-enterprise workshops. Since 1976, State intervention also extends to the training of instructors in the enterprise. This trend is caused by the financial constraints on enterprises, due to the gradual separation of training from production, and is also linked to the reduced number of offers of apprenticeships by big industry, and lastly to increased unemployment among young people. In 1972, this movement resulted in the so-called BGJ Act (*Berufsgrundbildungjahr*), by which one year of equivalent school education had to follow one year of apprenticeship and vocational activity. The employers' organizations strongly resisted this approach, since it undermined the power of the enterprise over the training of half of the young people. On the other hand, some of the workers' unions were favourable to this reform, while at the same time trying to preserve a 'dual' system placed under stricter public control.

The present situation is therefore very interesting in connection with the debates about the interactions between education and productive work, since it takes us back to the questions of the dependence and autonomy of the education system in relation to the socio-economic system, and the relevance of the alternation system. Although this 'dual' system of the Federal Republic of Germany would seem to be one of the first institutions to contribute effectively to the social integration of young people, it should also not be forgotten that training/production activity in the enterprise enables the pupil to gain an insight into the socio-economic reality of work not possessed by young people of the same age in other countries. It must also be admitted that vocationality, considered to be the objective of alternation, is based on these conditions, which are necessary but perhaps inadequate.

NOTES AND REFERENCES

1. On this subject we refer to the work of J. Guigou, using particularly the procedures he proposes in: Critique de l'analyse systémique des actions de formation. *Education permanente* (Paris, Agence nationale pour le développement de l'éducation permanente), n° 17, janvier-février 1973, p. 113-147. Appendix II gives an abbreviated version of his proposed procedure which we illustrate by using the first type of activities connecting training with work. The reader is invited to use these analytical grids for other types of activities.

2. Moreau, Jacqueline, ed. *Les activités manuelles dans l'enseignement obligatoire.* Paris, Editions ESF, 1983, p. 45.
3. *Ibid.*, p. 49.
4. *Ibid.*, p. 54.
5. Bringuier, G. *Conversations libres avec Jean Piaget.* Paris, Laffont, 1978, p. 21.
6. Moreau, Jacqueline, ed. *Op. cit.*, p. 63.
7. *Ibid.*, p. 64.
8. *Ibid.*, p. 65.
9. *Bulletin officiel de l'Education nationale* (Paris), n° 31, 11 septembre 1980, p. 2387.
10. *Ibid.*
11. Lapassade, G. *L'entrée dans la vie.* Paris, Minuit, 1963, p. 148-150.
12. Since 1979 Norway has introduced a similar experiment. See: Unesco document ED/BIE/CONFINTED 38/Inf. 1.
13. Quoted in Watts, A.G. ed. *Work experience and schools.* London, Heinemann Educational, 1983, p. 3.
14. Report of the Newson Committee. London, Central Advisory Council for Education (United Kingdom), 1963, chapter 9, Quoted in Watts, A.G. ed. *Op. cit.*, p. 5.
15. Quoted in Watts, A.G. ed. *Op. cit.*, p. 5.
16. *Ibid.*, p. 6.
17. *Ibid.*, p. 6, 7, 8.
18. We note that, in contrast with the situation in France, all social and economic groups participate in the debates on the interactions between education and productive work in the United Kingdom.
19. The situation in Switzerland is very similar to that in the Federal Republic of Germany.
20. See: Maurice, M.; Sellier, F.; Silvestre, J.-J. *Politique d'éducation et organisation industrielle en France et en Allemagne.* Paris, Presses universitaires de France, 1982.
21. In analysing the following points, we base ourselves on Tanguy, Lucie; Kieffer, Annick. *L'école et l'entreprise: l'expérience des deux Allemagnes.* Paris, La Documentation française. 1982. 172 p. (Notes et études documentaires n° 4669-4670)
22. See Clément, A. Les difficultés de l'apprentissage en RFA. *Le Monde* (Paris), 19 mai 1983.
23. Sachverständigenkommission Kosten und Finanzierung der beruflichen Bildung. *Kosten und Finanzierung der ausserschulischen beruflichen Bildung.* Bielefeld, 1974. Quoted in Tanguy, Lucie; Kieffer, Annick. *Op. cit.*, p. 72.

CHAPTER XIII

From adolescence to active working life

Both of the situations we have just analysed in the Federal Republic of Germany and the United Kingdom concern young people between the ages of 12 and 16. But we have just noted that their modes of socialization are in fact very different: while British young people pass two-thirds of their days over a year in a school, those in the Federal Republic of Germany pass three-quarters in a workshop, an office, a store or a work site. The consequences of these situations for their respective futures will therefore be very different, especially with regard to their possibilities for enrolling or not in subsequent education courses or taking a permanent job. The question we now have to ask ourselves is how these problems affect young people who are going to find themselves either in an institutional situation of the school type, or in a 'non-working' situation after they have left compulsory education or have failed in an apprenticeship.

In most of the industrialized countries with which we are concerned here, the 16 to 18 age bracket, as it is functionally described, presents a certain number of problems, the analysis of which is of paramount importance for an understanding of the interactions between education and productive work. Having created *one* conceptual category of 'adolescents', while clearly realizing that this category is not homogeneous, we are confronted with the opposition which we are trying to define between work and studies. It should be remembered that there are also adolescents to be found in the second cycle of secondary education who have been rejected by the job market for socio-educational reasons — but are they comparable with students? What they have in common is their non-inclusion in the work situation, and it is because of this fact that efforts are being made in various countries to find work for adolescents who are, in fact, already adults.

YOUTH, WORK, STUDIES

A report by the Centre for Educational Research and Innovation (CERI), part of OECD, states the following:

Thus, in less than 100 years, a new social entity had been created: the adolescent, youth, the not-yet-adult, whose age limits cover at least a decade of an individual life. Increasingly, these young people have been separated physically, economically and emotionally from younger and older population groups; in particular, they have become associated with a specialized institution — the school — which is now pivotal in defining their status, and in determining the road into the occupational structure and their future roles as adults. Pushed by legal constraints, by interest, or by vocational necessity, youth came to schools in great numbers. They and their families accepted the extended presence of school in their lives for what they

perceived school to embody: a social contract whereby, in exchange for their time, effort and good conduct, they would gain a place, possibly a better one, in the society that had value to them[1].

At the same time, however, the CERI report continues:

Most obviously, young people are caught in a kind of no-man's land, where they are neither children nor adults, but where one must be both child-like and adult-like at the same time. On the one hand, they are told to experiment and be free before the responsibilities take hold. On the other, they are chastised for being irresponsible, for not recognizing the seriousness of their behaviour. They are protected and segregated, and then condemned for being overly self-centred. They are simultaneously viewed as harbingers of a new society and as junior representatives of the existing adult world. ...

The net result is that today's young people have to learn their adult roles as workers, as parents, as members of society by proxy, as it were, without the benefit — the hardship, some would say — of having to confront their learning with real life situations of adulthood. At the same time, the roads to adulthood have become confused. Extended schooling has lengthened the transition. Birth control practices have separated sexual activity from the responsibilities of family. Concepts of continuing education have lessened the impact of school leaving as entry into adulthood. The economic returns to schooling have become less apparent in a limited growth economy, and the rationale for staying in school has become less persuasive, even as unemployment among school-leavers remains high.

Some of these confusions have always been the lot of young people, but concern about them has intensified. Despite empirical evidence that the youth movement of the 1960s did not, by itself, impose any radical and long-lasting changes on the ways our society functions, adult worries about youth have grown as young people continue to protest and as dissatisfaction with schooling and work seems to grow[2]

If we bring these observations back into the context of education and productive work, we notice, as does the CERI report:

What has distinguished an increasing number of this century's young people from older age groups has been the lack of either a clear or a permanent place in the social pattern of the world of work. While many young people work, they are not really seen to be in the work force, but rather at school or in apprenticeship programmes preparing for adult jobs. While many leave school early, those who extend their schooling are regarded as having chosen the best way to fulfil their responsibilities to themselves. For only social minorities and the marginal classes — poor farmers, small tradesmen, the under-proletariat and the poorer levels of the working classes — does a state of non-youth exist; for all others, youth proceeds slowly and without a sharp demarcation into adulthood[3].

All these 'marginal' young people, therefore, have in fact already entered active, adult life: under different conditions and in different ways, to be sure, but in general along individual paths where they have had to cope with problems of accommodation, family, subsistence, etc. We might say, then, that young people in school surroundings are held back from entering full adult life, whereas young people who have left school have perhaps entered it too early. This brings us back to the ideas we expressed on the subject of this 'new youth', which no longer conforms to an earlier pattern described by Vincens.

Around 1950, the majority of young people were still entering active life at age 14. Many did not even have any choice about where they would start: the children of farmers stayed on the farm until entering military service, or the majority of the children of artisans and businessmen learned their trade in their parents' home.... Adolescence was passed in work; the long

period of coming of age and discovering oneself and others was also connected with work in enterprises, which, no doubt quite differently than today, found a place for young people as such.[4]

That is why today, as Jacques Delors stated in 1976, 'we find a large number of small, temporary activities, jobs for filling in time as stock clerks or packers, independent and marginal activities, but also — and this is one of the dangers threatening us if there is permanent under-employment — ways of life which involve delinquency or law-breaking.'[5]

At the same time, many of those who have attended schools after compulsory education find that they are:

...condemned to the experience of social decline at the beginning of their career, a decline which is especially hard to endure, since their prolonged studies in school, if not in university, have greatly changed their expectations with regard to vocational life. A young man of this type will have to change jobs five or six times before finding one where he might... rejoin the competition between young skilled workers.[6]

The contradictions with which young people are struggling in the industrialized countries reflect the topicality of the question of the interactions between education and productive work. And the CERI report considers that:

Today, the changed economic situation of the 1970s, projected into the 1980s, suggests that these dilemmas will increase. Questions of whether to let young people retain their status as not-yet-adults, to extend or lessen their years at shool, to create job opportunities and to require their participation in them, and to clarify the road or roads to adulthood will remain high on the social agenda.[7]

In response to these problems, experiments or programmes are being launched in the United States and France, for example, to find new link-ups between school and community, and between young people and jobs, especially by means of systems of work/education alternation.

COMMUNITY-CENTRED EDUCATION IN THE UNITED STATES OF AMERICA

General context

The problems created by the situation of young school graduates between ages 16 and 18 are particularly acute in the United States because the level of education there is very high, especially in the field of vocational and technical training. More precisely, those who stay within the education system combine work with education, since they often engage in remunerative activities from ages 14-15 and up to 25 (in fact, approximately three-quarters of the pupils of the twelfth year of school work half time).[8] However, although this practice has become a social norm, it is not very well accepted and is still totally ignored by educational institutions in terms of teaching, vocational future or social inequalities.

It would seem, therefore, that there is a complete dichotomy between the school and society which young people are trying to overcome by a purely empirical and individual process. In the face of this situation, some persons are beginning to wonder whether too much time spent in a school environment today does not offer

more disadvantages than advantages in terms of social integration, and they stress the need to have this task divided between the school and the community.[9] More exactly, the apparatus of laws and regulations aimed at protecting children from rapid involvement in a capitalist system by removing them from the community has achieved its objectives, but the educational apparatus which has been set up beside it has not succeeded in replacing the tasks of socialization for which the community has been responsible. Moreover, the school today plays the part of a 'holding reservoir' for the benefit of parents and the public authorities, as well as of wage-earners in times of economic crisis.

The arguments advanced by Goodman in 1956[10] appear even better founded today when we see the development of passiveness and stereotypes among young people who have gone through this kind of transition before reaching adult age. That is what was feared even earlier by John Dewey, who said that the worst form of education was one that 'is not motivated and impregnated with a sense of reality by being intermingled with the realities of everyday life.'[11] For that reason, the National Commission on Youth recommends the development of programmes which bring the school and the community into association with a view to restoring individual and social meaning and profitability to young people in their transition towards adult age.

School-community collaboration

Here we once again find the idea, which was expressed in France by Schwartz, of integrating in one educational network the different institutional resources which contribute to the education of the young. This approach is not intended to deprive the school of any role, but on the contrary to restore to it certain specific functions within this network. The National Commission on Youth has drawn up the following list of four characteristics of programmes which link the school with the community:

- young people learn by doing;
- young people are offered a type of participation which gives them an opportunity to show a sense of responsibility;
- young people experience the consequences of their acts in so far as those acts affect others;
- young people gain confidence by participation in community life, since they develop the necessary skills for effective participation.

On the basis of these characteristics, the committee distinguishes three types of programmes: those centred on the school, courses in enterprises and social service programmes. We shall not go into detail about the first two types, since they have many points in common with activities we have already analysed in the Federal Republic of Germany and the United Kingdom. On the other hand, the social service programmes shed some light on certain new approaches to work and employment: these programmes can be directly linked up to the school or carried out in association with voluntary organizations.

The programmes linked with the school are generally based on the principle of mutual aid between young people and children, for the benefit of underprivileged groups, in liaison with ecological demands and as assistance to small economic

activities. As for the activities organized by voluntary organizations, youth organizations in particular, they constitute an excellent source of opportunities to participate in community life, while being explicitly related to the school, such as the programme of the Red Cross Youth Service entitled 'Things You Never Learned in School'.[12] It would seem, therefore, that it is mostly the local communities which actually assume the role of socializing young people at the end of their secondary schooling rather than the school itself. However, the latter should not react to this situation by taking the initiative by itself to add a 'community' dimension to its programmes. Activities for assisting the transition of young people towards adult life can best be introduced through negotiations between the relevant social partners at the local level.

Although the Federal Department of Education has no executive role in the field with which we are concerned, there is one experiment which has been conducted since 1976 and which involved about 17,000 students in 1979. 'Experience-based career education' (EBCE) is interesting because it combines general and vocational education in terms of programmes and enables students to take part in community activities. From the evaluations made, it appears that these students become more motivated for training, are better informed about the possibilities of subsequent employment and find that this facilitates their working relations with adults. Moreover, these students have shown proof of superior ability in reading, understanding, communication and the practical utilization of mathematical concepts, thus proving that the acquisition of academic skills can be improved by working links with the community.[13]

Prospects and problems

Having suggested these objectives, the members of the National Youth Committee made no attempt to conceal the difficulties of achieving them at the levels of the various social actors concerned:

- traditional beliefs pertaining to the custodial function of the schools;
- skepticism of parents, students, and educators about the programmes;
- rigid curriculum requirements established either through local expression or by state fiat;
- logistical issues surrounding the transportation of students into the community;
- financial arrangements over liability for students out of school and on job locations;
- inflexible scheduling practices;
- minimum wage requirements for full-time paid positions;
- union rules or contractual arrangements for specific occupational settings.[14]

This list of problems brings us back to some others which we raised in connection with the evolution of work and education systems. It is a striking fact that the benefits obtained by workers in the last few decades are today presented as obstacles to the development of structural relations between the school and the community. However, while the school first developed as an institution for the protection of children, labour legislation and the collective agreements signed between employers' associations and trade unions have been and still are instruments for the protection of the workers. We certainly have to admit that the school, like the workers' organizations, has developed tendencies towards bureaucratization and

the defence of its acquired privileges in the face of criticisms of the education systems and the increase of unemployment.[15] However, we should ask ourselves whether solutions which place social gains in question and recommend that the age for completing compulsory education[16] be reduced to 14 do not cause us to revert to the problems already raised in 1915 by the American Federation of Labor (AFL) concerning vocational training:

> There is also evident some apprehension that this proposed industrial education may ultimately give way to an attempt on the part of large commercial interests, whereby the opportunities of the workers' children for a general education will be limited, and which will tend to make the workers more submissive and less independent.[17]

This reference helps us to place the debate on the interactions between education and productive work in the right political perspective, which only too many social actors often fail to take into account.

PROGRAMMES FOR UNEMPLOYED AND/OR UNSKILLED SCHOOL-LEAVERS

In the United States, although school attendance up to the ages of 17 or 18 is regarded as the social norm, approximately 25 per cent of young people nevertheless leave the high schools without a diploma — and this percentage may exceed 50 per cent in the big cities. These young people therefore find themselves in the labour market without any skills, with little hope of reentering a school structure or vocational training school; they become unemployed with all that follows in terms of a marginalization, which their social origin had often already encouraged.

Situations of the same type are arising in France, and we shall analyse the programmes carried out in that country and in the United States, as they raise complementary problems.

The 1980 Youth Act in the United States

A report written by the Vice President's Task Force on Youth Employment called attention to the problem.

> There are nearly 44 million Americans aged fourteen to forty-five. Of those, 24 million are in the critical sixteen- to twenty-one-year age span, the period of 'transition' from school to work. For the vast majority of these young people ... that transition is made reasonably well. ... For almost four million others, though, things do not go so smoothly. Their transition is bumpy and difficult, and they face a serious risk of not completing it successfully.[18]

This analysis shows the magnitude of the problems raised in the United States for this category of young people and which at the same time combine social and educational problems. But it is more interesting to see how the country's employers judge this situation: they do not place so much emphasis on the difficult situation of these young people, who one might think were effectively excluded from the job market, but stress the more general problem of the education of all young people. It is not so much the lack of vocational skills among children leaving the school system which employers deplore, as they used to do at the beginning of the century, but rather the lack of essential skills, such as reading, writing and arithmetic. This is confirmed in *Education and work:*

At Task Force Roundtables around the country, employers told the same story — that a high school diploma no longer is a good indicator of the skills of job applicants. High school students cannot even fill out application forms correctly. Employers say their concerns are not about whether young people have been trained for specific jobs. What they do want, and must have, are employees who can add and subtract, read and write.[19]

We shall not describe in detail the many programmes which are being carried out all over the United States to enable young people with educational and social difficulties to find jobs. However, we shall draw attention to the more basic problem of the situation of these young people: this may be considered in the light of the more general problem of the relations between school and work and also helps to clarify the question of the control of vocational training by a country's social actors. Actually, assuming that this training were carried out entirely outside the school system, the latter being responsible for teaching general basic skills, there are several actors who enter into competition, if not opposition: the State, employers' associations, workers' trade unions, pressure groups, teachers, local organizations, communities, etc. In the United States we find that the workers' trade unions tend to stay aloof from vocational training, that the employers' associations develop their own system of on-the-job training, that the State and the teachers are accused of being ineffective, and that the local organizations and communities are becoming more and more important in carrying out programmes for finding a place for young unemployed and untrained persons in society and in some occupation.

So once again we find the same ideas we expressed earlier about the spatial and temporal recomposition of educational, social, vocational and productive processes within the framework of polyvalent management structures which are opposed to the present sub-division of these processes. To this extent then, the question of the socio-vocational adjustment of young people in a difficult situation may prove not to be a marginal phenomenon in relation to the problems of the interactions between education and work but rather to open up new outlooks on the future.

The vocational and social integration of young people of ages 16 to 18 in France

Since 1981, the social and vocational integration of unemployed and unskilled young people of ages 16 to 18 has become a priority for the French Government. According to the report by Schwartz, *L'insertion professionnelle et sociale des jeunes*[20], there are in fact more than 200,000 young people living in France who are in a difficult situation because of unemployment or the unstable and unskilled jobs they hold. A number of measures have been taken on their behalf, calling on all the social partners concerned, in particular the local communities and associations. As in the United States, therefore, we find that an important role is assigned to decentralized structures, which are in a better position to understand and respond to the social and vocational needs for the integration of young people.

More specifically, local reception and guidance centres for young people have been established in very many towns, which by 1 April 1983 had assisted 159,000 young people. After receiving this guidance, the young people are introduced both to courses with a strictly vocational purpose and courses which are intended to facili-

tate their integration in social life — and it is in this second field that many associations are involved. Vocational courses are conducted both by enterprises, in a system of alternation, and by the services of the Ministries of Education and Labour, the local communities supported by the central structures, the chambers of commerce and industry and the technical education establishments. Thus, as in the United States, although here the State is playing a different role, the problem of linking up work and education for young people of ages 16 to 18 has had a dynamic impact on both thought and action. The public establishments for technical and vocational education have seen their importance reaffirmed and strengthened for assisting a larger number of young people, the employers' associations have had to give proof of their ability to create jobs, and the associations have found a field in which to test their capacity for social administration.

Both in the United States and France, therefore, as well as in all the industrialized countries, the 16 to 18 age bracket is becoming significant for revealing the problems raised by the growing disconnection between education, work and employment, as well as the ability of the public and private social actors at the central, intermediate and local levels to think up new approaches to the question. This inquiry, however, does not stop at the age which in most countries is considered to indicate maturity, and therefore the ability to assume responsibility for one's own future as a citizen, producer and parent. The situation of those who are called young workers and students is in the process of rapid transformation and raises problems which also call in question the links between education and productive work in their respective fields.

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CHAPTER XIV
Entrance into adult life

YOUNG WORKERS AND STUDENTS

In connection with adolescence and the transition to adult age, we have implicitly assumed that the growing dichotomy between work, employment and education can explain the criticisms which many young people direct against work or the behaviour resulting from it. If we now reverse the question, we can ask ourselves whether it is possible to confirm the fact, by analysing certain effects, that this dichotomy is the real cause of our present problems. For this purpose, we shall refer to a book by Cador, *Etudiant ou apprenti*[1] which analyses this question on the basis of medical studies and the teaching of the Compagnons du devoir du Tour de France.[2]

Questioned about their apprenticeship in their trades, none of those interviewed, whose introduction to vocational life had been made through the schools, denied the usefulness of a general education and the importance of scientific knowledge; nobody doubted the social advantages of possessing a diploma, but all finally admitted that they had learned the most important part of their trade outside the school, before, beside or after school, and not without painful intellectual conversions when that apprenticeship had taken place at a later age .... However long their studies lasted, most of them had had to acquire the knowledge and intellectual processes which they used in their vocational activity 'on the job'. Only later on did their school education prove useful by enabling them to view that activity in a more general and comprehensive framework. Moreover, this ability seemed to them very valuable, even if they had often had to spend much time and undergo great difficulties in order to make good use of it.

However ..., the school system did not have the advantage of a repeated authentication similar to that available to the apprenticeship system. Its roots not being sufficiently profound, it has not been subjected to serious scientific verifications, a disadvantage which educational specialists do not attempt to gloss over.[3]

'The first fact we have to admit after thirty years and which is really surprising', writes Jean Piaget, 'is how ignorant we have continued to be about the results of educational techniques. In 1965, we do not know any more than we did in 1935 about what are still different kinds of knowledge acquired in primary and secondary schools after five, ten or twenty years by representatives of different groups in the population.'[4] The use of the school system 'has therefore become universal', says Cador, 'in the name of science for reasons which have nothing scientific about them.'[5] Moreover,

... by selectively cultivating the tastes and aptitudes of children and adolescents, the school system is causing migrations of men and of skills which are changing the genetic potential of trades and eventually bring about a metamorphosis in the way in which they are practised. These transformations are of such a nature that they call for a new development of schooling

which is therefore increasing at a constantly accelerating rate. There is no reason for us to admit without further examination that this process is in all respects a beneficial one. Some converging indices give us reason to assume that there is a relation between the universal adoption of the school system and technocratic evolution. This evolution, which can be compared with that of a malign tumour, seems to be that of tissue which is lacking in complete genetic information.[6]

The author concludes from this situation that:

... the apprenticeship system is in the process of disappearing which may be especially complete because it had not been born of an idea, nor of a plan, because it was lived through rather than written about and has consequently left more monuments in landscapes than in libraries. In spite of its historical importance, therefore, it could very easily sink into oblivion until some avant-garde group of American researchers with great difficulty rediscover the principles of this system, which, decked out in Anglo-Saxon words, would then seem sufficiently revolutionary to deserve attention. Meanwhile, as the breed of men capable of implementing it — the apprenticeship masters — would have largely disappeared and the necessary structures for its implementation would have been uprooted, such a system would appear to be purely utopian: a brand-mark which would be enough to win it the admiration of the young and the mistrust of the old and established.[7]

It is perhaps warnings of this kind, and especially the realities of technological evolution and the job markets, which have encouraged the establishment in many industrialized countries of programmes, structures and tentative policies based on an alternation between education and work for students in post-secondary education, young unskilled or jobless workers, and young people leaving the second cycle of general secondary education. (We shall assume that these groups fall roughly within the 18 to 23 age bracket.)

ON-THE-JOB TRAINING FOR YOUNG WORKERS

While the various situations we have analysed above concerning young people up to age 18 have revealed the importance of the links between work and education in relation to their individual and social development, the gradual entrance of these young people into adult and active life is characterized by the increasingly strong emphasis placed on their role as producers. This phenomenon of a gradual transition from the terms of our debate, from the relations between education and work to those of the relations between education and production will influence all the analyses we are going to make in the next few paragraphs. At the same time that society, and especially young people, are again questioning the place of work, there is a tendency for production to be no longer considered as an end in itself.[8] We would seem to be in a contradictory situation in which production can continue to increase in a situation of economic crisis, and must continue to do so in order to create the 'necessary' goods and services; but at the same time this production can increase in parallel with increasing unemployment, while being obstructed by bottlenecks in the availability of certain types of manpower.

Among this group of contradictions will be found young people who either refuse to work, or do it badly, or are frustrated by it. This situation also gives rise to policies and practices by different social actors (State, enterprises, trade unions, associations, towns) aimed at linking education to production.

EDUCATION/PRODUCTION ACTIVITIES FOR CREATING JOBS

Denmark, which has now been confronted with the problem of unemployment for ten years, especially among young people, set up an education/production programme for them in 1976/77. (It should be emphasized that this programme was connected with a reform of the apprenticeship system: a preparatory year of pre-vocational training was introduced aimed at consolidating the foundations of young people's general education by letting them choose between eight electives which were not vocationally specialized.) With regard to education/production programmes, a National Experiment Committee co-ordinates and approves proposals made by local communities: this is very important because economic questions connected with production planned in the centres are taken up and negotiated between partners familiar with the local socio-economic realities (raw materials, outlets, competition, prices). The group at the Kolding Centre, for example, is composed of young unemployed workers (75%) and unemployed persons between ages 18 and 25 who work there for a maximum of one year. The centre's activities combine the creation of jobs with vocational preparation for work, and animal husbandry and horticulture typical of the local environment, the income from which is used for the self-financing of the centre. The training activities are conducted by unemployed workers who are qualified in all fields of production and management by a system based on the rotation of tasks.

The type of programme set up in Kolding, Denmark, is also to be found in many other industrialized countries. Their main characteristic seems to be to create more or less new activities to deal with the social problems of populations that might in some cases be described as marginal or else as excluded from the mainstream of economic life. However, it should be pointed out that these activities can lead to job areas which are 'reserved' for young people and constitute mere expedients for reducing the unemployment statistics. Precautions and safeguards must therefore be provided, as stated below:

> The creation of these new jobs and these activities shall be subjected to a rigorous control of their collective utility and must meet properly endorsed needs which are not satisfied directly by the State or by private initiative. It will be up to the local and regional planning authorities to ensure the coherence of the proposed initiatives, to satisfy themselves that they do not disrupt the normal functioning of the market and to verify their economic viability. The second precaution consists of clarifying the status of the young people employed in these jobs; they will have the benefit of a work contract drawn up in due form. However, it may happen that some communities are unable to commit themselves to long-term activities involving work contracts. In this case, the activity cannot be approved unless it is part of a qualifying training strategy under which the young worker has the status of a student undergoing vocational training.[9]

EDUCATION/PRODUCTION ACTIVITIES FOR THE ACQUISITION OF AN INITIAL SKILL

These warnings by Schwartz about education/production activities aimed at creating jobs should be extended to activities enabling young workers to acquire an initial skill. In this connection, in fact, we are reminded of the tension between

socio-educational and economic objectives relating to alternation in general. The case of young unskilled workers is particularly interesting, since it is the first manifestation of a problem which we will find again in connection with older persons engaged in lifelong education. Are periods of non-production (or training in some other productive structure) periods of recognized training which qualify the student — at the individual, vocational and social levels — or are they digressions in working life whose objectives are mainly ideological (psychological equilibrium vis-a-vis work, maintenance of a permanent feeling of incompletion)?

Since these projects are intended for young people who work without possessing a skill — whether after leaving compulsory education or general secondary education or even after failing in university — the question which they raise is that of the acquisition-validation of a vocationality which these young people lack in new fields such as data processing where their mobility is still possible. The case of young people of ages 18 to 23 also illustrates the institutional dimensions of establishing new relations between education, work and production: in addition to the question of justifying education/production activities, the debate centres on the role of the State and its school authorities for initial education in recognizing qualifications. The question which arises is whether more numerous partners, including students, can establish new procedures for evaluating education and hence for certification, since: (a) the establishment of education/production activities often involves actors other than the State at a decentralized level (especially enterprises and local communities); (b) this type of activity makes it possible to encourage the achievement of the (technical and social) object by teaching the students a sense of responsibility in the production process as well as while undergoing their training; and (c) the link-up between education and production opens the way to a division of educational authority which has hitherto been held by the legitimate top-level educators and without any connection with production. This problem has not yet been solved: its discussion will mark an important step in advancing the debate about the interactions between education and productive work.

POST-SECONDARY EDUCATION AND PRODUCTIVE WORK

As we are still interested in the 18 to 23 age bracket, it is now necessary to take up the question of the interactions between education and productive work in post-secondary education. We are using the term post-secondary education deliberately: the problem with which we are concerned covers the different levels and types of this education and brings out the dangers of compartmentalization. This is why at the end of the 1960s, alternation as a frame of reference facilitated the emergence of this global approach to the forms of so-called higher education as a response to its quantitative and qualitative problems.

We have already pointed out that the discussion about the interactions between education and productive work were nothing new in some sectors of higher education, such as medicine and law, where practices of this kind have been developing since the Middle Ages. However, if we accept the analyses of Girod de l'Ain, Director of the Research Centre on University Systems in Paris-Dauphiné University, it would seem that it was not until the end of the 1960s that alternation was

proposed, mainly by politicians, as a solution for the problems of higher education.

In fact, 'although the school and university ghetto was cheerfully and noisily denounced in May 1968, "alternating education" did not become a catchword. This adult solution, which had the agreement of technicians, was at that time totally ignored.'[10] In 1969, however, at the sixth Conference of European Ministers for Education, the Swedish Prime Minister, Olof Palme, was to initiate a large-scale political process by linking the evolution of secondary education to the need for what he was to call 'recurrent education'. We shall come back later to the concepts of recurrent, lifelong and further education. At this stage, we shall merely note that alternation appeared in the early 1970s as a possible remedy for the quantitative, demographic and budgetary problems of higher education.

This is what Palme proposed at the 1969 Conference:

> Expenditures for education cannot continue to increase at the same rate as in previous years. Then, 'what was the economy to do?', he asked. In Western Europe, Sweden had gone farthest in establishing an egalitarian school. The result had been a formidable expansion of pupils in the secondary and then the higher grades. The number of first-year students in all university and post-secondary institutions had increased from 3,000 in 1950 to 25,000 in 1969. In that year, the economic recession, which in Sweden was fairly acute, had caused added concern to educational planners .... Palme then suggested an alternating equation, on the basis of the preliminary ideas of the Royal Committee on the Future of Swedish Higher Education, soon to be known as 'U 68', which for some years became the international label for educational innovation. 'If the education of the young continues to increase at the same rate', said Palme, 'we will no longer be able to offer adults any great opportunities to resume their studies'. But he added that, because of the equalization of opportunity between social classes, a limitation on the expansion of education for young people, or even a limitation on secondary studies, could not be applied before the completion of compulsory education. 'The only practical solution left, therefore, is to reduce the growth of post-secondary education in order to permit adult education to develop.' Palme proposed the following in order to stop that prolongation of young people's studies: 'The extreme hypothesis would be to organize all post-secondary education on an alternating basis: after going through a complete secondary education, all young people would take a job and, after a certain time, would enter upon a new period of education and then go back to their jobs' .... 'Alternating education', Palme added, 'would have several advantages for the individual. Whatever jobs we may have, we all need variety. The student suffering from educational neurosis and the wage-earner who shows symptoms of stress might perhaps solve their problems in that way.' 'Moreover, adults have a greater chance of succeeding in their studies, since vocational experience often supplies a special reason for carrying out successful studies.'[11]

The quantitative problems connected with the uninterrupted development of higher education are not the only ones which encourage the discovery of alternation as a remedy. 'Has not the prolongation of full-time education for more and more young people reached the limits of its social utility?', asks Girod de l'Ain. And he concludes: 'A recurrent structure of education and training probably represents the best hope for interconnecting the economic system with the education system, due to the range of choices which are offered, more realistically, through an individual's career.'[12]

For his part, Edgar Faure, in his report for Unesco entitled *Learning to be*, considers that 'uninterrupted study is certainly not the only conceivable method, especially at the university level'.[13]

But besides the functional concerns of the promoters of alternation, there are also other reasons which stand out. 'Education seems to have abandoned its allegiance to society and has become a powerful source of cultural and social criticism.... It sets out not so much to improve society as to destroy it', states the CERI report.[14] But, on the contrary, Gass estimates that 'some fear that education in a modern, technological society, will become an element of conversation and not of creation, that it becomes a brake and not a motor to technological progress and economic growth'.[15] The crisis of higher education, therefore, reveals the socio-economic aspect of the proposed policies of alternation, since these preoccupations have nothing to do with the development of the individuals with whom we are most concerned. Some educational aspects, however, are not foreign to the defenders of alternation, as is pointed out by Girod de l'Ain in the following passage:

> Both French and foreign talk about alternation at the beginning of the 1960s dealt unanimously with the need for this educational interruption. It was justified by three demands:
> — The demand by young people — which was strongly expressed in 1966 in the United States and Sweden, and then in 1968 in France — to be allowed to leave the artificial world of the school and its constraints, which they considered intolerable if they were to devise their own life style.
> — The demand by institutions of higher education for motivated students, i.e. students who were looking for knowledge and who consequently would accept the authority of those possessing knowledge.
> — The demand by society that lawless young people be taught the rules and constraints of collective life.
> We frequently find two and even three of these demands mentioned in the same speech. Which seems to mean that they did not seem contradictory at the time to the advocates of alternation.[16]

After fifteen years of evolution in the roles of young people, higher education, work and employment, therefore, it is necessary to accept the following findings:

— While young people used to want to get away from the formal school atmosphere, today they do not necessarily consider work as the other side of alternation, and in the 1970s it was perhaps adults who proposed work as a remedy for their loss of authority.
— An 'everyday job', taken as soon as possible after completing the course of higher education, and paid 'temporary jobs' while attending school, only too often lead to the old practice of on-the-job courses (helpful in the processes of selection used by employers).
— From alternation interpreted as an interruption in the development provided by work in enterprises for future medium or higher skilled employees, we have moved on to alternation as a strategy for the (definitive?) insertion of young people into some productive activity.

This reminder of the vicissitudes of the concept of alternation as applied to higher education helps us to define more clearly the practices and problems we referred to for the previous levels of education, as well as the present trends in different sectors of post-secondary education. For this reason, we are more particularly concerned with long-standing practices like the education of public works engineers in France, 'sandwich' studies in the United Kingdom, co-operative studies in the United States and new practices such as university service for the community. To conclude

this chapter, these different practices enable us to take up the question of the links between education, productive work and research.

The public works school in France

In 1747, an Office of the King's Draughtsmen was created in France for the purpose of training engineers for the Bridges and Highways Department (*Ponts et Chaussées*) and preparing the necessary maps for constructing the road network. From the beginning, this office functioned on the principle of alternation; since no 'courses' were given in the department itself, the student-engineers attended courses outside, visited architects' workshops, and then communicated what they had learned to their colleagues. In addition to these activities, the future engineers carried out a certain number of projects in the school which served to evaluate their skill. Finally, the students had to take an annual training course with an engineer of the kingdom's Bridges and Highways Department, during which time they gathered information which would be used in training others. After the creation of the Polytechnic School in 1794, that approach was criticized by certain professors and scholars who favoured making the instruction more theoretical, with the result that work on projects was dropped, as well as the training courses with engineers. There was therefore a change-over from a comprehensive approach based on projects and actual work to an analytical, scientific and technical approach which was centred on the object quite independently of the environment.

It is a paradoxical fact that it has taken almost two centuries — up to 1971 — for a long-term course system following the end of the second year of training to be reintroduced and for work-site courses at the end of the first year to resume their function of establishing contact with the practical work of the engineer. This rediscovery of alternation clearly illustrates the discussions we referred to in Part One of this work on the evolution of science and technology, its skills and its effects on education.

'Sandwich' studies in the United Kingdom

The so-called 'sandwich' studies system in the United Kingdom dates from the beginning of this century or the end of the last century — depending on whether we consider the first institution to apply it was Sunderland Technical College in 1902 or Bristol College in 1878. Although other schools also made use of this system during the first half of the twentieth century, the Churchill Government issued a White Paper on technical education in 1956, which proposed the transformation of a few good technical schools into establishments of higher education for training skilled industrial workers by the 'sandwich' system. The technical advance of the USSR and the United States had shown that the traditional universities had failed to make this transformation, and in 1967 this led to the creation of a second network of establishments — the 'polytechnics'.

The 'sandwich' system of study for training engineers was tried out in these polytechnics. Here we should point out that the British system for training engineers (in metallurgy, chemistry, electronics) is strongly influenced by the guild tradition

of the Middle Ages, since it is the professional associations which set the rules for entering the profession and which grant engineers' certificates — which are not awarded until after a fairly long trial period in practical work. In this way, the 'sandwich' system extends the length of the training period proper by including periods of practical work, but it does not prolong the overall time needed to acquire the engineer's certificate.

The objectives of the 'sandwich' studies are summed up as follows by P. Venables:

> The needs of the industrial society provoked two models for training 'technicians': full-time eduation which postponed practical experience for several years; and on-the-job apprenticeship implying that theoretical instruction took place at the end of the working day. The first lacks the practical training element, and the second lacks study time ...
>
> Dissatisfaction with these two formulas grew after 1945. The accumulation of knowledge led to encyclopedic curricula and a prolongation of the study period. The result was a high rate of failure and excessive lengths of study to obtain a diploma in the part-time study method. Full-time technological education was also criticized. The long study period led to unnecessary delay in making contact with professional practice and apprenticeship, requirements for entering the profession. Many students gave up. In fact the number of them who could sieze abstract notions without basing themselves on the experience of everyday reality was more restricted than was thought ...
>
> These two streams eventually led to the experimental introduction of a better balanced system integrating studies with practical learning.[17]

More specifically, we can say that the 'sandwich' system emphasizes an educational field which has been long neglected: the process of transferring ideas, concepts and techniques from the scientific domain to the technological and production domain.

This social recognition of 'sandwich' courses is aimed at avoiding the problems of the downgrading of technical culture and on-the-job apprenticeship which we referred to in Part Two. Although the training period is four years, instead of three for a traditional curriculum, the regulations of the professional associations recognize the one year of practical work as one of the two years of training needed to obtain the engineer's diploma. All students are therefore put on the same footing, which helps to upgrade their vocationality.

With regard to the organization of courses, there is a distinction between the 'thick sandwich' and the 'thin sandwich'. The former comprises two initial years of study, one year of vocational training and a further year of study. This model is most often used in the fields of biology, data processing and the public works projects which are organized in connection with projects. The 'thin sandwich' comprises a succession of six-month periods of study and apprenticeship which are used for education in business and engineering. These two models are not inflexible and can be adjusted to special needs and places; both systems have advantages and disadvantages when it comes to integrating students in work and in enterprises.

The most important aspect of 'sandwich' training is its relation to employment problems. In fact, while this formula represents an interesting step towards developing interactions between education and productive work, it also clearly raises the question of the relations between training and employment — which, as we have seen, is becoming a priority question for most young people. First of all, it is necessary for students and university staff to locate jobs that are valid for periods of

six months to a year; these are also jobs which should continue to be controlled by the academic authorities. These jobs can be highly diversified and their characteristics will be taken into consideration, more or less, in the instruction given. As soon as they are working in an enterprise, students must be visited at least twice every six months by their industrial tutor, a teacher in their class year, while the firm has to appoint one of its staff members to advise and monitor the student's work. In principle, therefore, there is collaboration between the university and the enterprise, which pays off when the course is evaluated. Both during the student's work in the enterprise and at the time of his evaluation, however, a certain number of problems arise which can be due either to lack of assistance on the part of the teachers and/or the firm's instructors, or to uncertainty about the points and criteria used in the evaluation.

Nevertheless, this latter aspect, which might be considered a negative factor, should be compared with what we said about the relative weight of the various social actors in controlling educational processes aimed at creating a new vocationality. The judgements passed by both students and employers can be at the same time positive and qualified. The students consider, at least theoretically, that they will already have a job as soon as they graduate and will be better paid than the ordinary graduates as soon as they start work. Employers seem to adopt a more reserved attitude about the advancement of this new type of student.

> The vast majority of industrialists reckon that the 'sandwich diploma' is better at the beginning of one's career than the traditional diploma in the same discipline. The graduate has a better understanding of economic and technical problems, his relations with manual workers and technicians are better, and he has a greater interest in the practical application of his knowledge. But, the industrialists claim, this advantage tends to decline over a period of a few years and even to become a disadvantage. The traditional graduates are superior from the beginning at least as far as 'management potential' is concerned.[18]

This estimate leads us to a certain number of questions which we shall deal with in connection with systems of further education, for it emphasizes the socio-political dimension of the development of the interactions between education and productive work: it would seem, in fact, that students from the lower middle and working classes are more numerous in the 'sandwich' system than in the traditional universities. We can ask ourselves, therefore, whether this system, in addition to its objective of combining theory and practice, is not also largely a response to a constantly growing social demand for education, without that necessarily leading to any greater social mobility since students from the polytechnics do not seem to make good managers. What we are faced with is the whole question of policies of further, recurrent and lifelong education, since we will have to ask ourselves to what extent the connection between work and education which they presuppose takes account of the comparative advantages and disadvantages of the different categories of initial education.

Co-operative education in the United States of America

In the literature devoted to higher education in the United States, a reference to co-operative education at Northeastern University in Boston appeared for the first

time in 1971, although that system had been functioning there since ... 1909![19]

The idea of co-operative education was first expressed by Herman Schneider in 1906, and he is still considered as its principal sponsor today. The very picture of a 'self-made man' at a time which preached natural selection and the survival of the fittest in industry and business, Schneider found the basis for his ideas in the transition from his profession as an engineer to that of a university professor. In fact, it was the Cincinnati Engineering School in 1906 which first agreed to let a group of students prepare for their diploma in six years (instead of four), nearly half of which were spent in different jobs, in collaboration with various enterprises in the area. That example was followed in 1909 by the Boston Polytechnic School.

Co-operative education in the United States early in this century developed in a very traditional university context. Universities in the European sense of the word did not exist in that country; they were rather colleges devoted to educating a cultivated élite and, later on, universities based on the German model of Humboldt and connected with scientific research. But it was also at that time that Dewey — as we have seen — began to take an interest in the links between school and society and proposed that education should be based on experience. More pragmatic than Dewey, Schneider held up work as the key to his co-operative education:

... work gives sense to man. It is a struggle for self-preservation and self-perpetuation. The strategy of this struggle always provided and still provides a stimulus for intellectual growth.[20]

And Schneider adds:

Work is deliberate effort to satisfy needs. Demeaning work is that brought about by the separation of tasks in a factory, with the result that each worker repeats the same process indefinitely in the smallest number of square feet possible.[21]

What H. Schneider was doing was to criticize Taylorism, but it is important to point out that his criticism was based on an élitist vision of social functioning, since that epoch called for the emergence of great leaders who were needed for industrial development. In other words, the interactions between education and productive work, as Schneider perceived them, presupposed a transformation of both work situations and of the processes and structures of education, since at that time the colleges, in particular, despised everything except the study of classical culture. Such an approach might have resulted in a totalitarian vision of work. Ideally, it is rather less than that, since Schneider touches on several topics about the work crisis which we have mentioned in Part One. In an article published in 1917, he refers to the ape and the bee in Kipling's tales.

The ape does what he wants, when he wants and for as long as he likes. But at the end of the day he has got nowhere. On the contrary, the bee uses the sub-division of tasks. She applies to work a Spartan philosophy composed of energy and sacrifice. But this system foresees neither relaxation nor a just distribution of honey according to the contribution of each bee. The queen gets it all, without question and without recourse ....

It would have been better if nature had been capable of developing a species which combined the best features of these two. A sort of 'ape-bee' which would spend part of the day in efficient work and the other in play. Most of society's wrongs would thereby be rectified. This ape-bee would be a determined individualist. So determined that, in order to have the maximum

number of hours free every day for his own affairs, he would give up his individualism during productive work in order to be an active co-operator.[22]

The co-operative system after 1910 developed on the basis of this connection between individualism and co-operativism. What is the situation today? One important change occurred at the end of the 1960s with the recognition of the third partner — besides the university and the enterprise — namely, the student. In 1967, the President of Michigan University defined the four criteria which have to be met by a co-operative curriculum as follows:

- an organized alternation of periods of academic study and periods of work experience;
- a clear policy aimed at making these periods of work closely linked to the studies and to the vocational ambitions of the student;
- a strict control by the university and the employer of the quality and relevance of work from the intellectual and practical points of view;
- a desire to provide the student with jobs involving steadily increasing responsibility in line with increasing knowledge.[23]

These criteria are based on the following 'principles', which, however, have never been formally clarified and demonstrated:

- priority given to education when looking for a job;
- contribution made by practical work to intellectual development (connection between theory and practice);
- democratic education of an élite (this principle is still valid today, in spite of the democratization of the country's higher education);
- self-financing of poor students through jobs held by them.

Since the end of the 1960s, in addition to these fundamental principles, there have been the objectives derived from the problems referred to by Olof Palme in 1969 at the Conference of European Ministers of Education:

- a remedy for the financial crisis of private universities in the face of rising costs and decreasing subsidies;
- a solution for the dissatisfaction of university students who no longer consider higher studies of any importance.

With regard to its organization, the co-operative system presupposes a dual alternation at both student and institutional levels; there would be, in fact, two groups of students who succeed each other alternately in the school and in the enterprise — thus achieving continuity for both institutions. If, more specifically, we consider the periods spent in enterprises, they are not courses but what might be described as temporary jobs. However, this presupposes a detailed system of co-ordination, since it is necessary at one and the same time to find jobs, to advise students and to keep in touch with them in their place of work. These functions are carried out by a special category of university personnel who, it would seem, find it very difficult to get themselves admitted and recognized by teachers at the institutional and statutory levels.

Once more we find the major question of the respective upgrading of theory and practice, intellectual work and manual work, which is at the heart of our debate. The facts appear to balance off the terms of this opposition, since students would seem to favour the practical aspect of the co-operative system during the first years of

their training (after taking full-time secondary courses), whereas at the end of their practical training they would like to study in greater detail the theoretical problems raised during the jobs they have held.

In view of the results achieved by the co-operative system in training engineers, and then company managers, many universities have adopted its principles and applied them to studies without any immediate vocational purpose: this brings us closer to the idea of university service included in the ecological problems of the relations between work, education and society.

University service programmes

In the industrialized countries, many universities and 'polytechnic' institutions tend to think that their students are incapable of contributing to national development or to a local project. They rather believe that in order to fulfil their responsibilities to society as a whole, they must base their action either on the establishment, under some external department, of specialized institutes which are responsible for special problems, or on advisory services furnished by their professors to ministries or to business corporations. Students may, of course, participate personally and on their own initiative in carrying out projects for community development or in voluntary activities, but there are still relatively few examples of integrating a 'university service' in scholastic curricula. The main exceptions are vocational training, social studies or the engineering sciences, where concrete experience is considered an indispensable element in vocational training rather than a means of solving some particular problem.[24]

This analysis by Alec Dickson, made on the basis of a comparison between a 'polytechnic' in a London suburb (Chiswick) and the Worcester Polytechnic Institute in the state of Massachusetts in the United States, sheds much light on both the fundamental principles and the difficulties of university service programmes.

With regard to fundamental principles, we can point out that university service programmes are mainly directed at solving 'town or community problems'. This connection between the university and the community was especially well analysed by Guy Berger in a report for the OECD,[25] which puts the relations between productive work and education in a broader perspective than in the situations we have analysed above. Actually, we find in Western Europe and North America that what are still too loosely called communities are applying more and more to the universities to solve their problems. However, these problems, which are of all kinds, in reality go back for the most part to questions which are explicitly or implicitly linked to production in its social, cultural, political, family, ecological and professional consequences. Moreover, although the term 'community' is not very clearly defined (groups, movements, local, regional and national organizations can be so described), it expresses the collective nature of the demands made, a very different phenomenon from that of the response to a demand for individual advancement through the granting of a diploma.

This emergence of collective demands, which is sometimes encouraged by university professors, seems to us to raise the question of the democratization of higher education in a new and stimulating manner for the years to come. According to OECD:

In supporting an approach that is less concerned with the quantitative expansion or decline of the universities and not solely preoccupied with their teaching function, we feel that we are recognizing the major importance of the democratisation of higher education and the social and economic development higher education can stimulate. At the same time we are also concerned with the new objectives of higher education, and hence with finding answers to the questions raised in the foregoing discussion.

The problem of democratisation brings up the question of a university's social function in the very broadest sense of the term. It includes not only the development of access to qualifications but the production of knowledge, and the social significance of that knowledge. It also involves a change in the sharing of responsibility for the development of knowledge and teaching.

Even in the present situation [there are] a number of trends that may be regarded as positive. A widespread conviction seems to be developing in all countries that if its research and training functions are to be properly performed the university must become part of its environment ('environments' would be more accurate) and develop its capacity to influence and benefit that environment. It is increasingly felt that a university should be able to draw upon existing competences wherever it finds them, and disseminate information wherever it is needed. If the university is to be effectively integrated into the community it must no longer concern only those who attend the university, namely the teachers and the students. It should be possible to pass on one's skills without being a teacher, and to receive training without being a student.

Above all, it is increasingly felt that a university should not respond to demands from the community with *a priori* models based on theoretical expectations, and consider the community merely as a field of application; it should, rather broaden its concept of research and constantly realign its theoretical models on current, concrete situations. This presupposes a new definition of the environment of higher education institutions, a new balance between functions, a new type of interaction between these institutions and the community or communities that form their environment, of which the training of students is merely the most apparent aspect, calling for the largest share of resources.[26]

This new approach to the democratization of higher education finally enables us, it seems, to catch a glimpse of the realization of the utopian ideas about lifelong education of the 1960s and 1970s, to which we shall revert in the next chapter. OECD observes that the development of links between the universities and their surroundings have, in fact, often been characterized by:

The emergence of a new category of students who, in the context of continuing education or even of basic training courses, are enrolled as full university students even though they continue in occupational employment and may not even hold the qualifications for university entrance (secondary school leaving certificate).

In coming to terms with their environment some universities have systematically addressed specific population groups — manual workers, migrants, women, elderly persons, ethnic minorities, and people living in economically or culturally backward areas — offering them general or special training directly connected with their immediate needs or particular cultural and social practices.

In some cases the university has gone out to the population groups it wished to reach; in other cases a new population group has come on to the campuses and into those monuments of élitist culture which European universities used to be.[27]

The appearance of these new links between the university and its surroundings raises a certain number of basic questions which Guy Berger sums up in his report to the OECD quoted above:

(i) Is there a real and significant increase in the community-oriented activities of the university?

(ii) Can this increase be interpreted as reflecting a qualitative change in the relation between the university and the community: is it a new trend, or simply an extension of the tradition of 'service' found in many institutions?

(iii) Does this movement reflect a desire on the part of the universities themselves to turn to their environment in order to act upon it or draw more resources from it, or is it determined by pressure from the environment, or finally does it reveal a new permeability between higher education and society? In other words, what is the balance between the internal dynamic and external pressures? How great is the risk of treating what may be a genuine social innovation simply as a new pedagogical tactic?

...

(v) If we can speak of change, is this confined to certain sectors of university activity, involving a few specific disciplines or groups of disciplines such as health education, technology, the environment, or is there a general change, uneven perhaps in its incidence, but affecting most disciplines and sectors of activity?

(vi) In almost all countries there is an evident crisis in knowledge, or rather a breakdown of general confidence in scientific and technical progress. Could a new interpretation of the relations and reciprocal duties of the university and the community lead to an amelioration of this uneasy situation, perhaps by enabling a revised conception for the future roles of science and technology?[28]

While Guy Berger clearly points out the stimulating prospects as questions raised by the development of university service programmes, Dickson draws attention to two aspects of them which may become problematical: the motivation of the teachers and evaluation of the 'service' supplied.

Assuming that most of those who choose an academic career want, like other people, to make personal progress, how in fact does the promotion system work? 'Publish or perish' is said to be the choice which faces them. But organizing a study service programme leaves little time for lecturing, still less for research in its traditional form, and probably none at all for writing with a view to publication. Commitment to the involvement of students in service may even cause raised eyebrows amongst professional colleagues. A prophet is not without honour except on his own campus.[29]

The author also raises the question of social recognition, both inside and outside the university, of the investment made by some teachers for the benefit of the community; he suggests a number of concrete measures which might facilitate such recognition, such as financial assistance to local and national administrations which call on university professors to solve their problems, support for foundations and promotion by the media. But these measures are pointless unless the work accomplished during university service can be subjected to a socially recognized evaluation. However, while the author refers in the case of the United States of America to the work of such bodies as the National Center for Service-Learning, he also points out an institutional difficulty to which we have already drawn attention in connection with the 'sandwich' and co-operative systems.

Viewed from this angle, several questions arise. Is it ultimately desirable that 'experiential education' should be emerging in the United States as a separate entity in its own right, with its own staff and offices, organizing courses in parallel with the conventional academic courses, with numbers of students apparently finding time to participate in both, whilst still more choose one in preference to the other? The reason must be that so intransigent was the loyalty to their subject, *vis-à-vis* loyalty to service, amongst the established faculty heads, that the

adherents of the experiential approach felt compelled to set up their own courses. In claiming course credit for experiences that sometimes seem only remotely associated with the subject being studied, the movement has often exacerbated antagonism amongst the upholders of traditional academic disciplines.[30]

Furthermore, Evans suggests that:

Any acceptance of experiential learning can be interpreted as potentially threatening for an institution. *If students can learn without being taught, is the institution necessary?* Why should the academic faculty join in something that apparently could put them out of their posts?[31]

This question in fact raises the crucial strategic problem of protecting the vocational areas of the university teaching faculty, which could be extrapolated to all the levels of education we have analysed: after all, the interactions between education and productive work which are encouraged by university service do call in question the quasi-monopoly established by the teaching profession during the last few centuries over the processes of education and, in that way, over the development of skills and the organization of research.

EDUCATION, PRODUCTIVE WORK AND RESEARCH FOR A NEW INTERDISCIPLINARITY

The various practices we have just analysed in the field of post-secondary education all bring us to the question of the development of skills and hence of research policies and strategies. In view of the steadily increasing relations between higher education establishments and communities, Pierre Dominice believes that the university cannot limit itself:

... to increasing the number of its initiates by a more flexible admission of new candidates, to inventing new educational formulas (loan system, technological assistance, changes in schedules or individual travel). The real secret for opening it up would consist of a radical change in its modes of intellectual production. It is necessary, therefore, not so much that it should open its doors to whoever wishes to enter but that it should agree to break down the code which now characterizes it for developing and disseminating knowledge. Instead of requiring every candidate for a university degree to possess a cumulative knowledge of different subjects, the university ought to contribute to the knowledge which the community lacks in all those areas of life where human beings today feel deprived, for the precise reason that they no longer know either what to be or what to do. It is high time to abandon the myth of the democratization of university studies and to concern ourselves about the role which the university should play in developing democratic knowledge. The problem of opening up the university then becomes that of the private or public nature of the knowledge it possesses. Knowledge which would no longer be the private property of specialists but which university professors, together with others, could try to develop thanks to their specialized skills.[32]

This question of the development of skills which would have some meaning in coping with the problems of society raises the problem of the definition and place of research in higher education and, at the same time, that of the definition of interdisciplinarity. In fact, since there is a close association between education and work, there are so many other fields, subjects, methods and requirements which lie open for research. From this point of view, interdisciplinarity takes on a much broader

meaning than a purely academic once, since it connects the internal evolution of science with the practice of researchers, the educational needs of students and the requirements of socially productive work. Here is how the CERI report views the evolution of interdisciplinarity:

> The requirement that the university should perform its full social mission by multiplying its exchanges with the community means that more weight now has to be given to the development of *interdisciplinarity exogenous to the university*, in other words, the interdisciplinarity whose origins are in the continuous momentum provided by the real problems of the community.
>
> A community 'problem' prompts the interdisciplinary approach because it acts as a focus unifying the various disciplines concerned. Employment, energy, environment, urban planning, health, transport, etc., these are all problems proposed by communities that open the door to the combination of various disciplines, in particular the natural and human sciences.
>
> Thus, it can be seen that this exogenous interdisciplinarity supplements, enriches and interrogates *endogenous university interdisciplinarity*; in other words, the interdisciplinarity based on the production of new knowledge with the aim, more or less explicit, of realising the 'unity of science'.
>
> ... The moment that universities organize their activities in accordance with *their function* and not the disciplines they teach, interdisciplinarity ceases to be a mere teaching device or the dream of certain enquiring minds and becomes an organisational need.[33]

Such an approach to interdisciplinarity will affect the contents of curricula, since they can no longer consist of the mere cumulative juxtaposition of fragments of disciplines. It is possible to discern three trends, which in fact give practical meaning to the various trends we have just listed:

1. An increase in the inter- or multidisciplinary share: the discussion of topics connected with certain problems presupposes an appeal for multiple references which again call in question the traditional borders between disciplines, between theory and practice, between the scientific object and social practices.
2. The appearance of links between the university's content and interventions in various fields: if the exercise of new functions by the university on behalf of the community is not to remain in a ghetto, it is necessary to reinject into that content a combination of knowledge and transdisciplinary knowledge and methods which call for the analysis and solution of actual problems.
3. The increase of the share of the liberal and social sciences: the treatment of topics or problems connected with the evolution of society calls for skills in the economic, political, psychological and sociological fields, although there was a tendency to belittle their importance in the 1970s and to prefer technical specializations.

When we consider the research function involved in the associations between education and productive work, we find that this gives added weight to the need for developing the general qualifications of teachers. Here is what Unesco proposes for this purpose:

> To play a constructive role in the teaching/learning process founded on an association among education, research and production, the teacher must fulfil certain conditions. First, it is vital that he participates in research. Next, he should be thoroughly familiar with production procedures and techniques currently used in the discipline he is teaching: the evolution of

technology, needs and progress. The theoretical lessons that he teaches will then have a more practical character, full of real examples and thereby more useful for the student. This development would be even more significant if the teacher involves his students in creative research. The fact that the teacher would undertake this new role would obviously lead to an increase in his work-load, which is already considerable. The involvement of production specialists would provide a means of lightening a part of the tasks of the regular teaching staff. The participation of specialists who do not belong to the teaching profession is a natural outcome of this association. The experience of academic staff as well as that of production specialists would complement each other in the teaching process. Yet, without special training neither the academic staff nor the production specialists would be able to carry out efficiently the new tasks brought about by the association of education, research and production. For example, the specialist from various trades could be placed in charge of the students' practical training, organize seminars and study groups, etc., but in order to be sufficiently motivated, to have sufficient prestige in the higher education establishment as well as to help them with their teaching, it is essential that they have an adequate pedagogical training. On the contrary, special training measures (courses, research work in industrial laboratories, special seminars in enterprises, etc.) are necessary to make academics aware of activities in the production sector. If properly organized, these two types of training could make it easier for production specialists to gain access to university posts and for academics to enter the production sector. There is no doubt that this mobility would benefit both parties.[34]

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CHAPTER XV

The world of production: initial studies and alternation

After analysing a number of situations in which alternation between education and economically and socially productive work was suggested by educators as a solution for many of our present problems, it must be admitted that we have been referring for the most part to the principal actors in the educational field — teachers and students. However, although we can only encourage the mobility of teachers and industrial personnel referred to in the Unesco report at the end of the preceding chapter, it raises some problems for both the educational establishments and young people.[1] Unfortunately, as far as we know, there have been very few analyses of on-the-job courses as seen from the point of view of the economic actors.

For this reason, we now refer to a survey conducted in France among 'instructors' (*tuteurs*).[2] This will enable us to conclude the present part dealing with the interactions between initial education and work and lead up to alternation as a process of interaction at the level of further education.

ALTERNATION AND THE ENTERPRISE

The study to which we refer was carried out among 'instructors' working in the field of apprenticeship as well as in those of training for young unemployed workers and on-the-job courses for university students. The author of this study was interested primarily in the selection, control, training and status of the instructors. We shall not dwell particularly on this point, since situations vary greatly from country to country, but shall agree with Vincent that, generally speaking, in the countries concerned:

> There is a wide variation in the function and status of instructors, depending on the objectives which the enterprise seeks to achieve by alternation. One illustration of this variation is the title given to instructors: the more the project has an educational purpose, the closer are its links to the educational organization which is a partner in the project, and the more closely the title corresponds to the educational vocabulary. When the situations come under juxtapositive alternation ... we find the titles of 'boss' or 'chief'; when they come under associative alternation, we find the titles of 'sponsor' or 'monitor' and, finally, when they come under copulative alternation, we find the title of 'master'.[3]

The point of view of the instructors about the purposes of alternation seems to us more interesting:

> If we start from the point of view of the enterprise, and based on what the instructors have to say, it seems that alternation is:
> — a system of employment characterized:

  - by the occasional labour which it procures for the enterprise, the importance of which labour can be: (a) the unskilled jobs which alternation in part supplies; (b) the limited wages and social costs; (c) its assistance in handling the surplus work load;
  - by improving the recruiting system, especially by using the in-service course as a time for selecting workers;
- a system of information and guidance:
  - by the observation of several vocational situations in various surroundings;
  - by methodological assistance to young people in analysing those situations and relating them to their aspirations or aversions;
- a means of change and innovation for the enterprise;
  - by making use of the 'naive' view taken by young people of the enterprise, its operation and organization of work;
  - by the educational innovation brought about by training young people.[4]

ALTERNATION AND EMPLOYMENT

The survey conducted by Vincent among 'instructors' reveals two aspects of the connection between alternation and employment: the advantageous manpower input and the connection between short- and long-term manpower needs.

With regard to advantageous manpower input, this relates more specifically to apprenticeship on the job: an apprenticeship of this kind can, in fact, be used to reduce labour costs, although it raises the problems of the employment of apprentices once they are trained and the enterprise's capacity for internal growth. On the other hand, the very close link which apprenticeship creates between the firm's short-term needs and the market for its products may be broken if there is any rapid technological change requiring initial training outside the place of work.

Alternation can also be used as a system for selection and then as a testing period before permanent recruitment: by offering courses to more candidates than there are jobs available, the enterprise forces young people to compete with each other during the training period. However, the prospect of a permanent job sometimes conflicts with the training institution's purpose, which is to accustom young people quickly to the life of an enterprise: the latter will then ask for financial compensation, without this solving the problem of the role of the instructors engaged for these brief periods of indoctrination.

ALTERNATION AND TEACHING

Vocational 'instructors' generally fall into two major categories: they act as models and/or guides:

Through alternation, during periods in the plant, we have individual training based on the relationship between the skilled professional worker and the young trainee. The training is primarily based on imitation of the model. The strength of the relationship established between the young trainee and the professional worker is emphasized by the instructors: it resembles the Socratic relationship between master and pupil.

This function as a model is more or less self-conscious, more or less deliberate, depending on the individual and the situation, but it is always there.

For some persons, this function as a model actually becomes the main purpose of alternation: it provides young people with an opportunity to meet adults who help them to change

their attitudes, to get a grip on themselves and to form their character. Without going that far, the other speakers view their role in a similar way: the instructor 'makes them see', he 'shows', 'corrects', 'works alongside' and 'explains' in a relationship which is considered 'very close', 'from father to son', 'emotional', 'almost like one of the family', 'while taking very good care', etc.

In addition to the model held up by the instructor, there is the model held up by the enterprise.

This phenomenon of the 'model' ought to result in varying the places where the courses are given. But this would be contradictory to two of the purposes of alternation which are emphasized by the enterprise: first, to train young people to meet their own needs (according to their own 'model' of a workman, an office employee or a technician); secondly, to use the on-the-job training period as a means of selecting candidates for permanent employment.

This contradiction only underlines the importance of the 'recovery' of trainees by the school, in groups, for periods when they can compare the various models which they have either admired or rejected.

As a guide, the instructor has two functions in his relations with the trainees: to familiarize them with the work situation and help them to understand it, on the basis of their own attitudes and motivations. As we have seen, in fact, young people have a number of attitudes towards work which are not always favourable and which become hardened when they no longer feel any motivation for the course (which happens in the institutionalized situations of alternation). The instructors, therefore, have to start from these situations in order to familiarize the young trainees with productive work and make them understand its technical, theoretical and organizational dimensions. Nevertheless, they have a tendency to unload the final responsibility for this help onto the training institution if they do not feel able to carry it out properly themselves.

ALTERNATION AND ORGANIZATION OF WORK

The question of the role of instructors in a situation of alternation leads to the more general problem of the links between education and the organization of work in productive circles. The work in the vicinity of a 'learner' will be organized differently, depending on whether his presence on the production site is formally recognized or not.

In the first case, industrial apprenticeship in the Federal Republic of Germany for example, we must first analyse the jobs in the vocational branch in question before planning the objectives and the necessary educational steps, as well as the aids to be used by the training organization (whether within or outside the enterprise) and the firm. This analysis of the tasks to be carried out will be made by the instructors of the training organization. The instructors and the monitors will use this analysis as a basis for their work, but in different ways: in the education or training centre, the table of programmes becomes the training curriculum, while in the enterprise it is faced with the logic of production. On the work site, therefore, the 'learner-producer' follows the normal sequence of the work, but the monitor selects the tasks to be entrusted to him according to the progression table. The trainee therefore participates in 'normal' work, with a special rhythm which does not, for example, take

into consideration the requirements of output. This type of alternation combines formal educational objectives with technical objectives of production.

The situation is different when the educational dimension of alternation is not the subject of formal treatment, whether this situation is voluntary or not. This is the case with job-training programmes for young people of ages 16 to 18, or with temporary jobs offered as a means of developing the social economy. In this case, the jobs assigned to the trainees are conditioned solely by the requirements of production and not by any formalized educational objective.

If this immersion in production is considered educational in itself, the monitor is actually the one who is fully responsible for ensuring the usefulness of the training period on the basis of a normal work situation. But this approach raises a number of questions concerning the organization of work and training: how is the monitor — assuming he is trained for this purpose — going to take account of the trainee's presence without having to modify, at least partially, the organization of work? How can he assess the training provided, since it will be based mainly on those aspects of the production situation which are related to efficiency?

These questions, which emphasize the social rather than the technical side of non-formalized training, take us back to the more general ideas we expressed about the crisis of work and lifelong education. After all, how can we possibly think that the period of a young man's immersion in an enterprise will be educational, when the organization of work itself is based on the sub-division of tasks? This problem is revealed by the ambiguous situation of the monitors, since their purpose of providing a more overall view of the enterprise and of its work is often thwarted by the Taylorist approach. However, these monitors are often situated at a hierarchic level described as managerial or supervisory and which at the present time is challenged by the Taylorist organization of work. We might say, therefore, that the monitor-managers illustrate both our difficulties and our hopes when we direct our thoughts simultaneously to the enterprise as an educator, educational work and realistic training. The alternation which leads to a new vocationality is to be found at the junction between these three fields.

ALTERNATION AND THE SCHOOL

Throughout this part, we have analysed different practices of alternation, both old and recent, for the most widely different fields and publics, but aimed at those whom we have briefly described as young people and covering the time they enter the school system until they graduate into 'active life'. Alternation is fashionable and everybody talks about it, but while some insist that the enterprise should evolve in accordance with the taste of the day and help to make a reality of the latest discovery in educational circles, others analyse alternation as an example of the failure of the school, which no longer even knows how to benefit by its dependence on the overall socio-economic structures and objectives. We shall now discuss this last point again, for as we have already said, we are assuming that school circles are the ones which are most impervious to constructive self-criticism about the question of developing interactions between education and productive work.

While teachers easily tend to emphasize the lack of any connection between production and educational imperatives among enterprises, they seldom realize the consequences of the lack of a reversed connection in school circles. 'If school education is over-protected against the realities of production, will it not also have restrictive effects on the theoretical content and practices of education?'

There too, in spite of a proclamation in principle of the merits of alternation, we find the same distrust concerning it: any concern for the enterprise's own production imperative in the content and objectives of education is often denounced by teachers in school circles as simply a form of exploitation. It would be wrong to avoid this aspect of the question, but is it not also a mistake to reduce the production imperative to what is most negative in it?

The test of real life generates a specific relation between knowledge and know-how. While school procedure is based on a formalization of knowledge, and an aptitude for formalizing conditions its results, the productive procedure is learned through experience and its results are conditioned by the capacity for grasping what is real. In other words, it calls for qualities which the educational approach is incapable of developing, such as dexterity, resourcefulness, intuitive judgement, a sense of observation and the practical intelligence which exploits the possibilities and limitations of an actual situation. Pragmatic requirements should not be considered solely as a sum-total of constraints. As another logic of knowledge and know-how, they constitute an irreplaceable aid in the work of education.[6]

Is not this over-protectiveness of the education system and the teachers in fact the result of this system's withdrawal into itself in the face of the growth of systems of production? As J.-M. Dupont writes:

> What is difficult today is to make those who operate the machinery of initial education accept the necessary changes to ensure the *new adjustment* between the educational machinery and the production machinery in the present situation. And these difficulties are mainly of an ideological nature. This can be said in various ways. There is talk about the teachers' *lack of realism*, about their *timorous reaction* to the invasion of the school by economic and social realities.[7]
>
> And there is talk about encouraging contacts with the enterprise by having teachers participate in initial education who are recognized and certified as instructors in on-the-job courses. For that is the real problem, to shift the attitude of teachers (their practical ideology) towards the relation between the school and the enterprise. And there is reason to think that this practical ideology, with its strong points — public service, equal opportunity, democratization — has served both the State machinery and the production machinery (we would have to qualify that remark, but let us stay with it for the time being!). The creation of mass education, with, as its corollary, a weakening of the general level in view of the available material, human and pedagogical resources, has caused a doubt to arise among teachers which should now be exploited to the hilt by holding them responsible for the poor adjustment between educational machinery and production machinery. The lack of any connection between these two mechanisms is a *personal* failure on the part of the teachers, and we must not hesitate to explain that the *technical and social division of work* is the result of the current streams in the education system.[8]
>
> We must not be naive. To banish the production imperative from the education system because it is connected with social exploitation is to forget only too quickly the school system's own responsibilities in the functioning and reproduction of the social relations of production. To leave one third of our young people in the labour market without either a diploma or a skill

is surely the same as to abandon them to social exploitation. The school/enterprise confrontation is not a confrontation between good and evil. The abolition of exploitation will not be brought about by the opposition between school and enterprise but by the contradictions and struggles to be found in both of them.

We cannot protect ourselves against social exploitation, we have to fight for it. In this connection, the practice of school/enterprise alternation may at least offer an opportunity to confront the realities of production from a different point of view and in a different frame of mind than that of the young worker who is left to fend for himself in the labour market after being rejected by the school. This is a critical, objective viewpoint and especially scathing because it is based on experience and makes it the object of reflection, knowledge and conscience. It is precisely because the school cannot yield to indifference but has to defend itself that it must face up to enterprise alternation, including, in particular, its most negative aspects.[9]

Although this position is certainly an extreme one, it is interesting to compare it with what the international teachers' organizations proposed as a recommendation for the 1981 International Conference on Education (see Appendix IV). In particular, item 5 of this recommendation raises one of the basic problems which alternation does no more than crystallize: that of the defence of the professional field of education against the development of other categories of 'non-teaching personnel and skilled workers'. After all, 'the establishment of a two-way movement between places of education and places of production will undoubtedly force the education system to revise its attitude towards its conception of skill, the relations between theory and practice and the place of vocational instructors in the training process, as the latter are now taking a more important place in training and educating the younger generations'.[10] It is interesting to note that here the author calls 'vocational instructors' (*professionnels*) those who work in the sphere of production, but do not teachers also call themselves 'professionals'? Concerning this point, there are two passages, one by Gelpi and the other by Ferry, that might give rise to reflection

The upgrading of scientific skill in those respects in which this skill is to be found in both a formal and a non-formal framework means to recognize the contribution of those who have mastered that skill. The inclusion of productive work in the school, cultural, scientific and technological stimulation, the inclusion in teaching of creative experiments in the field of science and technology, all call for the use of a variety of expertise throughout the systems of education, production and social life.

With regard to structural changes, provision should be made for one in particular, the possibility for educators who are not teachers but who are engaged in active life to become a part of the school system without losing their attachment to work: the use of this highly skilled personnel is often prevented by company rules or obstacles of an economic nature.

Assuming the integration of education and productive work, it will also be necessary to review the recruitment and training of teaching personnel: both those who are directly engaged in production and the teachers of theoretical subjects are very important in training, so that any separation of these two types of educators should be avoided.

Practitioners and vocational teachers will be trained jointly on the basis of everyday work in the places of production and in the laboratories.[11]

As we can see, the problem of alternation cannot be reduced to a simplistic formula by which the school would provide theoretical knowledge, while the enterprise would impart practical knowledge, the combination of the two constituting a panacea for the training/employment adjustment. The educational virtue of alternation consists in its capacity to cope with, if not to

overcome, the contradiction between the educational imperative and the production imperative. A technical contradiction, to be sure, since the orders of priority of knowledge and of know-how conflict with each other in two different logics. But it is also a social contradiction as far as the educational project invades productive experience as an object of social conscience. It is in this sense, and provided that the productive sequences are not dissociated from the educational project, that alternation can be considered as a specific mode of vocational training.[12]

Here we again find the point of view of 'vocationality' which we have already suggested as a prospective frame of reference for our thinking about the interactions between education and productive work.

To conclude these observations about youth, we also think it would be helpful to define alternation in relation to the general question of the socialization of young people. If the school has, to an increasing extent, taken the education of children out of the hands of their families, the currently emerging trend to encourage the mobility of young people between school and 'active life' raises the problem of the socializing value of such mobility: where is a young man to find himself between his family, his school and his environment? Is there not a creation of vulnerability as a result of this mobility, which for a young person takes on 'the aspect of an obstacle race, replete with chance and uncertainty, leading to feelings of anxiety and exclusion, which is especially traumatic because the young person experiences it during a period of great personal vulnerability. Without having anything to take hold of', writes Tartakowsky, 'these vulnerabale young people are rolling stones which gather no moss.'[13] How, then, can we reorganize that space we were talking about above, in which school, family and work would no longer be split off from each other but would help to build a feeling for the future on the part of youth? It is in this context that we must view the debate about further education, as an economic, technical and social instrument for recomposing the processes of work and education, both within and outside the enterprise.

NOTES AND REFERENCES

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PART FIVE

Work and further training

CHAPTER XVI
Work and the enterprise

The observations we have just made about the relations between initial education and productive work, organized around the personal and social development of what we have called youth or young people, now lead us to consider the relations which workers — in the broad sense of the word — can maintain with education during their productive life. In Part Two, we have already considered the question of the relations between further education and work at the macro-social and economic levels. If we approach this question from the eco-logical point of view which we referred to in Part Three, i.e. while stressing the need for an integrated approach to the processes of education and work in the light of the analysis of socio-educational networks, it now proves necessary to adopt a procedure of a micro-social type. After all, the dynamics of the relations between education and production are to be understood at the level of everyday working life in enterprises. In the following chapters, therefore, we are going to analyse the ways in which the organizational and institutional variables of work in the enterprise affect the functioning of the further education of individuals or groups. Just as in the case of initial education, therefore, we shall again be faced with the question of the relative autonomy of the education and productive systems, the dependence of the former on their relations to the latter, as well as the problems of the power of the various social actors over their work and their education.

THE ENTERPRISE: POWER, ORGANIZATION, INSTITUTION

If at this point we quote the chapter heading of a book by the French sociologist Alain Touraine, *La société post-industrielle*,[1] it is because this author's analysis of the evolution of the enterprise enables us to link up the observations we made in Parts One and Two about the evolution of systems of work and education with our analysis of contemporary practices in further education.

'The transformation of the enterprise and, consequently, the development of conceptions of the enterprise can be analysed as they apply to acts of organizational and institutional mediation between the economic power and professional activity.'[2] Touraine distinguishes three stages in this development. In the first stage the power of capital is exercised directly on work:

Economic power

Productive work

In the second stage, economic power is exercised on work through organization:

Economic power

Organization

Productive work

In the third contemporary stage, the enterprise is still there, but not solely as a unit of production and as an organization; it is also an autonomous decision-making centre confronted with external and internal actors, which gives it an institutional dimension:

Economic power

Institution

Organization

Work opportunities

In our opinion, the respective interests of the various categories of social actors concerned with the development of further education can be defined in relation to this type of the enterprise's evolution. Therefore, 'while the modern enterprise, in the course of its evolution, is tending to stand out more and more as a political system for managing technical and economic efficiency', this evolution 'is leading the actors to define themselves more and more by their relations with others and no longer by the possession of any qualities and absolute rights, of their own.' Any project of further education, therefore, will be a part of this political system of management and will have repercussions on the relations between the actors concerned. Let us quickly go over the stages distinguished by Touraine in the process of rationalizing the functioning of enterprises.

The first stage is characterized by a very limited use of rationalizing models, mainly at the technical level. In this situation, 'vocational defence and economic exploitation find themselves face to face .... The enterprise is an economic unit, a labour market. The development of vocational autonomy, that of capitalist domination and that of political life, are quite separate from each other.'[3] While the trade unions at the beginning of the century drew a sharp line between their defence of the workers and political action, the capitalists of the time reasoned only in terms of accumulation — which was contrary to a process of economic and social rationalization. Consequently, 'in the absence of a world composed wholly either of entrepreneurs or of workers, they (entrepreneurs and workers) only want a world which is dominated by a direct, peaceful or violent relationship between employers and wage-earners.'[4]

In terms of further education, this period was characterized by the establishment

of the 'training-within-industry' (TWI) model, first in the United States and then in Europe.

Touraine explains that 'when the rationalizing models penetrate to the level of corporate management, a movement which in its early stages is called the scientific organization of work, both employers and wage-earners begin to be defined by their roles in a social system. On the worker's side, the notions of the trade and the labour force yield to those of qualification and output. On the employers' side, the idea of the director of the enterprise replaces that of entrepreneur.'[5] But the unity created by this social system, through:

> ... the existence of the industrial society, does not yet come about except indirectly, by its own negation, by the splitting up imposed on it by the class conflict .... Due to the decline of vocational autonomy, and due to the fact that the trade is replaced by status and roles in a system of communications, our analysis is no longer centred on real social groups but on work relationships within a system defined by values, norms, forms of authority and equilibrium.[6]

It is in this context that educational programmes are developed and that reference is made to the participation of the workers in the management of the enterprise; 'but what has often been called worker participation in management is actually only the intervention of representatives of the personnel in this social administration, without this participation affecting the economic decision-making centres.'[7]

This evolution leads to the third stage as defined by Touraine:

> The dual notion of the enterprise tends to disappear, since economic growth depends more on the capacity to mobilize and organize resources, to manage change, to predict and programme development .... The efficiency of the enterprise depends more and more on social and political determinants, on the general functioning of the economic system, which itself extends to all aspects of social life: territorial improvement, vocational training, investments in research ... .[8]

> In these developing societies, the State cannot remain a special sphere, separate from civil society. It intervenes in the life of the enterprise in an extremely variable way, but it can be considered to be in the general logic of this system of production that while the directors, the wage-earners and the State are certainly autonomous actors, their guidelines for action are linked to each other in a system of action which is not increasingly unified but increasingly integrated.[9]

The above is an overall approach to the enterprise which reveals the interrelations between the fields and actors that will characterize the policies of further education.

Concerning the practices of further education, Touraine suggests a key when he writes that today's enterprise is 'both pragmatic in its goals and highly geared to integration. It is not so much as formerly an assembly of jobs and specialities but more a network of communications, the unity of which can only be preserved by a process of conforming to the needs of the organization, its homogeneity, its capacity for resisting changes and incidents. Hence the concern for information which is evident in enterprises, as well as the concern for careers and promotion.'[10] Many programmes of further education, in fact, are organized, among other things, around topics of communication, integration and promotion. But the question arises of the interaction and control of the social actor or actors who negotiate, set

up, carry out and evaluate these programmes. Just as in the case of initial education, the meaning of the interaction in establishing policies and programmes between work and education will depend on the relative weight wielded by the employers' associations, the State (as represented by its legislative and administrative bodies and executive organs, such as ministries of labour, education, economic affairs, etc.), local communities, workers' associations and representatives.

THE ENTERPRISE AND THE WORKERS

If enterprises in the most industrialized countries we are studying have attained the degree of complexity described by Touraine, we may wonder — in connection with our analysis of work in Part One — what is the position of the 'offerers of work' in relation to this evolution. More precisely, with regard to further education, we may wonder whether this education will constitute a means of understanding and controlling the complexity of the system, with respect to individuals and the organizations which defend and represent them. We are therefore led to ask ourselves what is represented and what is claimed, in terms of further education, by the trade union and vocational organizations in relation to the enterprises in the present context of the crisis of work, rapid technological growth and the search for a new vocationality. Touraine explains:

> On the one hand we can emphasize the penetration of trade-union action at the level of the enterprise's political decisions, while on the other we may think that the trade unions are to an increasing extent negotiating conditions of work, employment and reorientation within the limited world of the enterprise, but that it is less and less the bearer of new social struggles. These struggles are more against the politico-economic power of the State connected with the big financial and industrial groups; they offer an active defence to communities, which are defined less by work than by their resistance to an economic, social and cultural change over which they have no control and which appears to them therefore as alienation.[11] [For this reason] the workers as consumers are increasingly induced to combat State-controlled or technocratic pretentions by strengthening community organizations, whether regional, local or professional, because it is in his concrete social and cultural allegiances that the individual can be defended.[12]
>
> [Consequently,] the trade union movement no longer tends to be the central instrument of a social movement, which overflows it both from above and below, at the specifically political level and at the level of resistance from the ground up to organizational integration and the institutionalization of conflicts. At the same time that the trade union movement is gaining influence and intervening more effectively at the decision-making level, it is ignored, outflanked or contested by anti-technocratic movements which are both politicized and less organized.'[13]

Today, what Touraine had perceived at the beginning of the 1960s can be seen as a reality, with the demand for the 'power of autonomy' brought about by 'enterprise corporatism':

> At a time when company managements are nothing more than pawns in a game which involves far more than they do, when the national State itself is at the mercy of imperialist financial strategies, only a limited power, a power of autonomy, is worth aiming at, a power of being autonomous in the face of all possible manipulations, all kinds of exploitation, all abuses

...a power which there is no attempt to supplant because it seems impossible to do so, but against which one at least claims to be defending oneself and isolating oneself in one way or the other.[14]

Therefore, the only solution is to fall back on the enterprise:

...gradual decline in the mobility of employment, growing importance of the rights connected with belonging to the enterprise (weight of seniority), determining wages in relation to the function and increase in the social share, all in accordance with the very tendency to egalitarianism, which, under a system of contractual policy in the enterprise, imperceptibly reduces the distance between those belonging to the same enterprise — all these things are confirmations of that tendency which has sometimes been called enterprise corporatism, communitarianism or industrial neo-feudalism.[15]

This 'falling back' tendency is becoming especially strong, since even in the so-called protected sectors of the economy — those which had not been subject to international competition — there are now upheavals together with restructuring measures which do not always guarantee job security.

The workers' trade unions are therefore caught up in a number of contradictions which will characterize their attitude towards policies of further education: on the one hand, they see themselves losing control over the workers, who argue in terms of individual and/or corporatist interests and no longer in terms of social classes; on the other hand, States are asking them to act as mediators for all workers, including those who are unemployed. In other words, the class conscience can no longer be proud of a qualification, a trade or a professional autonomy which have disappeared,[16] but is perhaps now in the process of reconstructing itself around the lack and privation (proletarian conscience) represented by unemployment. That is why, depending on the country, the trade unions will aim at reconstituting a vocationality — as we have defined it — on the basis of further education and/or preparing new ways of thought and action concerning the education of the unemployed.

With further education, the levels which are largely affected are those distinguished by Touraine — execution, organization, institution, power — since 'the problems which arise at the level of execution have not merely been absorbed by those of organization; they have to a certain extent been institutionalized, thanks to trade union action and social welfare laws. ... Neither the enterprise nor the trade union can isolate demands concerning working conditions, the definition of qualifications, training and professional promotion, the rhythms and duration of work.'[17]

The question concerning the policies and practices of further education, whether they are described as vocational, general, cultural, trade union or labour, etc., is to determine whether they will take account, in their definitions, of the establishment, execution and evaluation of the systematic interdependence of the levels affected by work situations (or situations of non-work), or whether, depending on the power relations between social partners, the content and effects of further education will at all stages affect the conditions and/or organization of work and/or the institutional and power areas in the enterprise and outside it.

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CHAPTER XVII
Discussions about lifelong education

How have the discussions and theories which have flourished since the early 1960s concerning what for the time being we shall call 'lifelong education' taken account of the context of work and of the enterprise which we have analysed? That is what we shall now ask ourselves in order to verify to what extent these discussions were consistent with this analysis, but also, conversely, in order to question whether some of the prospects which had appeared utopian are not very much up to date in view of the ambiguities of certain practices of further education. Actually, if lifelong education failed to take sufficient account of the socio-economic reality of work for it to be accepted fifteen years ago, the present situation again raises certain questions about the interactions between work and further education which might possibly be answered from the point of view of lifelong education. Moreover, the discussion about lifelong education necessarily raises the question of the connection between initial education and further education which we have referred to several times in the preceding chapters. Lastly, the concept of lifelong education comprises psychological and philosophical dimensions which, among other things, call into question our practice of dividing students up by age brackets in order to describe and analyse the interactions between education and productive work since childhood. In the light of the above, the point of view of B. Schwartz, who presents lifelong education as an instrument of equalization, universalization, participation[1] and therefore change in the educational and socio-economic fields, seems to us the one best adapted to the present situation in the countries with which we are concerned.

FROM PLATO TO KROPOTKIN

If we go back to the myth of the cave as the Greek philosopher Plato told it about 400 BC, it is because it seems to us that the ideas of the last thirty years concerning lifelong education can be compared, both in a positive and a negative sense, with Plato's own ideas. At this point we shall not make a detailed analysis of the myth of the cave; we shall merely recall that it is the archetype of both the womb and the tomb, and hence a symbol of birth, death, chance, transformation and decomposition in the whole process of becoming. But outside the cave there exists another world, symbolized by the sky and the sun, where the nature of things is the only means of knowing them and logically organizing individual and collective life within the cave. The worlds of the cave and the nature of things, however, are far apart; only the soul epitomizes the nature of these extremes and can facilitate their

junction, provided that some work on education is accomplished. This alone can lead us to the immutable world, bring us in contact with the original models and thus enable us to master the state of flux, provided that those who are 'educated' redescend into the cave to reveal every shade of the truth about themselves.

Pineau suggests that this myth can be interpreted in relation to the contemporary ideologies of lifelong education.[2] He first points out that the type of education which corresponds to leaving the cave would tend to develop 'in a cultural island rather than on the mainland; looking to the heights before completing the foundation; seeking the resources of the positive before working out the negative; formation of the spirit before the formation of matter'. Moreover, this type of education 'favours a certain type of clear, cold, distinct and separated knowledge ... to the detriment of experiental, participative, active and warm knowledge'. At the political level, the myth of the cave implies that power can no longer be that of force, but rather of science, which alone can ensure just power: there is therefore an essential link between education and politics which results in the establishment of a class of intellectual leaders who have to transcend all interests and all affections. Lastly, the most important element in relation to our problem, 'the length of the climb, as well as the need to adjust our vision to the two worlds', give rise to the two temporal keys to lifelong education, that of making education available to all ages of life and that of alternation between study and work.

> Let us not quibble, I say. Put in five years [studying dialectics] after which you will make them descend into our cave again and force them to perform military service and all functions proper for young people, so that they will not be behind the others even in experience.[3]

It should be noted, however, that the consequences of this alternation for the practical improvement of the cave, after the sojourn in the world of daylight, are not clarified, for it must not be forgotten that Plato is afraid of change. 'In everything, except in what is evil, there is nothing more dangerous than change.'[4] Consequently, Pineau observes, what is suggested:

> ... limits the dialectic method proposed by Plato to a method of apprenticeship which will make it possible to sum up the data of the different sciences or to alternate periods of application with periods of contemplation .... This long circuit in building the perfect city (the educational city?), therefore, encourages an organizational myth which, paradoxically enough, associates the first model of lifelong education with a complete opening-up to rationality and at the same time to an equally complete closing off from historicity.[5]

Condorcet and the French Revolution

Condorcet was undoubtedly one of the first philosophers to have advocated before a legislative assembly a plan proclaiming the equality of all ages with respect to education (April 1792). The Platonic schemes of ascension and transcendence were transformed and democratized by this man, who was the leading representative of the encyclopaedic spirit within the revolutionary movement, into a theory of human progress based on a scientific humanism. The negative element in history, he said, was the division of mankind into two antagonistic groups: the monopolization of knowledge being an instrument for the domination of one group by another. To destroy that monopoly, the source of oppression, Condorcet proposed universal education and, as one means among others for achieving it, the spread of education among all ages. 'We have observed, finally, that individuals should not be deprived of education as soon as they leave school, that it should embrace all ages, that there is no age

when it is not useful and possible to learn, and that this second education is especially necessary because childhood education has been confined within narrower bounds. That is one of the principal causes of the ignorance in which the poorer classes of society are sunk today; they did not so much lack an opportunity to obtain an initial education as they did the possibility of retaining its advantages.'[6] This plan was not adopted, but 'a century later it was to be constantly in the minds of the great reformers of the Third Republic'[7].[8]

Socialist thought

This rationalist and encyclopaedic model, a product of the Century of Enlightenment, modernized and democratized the Platonic formulas and was responsible for the birth and development of adult education courses and especially of the formal school system. Parallel with this model, however, we find the development of popular, socialist and communist counter-models of education.

The most significant model is derived from the last measure proposed in the *Manifesto of the Communist Party*:

> After the public, free education of children and the abolition of child labour in factories as practised at the time, this measure proposed *combining education with material production.* This abrupt and succinct proclamation was profoundly revolutionary and supplied the substance, rather than the principle, for the development of all future socialist education. It ran counter to all the old, established educational formulas; it brought education back to earth, placed it on its feet in the cave, in the terrain of history. The significant actions of education are no longer those of leaving the cave, ascending upward, beholding a vision and experiencing illumination but rather those of work, the collective work of improving the grotto, the work of material production which is also the production of human beings. These actions, or rather practices, occupy another epistemological area whose contribution to the emergence of a conception of lifelong education has not been explored very far. Even if these secular formulas do not seem to have been highly developed — perhaps they were so much a matter of course that any development was superfluous — to glimpse the possible relations, it is enough to mention among the productions of dialectic materialism the watershed concepts of collective education, integral education and polytechnical education.[9]

Kropotkin and utopian thought

We have chosen to present a quick sketch of Kropotkin, the 'anarchist prince' (1842-1921), because in his writings he refers to a certain number of topics which we have studied in Parts One and Three in connection with the links between science, production and education. In his book *Fields, factories and workshops*,[10] Kropotkin shows that 'Dividing work between manual and intellectual work and even between basic science and applied science can only lead to disastrous subdivisions'.[11] These subdivisions are contrary to the advancement of science, since it was workers who made it possible for research to prove successful, by means of 'little trifles which can only be learned in the workshop and which enabled the workers of the Soho factory to build a practical steam engine from Watt's plans'.[12] Is this not the same workshop culture which is being rediscovered today?

Kropotkin draws the following conclusions from this analysis in terms of policies with respect to education and scientific research.

> Contrary to the division of society into intellectual workers and manual workers, we propose a combination of two orders of activity, and instead of 'vocational' education, which involves

preserving the present separation, we, like Fourier's followers and many modern scholars, advocate an integral education, a complete education, which will lead to the abolition of this pernicious distinction.'[13]

Speaking more broadly, the participation of the procedures in permanent and general study is not postulated solely for the social or socio-cultural advancement of the producers, but above all for the progress of science. Moreover,

We are forced to admit that Franklin was right when he said that five hours of work per day would be enough ...; more than half of the day would then be left for everyone to engage in art, science or any other leisure activity he might choose. And his work in the artistic or scientific field would be all the more profitable because he had employed the other half of the day in some productive work.[14]

Here we are very far from the Platonic point of view, but perhaps well beyond the present criticisms of work and the ideas about time, leisure, science and technology which we analysed in Part One! As Desroches says, Kropotkin wants 'men with actual experience to become men of intellectualized experience by a strategy for educating adults which will be adult education'. And Desroches shows how this thought is rooted in the utopian Proudhon of the *Carnets* in the first half of the nineteenth century:

No longer set any age for taking diplomas or for admission to the schools.[15]

Teach the workers now to add to their knowledge and their enjoyment.[16]

A man's whole life is an apprenticeship.[17]

The personality grows by programmed education, which opens more or less personalized doors to ability, depending on the individual's nature and temperament.[18]

Since work is an education in itself, and both of them last a lifetime, and since education should be simultaneous with work, without a beginning or an end, the beginning being everywhere and the end nowhere, it is indispensable that workers should be equal.[19]

Therefore, in the same way that we showed that alternation in initial education is far from being a new idea, the notion of the permanence of education throughout productive and social life can be rediscovered in the past of the societies with which we are concerned.

THE FIRST HALF OF THE TWENTIETH CENTURY: FROM ADULT EDUCATION TO LIFELONG EDUCATION

At this point we shall not review the history of the concept of lifelong education: this has been done by others.[20] It seems to us necessary, however, to draw attention to the main currents which characterized the twentieth century down to the mid-1970s in order to get a better grasp of the questions we shall ask ourselves about the links between further education, work *and* initial education. In fact, the establishment of policies and programmes of further education after the end of the 1960s was characterized by whether consideration was given to one or two of these links or to none at all.

Up to the Second World War

During the first half of the twentieth century, more and more thought and specific proposals were devoted to the idea of spreading education over all ages of life.

In 1919 in the United Kingdom an Adult Education Committee in the Ministry of Reconstruction stated the following:

> The education of adults should not be considered as a luxury reserved for a few lucky citizens chosen at random, an institution only concerned with a brief period of early adulthood, but rather as a permanent necessity, an element of citizenship which is inseparable from other elements and, consequently, should be both universal and available throughout one's life span.[21]

This British report was to have a great influence on the practice of adult education in the United States up to the 1929 crash: until that time it was considered as an instrument of social reform and was defended by very idealistic educators who claimed to be agents of reconstruction and social progress.

On a more philosophical level, Bachelard wrote the following in 1948: 'Culture which is limited to a certain time in school is the very negation of scientific culture. There can be no science without a permanent school'.[22] It is interesting to note that while Bachelard made an effort to study the material conditions of the production, dissemination and utilization of knowledge, he never abandoned the idea of making the school a model institution for discovering the truth. In the United States, the period 1926-46 was characterized by a retreat from the idealism preached before the Great Depression and by the start of a movement towards vocationalizing educators of adults. In 1926, this resulted in the establishment of the American Association for Adult Education and the publication of the *Journal of adult education* in 1929, as well as the first textbook on adult education in 1936.

The first Unesco conference on adult education (1949) - Elsinore

The conference organized by Unesco after the Second World War marked the beginning of that organization's activities in the field of adult education. This conference was interesting in more than one respect, for, at the institutional and international level, it confirmed the appearance of an autonomous discussion about education as such, since the discussion on work was held by the International Labour Office, which is also interested in vocational training. It is not surprising, therefore, that from 1950 to 1970 an increasingly detailed discussion about lifelong education took place in educational (professional and administrative) circles, although that discussion tended to cut itself off from the reality of work, or else was closely dependent on it without explicitly acknowledging the fact.

The Elsinore Conference was concerned more specifically with the education of adults who were already engaged in active life and it had two limited objectives:

- to train elites of workers or farmers as leaders for rising social groups;
- to promote popular education, as understood in the restrictive sense of making the benefits of schooling and public instruction available to the entire adult population.

The first half of the twentieth century, therefore, was strongly characterized by the development of school systems of initial education, since it was in comparison with these systems that ideas and proposals were advanced for adult education.

THE 1950s AND 1960s

The years following the Elsinore Conference were characterized by the gradual crystalization of the concept of adult education at national and international levels by reducing the field of adult education and gradually establishing systems of further education showing approaches which were in fact contradictory to lifelong education.

There are several sources of theoretical inspiration on lifelong education. We see the appearance of three main currents — American, European and international — which we shall rapidly survey.

The American current

We have seen that adult education had gradually taken hold in the United States as a recognized social practice since the end of the First World War. This trend was confirmed by the Elsinore Conference and was strengthened during the 1950s and the first half of the 1960s by a number of authors such as P.L. Essert, C.O. Houle, J. London, R.J. Kidd and P.A. Miller. At the institutional level, the vocationalization of the adult education field was confirmed after 1951 with the creation of the Adult Education Association in the United States and the Fund for Adult Education. From the point of view of language, it should be noted that the term 'lifelong education' is very rarely used in English-speaking circles, and that those of 'continuing education' or 'recurrent education' are preferred. (We shall return to this latter concept later on). However, the concept of adult education is still widely used. To be sure, the language differences reveal different theoretical approaches, in particular the fact that the American current considers the development of the individual to be the main centre of thought and action, with which are associated certain social and economic ideas.

The European current

While the American current centres its thought and action on the individual, the European current is concerned with more social themes and has made the evolution of industrialized societies the main centre of its work. Here we shall quote from Joffre Dumazedier's book, which is based mainly on the relations between leisure, cultural development and lifelong education:

> Leisure, which is the result of reducing the annual duration of work from 4,000 hours (around 1850) to approximately 2,000 hours (in 1975), should not be confused with free time; it is only a part of it, but the most dynamic part in today's culture, especially for the new generations. Time and leisure activities are not merely the product of technical progress and the social demands of the workers. They are also the result of the *decline in the institutional controls* of the family, the school, the churches and the public authorities over the time of individuals, as

well as the result of a *mutation of values* in man's relations with nature, society and himself. It seems that it is of paramount importance to analyse this point in order to better understand the temporal conditions of the educational process at the various stages of the life cycle.[23]

More specifically, following a number of studies of leisure activities, Dumazedier finally became interested in the conditions of self-education (*auto-formation*) in an industrialized society, which in the author's opinion is the only dynamic field for a truly lifelong education.

Mere observation of the school population and the more or less democratic functioning of school or university institutions are becoming increasingly inadequate for analysing the new educational processes from childhood to the third age. These processes are developed in what Emile Durkheim called 'anomy' according to the new, and often conflicting, aspirations of generations and persons. They are difficult to register for they are concealed both in school success and school failure, in the 'parallel school' as much and more so than in the behaviour imposed by school or university education, and more in the choice of free activities than in an education imposed by the needs of the enterprise.

This rather marginal movement has met with much indifference or opposition in educational and sociological thought. Surely, it is dangerous to draw too close a parallel between adult education, lifelong education and the cultural development of leisure. And what about work? We do not forget that work is the producer of wealth and the privileged creator of social relations. All further education should be based on the needs of work. A radical transformation of the life of enterprises is necessary if work ... is to become 'a means of culture' for the greatest possible number of workers.

However, sociological observation has shown us that more than three-quarters of all employees in our society are deprived of the necessary conditions of responsibility or creativity for the complete development of their personality. Must the education of workers and employees be restricted to work which is nothing more than a job? How can we ignore the general aspiration of workers of all types to shorten their working time and add to their leisure time at all ages of life? Work in the twentieth century is not the same as that of the nineteenth. It has been supplemented not only with new kinds of work but with leisure. If leisure is to become a field of recreation and lifelong re-creation of the personal self, it must become a privileged and not a neglected object of adult education in particular and of lifelong education in general; otherwise opportunities for the full development of the personality will lose out against chances of a passive and massive consumption of the most profitable goods and services in the interest of the masters of the economy.[24]

Thus, Dumazedier's conclusions bring us back to the heart of our problem, since work once more occupies the foreground of the debate. But it occupies it in a way which is perhaps somewhat too limiting, without any sign of dynamics in this field.

The Unesco current

While the first International Conference on Adult Education had the industrialized countries as its socio-geographic frame of reference, the Montreal Conference of 1960 saw the appearance of the developing countries in the foreground. We shall not analyse what this phenomenon implied for the countries concerned in terms of lifelong education, but shall point out that this Conference marked the beginning of a decade of research and of Unesco's intervention on this subject.

Among the many documents published by this organization, we shall quote this definition of lifelong education: 'it is the means to cultivate in man the aptitude to

understand the modern world which surrounds him and to allow him to adapt to the demands of a universe undergoing rapid transformation, as well as to working and living conditions in general subject to incessant change.'[25] The adjustment of individuals to their surroundings and the changes in them is therefore the main objective of lifelong education.

Foreseen as a being's ultimate objective, adjustment involves the whole educational process. First, curricula should guarantee a better balance between general training which prepares the individual to keep up with the evolution of information, and vocational training which helps the acquisition or maintenance of a particular qualification. In turn, educational methods should conform to the new modalities of learning — growth of enrolments, diversity of the clientele, widespread motivations — and integrate recent educational technology. Furthermore, lifelong education means not only the unification of the whole educational enterprise, formal or non-formal, but also involves the articulation of their activity within the framework of a meaningful policy. Finally, the new tasks for the teacher — a resource person and counsellor rather than the simple transmitter of knowledge — lead to the revision of their training and the broadening of their recruitment to include new educators originating in many different socio-economic occupations.[26]

Unesco's work has consequently been mainly concerned with studying the transition from the present education systems to lifelong education. This tendency has perhaps resulted to some extent in cutting off the organization's work from socio-economic realities, and especially from the evolution of work, and has favoured a more educational and humanistic position which was to be challenged by implication early in the 1970s at national and international levels.

FROM THE 1970s TO THE PRESENT

From the early 1970s, the attitudes to lifelong education underwent fairly important transformations due to several, especially socio-economic, factors. The transformation of production structures connected with the acceleration of growth since the end of the Second World War had a number of consequences with regard to initial and further education, but this trend was brought to a halt by the crisis of 1973. At the present time, lifelong education finds itself in midstream between decisions aimed at embodying it in legislation, making it universal and placing it on an operational footing, and a rapid implementation which will have to take account of the constraints enforced upon it by the crisis. Both international organizations and individual countries will find themselves confronted with this situation.

The world crisis of education at Tokyo (1972)

The Third International Conference on Adult Education, held by Unesco in Tokyo in 1972, revealed that contradictory trends were making their appearance in educational circles among those who, like Coombs, had been denouncing the 'world educational crisis' since 1964 and a more optimistic trend than that described in the Faure Report for Unesco - *Learning to be* — in 1972. The same tension was to be found again after the beginning of the economic crisis of 1973 and the upheavals in educational strategy which it brought about.

With regard to the Faure Report, it 'upholds an overall conception of the development of education for contemporary societies, the purpose of which is to guarantee every individual the possibility of learning throughout his lifetime'.

This so-called principle of 'lifelong education' not only constitutes the keystone of every argument, but above all, in the authors' opinion, is the driving force in new educational strategies, which, while assigning a proper place to teaching, will never identify its expansion with educational policy, but will endeavour to redistribute educational responsibilities among all institutions of society, including those which normally do not have an educational mission. Such strategies presuppose that the development of an individual and a group in our contemporary society depends simultaneously on three distinct forms of education, namely:

- on *diffuse* education, i.e. on a really permanent process thanks to which every individual adopts certain attitudes and values, acquires knowledge as a result of his daily experience, the influence of his surroundings and the work of all the institutions which impel him to change his course of life (pages 156, 158 and 170-174);
- on *out-of-school* education, i.e. on all organized educational activities aimed at special clienteles on the basis of their needs and aspirations;
- on *formal* education, lastly, which in the form of hierarchic systems of teaching, divided up into years of study, enables the whole population which is not yet engaged in production to acquire the necessary basic education to make use of the facilities of informal and diffuse education.

This means, on the one hand, that any educational policy should be part of a whole made up equally of cultural policy, scientific policy and employment policy, something which is particularly important in our present situation when policies are being worked out in parallel and without any co-operation between these fields; on the other hand, that such a policy will implicitly recognize the right to education.

It is on the basis of such a principle that Learning to be specifies the role of adult education, which becomes 'the normal result of the educational process'. In other words, the success (or failure) of an educational policy in a country can no longer be measured solely by the number of the new generation attending school but rather by the number of adults who have become capable of self-education.[27]

The Tokyo Conference could only record the discrepancy between the major objectives set forth in the Faure Report and the real state of affairs referred to in that same report:

First of all, we live in societies which do not make enough use of diffuse and informal education because, except in particular cases, the environment is not designed to encourage self-instruction. That is why, after emphasizing the importance of diffuse education, the authors of *Learning to be* stress the necessity of a systematic association between the exercise of an occupation and further education:

- at the initial education level, when learning should be considered as the first stage in further vocational education;
- and at the level of vocational practice, when places of production should be organized in such a way as to encourage individual development.

The second obstacle to the process of lifelong education is the fact that the school, in spite of ideological claims that it is a privileged means of democratization, is a universe where in fact all kinds of inequalities prevail.

All these reasons lead the authors of *Learning to be* to state that educational development must do more than assign a supplementary, corrective or palliative role to informal education in comparison with the school systems, but rather that the success of adult education depends on a complete reorganization of school systems.

Lastly, the third reason for the impasse is the meagre amount always allotted to expanding and institutionalizing informal education, largely because States only assign it a tiny place when financing their educational policies.[28]

The Tokyo Conference, in fact, marked the beginning of the stagnation of Unesco's contribution to the ideas about lifelong education, because of the institutional barriers which, as we have said, concentrate the work of this organization on the school and which, consequently, perhaps prevent it from taking sufficient account of the socio-economic evolution of the industrialized countries. The development of work, employment and technology call for the establishment of systems of further education administered by one or more of the social partners who are faced with the problems of school systems (costs, failures, inadequate curricula, etc.). The 'idealistic' bases of lifelong education, therefore, tend to be forgotten in favour of a more realistic approach in which we see the concepts and practices of educational leave, recurrent education, the integration of education and active life and finally alternation between studies and work.

Educational leave and the International Labour Organisation

While interest during the 1960s was centred on Unesco's work on lifelong education, it should not be forgotten that since 1965 the International Labour Organisation (ILO) has concerned itself with paid educational leave for workers. At that time, a resolution of the ILO recommended that its member states 'should take effective measures so that workers could obtain various forms of paid educational leave.' And in 1970 the ILO published a study on the relations between lifelong education and the concept of developing human resources.[29] However, Convention No. 140 (which came into force in 1976) and Recommendation No. 148 on paid educational leave were not adopted until 1974.

The preamble to the convention states that paid educational leave should be conceived in the context of a policy of education and lifelong training introduced in a progressive and effective manner, while the first article defines paid educational leave as leave granted to a worker for educational purposes for a specific period during working hours with the payment of an adequate financial indemnity.

Lastly, the convention does not specify whether paid educational leave is an individual right or whether it is at the employer's discretion, but the ILO does recommend that there should be a movement towards a right to educational leave. Although this convention is the result of a compromise, it is nevertheless important because it reflects the relation of forces at the time between the three major social actors represented in the ILO: governments, employers' associations and labour unions. If the text of the convention is compared with Unesco's statement of the same time, it is obvious that their points of view are very different, but that of the convention seems to be closer to socio-economic reality, since Unesco is composed only of governments, which are represented by their educational authorities. Anchorage in social reality, for example, can be found very clearly in the discussions prior to the signing of Convention No. 140.

The basic task [of paid educational leave] is to give back to the worker the possibility of achieving his full competence and to fulfil himself through his work; this means the possibility

of understanding, of taking over and of transforming the production process by taking advantage of the possibilities offered by scientific and technological development.

Thus, we find the same ideas about the relations between the situation of workers and the division and organization of work, and education as an agent for the recovery of their productive life in its social and technical dimensions.

Recurrent education and the OECD

Following the failure of the policies of job planning and education which the Organisation for Economic Co-operation and Development (OECD) had advocated early in the 1960s, that organization gave same serious thought to Olof Palme's ideas in 1969 about recurrent education — which we have already referred to in connection with recurrent education and higher education. OECD's work took concrete form in 1973 in a report entitled *Recurrent education: a strategy for lifelong learning*. We shall not analyse the whole of this document, but it seems to us useful to dwell on one of the three arguments which, in the authors' opinion, militates in favour of the establishment of a system of recurrent education: better interaction between the education system and the world of work. After stating that recurrent education would facilitate the self-determination of personal development, as well as a greater equality in opportunities for education, the report tries to show that such an education system would help to combat the 'alienation' created by our society, which is now based on production and consumption.[30]

While it is interesting to hear about the combat against alienation in the report of an intervogernmental organization, it seems to us somewhat difficult to imagine that recurrent education will make it possible to attain that objective. The report says, does it not, that this education is expected both to achieve a better adaptation of education to the labour market and to emancipate the individual from socio-economic constraints.[31] There is there a fundamental contradiction which the authors have clearly perceived: 'Such programmes of recurrent education would, however, fail in their purpose if they were planned in terms of immediate labour market needs and not primarily decided upon by the participating individuals.'[32] But in order to bring out the political importance of their project, the authors should at the same time emphasize the better adjustment of manpower to the needs of the market, which are conditioned by technological evolution and the social organization of work. However, since the requirements arising from the latter are often contradictory and since the participation of the workers — the ones primarily concerned — in making the technical and social decisions affecting them is increasingly limited, it is hard to see how recurrent education will be able to free individuals from alienation or from the socio-economic context surrounding them.

After analysing the advantages of a system of recurrent education, the report considers its organizational consequences: we shall mention them here, since they refer to the question of the connection and integration between initial education, further education, work and social life which are at the very centre of our problem. What is proposed is really an integration at the following three different levels:

- integration of education at all stages of life: the processes of apprenticeship aimed at a specific objective are now no longer limited to the period of childhood and adolescence, but are divided over an entire lifetime;

- integration of the various sectors of the individual's life: the occupational sector, the leisure sector and the sector of 'inactivity' (periods during which one does not have to work for one's livelihood) are interconnected by an active relation between the structural forms of apprenticeship (training) and fortuitous processes of apprenticeship (other social activities);
- integration of different educational institutions: creation of a system of institutional liaison between the sectors of public post-compulsory education, further vocational education organized by enterprises in the private sector and optional and self-financed adult education.

More precisely, it is possible to derive the following guiding principles from the report:

(a) 'Recurrent education' provides for a process of alternation between periods of education and work which offers possibilities for individual advancement at various levels, in this way generally encouraging access to knowledge of society and breaking up the linear progression from the school career to the vocational career in favour of a spiral integration of education and occupational practice.

The monopoly formerly held by educational institutions with regard to teaching will be abolished in favour of a connection between the fortuitous apprenticeship which is undergone within the framework of life, work and leisure, and the apprenticeship which is directed towards a specific objective and which follows an educational plan.

(b) There are several mentions of an objective aimed at developing new forms for organizing education which would help to make a better use of the experience of everyday and vocational life and which would replace the 'school' initiation with its codified catalogues of knowledge. This objective is associated with a high opinion of the motivation of individuals for learning and with the need for broad participation in programming and organizing education.

(c) The organized and rigid forms of a linear and hierarchic education are rejected, as well as the models of dichotomic education. The main ideas scattered throughout the report concerning the vertical and horizontal integration of the processes of apprenticeship include, among other things, a flexible system of organizing courses which makes it possible to receive part-time instruction, an internal diversification which permits the 'learner' to make a choice in accordance with his own interests and the abolition of the traditional systems of evaluation.

(d) The upgrading of practical vocational experience advocated in the report implies a downgrading of formal academic systems of reference and abolition of the monopoly of teachers who exercise the profession throughout their lives and possess no other practical vocational skill.

(e) With regard to the institutional framework of 'recurrent education', the report proposes centralized financing and a local and regional decentralization of educational bodies. It is also recommended that provision should be made for inter-regional institutions of learning, open to all ('open universities').[33]

We see, therefore, that the OECD report on recurrent education, rather like Unesco, is primarily concerned with the consequences of such a system for the functioning of the structures of initial education, while at the same time going farther into the

problems of organization by proposing a periodic alternation between the job market and the education system.

Nevertheless, these ambiguities of a policy of institutionalized alternation, to which we have already referred in connection with initial education, are greatly increased when we have to deal with an individual or groups who are engaged in active social and occupational life. In a system where learning and working are two activities which are so organized as to alternate with each other, each of them can easily seem to be a competitive alternation which may downgrade the other. Alternation between the social identity of the vocational role and the social identity of the learner's role may tend to widen the gap between vocational experience and educational experience instead of encouraging their integration. Lastly, the institutionalization of the system of recurrent education may, in fact, reintroduce a model of the school type, with all the implications in terms of selection, inequalities, processes of differentiation and examination systems, while still being contradictory to the objective of ensuring the participants' freedom of self-direction and decision-making with regard to their education.

The purpose of this critical analysis of the OECD's report on recurrent education was to show the dangers inherent in an approach which claims to be overall but which, in relation to the problem of the interactions between education and work, mainly analyses only the educational role while considering work situations as being of little or no importance from a dynamic point of view.

Lifelong education and the Council of Europe

If we approach the concept of recurrent education from the point of view suggested by Schwartz — equalization, universalization, participation — we find that, although the OECD's approach is aimed at the universalization of the education system, the objectives of equalization and participation are perhaps not achieved because of the institutionalization proposed for recurrent education. Above all, however, it seems to us that the development of the interrelations between education and work presupposes that equalization, universalization and participation should be achieved *simultaneously* for the processes of education and production. This is what the Council of Europe tried to suggest in 1971 in its preliminary report entitled 'Lifelong education: foundations of an integrated educational policy'.

On the basis of these foundations, for several years an advisory group studied twenty-five pilot projects which had been proposed by the Council for Cultural Co-operation. This group, under the direction of Schwartz, presented a final report containing certain conclusions relevant to our problem; it would seem useful to recall them. This report attempts to determine the conditions which will make it possible to achieve participation, universalization and equalization in adult education processes.

Participation is defined with reference to four everyday situations: the role of the citizen in society, leisure, the work situation and the education situation.

With regard to the work situation, the report notes that for:

— a divided and repetitive role, a fragmented and confining job, the worker feels no need to come to learn;

- a work in which nothing can be learned, a harassing work, the worker loses interest in both the work and his environment;
- lastly, a rigid authority structure destroys all possibility of participation in the management of everyday life, both at work and away from work: permanent education is linked to economic democracy.[34]

With regard to the educational situation, freedom from the constraints of place, time and content should make possible real participation on the part of the students. However, this kind of participation is only individual: for this reason there would be an important transformation in collective participation if the 'education group' were placed in charge of education.

More broadly than with group participation, the report refers to the role of collective training projects for ensuring the responsibility of the social actors in training processes which would be of an equally social nature. The main importance of this kind of project for our own problem is that they are carried out from an overall point of view. Work and instruction are integrated in broader social perspectives and are related to problems ranging from the living environment to health and working conditions. Moreover, with collective projects it is possible to proceed from a democratizaton of culture to a cultural democracy, since there is a process of creating references peculiar to one population and not the consumption of models belonging to other circles.

A general comment is in order here. Many people feeling a need for education are frightened by the opportunities for participation offered to them and are too inhibited to make use of them. This is the result of their early, directive schooling followed by conditioning and alienating occupational activities. True participation in education implies a society in which democracy is experienced directly and, even more, it implies firms operating a system of economic democracy. This being so, participation in education in our present day societies must be learnt, does not occur automatically and is not a response to a spontaneous aspiration. By means of a gradual process, then, beginning in infancy, an awareness of social relations will develop and eventually, but not painlessly, make itself felt throughout society.[35]

Globalisation is a term used in referring to projects, actions and methods which, in our view, seem to tend towards a certain globality. The term globality operates on two levels: man is global, and human functioning, in life situations which are themselves global, is of a global nature. The move towards a global education, one which relates to the whole person, arises out of this dual perception of man-in-a-situation.

But today globality is more often experienced as separation, because the individual has two spheres of action, two modes of being:

- one at work;
- the other in his everyday life — alone, in a family or in a community, but not at work.

It is therefore important to organize the definition of education according to a double typology: according to the components of a globality reconstructed between non-professional life and education, or between professional life and education. It is also important to identify, in the examples mentioned, the indicators of gradations of globality.

- A 'globalised' education in relation to everyday life would mean an education built into the very elements of that everyday life, one which does not set it apart or take place outside it.
- A 'globalising' education would be one which would provide means of acting upon the environment.

The nature itself of the students and their demand very soon imposed some globality of

method upon all educational institutions. Nevertheless, the differences in adult education stand out in clear relief today; it ranges from individual advancement to cultural democracy including co-managed groups, collective actions and community development.[36]

The authors of the report first hold up individual advancement as an instrument of universalization through a system of educational leave, for example, but on the condition that the adult is not relegated to a situation of the school type which does not allow him to acquire skills which are meaningful for the individual. For this reason, the report of the Council of Europe favours more universalized situations of instruction in which groups define their own objectives, such as, for example, study circles but above all, projects for collective advancement.

... for the globality of the original collective situation reappears in the globality of the learning situation at the three levels:

- in the initiation of the educational action, by the way in which need analysis is organized and by the provision of interest-creating or sensitisation courses. The education is globalised because of the deliberate links with learners' everyday lives. The nature of the educational offer, when it includes such courses as sewing and dressmaking for women and car mechanics for men, is symptomatic of a globalised education, one aim of which is to get people out of their isolation. Courses like these have relevance to and draw from everyday life. Insofar as in the present state there is unemployment, sewing and car repairing are the only ways of enabling people to live less expensively and also to keep occupied and possibly earn some money. In this situation, the sensitisation course responds to personal motivations arising out of a collective daily experience (because it is a shared concern) but individually experienced;
- throughout the whole learning situation, for alongside increasingly highly structured courses in such subjects as electricity, there are also classes in expression, for instance, which continue to develop an approach to the problems and situations of life;
- and in the educational issue, through the great number of people involved, who talk about and discuss it, and are thus brought to think of what they can or should expect from their work.[37]

Another measure for achieving universalization is community development, which, in contrast to collective training projects, emphasizes the socio-cultural aspects of a population's situation in order to bring out its educational components:

... collective development gives every member of the group an opportunity to act on behalf of all. The development strategy really is global. Development is exactly the right word here, for not only is there the discovery of possible social, political and educational solutions, but the promotion of a community and the extension of its field also become possible. Insofar as it is global, however, that is, takes all problems into consideration on an equal basis, and insofar as nobody assigns a particular meaning or direction to it, this development may escape all regulatory mechanisms. The community can only acquire a meaning through the mediating action of development. Besides: what does the globality of a collective development mean if not a process of cultural democracy in which there is no longer any distinction between the project and the action, no longer dissociation between the action and its elaboration by a group, of its own identity?[38]

From this point of view, equalization is seen to be the natural political dimension of all lifelong education:

There has been a substantial increase everywhere in the facilities available to adults in terms of educational supply: the number of adults engaged in some form of education is indeed rising

steadily. But close examination of their sociological profiles shows that there is a de facto relationship between the level of previous education and that of the adults now taking courses. The more education one has received, the more readily one will act to extend and complete one's education. Groups having weak early education, on the other hand, are under-represented and in some cases absent. Even actions specifically designed to offset educational and social inequalities resulting from basic education fail to do so.

Yet legislations intend to give all adults equal rights to further education; so why are the results for the most part so disappointing?

While pointing out that this subject of concern must not serve as an excuse to the opponents of a total reform of basic education and that equalisation as an objective, in a society founded upon inequality, is pure illusion, the Council of Europe has long maintained that it was necessary to achieve the highest possible degree of equality of opportunity in adult education, and has made a study of projects attempting to promote it.[39]

That is what the report of the Council of Europe has to say about further education. What is the actual situation for workers in an enterprise?

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CHAPTER XVIII

Further education and workers: needs and effects

After reviewing a number of discussions about lifelong education, it is now possible to compare these discussions with our analysis of the enterprise in connection with the further vocational training which developed in many countries at the end of the 1960s. On an earlier page, we agreed with Touraine that all further education takes place theoretically at four different levels: execution, organization, institution and power. It is at these levels that the respective influences of the social actors concerned will make themselves felt, these actors being the employers' associations, and workers and/or their representatives, the State and the social actors outside the enterprise. In the following paragraphs, therefore, we shall begin by analysing the influences brought to bear by the workers at these levels in order to illustrate the dimensions of the interactions between education and work at the micro-social level. More precisely, we shall ask ourselves how the objective work situation (division, organization), employment and qualifications — which we studied in Parts One and Two — will determine the subjective dimensions of further training from the actor's point of view. These subjective dimensions condition the attitude towards training, in terms of needs and effects, as well as the attitude to basic education. This approach then enables us, in the same way as for basic education, to begin our study of the rigid categories which separate vocational training from other forms of general, cultural, trade union and political education. Since workers experience further education in the context of their work situations, it is not possible to make these distinctions, although they will often be defended by enterprises.

PROBLEMS OF WORK AND EDUCATION

The attitudes of the participants in the enterprise are influenced by major trends in the economic and technical evolution of industrialized societies, particularly for the definition of qualifications, job classifications and occupations. The day-to-day relationship with working conditions is, of course, determined by the nature of the tasks performed, as well as by careers — and especially visions of the future inherent in them — but above all by the dominant attitudes existing in the enterprise and in society.

The vocational demands of the different categories of workers in an enterprise will therefore be expressed with reference to vocational tasks and the conceptions in the hierarchy of functions: differences do exist between executive staff, technicians, instructors and/or supervisors and manual workers with respect to the type of job and background (basic education, on-the-job training, internal advancement, social

status, etc.), their wages or working conditions. The key problem of any policy of further education is to be found in this context: can work problems be solved by education? Is education a 'need' in coping with these problems?

The distinctions between executive staff, technicians and manual workers can be described as follows:

- For senior executive staff in an enterprise, further education is potentially a part of their vocational function and theoretically it is their possession of technical skills which determines whether they are kept on and/or promoted in the enterprise or in that particular field. The skills in question may also be connected with the social organization of the enterprise: in this case training for 'leadership', 'human relations' and 'executive ability' will be considered as needs. The form taken by such training will depend on the executive staff's own conception of social relations, authority and worker participation in the enterprise.
- The problems and needs of middle-level executive staff, technicians and instructors will be fairly similar but are more liable to be influenced by the level of general education on which further training must be based. Inadequacies or gaps in their formal education or initial vocational training will determine the nature of their advanced training and may or may not lead to complaints or further demands.
- For manual workers, the question of further education is a paradoxical one, since their jobs often do not require any special training. However, it is at their level that problems connected with the organization of work most often arise. What does further education mean for this type of personnel unless it leads to a change of job and/or a changeover in the organization of work?

These different points of view clearly show that we cannot dissociate our thinking about further education from that about participation in defining the objectives and special characteristics of work.

NEEDS IN FURTHER EDUCATION

The differences between socio-economic categories with respect to further education reveal the ambiguity of the notion of 'need' in this field. However, it is by means of this notion that educators justify extending their working field and think that they can transform their students' situation. At this stage of our thinking, however, it seems useful to take a closer look at this notion, for it conceals a number of ambiguities.

The analysis of needs, which appeared during the 1960s as a reaction against the formalism of adult education projects, undoubtedly made it possible to emphasize the connection between education and social life, but it also harbours some contradictions about the role of education: from the humanism which stresses the 'deep-seated needs' of individuals to the technocratism which favours the individual's 'need to adjust' to social necessities. Even if the ambiguity of analysing 'implicit, latent, genuine, etc., needs' has been subjected to much criticism in the last few years, many educators in fact continue to indulge in it. There is always an ambiguity between what is done to improve the efficiency or profitability of educational activities and what is merely an effort to ensure the participation of the

persons concerned in these activities. The analysis of needs often enables us to move on from recording the objective constraint of curricula to recording the wishes of the participants and, conversely, without these wishes being necessarily explicit.

Moreover, the term 'analysis of needs' strongly suggests that these needs are naturally imposed on the basis of facts. However, the expression of needs is always the work of diverse social actors who are speaking either for themselves or for others: the expression of needs is therefore only the suggestion of ways to transform particular situations at any given moment. The question now is to determine what types of situations, individuals and groups seem to require education in order to achieve certain objectives. J.M. Barbier and V.M. Lesne distinguish three fields of phenomena which affect education more or less closely:

- The field of phenomena related to the exercise of some kind of work, or more generally to the exercise by specific individuals of certain skills, qualifications and abilities in social activities. This field is not where educational activities are carried out, but they take on meaning in relation to it, since they are precisely the ones whose *raison d'être* is to produce or reproduce these skills, qualifications and abilities.
- The field of phenomena which are directly related to the institutional forms of education and to the situation which is created for them.
- The field of phenomena which are more directly related to the time of teaching or of guidance proper.[1]

In relation to these three fields, the authors state that 'there is an analysis of educational needs when the stage of producing objectives related to the skills of individuals in their daily activities is subjected to developed and voluntary procedures.'[2] In their opinion, therefore, 'the analysis of educational needs consists essentially of the explicit production of inducive educational objectives'.[3]

If we adopt such an approach to the analysis of educational needs, it is easier to understand the often divergent points of view expressed by different categories of workers in an enterprise concerning the courses in further education they have already taken. Depending on their degree of participation in analysing educational needs (just as in their participation in organizing their work), their relations with any new educational project will depend on their previous experience in that field, but above all on their vocational situation and their social progress.

EFFECTS OF EDUCATION ON SOCIO-VOCATIONAL PROGRESS

In Part One, we pointed out the importance of the notions of socio-educational networks and progress for understanding the actual interactions between education and work. While this approach is important, for example for understanding the behaviour of certain groups of young people in coping with initial education, it is indispensable for assessing 'needs' or 'non-needs' in further adult education on the basis of their previous educational progress and their experience of on-the-job training. If we go back to our description of the socio-vocational categories within an enterprise — executive staff, middle-level executives/technicians, manual workers — we can see that there are certain different types of relations between them and further education:

- As far as executive staff are concerned, further education is often felt to be a

technical and social necessity. But there remains the question of whether the body in charge of this education is located in the enterprise or in some outside institution. What is involved is the whole question of the links between on-the-job training, promotion/mobility and certification by some public authority. While certain executive staff members may reject all education by any other agent than the enterprise — asserting the incompetence of the university, for example, faced with the realities of production — others demand broader kinds of education, certified by diplomas which do not tie them down to a particular enterprise and grant them a measure of mobility. The same debate which we analysed in connection with the links between initial on-the-job training and training in institutions outside production arises again in connection with further education. There are a variety of answers, depending on the countries and participants concerned.

- The situation of middle-level management and technicians with respect to further education is very interesting.[4] Individual advancement through further training may already seem to them the best means of achieving their objectives. It is not surprising, therefore, that middle-level executive staff should oppose every new suggestion for further training if their objective of a vocational change has already been achieved as a result of their own investments in education. Their reaction will be most critical if there appears to be a downgrading — a downgrading which further education was supposed to prevent — and/or their further training has not led to a job with broader responsibilities and/or promotion. The consequences of this apparent ineffectiveness of education will vary between a resort to other, perhaps more collective, demands and indifference due to a feeling of failure.
- Finally, unless they are employed at strategic and sensitive points in the production process, education often means nothing at all to manual workers or is associated with extra-vocational objectives, such as personal development. In the most favourable cases, this type of further training may impel the worker to strive for a higher skill, always assuming that his basic education makes this possible.

FORMS OF SOCIO-EDUCATIONAL PROGRESS AND ATTITUDES TOWARDS EDUCATION

Here we touch on another aspect of the real life of workers which will influence their relations with education. Depending on whether their formal education has been a success or a failure, their attitude and behaviour towards further education will vary greatly.

Educational institutions have never succeeded in freeing themselves from the image of the school, an image which they project in spite of themselves. Moreover, I am not as sure as has been claimed that further education has succeeded in renewing educational models, for the educational situation reactivates an imaginary situation in which the school's function reappears in the way in which individuals position themselves directly or indirectly in relation to their status and in a broader way in relation to their condition.

Accordingly, in the experience in question, many have felt further education to be a 'return to school'. This impression has been reported as being particularly strong because it was some-

thing which was both desired and feared, as a result of what school had meant in their own case: an advance towards promotion, i.e. the means of rising out of and above one's condition.

Instruction was placed on a pedestal because it was supposed to solve all problems. Not to have had the 'luck' to benefit by schooling (the bare minimum in order to possess a skill) is considered as a 'lack' of instruction that is constantly associated with a feeling of inferiority concerning one's place in society. 'To be educated' is to be able to talk about one's self and this achievement is seen as social recognition conferred by the entire educational apparatus.

These stereotypes of the school which come to the fore during temporary courses are especially important if one's own school career has been interrupted. But all these attitudes go back to the conception of education as a 'bank' which P. Freire talks about; it consists of making the learner a deposit box, a receptacle for receiving and storing knowledge. From the beginning, people are considered as 'holes' to be stuffed with the teacher's knowledge, which is defined as the real learning which one is called upon to commit to memory.

While, on the one hand, the time spent in further education becomes a reminder of the school, whose pattern of alienation has been internalized by expressing it in a positive way, on the other hand the educational situation is experienced as a need to forget everything recalled by the school, which at a deeper level is felt as a failure in as much as it is associated with the social position of failure to succeed, i.e. with the inferior status to which one is relegated and which saps the ability to believe in one's self.

The reminder of the school operates with particular force in these groups because it is the only educational model they know and because it functions as the normative model of culture.[5]

If the school models are so powerful, therefore, adults who have experienced failure in them might have two opposite attitudes: either they will try to enrol in programmes of further education which will enable them to exorcize this failure by placing themselves once again in the situation of a pupil; or else they will refuse to return to a situation which they fear will only confirm their initial failure.

This reference to the school as an institution enables us to bring up a central question about the development of further education, a question which is implicit in the discussion of lifelong education which we have analysed above: does not the institutionalization of recurrent education reproduce the problems which the school systems have helped to create over the last few decades? Are we not going to find ourselves confronted with the same topics which we used to associate only with children's education: the democratization of further education; equality of opportunity; education for marginal, underprivileged adults? In this context, what can the paid educational leave proposed by the ILO amount to, since actually this is something which the individual should demand, without it necessarily being considered 'useful' by the enterprise?

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CHAPTER XIX

The enterprise and further education

Now that we have seen the attitude taken by workers towards practices of further vocational training, the question arises of the utility of education for the enterprise.[1] However, the modalities of actually carrying out further education projects — at least those modalities which fall within an institutionalized framework — will be the result of the confrontation, whether negotiated or not, between the positions of the enterprises, the workers and their respective organizations.

More specifically, positions will diverge on the question of defining the vocational dimension of further education, especially during a period characterized by unemployment when the social partners will be looking for a new vocationalism.

The objectives of enterprises with respect to the further education of workers will be influenced by several different variables. First of all will be the economic characteristics, such as:

- the economic, legal and financial structures associated with the enterprise (professional field, financial group, national or multinational establishment, etc.);
- existence or not of an internal labour market as revealed by rates of internal promotion, the degree of stability of the personnel and the frequency of rotation;
- the situation in the external labour market as measured by the relative wage level, type of person recruited and structure of qualifications;
- significant trends in the work process: mechanization, automation, downgrading of jobs, etc.

On the basis of an analysis of these variables, we can interpret the indicators related to the introduction of further education, such as:

- the intensity and nature of the educational effort carried out by the enterprise (division of students into categories, existence or not of internal training, content of training courses, resort to outside agencies, etc.);
- the modalities of organizing and administering training in relation to the general structure of the enterprise. But above all, the objectives of the enterprise will be revealed by the effects which it proposes to obtain through further education. Thus we find the same approach as for the workers, with the problems, needs and effects of an education which the enterprise defines both as vocational and as further education.

The main purpose of all these indicators is to clarify the strategic problems of the method of finding a place for education in the production process, in the organization of the enterprise and in the job market. The central or marginal role of further vocational training in an enterprise depends on whether further vocational education does or does not contribute to

changes in production, is or is not an instrument of a personnel policy and a regulator of internal promotion. Depending on whether it is integrally administered and controlled by the management or finds a central place in negotiations and disputes between management and trade unions, it will be a more or less important factor in the functioning of social relations. It is therefore through a simultaneous analysis of the relations between education and economic production, on the one hand, and education and social strategies on the other that we will have the best chance of understanding, by educational practices, the coherences and contradictions of the *management logistics of the labour force*.[2].

NEEDS OF THE ENTERPRISE AND NEEDS OF THE WORKERS

A critical analysis of needs carried out for training purposes would help us to understand the difficulties seen uniquely from the viewpoint of the enterprise.

The predominant method of drawing up educational needs may be described as 'authoritarian' since it is based exclusively on a hierarchy. In this case, the educational needs of the enterprise are defined as being those of production. According to this view, two procedures are possible. The manager of the enterprise, the department or workshop foremen or those in charge of production units can submit proposals to the training department or to the general management for educational projects which will meet the needs of the departments. Or else the training department can submit proposals to its hierarchic superiors for courses (sometimes even a catalogue) and collect replies on the basis of which it will draw up a plan for education or training.

In both cases, the main difficulty is to translate production needs into educational needs. After all, it is not self-evident that problems perceived by responsible persons in the hierarchic scale can be solved by education. Conversely, it is far from certain that the courses proposed by the training department will be directly related to the concrete problems of production as perceived by the hierarchy. The paradox here is to try to satisfy production needs without ever consulting those who are aware of them. As thus conceived, the needs of the enterprise are often reduced to the requirements of production or integration as perceived by the management, the section heads or foremen. In these conditions, it is not surprising that education or training often takes the form of courses to adjust workers to new machines and refresher or leadership courses for the executive staff.

A second, less directive model is based on a complete dichotomy between the 'needs of the enterprise', as indicated through hierarchic channels, and the 'individual needs of the wage-earners', as ascertained in various ways (personal questionnaires, interviews, orientation lectures, etc.). These methods generally result in relative failure and the pessimistic conclusion that the workers and employees scarcely feel any need for education. It would seem, indeed, as if hardly any educational needs existed for wage-earners except those which the hierarchy specified for their jobs.[3]

These two procedures for analysing needs shed some light on the difficulties of negotiating between partners about further vocational education, since the results expected by the enterprise and those expected by the workers are often contradictory:

What the managements of enterprises want is not wage-earners who are better educated 'as such' but wage-earners who are better adjusted to the structures of production and to the objectives of the enterprise. What workers holding unskilled jobs want is not education but a change of work.[4] Between the two, the demands for education by skilled workers are inseparably linked to prospects of change, promotion and vocational careers.[5]

EDUCATION AND PERSONNEL POLICY

In connection with workers, we have pointed out that the question of promotion and/or a change of work station after education was often the key to understanding their behaviour and 'needs'. If we now place ourselves in the position of the enterprises, the relation between education and a change of work is much less in evidence in most countries. Managements generally do not feel themselves in any way obliged to promote or to provide any change for workers who have educated themselves or who have been trained by the enterprise, either with or without a diploma.

On the other hand, the connection between promotion and education seems to be much more common. In most of the enterprises which were analysed, promotion precedes training, which serves only as the confirmation of a promotion which has been decided on for reasons having nothing to do with the possession of vocational diplomas (e.g. for such reasons as previous productivity, human qualities, integration policy, etc.). Training, therefore, seems to be an effect of promotion, or at least of the decision taken by the hierarchy to promote a worker. In some cases training takes place between the decision and its execution and the results of the training may annul the previous decision (for example, if entitlement to the job requires possession of some qualification as the result of a collective agreement). In other cases, training is more an adaptation to the new function and the guarantee of a general level of education which is more in keeping with the new vocational status.[6]

THE FACTORS IN FURTHER VOCATIONAL EDUCATION: FROM QUALIFICATION TO EMPLOYMENT

After describing the positions of the partners directly involved in planning policies and projects for further vocational training, it appears evident that they are directly related to the types of management in charge of the labour force, as well as to the structure and organization of the work process itself (skill, know-how, remuneration, power structure in the enterprise). The principal factor is therefore qualification, as we have analysed it above, whether determined by the workers and their organizations or by the employers' associations. However, at the present time, qualification is very much in the foreground of the debates about the tensions between the logistics of production and education which we referred to in connection with initial education:

- While the enterprise is a hierarchic universe based on 'the authority of the bosses' and 'passive obedience', education induces attitudes of discussion, criticism and questioning which are incompatible with the rigidity of the structures and authoritarianism of the foremen;
- While the purpose of the enterprise is production and is organized solely according to the criteria of immediate efficiency and capitalist productivity, education tends to develop attitudes of technical rationality (war on waste, personal inventiveness, etc.) and work relations (group work, collective experimentation, etc.) contrary to the organization's dominant objectives;
- While the enterprise is organized in such a way as to ensure, by various means, the anonymous integration of the personnel with its objectives and structures, education tends to develop a multiplicity of initiatives and individual projects which are hardly compatible with the dominant bureaucratic models.

For all these reasons, the development of educational structures which observe the appropriate logic for personal apprenticeship is often associated with increased tensions or disputes among the hierarchic executives of the enterprise, the trade union representatives and the instructors in question. The whole 'social system' of the enterprise is affected by the introduction of processes peculiar to educational structures. Since the enterprise is not an educational institution, education cannot enjoy a minimum of autonomy without provoking tensions and serious disturbances. While it is certainly possible — and common — to adapt education to the functional requirements of the enterprise, it also happens that education helps to reveal and even to modify the underlying power relations of the enterprise's structures.[7]

If further education results in opening up a power relationship within the enterprise, what is in jeopardy is clearly the individual and collective qualifications of the workers. The question is: who is going to profit by the potential opened up by education and how will it develop in the light of the socio-economic changes which have taken place since the beginning of the 1973 crisis? An article by Dadoy attempts to answer this question.

For the trade unions, the odds were uncertain. Historically, trade unions were based on a trade. It was by their skill and their ability to master the production process that trade unions were able to impose their power of negotiating working conditions and wages. But the power of the trade unions came under pressure on two fronts: by subdividing jobs and skills, the scientific organization of work made it more difficult to master the production process; and the democratization of education endeavoured to develop training in order to reduce tensions in the labour market. However, up to now, this development of education has been accompanied by increased needs on the part of enterprises for skilled labour; because of this fact, education was able to keep up its price in the labour market. But with the collapse of the policies of growth and the rise of unemployment, we have witnessed an increasing dislocation between education's place in the production process and remuneration. The phenomenon is still not too much in evidence for employers themselves hesitate to abandon the criterion of the diploma, which makes it possible to standardize wage negotiations. Employers, therefore, are resorting to subtle tactics: they may assert the principle of the diploma very strongly, but otherwise training and recruitment are organized so that there is a sufficient pool of skilled labour whose diplomas are not automatically recognized by collective agreements.

In these conditions, the trade unions feared that further vocational education would be used by the employers to put through their new manpower policy by the massive recruitment of poorly educated workers or dropouts and by the use of further vocational training in the enterprise to teach them skills of interest to the firm. The internalization of qualifications would thus insulate the enterprise against the labour market, deprive State diplomas and collective agreements of all meaning and confine all negotiations to the enterprise. For the trade unions, that meant the danger in the long run of considerably weakening their ability to negotiate.

On the other hand, the trade unions could not accept that less-privileged workers should be imprisoned in their social condition at a time when the classic mechanisms of vocational promotion were becoming inoperative. In that situation, the trade unions placed their odds on further vocational education, in the hope that they could control the phenomenon thanks to the pressure of the workers.

For their part, the employers feared that they would be swamped by a massive demand for in-service training, which would increase the cost of the labour factor at a time when national and international competition was becoming more acute. They also feared that the increase of knowledge and skills might lead to a radical reshuffling of the hierarchic structures in the enterprise. In the long run, the trade unions' control over further vocational training led to a

division of power over personnel management, an idea which was totally unacceptable to company directors.

Nevertheless, the employers had two reasons for being interested in training policy, provided that they could keep control over the way in which qualifications were recognized: first, the expected technological evolution (automation and data processing, new forms of energy, etc.) and the rationalization of the production process and the work process, aimed at improving the productivity and profitability of enterprises — an essential condition for their survival — made the reinforcement and development of qualifications indispensable; while, secondly, the scarcity of promotions coupled with mass dismissals for economic reasons, as well as increased unemployment, demoralized the personnel and made management of the labour force more difficult because of the loss of the traditional incentives. By facilitating retraining and opening up some prospects of promotion, which were made more attractive by their hyper-selective character, further vocational training represented a new means of stimulating the personnel.

There were well-justified fears on both sides. In fact, however, they were not substantiated, mainly because of the economic crisis.

The crisis completely destabilized power relationships and reassured employers in their attitude. The point at issue has shifted from qualification to employment. Enterprises are not swamped with requests for training and the trade unions are absorbed in the struggle for jobs.

No war will be waged for qualification.

Although this analysis refers more specifically to the case of France, it seemed important to present it, since the breaking off of relations between education, promotion and wage increases for the theoretical, if not verified, benefit of the struggle against unemployment is a phenomenon which characterizes vocational training practices in the countries with which we are concerned.

NOTES AND REFERENCES

1. We use this euphemism, as defined by Touraine, to designate those who hold political power in an enterprise. It is, of course, quite clear that the enterprise is not a social actor, but a structure which cannot function without the other actors — the workers.
2. Dubar, C. *Formation permanente et contradictions sociales.* Paris, Editions sociales, 1980, p. 167.
3. *Ibid.*, p. 170-171.
4. Cf. Roustang, G. A-t-on besoin de gens formés? *Esprit* (Paris), octobre 1974, p. 108-190.
5. Dubar, C. *Op. cit.*, p. 170-171.
6. *Ibid.*, p. 174.
7. *Ibid.*, p. 169.
8. Dadoy, M. La qualification et la formation professionnelle continue dans les entreprises. *Pour* (Paris), n°81, février 1982, p. 19-27.

CHAPTER XX
Forms of further training and initial education

Although the main point at issue in further vocational training has shifted from qualification to employment, this nevertheless recalls the debate we have analysed about initial education. We are now able, therefore, to inquire how the policies of further training associated with enterprises — as well as the other types of further education — are connected, depending on the realities of work and of vocational relations, with the policies of initial education which are the responsibility of States.

THE PLACE OF SCHOOL SYSTEMS IN FURTHER EDUCATION POLICIES

First of all, we can ask ourselves whether the influence of enterprises has not led to a new division of work between forms of initial education of the school type and in-service education, particularly in such countries as France, where State control over initial education is strongest. This new division would seem to tend, for example, to leave the tasks of a lengthy initial education to the school system, as well as those of reconversion and advanced instruction, which are also lengthy and equally expensive. Enterprises, for their part, would be responsible for adapting workers to the specific details of the production process (training executive staff, initiating workers to their jobs, preparing special technical developments, and social and ideological integration). It is obvious that this division reflects the state of the relations between social partners (employers and trade unions), the way in which these partners envisage and influence the roles of the State in relation to education in general, and also the way in which the State itself makes use of its prerogatives, its educational structures and its resources in the fields of initial and further education.

It is difficult to define the role of the school system, in its capacity as the supplier of further education in a market which responds primarily to the needs of enterprises. Consequently, the objectives which, early in the 1970s, might have been to ensure that further education had a catalysing effect in bringing about innovations in the school, have not been achieved because the school system has not been flooded with requests from enterprises for further education. The reasons for this situation can perhaps be found in the enterprises' method of internal decision-making with regard to further vocational training. As consequences of the situation, we see the development of alternating courses of initial education and the role played by the school system in dealing with the present unemployment.

In other countries where the socio-economic role of the State is much less developed than in France (as in Italy for example), and where employers and trade unions

handle questions of further education without direct intervention by the State, the question of the connections between initial and further education is posed in a general way and not as a by-product of the introduction of further education. It should be pointed out that it was rather at the initiative of the trade unions that systems were established and that they were very much concerned about the problems of the school system (democratization, failures, diplomas, social inequalities, etc.). The connections between further and initial education were therefore considered the main element in the demands for further education and in its practices. From this point of view, the question of the borderlines between general, cultural and vocational education is to be found at the centre of the debates, both in the school system and in the practices of further education. It is quite normal, therefore, that the school system should be asked to respond to requests for further education aimed at reconstituting a vocationalism containing certain aspects which are linked to work and education.

Lastly, in countries where the role of the State in initial vocational education is very limited, as in the Federal Republic of Germany, and where vocational relations are governed by formalized systems of the co-management type, further vocational education is looked at from the same point of view as initial apprenticeship. As a result of this, further vocational education is included in collective labour agreements (in the form of educational leave), while State structures such as the Federal Labour Office are the ones most concerned and institutions such as the people's universities are the ones which respond the most to requests for further education outside the enterprises.

Moreover, the very fact that further vocational training is considered as a prolongation of apprenticeship leaves open other fields for adults, such as civic, political or trade union education, which are recognized at the legislative level and in agreements. Here we find ourselves in the opposite situation to that of Italy, since the barriers between general and vocational education have been strengthened, at least formally.

TOWARDS FORMAL FURTHER EDUCATION

These differences between countries pointed out by way of illustration all emphasize one and the same phenomenon: the role of formal instruction as a reference point for the policies and practices of further education, whether this reference point is implicitly reinforced (as in France) or explicitly weakened (as in Italy). We do not mean that further education is a mere reproduction of the school, but that the strength of the school's norms and values has a great influence on the objectives and behaviour of the actors involved. What, then, does this mean for our problem of the interactions between education and work?

The principal criticism heard in most countries with regard to formal education systems today is that they are cut off from socio-economic realities in general and from work in particular. However, we have to agree with Verne that:

> When analysing the various dimensions of the world crisis of education, when denouncing the rising costs of school programmes, when revealing the hidden curricula of formal institutions, nobody suspected that the main effect of this radical criticism of ten or fifteen years of compulsory schooling, and of full-time further training, would inevitably lead to the idea of

lifelong education, facilitate the educationalization of all ages and make permanent attendance in the classrooms compulsory.

Criticism of schooling at least had the paradoxical effect of strengthening the belief in the need to provide education, to provide more and more of it so that more people could enjoy it more often, and thus produce new educational mechanisms for creating a social demand for education by improving the production/consumption system. By making the need to continue providing education a self-evident fact, we make sure at the same time that education is a capitalist, measurable and money-making property. The transition from formal schooling to training confirms the substitution already made by the school by transforming a value into a service and by linking the consumption of the service to the compulsory and exclusive attendance at an institution charged with producing it in an industrial form.

It is presumably through the search for alternatives provoked by a reaction to the negative effects of formal schooling that we have advanced from an educational process limited to the first years of life to the presence of permanent or lifelong education.[1]

This criticism of lifelong education, which we have already touched on in connection with the system of recurrent education, takes us back directly to our own problem: as we have identified the well-being of the working class with public and compulsory education, the claim now is that lifelong education introduces a new way of life which will enable us to close the gaps which the school has opened up between young people and adults, education and production, work and leisure, active life and passive life, intellectual work and manual work. However, ...

...'further training' is determined by the new requirements and characteristics of the present phase of development of the industrial mode of production, which is characterized by, among other things, a knowledge and information market and the importance of technology. Offered as an alternative to formal schooling, as an attempt at 'deschooling', lifelong education is in fact called upon to follow the same underlying curricula. For economic reasons and the present situation of industrial development, it has simply become essential to transfer to adult education certain functions which the school is no longer able to or does not perform satisfactorily.

If we shift the problems of over-industrialized societies towards problems of education and training, we are trying to cover up the problems raised by uncontrolled technology. The problem of education is no longer to develop new training strategies and to institutionalize educational reforms. It is to attack the monopoly which the industrial method holds over production, the organization of industrial work, so that men will be able to recover a relationship with their environment — which will not be achieved through the medium of tools they no longer control. All the eloquent protests of humanistic educators call for education based firmly on the real, everyday life of the worker, from which it draws its content and richness and in turn gives new dimensions and outlooks. All the hopes we hold out for an education anchored on experience so that it can set in motion an endogenous process of enlightenment and elucidation, all the aspirations which appeal to this intellectual adventure through which the underdeveloped man-object will become aware of his own historicity — all these things have a meaning if they are accompanied by a criticism of industrial tools, the far-reaching monopoly of vocational workers and the industrialization of values. We cannot, at the same time, both want to have an integral education in a global process aimed at the complete man and adapt education to the acceleration of progress as industrially defined. A society with an uncontrolled technology cannot be educational. On the contrary, it needs the help of the schools.

The dimensions of industrial tools having exceeded certain limits, they have become intolerable because they are uncontrollable by most people, and an uncontrolled tool is an unacceptable threat to the human equilibrium. The increase in the number of tools beyond criticial

limits always foreshadows more programmed education, functional literacy, dependence, exploitation and impotence. There can be no question about man's ability to learn, his ability for autonomous self-development and his ability to be creative. But the over-efficiency of industrial tools threatens this ability, which is also being destroyed by their increasing counter-productivity.[2]

What Verne fears, therefore, in connection with the institutionalization of further education, is that it will 'put one's whole life into school', and he also fears that local skills, workshop cultures, attempts at adult education (especially of the associative type)[3] might have to be cast in a specific mould by the constraints of a kind of work whose subdivision and organization will have hardly changed. Lastly, he denounces the vocationalization of further education activities which inevitably recall the movement that marked the separation between places of production and education in the nineteenth century.

We have thought it useful to repeat these warnings here, even if they may seem excessive, because they take us back to the heart of the eco-logical approach to work which we have defended in earlier pages and because they show that the objective of reconstructing vocationalism should not stop with basic education but should also be interpreted in relation to the present developments of systems of further education

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2. *Ibid.*, p. 38, 45, 46.
3. Subjects such as education of the people, trade union education and cultural education will not be covered here even though, in one way or another, they deal with questions of work (or non-work) and its links with training.

Conclusion

Some prospects concerning developing countries

The analysis of the market-economy industrialized countries may seem to be quite foreign to the situation in developing countries, and more especially in the less advanced of them (most of which are in Africa). It is quite obvious that their geographic, sociological, historical and political circumstances are quite different from those of countries which, as has been said, have entered into a new economic revolution. However, we may ask ourselves whether the questions we have just raised concerning the work crisis, technological evolution and the appearance of a new vocationality are not equally relevant in contexts which are about to be overthrown by economic, climatic and cultural crises. Our assumption is that the conflicts of models in all fields, which are today occurring in the least developed countries, are challenging the so-called values, ideas and practices just as much as the references which have been imported into these countries *en masse* since the beginning of the century; and that this questioning is beginning to have consequences in the African countries which are concerned about drought as well as in the 'post-industrial' countries which are facing far-reaching crises and economic restructuring.

First of all, ideas about work cannot but be radically changed in countries where the trend in agricultural production, the emergence of urban concentrations, demographic growth and the migrations caused by drought are overthrowing socio-familial structures and creating labour markets in circumstances which did not exist fifty years ago. Therefore, the battle against unemployment or under-employment becomes a priority for most governments of the developing countries, without any analysis of the suitability of the solutions proposed in relation to the growth of ideas about work in the populations in question.

The presence in the developing countries of technology which has been directly transposed from the industrialized countries, without any regard for local circumstances, has also left deep-rooted traces on the populations. In fact, conflicts with technological cultures are appearing in many fields where the resistance of the local culture is strictly limited. The consequences are to be found in the destruction of local methods of production — perhaps in the same way as rather far-reaching transformations are now taking place in the industrialized countries. In both cases, however, reactions are beginning to be felt which would tend to challenge some of the postulates of the present technological revolution.

It is quite obvious that such a situation cannot help but have an effect on the educational policies and practices of these countries. It would be tempting indeed to compare the evolution of artisanal apprenticeship, which we have discussed in the case of Europe, with the educational policies concerning human resources for the

second millenium. Such a comparison is not possible, but the parallel reveals a number of interesting phenomena, such as the relation between the appearance of formal education systems and economic development. While in Europe schools were established to keep pace with the growth of needs for socio-economic development, the expansion of school systems in the developing countries — the African ones in particular — was due to political and ideological rather than economic reasons. In fact, it soon became evident that the claims in the early 1960s for the priority role of school education to bring about 'modern' economic development produced no results. Accordingly, the dependence of educational phenomena on economic facts appears to be valid in the industrialized as well as in the developing countries. At the same time we can see the political and ideological functions of their education systems, which were to encourage, as in Africa after independence, the establishment of nations and the cohesion of States.

Since the end of the 1960s, therefore, the developing countries have been faced with a paradoxical situation in which the myths of 'modern' economic development have collapsed one after the other, while education systems — mainly basic education — were continuing to develop using this model of development as their principal point of reference. Given these conditions, it is not surprising that certain proposals emerged which intended to bring education into a closer relationship with the surrounding socio-economic reality by developing, for example, interactions between training and production. Paradoxically, we would say that the situation is just the opposite in the industrialized countries; the 'backwardness' of education systems in relation to the realities of production is what is encouraging the establishment of programmes of interaction between education and work.

This comparison should not be pushed too far, since it would presuppose the existence of a standard of reference, in socio-economic terms, in relation to which education systems would be either 'ahead' or 'behind'. It must not be forgotten that the history of each country has created unique conditions in terms of skill, technological culture and vocationalism, and that a dualist view of reality is not in keeping with the facts. In other words, it is no longer possible to praise formal education and industrial development as something modern and to depreciate out-of-school education and artisanal production as simply traditional. In this respect, the rediscovery of on-the-job training practices illustrates the complexity of the situation, since there are limits which cannot be exceeded except by some link-up with formal education — whether at the level of the education of the young or at that of adult education. As in the case of the industrialized countries, therefore, we once more find the connection between formalized and non-formalized educational processes at the very base of all ideas about interactions between education and productive work. The question which still remains open today in both contexts, therefore, is that of the institutionalization of these interactions. We cannot answer this question because the only driving force behind these interactions is the special dynamics of the social actors in each context.

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APPENDIX I

Interaction between education and productive work

To stimulate the debates during the thirty-eighth session of the International Conference on Education, held in Geneva from 10 to 19 November 1981 at the International Conference Centre, the special theme of which was precisely the 'Interaction between education and productive work', the International Bureau of Education prepared a working document (ED/BIE/CONFINTED 38/5). Almost the entire content of this document is reproduced below because of the continuity it brings to the discussion of this same subject in this monograph.

This document was based on the official replies from fifty-five Member States of Unesco to the IBE questionnaire ED/BIE/CONFINTED 38/Q/2/80. It also draws upon the decisions of the General Conference of Unesco and on the recommendations adopted by regional conferences of ministers of education and those responsible for economic planning in the Member States of various regions.

INTRODUCTION

1. The special theme to be discussed at the thirty-eighth session of the International Conference on Education, 'Interaction between education and productive work', is a matter of active concern to educational authorities and to governments generally in all parts of the world. The purpose of raising this theme at the Conference is to provide an opportunity for participants from Ministries of Education and from other interested bodies to discuss their achievements and preoccupations in this field, to exchange experience and jointly to recommend ways and means by which the interaction between education and productive work might be improved in their respective countries....

4. To deal with this topic the Conference is invited to follow the structure of debate which has been proposed by the IBE Council. The main elements of this structure are:

(a) the *current situation* and government policies relating to interaction between education and productive work;

(b) *measures taken or planned* to improve such interaction at the various levels of education;

(c) *favourable factors, difficulties encountered and results* obtained in the implementation of such measures....

12. In conformity with the suggestions made in the introduction to the questionnaire, the words 'education' and 'productive work' are used in a rather broad sense throughout this report to include any type of education, formal or non-formal, and any type of socially useful activity. Expressions such as 'school and higher education', 'schooling', 'practical' or 'creative' activities are used, as appropriate, when reference is made to particular forms or levels of education or productive and other socially useful activities.

I. THE CURRENT SITUATION

13. All the governments which have replied to the questionnaire report that they are giving increasing attention to interaction between education and productive work and more generally to the relationships between educational activities and the world of work.

14. The reasons given for this preoccupation are many and varied. Some relate primarily to the educational system itself and include references to trends in traditional educational patterns towards isolation from life outside the school or university, lack of relevance in what is taught to the demands in employment, undue concentration on intellectual development as distinct from the development of the individual as a whole, and more generally, a lack of understanding on the part of many educators of the complex social, economic and technical realities of the world of work in modern society.

15. Others relate more closely to production. Rapidly changing and increasingly complex scientific applications and technologies require changes in the knowledge and skills acquired at school and in more specialized vocational and technical education and training. As industrial applications become increasingly interdisciplinary, subject teaching — with little communication among subjects — is considered anachronistic. Similarly, the sharp distinctions traditionally made between theory and practice in training and education lose their rationale as such differences are blurred in practical working life.

16. What is sought in most of the reforms described in the replies received from the various governments is the active use of a broader range of didactical methods, including, in particular, practical and socially useful work as an element in the teaching/learning process. This implies a rapprochement of subject content in the curricula to real life situations outside the school; relevance to the current future activities of the students; and diversification of educational objectives in line with the manifold requirements of the world of work. A basic prerequisite, according to the responding governments, for attaining these goals is improved interaction between education — at all levels and in all forms — and productive work, or more generally, the world of work.

17. The points of departure in this reform movement differ greatly between countries. In some of them schooling — at both primary and secondary levels — has been, and sometimes still is, predominantly 'bookish' and educational activities all but isolated from life outside the school. Even the most timid introduction of some school-garden activities, hand-tool work in wood or metals or preparation of food and hand-sewing constitutes a fundamental break with tradition. In others practical applications and productive work have formed part of curricula throughout the educational process in both schools and higher education for many years and the reforms relate more to such aspects as integration of productive work experience with subject teaching in the classroom or the choice of work items in productive work.

A. Long-term development and reform objectives

18. To some of the respondents what is required is a return to pedagogical fundamentals formulated centuries ago by such pioneers in educational thought as J.A. Comenius (Komensky), J.J. Rousseau and J.H. Pestalozzi, or more recently, by A.S. Makarenko. Others refer to the educational thinking of political philosophers [such] as Karl Marx or Lenin or to leaders in the early struggle for independence such as Mahatma Gandhi. Most of the replies, however, attribute modifications in policies and changes in objectives, structures and programmes to three sources: conditions, developments, trends and needs typical of the past few decades; changes in social requirements, conditions, and opportunities; and broad policy perspectives and political ideological objectives of the government concerned.

19. Generally the replies confirm the trend to consider educational development objectives and policies as an integral part of overall social, economic and cultural development. Educational development plans, which in many countries used to constitute separate and independently elaborated documents, have more recently tended to be integrated into national development plans and subordinated to more general development objectives. While educational development itself remains a major development

objective, individual educational activities and the curricula governing them become means of attaining other socio-economic and cultural objectives.

20. About a third of all responding governments indicate that the criteria applied in setting immediate objectives in educational development planning and in specifying educational policies constitute a mix of social, economic and cultural considerations. Finland, for instance, stresses the combination of pedagogical, economic, social and cultural objectives pursued in all recently implemented or planned reforms in both school and higher education and in the development of adult education patterns and programmes. Cyprus specifies that objectives in educational reforms include improved development of the personality of the child and adolescent, better preparation for working life, respect for work in all forms and of all kinds, development of social thinking, training of effective manpower, and production of goods and services within the school system. Saudi Arabia emphasizes preparation for working life and teaching of relevant skills at all school-leaving levels, and the United States of America in its reply emphasizes the tendency in recent educational development to 'merge economic with social and educational development objectives'. Czechoslovakia describes its educational development plan as part of 'an overall policy where economic, social, cultural and educational objectives form a homogeneous, integrated and mutually conditioned whole'.

B. Intermediate and immediate objectives

21. The trend towards merging social, economic and cultural objectives with pedagogical and more generally educational ones is found also in the formulation of the more direct and immediate objectives cited in the various replies. Productive and otherwise socially useful work is being introduced into the school curriculum or into higher education not only for its pedagogical value, but also because of its economic value in contributing to productive outputs as well as the social and cultural value of learning essential productive skills in interaction with adult workers.

22. Among pedagogical objectives mentioned in the replies those most often quoted are the balanced development of both the physical and intellectual capacities of the child and adolescent in primary and secondary education, and the interplay between theory and practice in intermediate and higher levels of education particularly in the teaching of science and in vocational and technical education. Reasons given for introducing work elements at an early stage in the educational process include development of team-work habits and concepts, understanding of the social value of all types of work, and recognition of the interdisciplinary nature of working life. Hungary, for instance, in quoting the relevant directives for secondary schools, emphasizes the importance of physical work for understanding the 'real sense of abstractions like "culture in work", "technological discipline" and "organization".'

23. Pedagogical reasons given for various measures taken in many developing countries are clearly influenced by economic considerations — especially the goals of increased agricultural production. They include such practices as school breaks at peak periods of rural work and adaptation of school periods to the agricultural calendar to enable children and young persons, including university students, to participate in the field work. Important related objectives are breaking the isolation of the school, providing opportunities for interaction with adults from different social strata and giving insights into conditions and requirements in productive work.

24. Pedagogical objectives relating to the intermediate and older age groups in school and higher education tend to relate more directly to preparation for entry into the world of work. Various measures taken are motivated by such concerns as improving understanding of conditions and requirements of productive life, orientation and guidance for a choice of education, training, or occupation, acquisition of 'pre-vocational' or 'life' skills, provision of basic vocational skills and knowledge in broadly de-

fined occupational fields, or of initial work experience through participation in productive work between terms or during breaks in the school year or in special work/study schemes for school leavers without special training or previous work experience.

25. The objectives of increased relevance in schooling at the earlier school-leaving ages and of improved orientation concerning the world of work have in many countries led to greater diversification of curricula for the age groups above the primary school. The measures taken include a wide range of changes in the educational opportunities provided for: increase in the offer of optional subjects beginning at the age of 12 or 13; provision of opportunities for choice between a larger number of streams in the past years of schooling; and streams of a pre-vocational or vocational character in many cases. The essential objectives are to fit curricula better to the differential capacities of the students and to smooth the transfer from school to work.

26. Measures taken often go beyond the confines of the school. Particularly in countries where unemployment among young school leavers has become a social problem, a series of educational measures have been carried out to provide first work experience or initial training. Experience has shown that such arrangements often lead young persons to reassess the value of continued schooling. The primary clientele is composed of young persons who have tended to drift out of school, who have no specific vocational training and little chance of finding valid training in employment.

27. Trends and objectives in vocational and technical education and training — as they emerge from the replies to the questionnaire — vary greatly depending upon traditions of such education and training in the countries concerned. In countries where a 'dual system' (such as apprenticeship combined with courses of related instruction at a specialized school or college) is applied at skilled worker, technician or technologist levels, the trend has generally been to increase the time devoted to theoretical studies and to widen the scope of general civic and economic education in the curricula. Austria and Switzerland, both dual system countries as far as skilled worker training is concerned, report demands for an extension of classroom instruction from one day a week to one-and-a-half days or even two full days per week. As the total period of apprenticeship remains unchanged or, in some cases, is even shortened, this means a decrease in the time devoted to practice and skill training including productive work in undertakings, although some of the additional time for school-based instruction might be devoted to practical training in laboratories or workshops attached to the school.

28. Countries which have a predominantly school-based system of vocational and technical education, on the other hand, frequently report on an extension of the periods devoted to practical work in the school workshops as well as of productive experience required for graduation. Kuwait, for instance, reports that the laboratories and workshops attached to the schools are being extended and improved and that the time students must spend in productive work in undertakings is being increased.

29. A comparatively new feature found in several replies is to require — or at least encourage — the inclusion of productive work experience in the requirements for entry into teacher training, or as an integral part of the teacher-training programme. Several governments report that the lack of knowledge, or direct experience of the world outside the school, is an obstacle to closer interaction between education and productive life. Switzerland reports that primary-school teachers, who have completed an apprenticeship before taking up teacher training, have constituted a particularly positive element in the corps of teachers. Australia reports on several schemes for bringing teachers into closer contact with the world of work. In the United Kingdom employers have initiated a scheme under which longer-term attachments to industry are offered to serving teachers, while local authorities in co-operation with local firms often provide similar, if shorter-term, attachments for serving teachers to gain first-hand experience in industry and commerce. Several countries give special credit for

practical work experience in choosing among applicants to teacher training.

30. Pedagogical objectives such as those described above are, however, often mixed with broader social and economic objectives. Chile has introduced a nutrition education scheme into rural schools where growing vegetables in the school garden is combined with study of nutritional biology. New Zealand gives as one reason for recent changes in curricula the necessity of involving schools in the general drive to improve the balance of payments situation. The schools are required to assist in the change of attitudes towards occupational choice.

31. Combined social and economic objectives are found in many references in replies to the questionnaire to improved qualitative and quantitative adequation between manpower supply and demand. Argentina reports on continuing efforts to maintain the 'vertical structuring and horizontal diversification of the educational system to ensure employment opportunities according to geo-economic region'. Elements of similar policies are found in a wide range of replies from both developing and industrialized countries. The modes of translation into practical action are mainly three: (a) regionalization of some aspects of educational planning in closer co-operation and co-ordination with regional and local representatives of the world of work — whether from the ministries concerned with manpower questions or directly with employers and workers (or with all three); (b) particularly in developing countries, increased emphasis in vocational and technical education and training and efforts to attract increasing numbers of school leavers to streams and options which include direct training for management and executive levels of productive work; and (c) increased attention to the further training and retraining of adults in view of rapidly changing — and increasingly sophisticated — requirements in many occupations and fields of employment.

32. Analysis of measures taken or planned would suggest that the stated objectives should be, in many cases, read with some caution. The objectives would often seem more ambitious than what could conceivably be attained through application of the measures described even in the most favourable circumstances. There are also important conceptual differences to be taken into account. A number of countries emphasize that they would accept productive work — in the widest sense of the word — as part of the educational processes only in so far as strictly educational objectives would be more effectively pursued by such means. At primary and intermediate levels this means primarily the development of psychomotor aptitudes, the learning of a few basic skills — of everyday use — and an improved understanding for theoretical notions taught in class. The place of learning would mostly be located within the school. At upper secondary and in higher education productive work experience would be provided only when entry into productive work (or orientation about it) is included among the objectives of the particular stream or line of education concerned. In other countries — somewhat at the other extreme — productive work experience, even at primary levels, and often in the sense of participating with other age groups in directly productive activities, is conceived as one of the means of attaining the overall objectives of closing gaps between the school and active life and of promoting the overall development of the child and preparing him for a smooth transfer from school to work.

33. Such differences in concept exist between countries irrespective of levels of economic and educational development and, largely also irrespective of the sociopolitical ideology and objectives pursued by the governments concerned.

C. Regional conference recommendations

34. Regional Unesco Conferences of Ministers of Education have, in the past few years, discussed a wide range of questions relating to interaction between education and the world of work in general and productive work in particular. A brief recapitulation of the relevant parts of the recommendations

adopted by these regional conferences is given below.

35. The Conference of Ministers of Education of African Member States, meeting in Lagos, Nigeria, between 27 January and 4 February 1976 and organized by Unesco with the co-operation of the Organization of African Unity (OAU) and the Economic Commission for Africa (ECA), discussed a concept of basic education, linking formal and non-formal education in the framework of lifelong education and therefore calling for new types of relationships between the educational system and the environment, called for educational approaches which would both develop the potential of each individual and promote advancement of economic and material levels 'by putting into practice learning procedures that are directly linked to the environment in which the population lives and by incorporating suitable productive work related to study subjects'. It also suggested radical reforms in teacher training to enable teachers to serve a wider range of clientele, including adults, to teach practical tasks as well as theoretical subjects, including 'some manual and vocational work linked with the world of work and the economy'. The recommendations adopted by the conference further emphasized the need for closer links to be established between education and productive work, and more generally with the environment. The aim should be, in the terms of the Lagos Declaration, 'to provide a new form of education so as to establish close ties between the school and work; such an education, based on work and with work in mind, should break down the barriers of prejudice which exist between manual and intellectual work, between theory and practice, and between town and countryside'.

36. The Conference of Ministers of Education and Those Responsible for Economic Planning in the *Arab States*, organized in co-operation with ALECSO and meeting in Abu-Dhabi between 7 and 14 November 1977, adopted six recommendations (Nos. 11-16) which have some relevance in the present context. The texts emphasize the necessity of orienting and utilizing education to serve the purpose of development and to expand and improve the systems of vocational and technical education and training.

37. The Fourth Regional Conference of Ministers of Education and Those Responsible for Economic Planning in *Asia and Oceania*, organized by Unesco with the co-operation of ESCAP and meeting in Colombo between 24 July and 1 August 1978, adopted five recommendations (Nos. 14-18) which have a bearing on the interlinking of education and productive work. Referring to the general tendency in many educational systems to lay too much stress on cognitive learning while failing to produce productive skills, to growing unemployment problems among young persons, contrasting with critical shortages of skilled personnel in some sectors, the Conference recommended Member States to promote work-oriented education, to reform teacher training and examination systems and to accelerate, as required, vocational, technical and agricultural education and skill training. The Conference also recommended Member States to develop flexible mechanisms linking education with productive work at all levels and to strengthen on-going efforts in curriculum reform, especially at secondary levels, with a view to providing the basic knowledge and skills required by each individual to absorb specific professional and vocational training at a later stage. Member States were encouraged to develop various forms of student participation in socially useful work to improve their systems of technical, vocational and out-of-school education for young people and to undertake policy-oriented research on changes in curricula and educational methods to develop the attitudes, skill and knowledge that are conducive to their employment. They should also seek to clarify, through studies, the linkages between education and economic development, especially at the post-secondary stage.

38. The Regional Conference of Ministers of Education and Ministers of Planning in *Latin America and the Caribbean*, organized by Unesco with the co-operation of ECLA and the OAS and meeting in Mexico between 4 and 13 December 1979, adopted

three recommendations (Nos. 9-11) on education and working life. The Conference, considering the general tendency to plan education, employment and productive work as separate concepts and the continuing shortages of adequately trained manpower, recommended Member States to intensify their efforts to bring about better compatibility between the educational and the productive systems, to provide for early initiation of pupils into the values and practices of productive work and an appropriate vocational orientation, taking full account of national legislation and international standards relating to the work of children and young persons, to promote different types of vocational training with special reference to manpower shortage areas and marginal populations, to stimulate development in fields in which the rate of employment creation is likely to be high, and to promote a continuing dialogue between those responsible for employment and education respectively. Considering the necessity to intensify action promoting an education by work, at work and for work, the Conference further recommended that Member States pursue policies of improving adequation between supply and demand for trained specialists at various levels, between education and employment, and between objectives in economic, social and educational policies. The importance of linking education adequately with productive work is also emphasized in the Declaration adopted by the Conference.

39. The Third Conference of Ministers of Education and Member States of the *Europe Region*, meeting in Sofia between 12 and 21 June 1980, adopted a recommendation (No. III/3) relating to education and the world of work. Considering the increased social and economic functions of the educational system, the Conference recommended Member States to develop and amplify the connection between education and the world of work, to ensure the best possible balance between general and vocationally oriented education and to take steps to introduce practical work into the teaching and education process in both secondary and higher educational institutions. They should strive to achieve greater efficiency in the process of introducing school leavers and graduates to working environments and in their adaptation to the world of work while pursuing policies of full employment for young people.

40. All five conferences requested Unesco to give special attention to the various interrelationships between education and the world of work, to undertake research and technical co-operation with Member States in these fields, and, as appropriate in each case, to collaborate with the relevant regional and international organizations on questions relating to education, training and employment.

41. Reference has already been made to the importance attached to improved links between education and the world of work in general and to the introduction of productive work into educational processes by recent sessions of the General Conference of Unesco and, in particular, to the references to this subject contained in the Medium-Term Plan and the Programme and Budget texts adopted by the nineteenth, twentieth and twenty-first sessions of the Conference. It would carry too far in the present context to describe the comprehensive activities in the form of research and development activities, exchange of information, conference and seminar discussions and other activities carried out by Unesco and its various subsidiary bodies, including the Regional Offices, the International Institute for Educational Planning and the International Bureau of Education in implementation of these policy decisions and plans of activity.

42. Attention should, however, be drawn in this context to the provisions for including productive work in general, vocational and technical education contained in the Revised Recommendation concerning Technical and Vocational Education, 1974, and to the parallel Convention (No. 142) and Recommendation (No. 150) adopted in 1975, by the International Labour Conference, concerning Vocational Guidance and Vocational Training in the Development of Human Resources. Unesco is currently undertaking a follow-up inquiry concerning

the implementation, by Member States, of the first mentioned instrument.

43. Relevant in this context are also the comprehensive international standard-setting activities of the International Labour Conference concerning Minimum Age for Admission to Employment, in particular Recommendation No. 146 and Convention No. 138 on the subject adopted in 1973. The Convention No. 138 contains a separate Article 6 relating to productive work forming part of a course of education or training.

D. Summary

44. There is a general trend in educational policy, planning and reform to place new emphasis on improving links between education and the world of work at all levels. Educational objectives pursued include: the use of productive and other socially useful work as a means of developing a broader range of aptitudes among children and young persons; the development of the personality as a whole; the provision of a broader range of socially useful knowledge and skills; the closing of perceived gaps between theory and practice; and an improved understanding of the economic, social and cultural aspects of the world of work, including a more effective occupational orientation and educational guidance.

45. The motivations for change vary between countries. Social, economic and cultural considerations predominate and include the establishment of an adequate balance between the structure of supply of trained manpower at various levels and in various fields with demand and opportunity at these levels and in these various fields.

46. While educational advancement remains a separate development objective, detailed planning relating to the various forms and lines of education is increasingly subordinated to other objectives in economic, social and cultural development. Recent national plans lay special stress on increased relevance in educational curricula to the local and national environment and the future employment opportunities of the young persons concerned.

47. Links between education and productive work are introduced already in the first years of schooling by such arrangements as school gardens, creative activities using local materials and, in some countries, introduction to socially useful skills and directly productive activities. They are further developed during the periods of secondary education through diversification of educational programmes, the introduction of new subjects into the curricula and the introduction of provisions for educational and vocational guidance and of various forms of prevocational, basic vocational and technological instruction. Provision is also made for students to gain some initial work experience during the last years at school and to be given opportunity for direct study of working environments and productive work situations.

48. Particularly in developing countries but also in some industrial ones, new emphasis is being placed on the development of vocational and technical education in their various forms and to reinforce links between school-based training and training in employment. Provisions for practice and training on-the-job are extended in both intermediate and higher and vocational and technical education and the theoretical and general educational elements in 'dual system' vocational training are being reinforced.

49. In adult education there is a gradually shifting emphasis from generally cultural and social studies towards more directly work and employment-oriented courses required by accelerating technical and social change in productive work....

II. MEASURES TAKEN OR PLANNED

51. Just as the objectives and reform priorities in education vary greatly between countries — and the needs for change in view of differing traditions within the educational systems — so the measures taken or planned to attain a wider measure of interaction between education and productive work vary between countries and between levels of educational activity.

A. Levels of education

The primary-school age

52. Measures taken at primary-school level — here defined to relate primarily to 6-12 year olds — principally concern the reinforcement of provisions for practical and creative activities. Argentina, Cyprus, Jordan and Morocco report on making more room in the curriculum for practical activities; Israel has reviewed and further developed the programmes for work on wood, metals and plastics in the primary classes; Czechoslovakia, the German Democratic Republic and Iraq mention special attention being given to the provision of adequately equipped workshops, school gardens and other facilities for practical work in the school; Chile, Colombia and the Philippines report on provisions being made for school gardens and, in rural areas, for children to participate more actively in agricultural work in the village, often in the context of integrated rural development programmes.

53. India, in a general effort to develop a more relevant educational pattern for children in both rural and urban areas, is undertaking a pilot programme for the introduction, along lines developed by the Education Commission in 1966, of what is termed 'socially useful productive work' in the curriculum of general education. The aim is to forge links between education and productivity. It includes participation in any type of productive work and the choice of work programmes and items is done in the light of the local economy and patterns of employment. Productive activities continue throughout the ten-year schooling period.

54. Practical activities of this kind usually occupy two to three hours per week during the period of primary schooling and, in some countries, continues in intermediate or lower secondary education. A somewhat different approach is currently being tried in Nicaragua, where full time work is combined with distance education during the sixth year of primary education.

55. Opinions differ among the responding governments on how far children should be allowed or invited to participate in directly productive activities, whether organized within the school in its own workshops or outside. A few countries actively promote development within the school system of socially useful activities which might approximate production of commercial articles or constitute some kind of training in locally useful skills. The tendency in many integrated rural development programmes is to involve children directly in productive activities already part of the curricula of upper primary classes. Objectives are variously described as: providing for an introduction of children to the world of adult work, preventing children from being prematurely taken out of school because they are needed for work at home, in the fields or for informal apprenticeship, which constitutes a major system of out-of-school education and training in many developing countries. In some cases — as for instance indicated by India — the objective is also to broaden occupational patterns in the community by introducing training in skills new to the community, thus using the educational system as a means for raising income levels and broadening the occupational opportunities of populations in which children already work in traditional occupations.

56. Such practices are discouraged in some of the replies. Austria, for instance, points out that productive work by children under the age of 14 or 15 is prohibited in national labour law and international conventions. Zambia, echoing statements by other countries to more or less the same effect, stresses that 'productive work which undermines the learning function of an educational institution is not acceptable' and that the purpose of introducing productive work in the curriculum should be to enable every citizen to develop his capacities fully for his own good and the benefit of society.

57. At the primary-school level, there is an essential difference in educational approach in this context between developing and industrialized countries. In the latter — usually highly urbanized and occupationally diversified — the emphasis in practical activities within the school during the first six or seven years of schooling (even later in many countries) is to develop the psycho-

motor capacities of the child, to provide the basic knowledge and skills required for creative activities, to provide for variation in the learning process, and to teach such concepts as accuracy, quality of work and properties of different materials — all matters which textbooks cannot convey. The principal problems in the more developed countries in this context are to overcome traditional sex differentiations in practical activities, to maintain educational relevance in a changing world, and the gradual development in the child of an understanding for the world of work.

58. In contrast, in many developing countries, the problems described in the replies to the questionnaire are to make educational programmes relate adequately to a society in which children traditionally take an active part in production and distribution activities at an early age already. The aim becomes one of overcoming traditions of using children for educationally unrewarding tasks, of matching and enriching the informal learning processes in the home and in the various agricultural, husbandry and craft activities in which they may participate. In short, the intent is to aid the child to be 'one' with the community and, at the same time, to be a source of impulses in development and to be adequately prepared for life in a changing society. The time available is usually short; most children in rural areas and in the poorer parts of the cities leave school early. They are often withdrawn from school to work full time in workshops, in the home or in the fields. Increased relevance in education becomes one of the means of diminishing the risks for premature school leaving, and 'vocationalization' a means of infusing new skills and knowledge into a society in which the informal learning processes largely serve to transmit traditional and often obsolescent knowledge and skills from one generation to another.

59. Little attention is generally given in the replies to the complex problems posed by the more general social objectives in this context. While national and international standards and legislation normally permit the inclusion of productive work in educational activities — as exceptions to the more general rules concerning minimum age for entry into employment — when educational objectives are the principal ones pursued through such work, some of the arrangements described, for instance when productive activities aim at off-setting a considerable part of educational cost already at primary and intermediate levels, or when commercial production is arranged in the school or in attached workshops and occupies children and adolescents for a considerable part of the day, the activities concerned may be considered in some contexts as inappropriate use of the work of children.

60. Transferring the work from the family farm to the school may not be the best way either. School teachers are not necessarily well prepared for teaching agricultural or craft skills and agricultural work in a village school can easily develop into an amateuristic duplication of a learning process that the children are anyway subjected to in their spare hours at home. This justifies the care put in some countries on transferring to the community the most appropriate technologies through the productive work practices in educational institutions.

Intermediate and secondary levels in general education

61. Two general trends are found reflected in a majority of replies from governments relating to the intermediate and secondary levels of general education. One is to extend core programmes to be applied in all streams and to all students. The other is to include an increasing number of production related activities in the curricula. The measures taken or planned range from slight modifications in the provision of occupational information to comprehensive curricular changes to introduce 'polytechnical elements', 'technology', and related subjects in all programmes.

62. Unification of programmes of study at lower secondary levels is clearly a developing trend but not yet a universally applied principle. Some countries report an expansion of their system of comprehensive schools with diversified programmes,

sometimes in parallel with separation of grammar schools with a heavy academic bias in their programmes from comprehensive schools, community schools, village polytechnics and other similar institutions of post-primary education for medium and lower level performers. Moreover, some measure of differentiation is made even within core programmes in many countries, which report a unified basic school covering the first nine or ten years of schooling, by providing various options such as A and O level subject curricula, basic and advanced courses and voluntary additions to the programme which, in many cases, might be determining for future progress through the school system and into higher education.

63. In many respects, the most comprehensive attempts of creating effective interaction between education and productive work is found in countries in which the polytechnic form of education is applied in curricular development. Beginning at the primary school age with school garden and other practical activities using elementary tools and common materials, the programme is gradually developed at intermediate levels to include theoretical and practical initiation into directly productive activities, including work experience within enterprises in the final years of secondary education. In some countries the principle is applied in a somewhat modified form also in higher education. A basic feature in the system is close co-operation between educational institutions and productive enterprises.

64. In the German Democratic Republic, for instance, polytechnicalization of the curriculum resulted in the inclusion of 'socially useful work' in school gardens and school workshops in the primary classes. The curricula for the intermediate and higher levels of secondary education (classes 7-10) provide for classroom study of such subjects as 'productive work', 'introduction to socialist production' and technical drawing as compulsory subjects. In addition, two hours per week are used in the two lower classes for productive work in workshops arranged by a nearby industrial enterprise, where the pupils learn basic skills in the handling of manual tools and simple machine operations and carry out elementary assembly operations. Work items are, whenever possible, taken from the production programme of the enterprise concerned, whose workers act as instructors for the participating adolescents. In the last two years practical work periods are extended to three hours per week and students are gradually assigned to directly productive work in the factory to form part of the regular work teams.

65. Important aspects in the application of the polytechnical principle are the interdisciplinary integration of subjects and the coordination of theoretical instruction with practical learning and experience in productive work. The teaching of science and technology emphasizes applications in industry rather than basic theory; the choice of subject material is dictated largely by industrial applications and use of technology in other fields of economic activity. Mathematics is as far as possible directly related to its practical use in production, while history, economics and civics emphasize conditions and relationships in productive work.

66. The application of polytechnical principles to educational programming is a complex task. Hungary, for instance, stresses that 'work-oriented education may only be effective under well prepared and pedagogically grounded conditions enabling pupils to work both mentally and manually'. Six factors are suggested as essential prerequisites for this: (a) availability of up-to-date software; (b) proper organization of of the teaching/learning process; (c) use of proper forms and methods of teaching; (d) positive and constructive relations between teacher and pupil; (e) a properly functioning student community; and (f) effective self-service arrangements for the students.

67. Opinions differ amongst educational authorities in different countries on how productive work for students in general education may best be organized: in some countries opportunities for productive experience and work should be given — after elementary instruction in a school work-

shop — only in genuine production environments. This is for instance the choice of Cuba, the German Democratic Republic and others. The Ukrainian SSR, on the other hand, has opted for the joint establishment by groups of schools and undertakings of special 'Kombinat' separate from both the school and the factory in which polytechnical instruction is given in a dozen occupational areas. Materials, equipment and raw materials are supplied by the factories concerned and the items to be produced or assembled are normally selected from among the pieces in production in the factories. Factory personnel also set up machines, maintain them and provide direct instruction.

68. Similar arrangements for providing practical productive experience outside the school, but as part of the general school curriculum, have been made by a number of countries. Iraq is currently equipping its primary schools with school gardens and workshops for basic practical instruction and is attaching 'industrial wings' to its intermediate level schools. The Ivory Coast is currently experimenting with 'units for learning occupational practices' which provide practical skills, training and productive experience for students at intermediate levels. Some schools likewise undertake subcontracting work for local business and industry.

69. Along similar lines Brazil — which has been introducing some vocationalization of programmes of primary education and at the second level of the comprehensive school as part of a general curricular reform designed to improve interaction between education and productive work — is experimenting with limited commercial production in the schools of the state of Paraná. In Norway both general and vocational secondary schools may take on some limited work assignments from industry such as materials testing, surveying and similar tasks which might serve to 'add to realism in the educational process'.

70. The Philippines is currently trying out work-oriented curricula (the 'theory-and-practice scheme') with prevocational instruction and practical work experience and a closer co-ordination between schooling and apprenticeship in industry. Similarly, the Sudan is experimenting with the introduction of practical and technical subjects in general secondary education and is planning to turn the workshops of technical secondary schools into productive units to carry out subcontract work for industrial enterprises and government departments. The Syrian Arab Republic, while expanding the capacity of its vocational and technical education and training systems, is currently introducing productive work in general secondary education as well. Workshops are established in the educational institutions with a view to reinforcing interaction between the teaching of science and practical technological applications. Tanzania and Zambia are both currently reviewing their educational patterns so as to reinforce links with the world of work.

71. The measures briefly described above are all based on a concept of practical workshop experience and productive work as a reinforcing, modernizing and diversifying element in the learning process and the combining of related subject teaching — technology, applied science, applied mathematics, principles and economics of production — with practical work as a means of both improving learning efficiency and closing existing gaps between education and the world of work. They may have general application or may be subject to choice among options or else be introduced only in what are seen as terminal classes for groups of children within the general education system. The new subject 'work education' (Arbeitslehre) in the Federal Republic of Germany, for instance, is provided for in the curricula of the secondary-modern school only.

72. The introduction of new subjects directly related to the world of work has in many cases involved considerable changes in the objectives and contents of teaching also in other subjects. The introduction of 'technological initiation' into French secondary education directly influences the contents and teaching programmes in science teaching and has resulted in modifications in the programmes for practical

work. One consequence has been the extension of practical work activities as a compulsory subject (with possibilities for further voluntary extension) to the 7th-9th years of general secondary education.

73. There is a trend in several countries towards further integration of general and vocational education. In France the aim in general secondary education is a dual qualification combining university entrance with at least basic training for an occupation. In the Union of Soviet Socialist Republics and other countries of Eastern Europe vocational training to skilled worker level includes a full course of secondary education.

Vocational and technical education and training

74. In its reply to the questionnaire the Government of Kenya refers to the practices of yesterday when a student 'could learn about agriculture and pass an examination without ever having stepped into a garden'. The suggestion may seem surprising to many; it does, however, describe the situation in many countries until quite recently. Current trends to in the opposite direction in all technical education. Today, as formulated by Kenya, a student must 'not only learn the principles of agriculture but must know how to practically apply them by growing crops'.

75. In dual systems of vocational and technical education and training, the combination of practical productive experience (provided by industry mostly through training on-the-job) and related instruction and further general education by day release, group release or some form of sandwich system provided in specialized schools and technical colleges, constitutes the very essence of the system. Countries in which an established and well-developed dual system exists are generally reporting that it works well and that modifications needed are minor. As already indicated one trend is for related technical and general further education to be expanded. Changing clientele and higher requirements for entry into some lines of vocational education and training explain why general or vocational schools in these countries are increasingly taking over some of the initial instruction tasks such as basic practical instruction ('first-year training') previously done in enterprises or part-time courses in vocational schools and technical colleges. Special preparatory courses for upgrading of school leavers in such subjects as mathematics and physics are also becoming more and more common as complementary offers by the general schools at the point of transfer from full-time schooling to direct training for a skilled occupation or profession.

76. Australia, where apprenticeship with technical college-based part-time related instruction has played and is still playing a major role in the system of qualification for technical occupations, has seen a rapid expansion in recent years of various types of pre-employment and pre-apprenticeship courses. These are 'link courses' in which undertakings, technical colleges and general schools join in providing additional general education for apprentices as well as special preparatory education before entry into full-time training and employment under an apprentice contract. Similarly, in the Federal Republic of Germany a number of states have introduced 'first-year' vocational courses, which — after some considerable debate — have been approved as equivalent to the first year of service in the undertaking.

77. In New Zealand, within the general framework of programmes to alleviate the youth unemployment problem, provisions are being made for pre-apprenticeship courses on lines similar to those introduced in Australia and the Federal Republic of Germany. In the United States of America the Career Education Act and the Comprehensive Employment and Training Act of the early 1970s provided new impetus for widespread experimentation with various school/industry co-operative arrangements to improve interaction between schools and industry and to raise vocational and technical qualifications of both young persons and adults.

78. In school-based, full-time training and technical education, the general trend reported by a number of countries is to require

extended practical experience. Such experience may be acquired through practical work in industry or in other enterprises between terms or by attachments for specified periods during the course of study. In Nigeria, for instance, plans are to require extensive practical experience by all technical education students through a combination of study tours, guided work in 'work experience centres' and industrial attachments. Kuwait — where training of technicians has recently been raised to post-secondary level — now requires practical work in undertakings to obtain the diploma; performance during the period of practice is jointly evaluated by the educational staff and management in the undertaking concerned. Governments in industrial countries generally do not report on changes in practice requirements, presumably because in most of these countries — as pointed out in the Swiss reply — productive work traditionally forms part of programmes of technical education and in some of them one of the prerequisites for entry into intermediate technical (technician level) education is completed apprenticeship with high marks at skilled worker level.

79. A general trend, illustrated for instance by the replies of Egypt and Saudi Arabia, is a shift from general streams in education towards pre-vocational general education with emphasis on technology and sciences and expanded vocational and technical education at secondary- and post-secondary levels. This is part of a general move to improve adequation between supply and demand, to speed up industrial development and to reduce the need for expatriate staff in responsibsle positions in industry and technical services.

80. Traditional vocational training — whether school-based or arranged in a dual system model — is, in many countries, breaking out of its traditionally exclusive concern with the training of skilled craftsmen and specialized workers in production and maintenance. In the Federal Republic of Germany a network of higher vocational schools (Fachoberschulen) and academic level vocational institutes (Fachhochschulen) is being developed. In Sweden experiments are currently being made with higher level vocational institutes (Yrkeshögskolor) and the Netherlands has introduced two higher degree levels in its vocational training system. An important prerequisite for entry into these higher level vocational institutions is a period of practical experience in industry after completion of initial training. The extension of the training system is motivated by the rising need in many occupations for a combination of technological understanding with highly developed manual skill.

Higher education

81. Only a handful of countries have referred to measures taken or planned to improve interaction between post-secondary and other higher education and productive work. A few developing countries have introduced voluntary or compulsory community work as one of the prerequisites for graduation. In Bangladesh, for instance, students at secondary schools, colleges and universities are required to participate in canal-building and other infrastructural improvement and are given study credits for such participation. Productive work, which includes participation in agricultural, industrial and service activities also forms an integral part of curricula in higher education in Cuba. Community service is obligatory for all students in higher education in Guyana; in one college it is considered part of the study programme in all lines of study. Guyana's report on the subject emphasizes the pedagogical objectives of making students aware of the needs of the community and of developing team work ability among students. Students in Iraq's institutions for higher education participate in various mass campaigns and in work as labourers in construction work and harvesting. In the United Republic of Tanzania the fourth term at the university is devoted to community work and two years practical activity is required between graduation from the secondary school and entry into the university. In Czechoslovakia professional and socio-political practice is included in the curricula of all faculties[1].

82. A number of countries require practical

experience before entry into a course at a university or else give credit for experience in productive or other socially useful work at the time of entry. Sweden is currently evaluating its experience from recent reforms of university entrance requirements which give credit for practical work experience and abolish previous provisions for a completed secondary schooling as a prerequisite for entry. The German Democratic Republic — along lines similar to those applied in the United Republic of Tanzania — requires one year of pre-study work assignments before entry into some fields of study (among them medicine, agriculture, economics, and technology).

83. One government — Finland — reports placing special emphasis on the interaction between academic institutions and the world of work through project work and subcontracted research for industry and other institutions. While emphasizing the importance of maintaining a proper balance between such work and the essential educational tasks of academic institutions, the reply stresses the educational value of opportunities offered by such contract work to maintain contact with up-to-date problems in productive work and front-line tasks in the development of new products. While only one government has referred to such practices, it is generally known that university institutions in a wide range of countries are interacting successfully with industry in this way. The point would appear worth stressing as some universities, mainly in developing countries, are reported to oppose such arrangements.

Adult and other non-formal education

84. References to non-formal education in the replies to the questionnaire are few and scattered over this vast educational field. A few countries, among them Liberia and the Sudan, mention the importance they attach to functional relevance in adult literacy work, and the importance of interaction between the educational authorities concerned and industrial and agricultural establishments in the conduct of literacy campaigns. Other governments refer to a new emphasis in educational measures taken or planned in lifelong education and recurrent educational arrangements, with studies interrupted for periods of practical experience. They point out the complementary roles that formal and non-formal education will have to assume in the future.

85. Formal education systems are, according to some replies, taking on some of the functions which previously belonged to the various forms of adult and other non-formal education. By giving credit for work experience and removing traditional age barriers many institutions are gradually changing their clientele to include older age groups, who bring new experience to the educational institutions, raise new and different demands for educational services and, through interaction with younger and less experienced students, bring new values to the institutions.

86. As both secondary and higher education have become increasingly occupationally oriented, so have adult and other non-formal education for both young persons and older adults. Czechoslovakia, the German Democratic Republic and Poland all emphasize the essential complementary contributions to the education and occupational training of young persons made by various pioneer organizations and by specialized youth groups such as 'Young Scientists' and 'Young Technologists' in their countries. Similarly the United Kingdom and the United States of America refer to the great educational value of the social activities and spare time practical activities often involving various types of productive work arranged by such voluntary organizations as the YMCA, YWCA, the Scouts and other groups with special interest activities on their programmes.

87. Mention is also made of comprehensive educational activities carried out in close interaction between educational authorities and the relevant manpower authorities in joint planning of various employment and training schemes to update, upgrade and retrain persons employed in industry and other fields of economic activity. The United States of America, as already mentioned, emphasizes the wide range of programmes operating in co-operation be-

tween educational and labour authorities at federal and state levels, often planned and implemented at local community levels by representatives of industry, labour, and local manpower and education authorities. Similarly the United Kingdom refers in its reply to the comprehensive tasks of the 24 industrial training boards responsible for the development of the training system in its particular field of economic activity. The legislation in several other countries similarly provides for shared responsibility between educational and manpower authorities in the provision of programmes for out-of-school youth and manpower programmes designed to improve the employability of vulnerable groups or more generally for upgrading and, as required, retraining of employed and unemployed persons. Active participation in planning and programming by employers and workers — and by representatives of the groups of persons concerned — is also an increasingly common feature in such programmes.

B. Educational staff and teacher training

88. Fundamental changes introduced in curricula and programmes of educational institutions at all levels have necessitated changes both in patterns of employment of staff, in requirements for practical experience and knowledge of economic and social conditions in different fields of economic activity, and in the programmes applied in the training of teachers and instructing staff.

89. Replies by governments differ with regard to the definition used for teachers and non-teaching staff respectively. In some replies it is clear that only those, who have full qualifications as teachers at the level concerned are considered as 'teaching staff' proper, while other governments draw the line between those who participate in some kind of teaching and instructing activities, on the one hand, and various types of auxiliary staff and temporary visitors to the school, on the other, regarding the latter as 'non-teaching staff'.

90. It is clear from many replies that there is a trend in most countries to employ an increasing number of persons as auxiliaries (laboratory assistants, skilled workers for tool and machine maintenance and other specialized operations which are too difficult for the students to do themselves, and others) particularly in practical work and productive activities in secondary education and especially when these are organized within the schools or in special workshops or productive units outside the school. In short, it is realized by many school administrators that the management of productive work is a specialization of its own and that the ordinary teacher has neither the training nor the experience needed to undertake such functions. Moreover, productive work requires preparation and supervision, for which the teacher normally does not have enough time because of his many other functions.

91. Non-technical teaching staff and teaching staff without formal teacher qualifications are particularly often used in special programmes in which the provision of work experience is an essential feature. Australia, for instance, reports on extensive use made of 'non-teaching staff' to assist in the various programmes for school-leavers and in link courses in the final years of intermediate and secondary education. Austria refers to the many part-time teachers used particularly in production-oriented subjects, in vocational guidance and orientation and in courses for day-release and block-release vocational students. Similarly Brazil, Czechoslovakia, the German Democratic Republic, the Netherlands, Poland, the Syrian Arab Republic, the Ukrainian Soviet Socialist Republic and the United States of America report on extensive use made of personnel without teacher training primarily in practical experience programmes within enterprises.

92. India and Nigeria use local craftsmen for productive and socially useful activities in the schools. The Philippines reports on extensive use made of non-teaching staff in community projects to complement the work of ordinary teaching staff and to perform functions which the students cannot do themselves. The Ukrainian Soviet Socialist Republic emphasizes that the role of the professional teacher remains as impor-

tant as ever, even taking into account increased use of self-learning methods, but notes increased use of non-teaching personnel to assist teachers and learners in performing technologically complicated works, such as machine-setting, fine-tolerance operations, and the like.

93. Malawi, Zaire and Zambia note that rather little use is made in their countries of non-teaching personnel but emphasize the importance of such resource persons to the teaching process. Belgium, which uses non-teaching personnel sparingly, strongly values their contributions as occasional visitors in order to bring special knowledge and experience to the learning process.

94. Sudan plans greater use of non-teaching personnel in the future while Cyprus uses them only in experimental programmes. Jordan and Kuwait report on using technical personnel drawn from enterprises as part-time and, occasionally, full-time teachers in specialized subjects. The United Republic of Tanzania stresses the need for using non-teaching personnel in practical work teams of university students and in the study of science applications within the school or university.

95. A few countries provide special training for non-teaching and part-time teaching staff. In Bangladesh, where non-teaching staff is used mainly for administrative and auxiliary tasks, some motivational and administrative training is given in advance of assumption of duties. The United States of America reports that limited training is usually given; Kuwait has started courses for non-teachers who participate in educational activities. India, Jordan, Nigeria and the Philippines — all using local craftsmen in productive work activities in schools — report that no special training is provided. Brazil, on the other hand, arranges instructor courses with 840 hours of pedagogical training and 1,500 hours devoted to technical and didactical aspects.

Teacher training

96. The general move towards improved interaction between education and productive work has begun to have considerable impact on principles and programmes applied in the recruitment and training of teaching staff and administrators of educational programmes. As new subjects have been introduced — such as 'work education', 'principles and practices in production' or 'bases of modern economics', new specializations have had to be created in teacher training institutions and new sources tapped for the recruitment and employment of teaching staff. With increasing demand for team teaching and interdisciplinary treatment of individual subjects and with special emphasis on work life applications, specialized teacher training in several disciplines has been modified in the same direction. Moreover, serving teachers are increasingly recognized to be in need of updating and, in some cases, further training occasionally bordering on complete retraining when extensive changes were made in objectives, programmes or teaching methods.

97. With reference to *initial training* of teachers, Brazil has recently raised qualification requirements for entry into teacher training in order to assure the degree of competence required for vocationalizing courses in the primary school. In Norway, and in many teacher training colleges in the United States of America, practical working life experience is now a requirement for entry into teacher training. Finland and Nigeria give credit for such experience in the selection of candidates for teacher training. The United Republic of Tanzania includes practical work in teacher training curricula and Colombia, Czechoslovakia and Hungary have recently modified their teacher training programmes in line with changes introduced in the curricula relating to work education and cognate subjects. In both Czechoslovakia and Hungary, special attention has been given in the new programmes for primary-school teachers and for subject-matter teachers in intermediate and secondary education to strengthening the application of polytechnical principles in the teaching of science and mathematics.

98. Most countries have further developed their *in-service training* for teaching staff in recent years to promote interaction between

education and productive work. Special transition courses have been arranged in Australia and specialist consultants employed to assist schools in providing adequate work experience for their students. These consultants also help assure liaison with industry. Moreover, intensive in-service training courses have been arranged for teachers in technical and vocational education, as well as training to update teachers' technical and organizational knowledge and their understanding of modern processes in industry. Brazil's educational authorities have arranged in-service seminars and courses for teachers and have made special arrangements with universities to provide courses for general secondary-school teachers in the light of new or modified programmes. In Colombia a number of in-service teacher training modules have been elaborated for similar purposes under a project of technical co-operation. In the Federal Republic of Germany special training courses were arranged to support the introduction of 'work education' (Arbeitslehre) in comprehensive schools. The introduction of 'socially useful productive work' in India is preceded by the preparation of new teaching materials and by special training for teachers; New Zealand has recently begun developing new programmes for in-service training of teachers relative to employment information and to the new directions in national training and employment policies. Zaire's changes in curricula are being complemented by comprehensive in-service training of the teachers most directly concerned.

99. In Austria, educational leave arrangements have been introduced for teachers to attend updating and complementary courses and Cyprus has made some arrangements for teachers in vocational and technical training and education institutions to go to industry for updating and refresher purposes. In-service training for technical and vocational teachers in Nigeria now includes industrial attachments and, as appropriate, further training abroad. Norway has a scheme of paid educational leave for its teachers and has introduced comprehensive upgrading arrangements for its teachers; in the United Kingdom, industrial undertakings and organizations have arranged for comprehensive schemes at national and local levels for study and for attachments in industry for teachers in both general and technical/vocational education. In the United States of America many teachers in both general vocational or technical education traditionally take jobs in industry between terms, and college and university regulations often provide for 'sabbatical periods' for teachers to update themselves through special studies, employment in industry, research or further education.

100. Updating courses relating to the introduction of work-oriented subjects or other measures to improve interaction between education and productive work are reported by Austria, Norway, Poland, the Syrian Arab Republic, Thailand, the United Republic of Tanzania and the United States of America. Japan is arranging complementary courses to assist teachers to provide better information and assistance to students in vocational orientation and guidance sessions. Bangladesh provides complementary practical courses for teachers, and Czechoslovakia has recently expanded its network of methodological institutions and revised their programmes to ensure continuing in-service training for its teachers in both general and vocational/technical education. Finland is currently developing plans for similar purposes. Some measure of the relative importance attached to these activities can be derived from the fact that six out of the United Republic of Tanzania's thirty-two teacher training colleges are constantly occupied by in-service training of active teachers.

The role of teachers' organizations in reforms and teacher training

101. Several governments, among them Australia, Austria, Czechoslovakia, the German Democratic Republic, India, the Ivory Coast, the Syrian Arab Republic, the United Kingdom and the United States of America report on the active participation by teachers' associations and other professional bodies in promoting a more effective interaction between education and working

life and in the elaboration of policies and programmes for such purposes. In Austria, teachers' unions have taken a leading role in advocating an extension of the period of related instruction for apprentices in day-release or group-release courses and for a better integration of theoretical and practical subjects in vocational and technical education and training. Teachers' groups have likewise participated actively in the elaboration of reform programmes in Argentina and in Nigeria. In the United Kingdom, specialized science teacher bodies have played an important role in the elaboration of new curricula for improved co-ordination between classroom teaching of the sciences and practical activities in workshops and laboratories. The Science Teachers' Association in Nigeria has also promoted the production of improved textbooks in their subjects and has organized quizzes and competitions in line with the general government policy of popularizing science-based education.

102. In Nicaragua, the Philippines and the United Republic of Tanzania, the teachers' organizations have played a particularly important role in making the general public aware of the objectives and means of implementation of the recent educational reforms and in helping to solve practical problems in their implementation. Brazil, the Federal Republic of Germany, Kuwait and Zaire refer specifically to the important contributions made by the teachers' associations and unions in enriching the public debate on interaction between education and productive work. A few countries report that their relatively young teachers' organizations appear more concerned with the conditions of work of their members than the broader professional aspects of their work; one may speculate that these groups will follow the leadership of the more mature professional associations in the years to come.

C. Intersectoral collaboration and related research

103. The new direction taken in many educational systems in seeking improved interaction between education and productive work and more generally between educational institutions and those directly related to working life have made it necessary to develop and improve arrangements for liaison between the educational authorities and institutions, and the authorities and organizations concerned with manpower questions, with organizations representing working life and with enterprises. It has also, in many countries been considered necessary to increase on-going research on questions relating to interaction between education and working life, often in co-operation with the organizations and enterprises concerned, and to initiate new research and evaluation studies to provide a better basis for the reorganization of educational activities.

Relations with the world of work

104. Traditionally arrangements for co-ordination and co-operation between education and working life have been the most highly developed in vocational and technical education and training. A large part of the responsibility for the organization and administration of the training and technical education of young people has often been carried by organizations representing working life or has been controlled by groups representing employers and workers, with or without government supervision or control. Technical schools have, as a rule, had working life representation on their boards and have sometimes had steering committees participating in the planning and management of individual programmes relating to particular fields of economic activity.

105. The trend emerging from the replies of the governments to the present inquiry is the involvement of representatives of working life in a widening range of tasks relating both to formal education in schools and universities — general and specialized — and to various forms of training and education taking place outside the system of formal education.

106. Arrangements made for liaison between education and the world of work vary greatly among countries to some extent on account of differences in administrative structures and traditions. Many countries

have advisory or management committees at the national level in discussion of educational policy in which employers and workers participate together with other concerned bodies. Among countries describing such arrangements are Belgium (National Council for Technical Education and for Higher Education respectively), Brazil (employer and worker representation in the specialized training bodies: SENAI — industry, SENAC — commerce), Colombia (Servicio Nacional de Aprendizaje), Finland (National Vocational Training Board, with an extension of the representative system to the secondary-education system being discussed), Kuwait (National Council of Vocational and Technical Education) and Malawi (National Advisory Councils for general education and for technical education and training respectively).

107. Less formal arrangements also exist. For instance in Australia, representatives for working life have been participating or extensively consulted in the work of a series of major ad hoc government committees concerned with various aspects of educational development and programming; in Kenya, government committees charged with the formulation of educational objectives include management staff and principal personnel officers drawn from undertakings; in the Netherlands, representatives of employers, unions, schools and universities together elaborated a policy document for educational development; and in Austria, as in many other countries, comments from employers and unions are always requested before decisions are taken in any major question relating to change or development in the educational system.

108. Direct consultations with employers are mentioned in the replies of New Zealand (informal but regular meetings between employers and educational authorities at both policy-making and executive levels) and the Ivory Coast. Similarly, the Nigerian Government mentions extensive policy consultations with business and industry and also with organizations representing other interested parties, especially women and science teachers.

109. Direct consultations with workers' organizations and other bodies representing employers in public and private enterprises are mentioned in a number of replies. Bangladesh states that comments and advice on educational reforms and practices are formulated by worker forums; Colombia consults workers in the elaboration of educational programmes; Cuba, the German Democratic Republic, Japan, Nicaragua, Norway and Spain mention trade unions as partners in consultations on educational development and reform and Zaire makes a similar reference to professional bodies. Participation by a wide range of interested parties and specialized groups in curriculum development is likewise mentioned by several countries, among them the German Democratic Republic, Japan, Poland and Thailand.

110. Participation by local business, industrial and agricultural enterprises in the management of local vocational schools and technical colleges is a normal feature in a wide range of countries (specifically mentioned for instance in the replies from Austria and Belgium) and employers' and workers' representatives have traditionally participated on examination boards in vocational education and training.

111. More recent trends towards decentralization of programming and more active involvement of business and industry in arranging for productive work experience has led to the development of new forms of co-operation and collaboration between education and working life representatives in many countries. Some (for instance Liberia) refer to decentralization of educational planning and development in general terms without specifying the nature of the regional or local arrangements made for the purpose, while others describe their new arrangements in considerable detail. Sweden, for instance, has recently organized a network of local committees for co-operation between education and working life for the organized exchange of information, for determining the form, content and organization of vocational orientation and guidance, including periods of observation and practice in undertakings (six to ten weeks in the 8th and 9th years of schooling), and to

assure the availability of information on working life organizations and conditions appropriate to the school's needs. These committees are also charged with organizing special measures for early school leavers and the handicapped.

112. Many of the more recent legislative measures for the development of educational programmes in the United States of America also relate to the organization of state, regional or local levels of co-operation between the various parties in the implementation of the programmes. The states, for instance, set up regional advisory councils for vocational education and may provide for the voluntary establishment of similar committees at city or township levels. A wide range of voluntary committees (industry-labour councils and private industry councils) also make substantial contributions to the organization and implementation of various education and training programmes; participation by business in the government bodies of general and technical colleges and universities is a common feature.

113. A number of Latin American countries, among them Argentina and Chile, apply a practice of special agreements between education and vocational training authorities on the one hand and business organizations and enterprises on the other for the development of training programmes. The aim is to ensure close attention to local needs and, at the same time, to ensure that private industry training fully conforms with national norms and standards.

Research, development and evaluation.

114. The search for ways and means of improving interaction between education and productive work, and the nature of the problems which it is hoped to address by such interaction has prompted many government authorities and independent research organizations to launch new programmes of study designed to throw light on these problems and to evaluate the effectiveness of implemented programmes. This is, in effect, a rapidly expanding field of educational research in many countries.

115. The need for such research is expressed by most countries. While some governments — among them India, Israel, Malawi, Morocco, Norway, the Syrian Arab Republic, Thailand and Zaire — report that little or no research on education/working-life questions has yet been started, or, that the programmes are of such a recent date (Philippines, Poland) that reporting on results would be premature, other governments provide more detailed information on research and development work and evaluations made. Together the research projects mentioned in the replies cover a wide area and only a few examples of research titles can be provided within the limited scope of this paper.

116. Some countries have embarked on comprehensive co-ordinated research programmes relating to the general aspects of relationships between education, work and employment. A Swiss research programme, for instance, relates to 'Education and working life' and a major programme with a similar title is being implemented in Austria. Researchers in Czechoslovakia and Spain are studying the influence of the educational system on attitudes and values, with special reference to work and employment. A research programme in Belgium is concerned with the potential conflict between broad educational objectives in vocational and technical education and trends towards modularization of training programmes designed to meet specialized requirements of individual enterprises or of different branches of economic activity.

117. Relationships between education and rural development is the subject of research in Nigeria, while Spanish research staff are engaged in a study of occupational change in relation to educational choice and of the validity of labour forecasts in the light of rapidly changing education and training requirements in various occupational areas. Brazil and Jordan are engaged in tracer studies relating to the career of graduates from the various educational streams and Austria is exploring potential new occupational fields for graduates.

118. Interplay between theory and practice in the curriculum is the subject of study in

both Cuba and the Ukrainian Soviet Socialist Republic. Among research programmes implemented in the German Democratic Republic, one is concerned with the selection of tutors for practical training within enterprises while another seeks new methods of presenting theory in educational programmes.

119. A number of research projects relate to organizational aspects and effects of improving interaction between education and productive work. Colombian researchers are studying the potential conflict between centralized policy-making and decentralized administration of educational programmes; Kuwait is concerned with the legal position of technical education and Nigeria is exploring the efficiency of different delivery systems for educational support materials.

120. Australian and Japanese researchers are engaged in general evaluatory research relating to various innovative elements in education systems. Cuba is studying the formative aspects of combining production with studies in 'schools in the field' (escuelas en el campo) and research is also being conducted to measure fatigue in students performing practical field activities or other productive work.

121. Governments appear to be generally cautious in reporting on results from the studies completed under these programmes. It would seem that the United States of America expresses the feelings of many governments when stating that 'so far, most completed projects have related to an identification of problem areas rather than to evaluations of effectiveness in programme implementation'.

122. Research capacity is being reinforced and new research organizations established. A number of countries have set up new research and programme development bodies or enlarged established ones. At the same time international co-operation in research is developing on a subregional basis and between countries with similar educational patterns. The Eastern European countries, for instance, have regular consultations on research and development on principles and practices of polytechnical education and vocational training and the Commission of the European Communities maintains a research and information exchange centre concerned with vocational training. Latin American vocational training bodies co-operate in research and development activities in the framework of the ILO-sponsored CINTERFOR in Montevideo. Similar regional co-operative activities are being developed in Asia and the Pacific and in Western Africa.

D. Summary

123. Measures taken or planned to improve interaction between education and working life include actions relating to practically every aspect of education. Within the primary school, efforts are mainly concerned with improving and systematizing creative and otherwise socially useful activities of children within the school and with revision of the content of primary education to make place for acquiring more knowledge of life outside the school. At the secondary levels, emphasis is, as a general rule, placed on providing a broad understanding of conditions of work and life in the various occupational fields, complemented by essential basic skills considered useful as a preparation for more specialized education and training and for employment more generally. Programmes in the terminal streams of general education place increased emphasis on vocational orientation and guidance and on the provision of pre-vocational training. In vocational and technical education and training and in work-oriented higher education, changes generally relate to providing better balance between theoretical instruction and practical training, and on preparing graduates for entry into a world of work characterized by rapid technical and organizational change. Adult and other non-formal education is moving towards increased concern with the provision of opportunities for continuing or permanent education with an increasingly occupational bias.

124. The many examples given of action to improve interaction between education and productive work should not be permitted to hide the fact, apparent in many replies and confirmed by direct observation for in-

stance in technical co-operation between developing and industrial countries, that many educational systems — in both — are still largely without effective contact with the world of work and that the introduction of what in the replies is referred to as 'productive work' goes little beyond traditional practical activity patterns in the schools.

125. There is a clear trend towards increased employment of non-teaching and of auxiliary teaching staff in the educational system as a result of these changes. Moreover, criteria for the selection of candidates for teacher training and programmes of initial training of teachers increasingly include practical work experience. In-service training for teachers is expanding as the introduction of new subjects and biases in teaching programmes require teachers to acquire new skills and to broaden their knowledge of working life and productive activities.

126. Improving interaction between education and working life has led many countries to review and reinforce arrangements made for liaison between educational authorities and institutions and the various authorities and institutions (including both private and public enterprises) which represent the world of work. Besides organized consultations with manpower authorities, employers and workers at national levels, measures often include arrangements for close co-operation and collaboration between schools and educational authorities and the world of work at both regional and local levels and, in many cases, for direct participation by working-life representatives in the decision-making processes relating to planning, programming and implementation.

127. Educational research is also taking new directions and research institutions in many countries are actively studying various aspects of the relationships between education and working life and especially of planning and programming for improved interaction between education and productive work.

...

III. FAVOURABLE FACTORS, DIFFICULTIES AND RESULTS

129. Member countries are cautious in their replies concerning prerequisites and favourable or unfavourable factors in the implementation of programmes for improving interaction between education and productive work. This reflects a number of factors: the newness of the trend, the complexity of the problems and the partial character of evaluation research on these aspects of education. Results obtained are therefore often expressed in rather general terms.

A. Factors favouring interaction

130. The demand for improved interaction between education and productive working life, according to the replies of several governments is the expression of a growing realization in society as a whole — among leaders in government, business, industry, education and in the general public — of the central role education plays in both social and economic development. Education has become a concern of society as a whole, a fact long realized in leading political and educational circles but only slowly accepted by other groups in society. The broad implications of this trend are brought out in a wide range of replies, but especially those of Australia, Austria, Brazil, Czechoslovakia, Cuba, the Federal Republic of Germany, the German Democratic Republic, Morocco, Sudan, Thailand and the United States of America.

131. The reasons given for this trend vary greatly. Nicaragua mentions growing public interest in education in the wake of a successful literacy campaign. Belgium, Brazil, Morocco and Spain perceive a growing concern in industry and business, while Australia specifies accelerating change in working requirements as one of the main reasons. Austria mentions the extension of secondary education to a large proportion of the population, and Brazil cites — together with other factors — international influence of organizations such as Unesco and the ILO. India sees a major cause in growing apprehension over employment difficulties encountered by graduates of secondary and higher education, and Colombia attributes part of the change to discontent with a centralized education system with insufficient flexibility as regards adaptation to regional

and local needs and conditions. New opportunities for employment in technical occupations and improved status and earnings of technical staff are cited by Jordan, Kuwait, Nigeria, the Philippines and Thailand.

132. Among prerequisites for improved interaction between education and productive work and working life in general, several governments (among them the Ivory Coast and Sudan) mention firm political will on the part of the government in general and the educational and manpower authorities in particular, adequate legislative provisions and arrangements and the full cooperation of those who represent the world of work, especially public and private enterprise. While other prerequisites are mentioned, these three recur most frequently.

B. Difficulties encountered

133. Several governments feel that one of the major problems encountered in their efforts to provide for more effective interaction between education and productive working life resides in narrowly insular views in some educational circles and in traditional attitudes toward the objectives and roles of education among parents and employers. This attitude may be summed up as follows: schools and other educational institutions should continue doing what they are competent in doing and should not venture into experiments in productive work, which neither educational administrators, nor teachers adequately understand. In contrast to this traditionalist view is a broad tendency to demand too much from the school, i.e. expect education to satisfy all the different and diverged needs of the world of work.

134. Governments widely recognize that the capacity of the schools and the universities — and other educational institutions — to reach all these demands are limited not only by the time at their disposal, the competence of their staff and the training capacity of their clientele. Beyond this there is also, particularly (but by no means exclusively) in developing countries, a severe lack of resources for satisfying even legitimate demands on the school to interact with working life. Many developing countries emphasize insufficient infrastructure arising from the lack of resources to acquire even the simplest tools and equipment, for creating plant for practical activities, or for ensuring a dependable supply of materials necessary for carrying out even the most basic forms of productive work.

135. The legal status of students in productive work and practice in undertakings — and also in school workshops — is another problem cited by several countries, among them Australia, Norway and the United States of America. In addition there may be problems to be resolved with trade unions concerned with possible misuse of children and young people as low-paid labour in competition with employed adults.

136. Within the general school system the obstacle most often mentioned is the lack of human and financial resources for the comprehensive staff training and retraining needed for such fundamental changes in curricula and programmes. Further, the traditional division of curricula into narrowly defined subject-matter areas in both secondary and especially higher education constitutes an obstacle to interdisciplinary approaches at these levels.

137. Rapid obsolescence of teaching materials and work exercises is a difficult problem arising from rapid developments in technology and its applications. This problem is mentioned as especially acute in developing countries. Further difficulties include the selection of proper places for practice and work in industry, mentioned, among others, by Czechoslovakia, Norway, the United Republic of Tanzania and the Ukrainian Soviet Socialist Republic, as well as the right choice of on-the-job instructors emphasized by the German Democratic Republic.

138. Logistical problems in developing and maintaining the proper contacts between educational institutions and operating enterprises are mentioned by Bangladesh, Colombia and Nigeria. Several countries recall the notorious lack of reliability of conventional manpower forecasts and feel that this is an area in which continued research and development is needed.

C. Effects and results

139. Experience is limited in most countries and many governments are therefore reserving judgement on the effects of measures relating to interaction between education and productive work. Australia suggests that one of the major positive effects of what has been done so far is an increasing integration of formal educational programmes and non-formal programmes such as apprenticeship. Iraq and Thailand similarly emphasize the narrowing distinctions between formal and non-formal education approaches and programmes. Along the same lines, Cyprus, Colombia, the Federal Republic of Germany, Kenya and the Ukrainian Soviet Socialist Republic have noted improved interaction between formal and non-formal education, despite differences in objectives. One major gain perceived by some respondents in this context is the increasing acceptance of the educational value of working life experience; others, however, see little effect of this kind and emphasize the complementary but separate roles of the two types of approach in education.

140. Several governments emphasize that reducing status differences among different streams in education is one of the major objectives in their actions but are frequently still uncertain whether such goals have yet begun to be realized. Australia and Jordan state that such status distinctions have become increasingly blurred, while Austria emphasized the current tendency to facilitate mobility between streams and notes that increasing use is being made of such opportunities. However, the replies are cautious in assessing the extent to which increasing blurring of these distinctions is casually connected with the introduction of productive work and related subjects in the curricula, the extension of vocational orientation and vocational guidance activities and other similar developments, or whether it relates more closely to more general social developments or to other kinds of change in educational systems.

141. The German Democratic Republic, Jordan and the United States of America emphasize one effect (which has been confirmed by research in still other countries) which might be among the most important improvements achieved through the introduction of productive work into the educational processes: namely, that low-achieving students, through work experience, are led to reassess their own attitudes to education in general and to their appreciation of such subjects as science and mathematics in particular.

142. The world of work, on the other hand, has been and will continue to be considerably influenced by efforts to improve interaction between education and productive work. Among the positive effects observed by more than two thirds of the responding governments are: better prepared manpower, greater creativity, better quality of work and higher productivity and more rapid adjustment to existing working conditions. Improved interaction between educational authorities and institutions and the various bodies representing the world of work is considered to have led to improved balance in manpower supply and demand. Further, certain bottleneck problems have been overcome, and productivity has been improved. A few governments, among them the Syrian Arab Republic, also mention a favourable influence on the enterprise climate arising from the presence of young persons as well as recognition by management and workers of their duty to provide adequate training for young people.

143. It is recognized, however, that improved interaction will also mean increased demands on the undertakings. They must, the Belgian Government notes, learn to see education and training questions in a wider perspective than that of the immediate interests of the undertaking. As stated in the replies from Belgium, Brazil, Cuba, Finland, the German Democratic Republic, Japan and Morocco, enterprises must find the proper place within their organizations for the contact functions with the educational system, and create the conditions necessary for assuming their part of the total educational burden. Nigeria and Thailand emphasize the mutual adaptation needed by the partners: schools and enterprises

must find ways of establishing a symbiotic relationship.

144. Several governments emphasize such effects on the individual as broader development of the personality of the child and adolescent and a better understanding for material values (the Ukrainian Soviet Socialist Republic), improved ability to solve minor technical problems in the home (the Syrian Arab Republic), improved understanding for the need to prepare oneself well for future work (Nigeria), improved agricultural practices (Malawi) and improved social understanding among students. Austria and Switzerland stress the beneficial effects of dual system programmes in reducing the risk of youth unemployment.

145. The short-run economic results of productive work in educational activities are, as a general rule, still found to be small. The Federal Republic of Germany notes that according to recent studies the productive work of apprentices in industry contributes less than one third of the total cost to the public authorities and the undertakings of training them. A number of replies stress that financial returns should be considered secondary and that pedagogical and didactical considerations should be determinant in deciding what productive work should be done.

146. On the other hand, some governments seek to offset at least part of the cost of their educational programmes through the productive work carried out in the context of the educational process. Cuba emphasizes the economic value of student work at peak periods in agricultural production. Similarly, Brazil, Iraq and Nigeria note that part of the cost of agricultural schools (in the Philippines, also fishery and fish-breeding activities) is offset by students' production. Morocco, Nigeria, the Philippines, the Syrian Arab Republic and Zaire indicate that some of their vocational and technical schools produce goods and services of commercial value, and Nicaragua is seeking ways of recuperating some of the costs of educational expansion and reform by production of goods in the educational system. Some of the basic education schools in India, set up on the model developed by Mahatma Gandhi, are in fact self-supporting.

147. The Ukrainian Soviet Socialist Republic points out that production to commercial specifications and for commercial use is not necessarily in conflict with pedagogical objectives and cites A.S. Makarenko, who said that 'the commercial yield may be extremely educational'. The problem as seen by many governments is to strike the right balance between educational and economic motives. This is a point emphasized by both developing and industrially advanced countries with particular reference to vocational and technical education and training (and occupationally oriented courses in higher education) in which attaining standards of quality and quantity in productive work related to market needs and demands is one of the major objectives in the training of young persons for their future work.

D. Summary

148. Growing realization of the broad implications of a need for improved interaction between education (and educational institutions at all levels in particular) and the world of work is clearly favouring the development and implementation of new and improved programmes for this purpose. A basic prerequisite for success in such endeavours is firm political will on the part of government authorities and a readiness to co-operate on the part of both educational authorities and institutions, on the one hand, and those who, in different capacities, represent the world of work, on the other.

149. There are important constraints to be overcome. Traditional attitudes among educators, employers, parents and students must be changed and the real impact of educational activities better assessed and understood, including their limitations. The legal status and social security of students in productive work need to be clarified, sufficient resources allocated and the cadres of teaching staff increased; non-teaching staff with adequate technical competence are needed and staff training patterns must be reviewed and revised. Logistical problems

in developing and maintaining proper contacts between educational institutions and the world of work must be satisfactorily resolved.

150. The effects and results obtained may, however, be rewarding: status relationships between different types of education may be better balanced and the distribution of tasks between them improved; students may reassess their system of values as regards choice of subjects and education in general; youth unemployment rates may be favourably affected, pedagogical results generally improved, and the walls between education and the world of work, where they exist, demolished. While there is some difference in point of view on short-run economic advantages, it is generally recognized that financial advantages are limited and that pedagogical and didactical objectives should still be determinant in the choice of productive work to be done. ...

1. In an inquiry undertaken by Unesco in 1977, twenty-seven countries at all levels of economic development and in all parts of the world, provided information about the existence of some kind of study service, similar to those described in this paragraph.

APPENDIX II

Identification of a training system

J. Guigou's suggestion is to classify the data of an educational practice comparatively by three levels of activity and six criteria for identifying a system. 'With this increase in concrete data and abstract analytical categories, it should be possible to identify the conditions governing the emergence of a sum-total of educational projects operating as a systematic whole.'

1. Criterion of interaction

'This is necessary but not of paramount importance in the genesis of education. For example, we cannot speak about a system if there is no relationship between students, instructors, educational media, learning processes, skills and situations for the practical application of education. This is the elementary level of educational communication. These relations are either directed to the transmission of theoretical knowledge in a specific social time span: educational time being more or less separate from other social times (work, leisure, changeovers, etc.) or to the dissemination of attitudes, values, methodologies and ideologies which either preserve the sense of the interactions or else transform them. Moreover, the criterion of interaction plays a certain role at the level of the social sub-units to which the actors engaged in education belong.'

2. Criterion of totality

'This is of decisive importance before carrying out the project, in the phase of analysing needs, setting goals and planning the educational process. In this respect it contributes to the creation of internal coherence, for in the actual teaching phase there is often a process of "disintegration" of the totalizing and integrating character of the educational project, due to the negative actions of some particular category of actors who are involved only slightly or not at all in the preparatory phase. At the institutional level, the unification of education is the work of the organizers of education and of the social groups which actually control the actions and give them a systemic unity in the form of programmes and objectives.'

3. Criterion of purpose

'The central criterion for many educators, who make it the condition *sine qua non* for the effectiveness of their work. Here, however, it is necessary to distinguish the objectives of education, which are often divergent, from the objectives of the system itself. The latter are generally not clarified by the actors engaged in education, not even by the groups which constitute its social environment. Hence the criterion of purpose does not appear as discriminating except at the moment when some specific objective is asserted which differs from the objectives of the educational action and also from those of the various protagonists.'

4. Criterion of reproducibility

'This represents one of the fundamental criteria in this nomenclature. One of the principal characteristics of educational actions in the process of becoming a system is, after all, the ability to reproduce themselves. This is the ability to preserve themselves by self-transformation. What is involved here is "the unity of invariability and change" mentioned by I. Barel in connection with social systems. Invariability is to be found both in educational processes and in the

institutions which dominate education. Changes occur at the level of educational organization. This is the case, for example, with variations in the group undergoing education, which functions either on the model of the classroom group of traditional teaching, or on the models derived from the dynamics of small groups.'

5. Criterion of functionality

'By identifying an education system by the functional action it exerts on its actors or on its structures, we make the attributes indicated by the two preceding criteria of totality and purpose more precise.'

6. Criterion of selectivity

'This means an objective, non-intentional selectivity which in some way predetermines the type of education to be organized. We might even say, paradoxically, that selectivity preexists and prepares the educational action, for it belongs to a more complex network of other educational sub-units, the selective development of which calls for this particular kind of education, which, once established, will in turn reinforce the overall selectivity of the education system.'

'Following this attempt, which in our opinion is still too general to identify a sum-total of educational actions as a socio-educational system, we should like to refrain from drawing any deliberately maximalist conclusion. All education is not necessarily a coherent system of intervention, even if we find in it the traces of one or more of the criteria which we have successively analysed. The minimalist hypothesis, according to which all education tends to become linked up with some specific and autonomous system of pedagogic action and to reproduce it while in dependence on the overall social system, seems to take much better account of the present situation of education.'

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APPENDIX III

Organizational arrangements for appropriate links with higher education institutions[1]

Achieving the participation of the production sector in higher education activities requires a series of organizational measures at the level of the central and local authorities and, especially, reinforcement of direct links between higher education institutions and enterprises. These measures may take the following forms:

(i) setting up of the co-ordination and advisory boards responsible for policy formulation and planning at the central and local levels which would include the representatives of the governmental bodies, teaching institutions, business and commerce as well as representatives of the professional organizations, trade unions and the general public;

(ii) inclusion of the production sector representatives on the governing bodies of higher education institutions;

(iii) establishment at the level 'institution-enterprise' of long-term co-operation and/or contractual agreements to meet a wide range of mutual needs as regards training, research, educational, cultural and social activities including setting up of the advisory, co-ordination and liaison committees;

(iv) it may also be necessary to set up in enterprises special units in charge of the implementation of activities imposed by the co-operation agreements with higher education institutions.

It would be advisable to discuss at the seminar the appropriate modalities and organization of forms of co-operation between higher education institutions and the production sector at various levels.

Provision of staff for work with teaching institutions

One of the consequences of the combination would be the involvement of the production sector's managerial and other professional staff into decision making, planning, teaching-learning and research activities of higher education. Assuming that participation in professional preparation in higher education institutions would become a permanent function of the production sector, this involvement may result in consuming a considerable amount of their time at the expense of their direct responsibilities. Moreover, mastering of teaching methods and skills in an entirely new area of activities would be required from many specialists.

The problem raises a number of questions which are expected to be elucidated in the course of the seminar:

(i) to what extent and in which capacity may the industrial specialists be involved in the teaching/learning process of higher education;

(ii) would it or would it not be advisable to provide the production sector staff with a category of professionals specially trained for teaching duties in conjunction or combination;

(iii) which would be the modalities and organizational forms of the production sector specialists' training for performing functions imposed by combination.

Co-operation with higher education instititions for conducting research

It is expected that combination will lead to:

(i) reinforcement of applied research in higher education institutions at the request of the production sector;
(ii) increased participation of the productive sector research personnel in research activities of higher education institutions;
(iii) developing joint research projects;
(iv) opening access for students to the research facilities and equipment in industry and assumption by the production sector research staff of guidance and supervision functions.

A possibility of setting up teaching-research facilities in enterprises or in the form of specially established centres for students' research may be envisaged.

Financing

Industry will hardly be prepared to place students, make available its equipment and specialists and carry the related financial burden if no compensation in terms of financial resources or services is received. Given the varying needs of the production sector higher education institutions can provide it with valuable services such as through its teaching and research personnel's contribution to research and development activities, organization of in-service and upgrading training programmes for working specialists, improving the general education and culture of workers, etc.

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APPENDIX IV

Recommendations by the international teachers' organizations concerning the interaction between education and productive work[1]

1. The public service of education must have the responsibility for organizing the general and technological training of youth, and also for permanent education. It must have a heightened awareness of the realities of the world of work.
2. Governments must recognize the role and responsibility of teachers' union organizations in ensuring the appropriate organization and in guiding the process of awareness.
3. In the same spirit, the teachers' union organizations firmly oppose all efforts to make the schools self-financing, and all exploitation of youth by the introduction of productive work into the school.
4. The organizations representing the teachers and the workers must be associated in preparing and evaluating the orientation and programmes which have to do with the interaction between education and the working world. They should also participate in supervising the introduction of measures for protection, security and health examinations in the schools and also in the premises devoted to creative and practical activities. The same principle holds good for organizations of students and of parents as well as for the representatives of the enterprises involved.
5. The initial and permanent training of teachers, viewed in the perspective of the re-evaluation of the teaching profession, must be carried on at the highest possible level, with an inter-disciplinary approach enabling it to deal with the question of the interaction of education and the world of work. Experience acquired in other fields should be taken into account when considering the level of qualifications of teachers. The non-teaching personnel and skilled workers who work together with teachers must receive appropriate pedagogical training to second the teachers in their educative tasks.
6. All interaction between education and creative activities, the world of work and socially useful services must be carried on in a spirit of applying and respecting international standards, conventions and recommendations of the ILO, the Unesco/ILO recommendation of 1966 on the condition of the teaching personnel and other recommendations of Unesco, in particular as concerns:
   - consultation with the teachers' union organizations;
   - the protection of pupils and observance of international standards concerning the minimum work age, which implies that the work of children and of young people must not be exploited by the enterprises, and must not be substituted for public financing of education;
   - the protection of university privileges and professional and academic liberties of the teachers;
   - the protection of the right to organize into unions and other civil rights of the teachers.

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1. International Federation of Free Teachers' Unions; World Confederation of Organizations of the Teaching Profession; World Confederation of Teachers; World Federation of Teachers' Unions. *Interaction between education and productive work: contribution of the international teachers' organizations to the debate on the special theme.* Paris, Unesco, 1981, p. 15. (ED/BIE/CONFINTED/38/Ref. 3)

Recent interest in young people's training for productive work crystallized in the thirty-eighth session of the International Conference on Education, which took the subject as its special theme. For Michel Carton, lecturer and researcher at Geneva University, it was no small achievement to retrace in this book, through the diversity of periods and despite differing cultural, political and economic backgrounds, the underlying line of thought which highlights not only the interaction between education and productive work, but also the almost total symbiosis which imbues any work with a clear educational value. It is also from this symbiosis that springs the commitment, inherent in all real education, to young people's preparation—and also to further training of the not quite so young—for the world of work.

ISBN 92-3-102220-2