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ABSTRACT

The impact of changes in work organization on development of Portugese workers' skills was examined. At the macro level, a national study was conducted to identify current and possible future relationships among initial training, continuing training, the labor market, and industrial relations in Portugal. At the micro level, cases studies of three enterprises were conducted to determine the extent to which new forms of work organization require workers to have additional or different skills the acquisition of which presumes new teaching procedures and/or provide new opportunities for apprenticeships and an opportunity to build on previously acquired skills. Two of the enterprises were manufacturers. The first enterprise had recently adopted the just-in-time system of production, and the second was organized along traditional lines (its research/planning units and manufacturing department were separate) but was also adopting a new work organization that may be described as skill generating. The third enterprise, a major Portugese bank, was changing its work organization in response to the technological modernization that has affected both banking equipment and information systems. The study identified the human resource development issues raised by the models of Portugese society's future. (The bibliography lists 35 references. Appended are eight tables on vocational education and training in enterprises.) (MN)

CEDEFOP Document

The role of the company in generating skills

The learning effects of work organization

Portugal

European Centre for the Development of Vocational Training

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FOREWORD

Numerous continuing vocational training studies at both the national and Community level, especially those carried out by CEDEFOP on continuing training policy in large enterprises, have revealed the expanding role being played by enterprises in the development of human resources. This trend - which some see as heralding the emergence of a new division of responsibilities between those involved in training and production - undoubtedly calls into question their existing relationship and respective activities.

These studies also imply that, when it comes to strategies for developing human resources within enterprises, formally organized continuing training is only one of the options available for generating the "new" skills and competences considered necessary by enterprises. There are now organizational models geared to providing apprenticeship opportunities by exploiting the training impact of work situations, thus enabling a dialectic to be established between "formal apprenticeship" and "informal apprenticeship" (via work organization and cooperation between employees in the production and innovation process).

While they may make converging structural trends apparent, these new organizational models take on different forms and need not necessarily have any general application. The considerable difference between the contexts in which these models emerge means an analysis needs to be conducted of the relationship between an enterprise and its environment if there is to be an understanding of how the organizational models fit into the social context and what the scope and limitations are in a transfer of such models.

The primary objective of the present series of studies being undertaken by CEDEFOP in nine countries[1] is to establish the impact of developments in work organization on the skilling process and, more especially, to pinpoint the links between these developments and opportunities for formal and informal apprenticeships. These studies also enable light to be thrown on the nature of skills and competences which can emerge in the context of new types of organization and allow assumptions to be made about the impact of these developments on training systems.

A twin track analysis is pursued below. At the **macro level**, an attempt is made to "reposition the enterprise in the chain of skill generation" and to provide an interpretation of the mutual links between initial training, continuing training, the labour market and industrial relations. At the **micro level**, the aim - based on enterprise case studies - is to throw light on the various aspects of organizational innovation, developments in skills and the on-the-job apprenticeship process, in particular work-based and work-influenced forms of apprenticeship and how they relate to formal apprenticeships. In each country, enterprises were required to have a "marked and relatively stable level of organizational innovation" to qualify for case study selection.

The present report deals with both these aspects without necessarily looking at all the cases studied. These are the subject of an analysis examining how the macro level interacts with the micro level which is presented in the summary that concludes this report.

Finally, a cross-sectional analysis based on the national studies identifies the converging and diverging developments which emerge in relation to their social context, notes the impact of these developments on the training systems and raises questions in respect of social dialogue and training policy decisions. This analysis is the subject of the

[1] Belgium, Denmark, France, Germany, Italy, the Netherlands, Portugal, Spain, United Kingdom

summary report on "The role of the enterprise in the generation of skills: the training impact of work organization", published in the CEDEFOP Document series.

Our warm thanks go to those responsible for the studies at the national level and to all the members of the research teams and companies involved in their successful conclusion.

Fernanda Oliveira Reis

Frédérique Rychener

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PART THREE - SUMMARY

PART ONE

NATIONAL STUDY

Maria João Rodrigues
Helena Lopes

Part One[2] comprises a study[3] at national level of the link between formal and informal training. In the first section, we highlight the difficulties the project entails and the need to adapt it to the situation in Portugal. The second section is given over to a description of the social background in Portugal. The analysis presented in the third section has a more forward-looking dimension, focusing on the options that will determine the predominant social model in the near future.

All these aspects will be taken up in the summary of the report in the light of the information provided by the case studies contained in Part Two.

SECTION 1 - THE PROBLEMS PORTUGAL FACES

There are two fundamental differences which mark off Portugal from its more advanced European partners: the very low level of education and skills of the working population and the very late recognition in society of the importance of vocational training. Thus, "the conditions for broadening and intensifying the quality and quantity of continuing vocational training with a view to establishing the right to training ... in accordance with the guidelines adopted by the European Communities and the International Labour Organization" (Conselho Permanente Concertaçao Social, 1991, p. 7) were not laid down in law until 1991. This indicates the need for a review of the assumptions on which this project is based and for a slight theoretical reworking which will enable the situation in Portugal to be taken into account.

1.1 THE PROJECT: ITS PREMISES AND OBJECTIVES

Key questions and their implications

In the course of the next few paragraphs we re-examine the point of departure of the common project launched by CEDEFOP because we feel it needs adapting if the situation in Portugal is to be adequately reflected in our analysis. In our view, the key questions should be formulated as follows:

1) *What is the role played by formal and informal training respectively* in generating skills bearing in mind the specific features of Portuguese society?

2) In what ways can the new forms of work organization advance informal training?

3) What impact will a new type of link between formal and informal training have on the generation of skills at a time when

   (I) Taylorist forms of modernization are being called very much into question; and

   (ii) the education and training system in Portugal is undergoing a far-reaching reform?

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[2] The edited final version of Parts One and Two of this report include the constructive remarks made by Frédérique Rychener. We should like to take this opportunity to thank her.

[3] This analysis takes into account the situation in Portugal prior to the completion of the first Community Support Scheme (1989 to 1993). Certain aspects of it may well, therefore, be out of date given the very rapid development of the education and training system.

Account must be taken of the following factors that are specific to Portugal:

- The key elements of the reformed education and training system are still being worked out, but it is already clear that they will sweep away the dividing line between training inside and outside enterprises (particularly when it comes to initial training).

- Wide-ranging vocational training programmes are encountering considerable passive resistance in society. This applies in particular to continuing vocational training in small and medium-sized enterprises.

- The direction and forms that public assistance takes are part and parcel of a training system which calls for the participation and active involvement of the employers and unions as well as society at large in matters affecting the running of courses, curriculum content, certificates and finance. However, the state retains a key role in all such matters, particularly as regards finance (there is a system of co-financing with the European Social Fund).

- The production infrastructure is remarkable for its pre-Taylorist forms of organization, the extent of modernization in the Taylorist/Fordist mould, and the very limited practical experience of implementing new forms of work organization.

The role of the enterprise

The issue that has to be tackled is how formal and informal training can be interlinked at a time when formal training is undergoing major changes.

It should be borne in mind that in-company training has to take account of

- the differences between workers. On the one hand, there are workers with a low level of education who are not capable of undergoing training while, on the other, there are better-educated young workers who have to be integrated into and trained during the work process because initial vocational training was introduced too late for them to benefit from it;

- the recent upsurge of public and private vocational training institutions, the quality of whose training is erratic;

- the fact that the contingency costs entailed in informal training are very high and are not entered into the accounts;

- the lack of interest and motivation on the part of the workers to go in for self-training.

New forms of work organization, therefore, need to address the problems arising from the modernization of technology and the simultaneous introduction of a system of vocational training.

1.2 SKILLING PATHS: THE SCOPE AND DURATION OF TRAINING

Society's approach and the range of skills

We are well aware of the importance of social theory for an analysis of how skills are acquired. According to the LEST researchers (Maurice, Sellier, Silvestre, 1982), skills ensue from the interaction between organizational structures, educational institutions and industrial enterprises. In actual fact, the enterprises are the key agents in the dovetailing of formal training and the organization of work. They determine the range of skills that are specific to a given society. In their initial work, the above authors (op. cit., p. 252-253) pinpoint two

factors and the relationship between them as defining this range of skills: the nature of the enterprises and the mobility of the workers. The attitude of the enterprises is crucial here in that the generation of skills is determined by their methods of organization. However, "... the importance of the principles and forces on which the workers themselves base their mobility" (op. cit. p.255) is often underlined, just as priority is attached to education and mobility paths (Silvestre, 1990, p. 107). However, the system of mobility is also being transformed in Portugal. This transitional state of affairs strikes us as being particularly important and needs to be taken into account when analyzing the situation in Portugal, where *new forms of social cohesion are developing*. The societal approach, therefore, requires a flexible analytical framework enabling a study to be made of the paths that form part of the changing structures.

Forces for change in society: the need for an analysis

It is not enough, then, to identify the major explanatory factors and show how they interact if we wish to characterize the specific aspects of a society. We also need to understand how these aspects come about so that the driving forces with the greatest influence on the generation of skills can be identified. Given the current quest for convergence between the Community countries, which it can be assumed will come about, it is important to identify not just lasting interactions, but also those that are susceptible to change. Whether people in Portugal are aware of the fact or not, the strategy is to invest in formal training as a means of generating skills. While this strategy may appear to the public authorities at the national level to be the only available option for the generation of skills, it needs to be supplemented by careful handling of informal training at the enterprise level. Indeed, the complementary nature of these two types of training is at the very heart of the generation of skills, since apprenticeships, which are the vehicle for their acquisition, constitute a progressive accumulation of abilities and skills, which only gel in the context of real work.

SECTION 2 THE SOCIAL ENVIRONMENT

2.1 THE EDUCATION MODEL

The initial education system

Tables 1 and 2 in the Appendix provide a brief but useful overview of the educational level of the working population in Portugal and of the links between economic developments and the country's education and training system since the 1950s. Table 1 shows that no systematic attempts were made to modernize the education system until the mid-1960s. This helps to explain why the values and rhythms of under-industrialized societies are over-represented in the breakdown of skills in more or less every sector apart from those that have undergone modernization. The production infrastructure is, therefore, very dualistic. The link between economic development and the development of education did not become readily apparent until the late 1970s. Tables 2a, 2b and 2c paint a telling picture of the low level of education and training of the Portuguese working population.

The political changes that took place after 1974 led to experiments with educational models from more advanced countries. This, combined with a serious economic crisis and a lack of stability in public institutions, upset the education and training system to an even greater extent. In 1960, 46% of pupils in secondary education were involved in technical training. Between 1975 and 1985, however, vocational and technical streams had virtually disappeared from every level of education following the standardization of secondary education. Their disappearance was not due in any way to a deliberate decision to remove them. It resulted rather from the parallel decision to standardize secondary education, the aim of which was to establish equality of opportunity for all in view of the social segregation that vocational skilling paths were accused of at the time. The only kind of training provided in educational

institutions, therefore, was of a general character. This explains why enterprises were forced into the role of providers of vocational training for different groups of young people. However, the vocational training they offered was not properly organized, being rather the informal and non-structured result of production work itself. It was only when the low level of training of the older workers became apparent that the importance of generating skills in production in Portugal really hit home.

The outcome of this state of affairs is all too predictable. Hundreds of thousands of young people who are neither willing nor able to undergo extended theoretical training have left school without any preparation whatsoever for their active working life. This helps to explain, incidentally, why general and academic training enjoys unusually high social status and why aspects of social and vocational hierarchies that have virtually disappeared in more advanced countries continue to exist in Portugal. The status attaching to white collar occupations - coupled with a very high demand for the appropriate training and careers to the detriment of technical training and paths - together with the "doctors and engineers" syndrome are major contributors to social stratification. Uneven regional development also exacerbates the situation. The training provided has little to do with production needs in the respective region. Young people migrate to the coastal areas, where there are more jobs in the services sector, because their training does not bind them to any particular region. The coastal areas give the appearance of being islands of modernization, thereby increasing national heterogeneity. This vicious circle is completed by a fourth factor - the poor quality of education, whose most striking features are the failure of pupils to achieve at school and the low professional standards of teachers and educators (Lopes, 1990).

The reform introduced by the Education Act (LBSE) of October 1986 and the Vocational Training Policy Agreement, concluded by the Standing Committee for Social Coordination - CPCS[4] - in July 1991, faces an immense challenge. As the Commission of the European Communities has stressed in the material it has published (CCE, 1989), "learning to learn" is of the essence. Any analysis of the process of generating skills must ultimately call into question a society's capacity to educate since this process interlocks with the activities of social and economic institutions of all kinds. We do not intend to detail the stipulations and changes contained in these acts and agreements, an updated description of which has been provided by CEDEFOP (1991), preferring to deal briefly with the underlying philosophy and overall structure in order to highlight recent changes in the educational system and to focus on prospects for the future.

The main aim of the reform is to provide everyone in Portugal with general training that will "pave the way to vocational training" The Education Act, therefore, lays great stress on the *integration - within the educational system* - of pre-school education (affecting children under the age of 6), school education, extra-mural education (literacy courses and basic education for adults, non-certified training) as well as certain elements of vocational training considered to constitute a special feature of school education. Table 3 shows the Portuguese education system in the form in which it has existed since 1986/87. This will help the reader to understand what follows. The advantages of structuring the education system in this way are obvious. The integration of pre-school education strikes us as crucial given the rate of failure at school (affecting almost 40% of pupils in primary school classes) and the scant respect given to the compulsory six-year period of schooling (cf. recent European studies revealing that thousands of children are out to work in northern Portugal).

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[4] This Committee, set up by Statutory Order No. 74/84, is responsible to the President of the Council of Ministers. It is a consultative, basically tripartite body designed to promote dialogue and consensus on social and economic matters.

Education policy in recent years has been geared to:

- the establishment of a nine-year period of compulsory schooling;

- the development of technical and vocational types of training in both state and vocational schools. These legal entities, which were set up in 1989, encourage the local population[5] to establish schools preparing young people for jobs that are required in the region. There were 134 such schools attended by 13,700 pupils in 1991/92.

- the introduction of sandwich courses, notably via the setting up of an apprenticeship system based on the German model. This type of training used to exist on an informal basis in Portugal but it was not put on a formal footing until after 1984. The apprentices receive a vocational training certificate plus a diploma which grants them access to regular types of training. (It should be noted, as indicated in Table 3, that both the vocational schools and the apprenticeship system are under the dual supervision of the Ministries of Labour and Education, this supervision being exercised by bodies given specific responsibility for each of the systems);

- the development of a polytechnical or advanced secondary education system which is short-cycle, vocational, and regionally decentralized;

- the development, parallel to the public sector, of private higher education, which accounted for as many students in 1991/92 as the public sector.

In conclusion, mention should be made of the existing and possible future weaknesses of the system described above. Systematic evaluation of training and institutions is very new in Portugal. This explains why there is a lack of quantifiable data and why nobody is as yet in a position to evaluate the gap between theory and practice, of which everyone is well aware. A summary of the above points is an appropriate way to present a brief critical analysis:

- With 6-year compulsory schooling, introduced 25 years ago, still to be fully implemented, there is cause for genuine doubt as to whether 9-year compulsory schooling will be quickly and effectively applied, particularly since the provisions concerning the integration and generalisation of pre-school education have been the most neglected of all the measures envisaged;

- There is a great degree of uncertainty as regards secondary vocational training. On the one hand, the vocational schools, which are financed largely from municipal funds, are heavily dependent on the local authorities and there are plans to put this relationship on a long-term footing. On the other hand, training of this kind is in direct competition with technical training in state schools, which may well dwindle into insignificance as a result (given the low level of funding available and the minimal contacts with community life). The lack of quantified data and the low level of coordination make a detailed comparison of the number of young people pursuing vocational training as opposed to general schooling difficult. In 1990, some 20% of youngsters in this age bracket were at school.

- One major problem that exists right across the board is the chronic lack of trainers for technical and vocational training. Appeals have been made to trained staff working in enterprises to come forward. They are, of course, in great demand since there are very few trainers available on the labour market. Training programmes for trainers have been launched, but in view of the very low level of interest shown in them (plus the lack of flexibility on the part of these potential trainers) they are currently being reviewed with the

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[5] Vocational schools can be set up by public or private entities such as local authorities, cooperatives, enterprises, trade unions, associations etc. by means of a contract programme) with the state (which guarantees part of the finance) and protocols ensuring cooperation between the various promoting bodies.

aim of placing greater emphasis on "tailor-made" training modules. This problem also stems in part from the absence of any regulated status for the profession of vocational trainer;

- A great deal of hope and enthusiasm surrounded the setting up of the apprenticeship system (which was launched in 1984, but which didn't really get off the ground until 1986). However, many difficulties were encountered - notably the lack of interest on the part of young people and inadequate cooperation with enterprises. The system has, therefore, been revamped in an attempt to give it broader appeal (there were 12,000 apprentices in 1990). It is now moving from the experimental stage to the developmental phase;

- Short-term university education (called polytechnical education) is expanding rapidly (even though it attracted only 16% of students in higher education in 1990). The major obstacle it faces is the low level of public demand in the light of what we have already referred to as the "doctors and engineers" syndrome. Young people and their parents tend to attach little value to qualifications below that of an advanced diploma;

- The problem posed by the proliferation of private higher education institutions is that of quality. This stems, on the one hand, from the lack of qualified teachers capable of responding to the teaching requirements in Portugal today and, on the other, from the low standards needed to obtain a certificate;

- The education system covers initial vocational training as well as certain extra-mural types of continuing training such as adult education, which is regarded as providing a second chance for all those who left school early. Some 40,000 adults were involved in training of this kind in 1990. However, such essential measures need to be put on a much broader footing. Above all, new teaching methods need to be introduced such as learning programmes, which the responsible bodies do not seem to consider at all;

- Another important issue is the availability to the public at large (including enterprises and pupils' parents) of information dealing with these new elements in education and training and the changes they require, which brings us back to the thrust of our approach.

Post-initial vocational training

Having dealt with the education system, we now turn to vocational training in the labour market (as opposed to vocational training within the education system - to use the distinction made in the 1991 Vocational Training Policy Agreement). The situation in Portugal in this respect is quickly described. In the past, all types of training were the responsibility of the state. Employers and the unions were involved in no more than a handful of large enterprises. In the wake of the recent reforms, however, and despite the fact that it is basically the responsibility of the state to initiate legislation, a framework for negotiation and consensus has been established which is designed to involve employers and the unions in drawing up and defining training policy as well as coordinating and implementing it. The involvement of the employers and unions is extremely important in defining training policy and establishing the role they can play in the direct provision of training. However, the definition of this training at the branch and enterprise level is still a very delicate matter in some ways. This has to do in part with the difficulty of introducing new issues into collective bargaining.

It is readily apparent in this context - adapting the argument used by Méhaut (Méhaut 1986) - that training in general in Portugal is heavily influenced by standards that are determined by the state. Only relatively recently have more conventional standards come to the fore. It is too early to say yet whether they will "redefine the range of skills, thus making it possible to change the conditions under which skilling can be developed and defined" (op. cit. p. 163), particularly since training is financed primarily from the state budget and by the local authorities, which are themselves recipients of central allocations from a state body (cf.

CEDEFOP, 1991, p. 102 ff for a description of the funding and of different "Operational Programmes" for training and employment that were launched as part of the "Community Support Scheme"). Larger contributions from the employers and unions to the financing of training might well bring about better management of these programmes. However, employers' organizations are critical of such an approach, claiming that part of the funding at the national level already comes from social security contributions paid by the enterprises and their employees (CEDEFOP, 1988, p. 63). Post-initial training is a very new development and so enterprises and workers alike are still a little wary of it. An analysis of post-initial training will be provided in Section 3.

The text of the tripartite Vocational Training Agreement concluded this year by the state, the employers and the unions (CPCS, 1991) has engendered a great deal of enthusiasm just as the Education Act (LBSE) did. In particular, it confirms the intention to make the enterprise a vehicle for training (CPCS, p. 16) in conjunction with the policy of support and organizational choices. Priority is given in the agreement to initial vocational training for the young (prior to 1987, when the LBSE came into force, almost 50% of pupils left school with no more than a certificate of attendance), training for trainers, and continuing education for adults. Two statutory orders have been discussed with the employers and unions. These concern i) the overall framework of vocational training which a) establishes the distinction between training as part of the education system and training for those already on the labour market and b) incorporates issues such as the definition of the different types of training and their respective target groups, forms of organisation and responsibility, certification, the content of training, evaluation etc. and ii) vocational training as a labour market instrument, which takes up and specifies the aspects dealt with above.

The training provided for under these new institutional arrangements is organized by the Institute for Employment and Vocational Training (IEFP) under the aegis of the Ministry of Employment and Social Security in two types of training centre. One is run directly by the IEFP and the other managed in accordance with the cooperation agreements between the employers and the unions (this type of centre will still be 93% financed by the IEFP, however). Training is organized in Operational Programmes, the thrust of which depends on the type of group they are directed at (cf. Table 4a). These centres provided training for a total of 38,200 people in 1990, 28,700 of whom attended the centres jointly run by the employers and unions (cf. Table 4b). The training lasts for different periods and caters for the attainment of qualifications, further training, refresher courses, and retraining. Further training accounts for the majority of the trainees with retraining being virtually insignificant in terms of the numbers involved.

Mention must be made, in conclusion, of the initial and continuing training carried out by the enterprises. In 1990, this affected 12% of enterprises and 220,000 participants - mostly in large enterprises (cf. Appendix 5) and was made possible thanks largely to the Operational Programmes co-financed by the European Social Fund.

2.2 THE EMPLOYMENT SYSTEM

Generating skills in the enterprises

Having outlined the vocational training system, we now move on to analyze what the employment system has to offer - using Rodrigues' concept and its application to the Portuguese situation (Rodrigues, 1988) - with an eye on our medium-term objective: the links between formal education and enterprises and how they can adjust to one another. The employment system makes it possible to study the relationship between supply and demand and to link the type of production a country specialises in to the characteristic features of the places where workers are socialized, the methods of managing human resources, and the organisational models that figure among the predominant structural indicators. We shall use

the employment system in Portugal and the indicators on which it is based (op. cit. p. 250-251) to explain a number of aspects that are important to our project.

The employment system in Portugal differs in a number of ways from that in other EU Member States:

- agriculture is much more important, although its significance has declined very rapidly recently;
- considerable importance still attaches to the traditional industries (textiles, leather, ceramics), although mechanical engineering and the automobile industry are expanding (as the result of foreign investment in the case of the latter);
- there is a growing services sector, which is attracting workers with better school education in particular. The upshot of this, however, is a shortage of managers and technicians in industry;
- there are a good many small and very small enterprises in most sectors;
- there is also a stark contrast between enterprises which have modern technology and management and those that do not;
- most sectors are lagging behind in the restructuring of production;
- overall competitiveness stems predominantly from wage controls and there are major weaknesses when it comes to quality and innovation;
- there is likewise a very marked contrast between stable and unstable jobs (the last to be taken on being the first to face unemployment);
- wage levels are low and collective and individual bargaining concentrates on wage issues;
- occupational mobility is on a low level both inside and outside enterprises;
- internal markets, where status is accorded to seniority, tend to predominate;
- the employment rate is below the European average but there is every prospect of it rising, which will lead to superfluous staff being made redundant.

What, then, are the connections between the employment system and the education system? One might describe them as being linked in a vicious circle. The low level of education of the population at large does not encourage the development of more "high-profile" activities and the employment system does not provide the elements necessary for the generation of more advanced skills. Studies that are more specifically sociological in character have described the cultural and vocational approach of the majority of enterprise managers as "archaic", deeming this to be a great weakness on the part of the elites, who are barely capable of constructing "islands of rationalization" that might spread to other areas of society. The emergence of these "islands" and their proliferation brings them into head-on conflict with problems that are inherent in the learning processes at both the individual and organizational levels. In Portugal, the situation has something exemplary about it. Without the capacity for individual learning there can be no learning in the organizations and vice-versa. The problem, then, is to provide everyone with a minimum learning capacity, without which no real social cycle or cohesion can be established. With the first step taken, how is the employment system going to react? The ball is in the enterprises' court and they have a major problem to face, i.e. how can older workers in the enterprise with little education be put in a position to work together with young workers who have totally different values and requirements? What

organisational model will allow the different skills of these two "vocational groups" to intermingle? How can there be two-way traffic of the different skills without hostility arising and one group being replaced by the other?

Training and the system of industrial relations

Before we come on to the essence of our analysis, let us look very briefly at "industrial relations". Having already touched on the role of the employers and the unions in defining and implementing training policy, we need now to examine the extent to which collective agreements comprise a link with training. The situation was summed up very well in a recent study. In contrast to what has happened in the pluralist democracies, the system of industrial relations has not developed autonomously but "has been absorbed in the concept and organization of the "corporate social state" which existed up to 1974" (CEDEFOP, 1988, p. 48). Thus, the employers and the unions have demonstrated little initiative or capacity for drawing up recommendations. Direct contacts between them are minimal and to all intents and purposes they only come together for the regular tripartite meetings. An exception is provided in this respect by certain sectoral pressure groups, such as the banking and transport sectors which have "verticalized" agreements regulating all occupational categories, and certain large enterprises which conclude agreements at the enterprise level themselves. It is only recently and partly in conjunction with finance provided by the European Social Fund that the employers and unions have started to collaborate on the issue of training.

However, the efforts that have been made so far are only marginally reflected in the Instruments for the Collective Regulation of Labour (IRCT). Although there are hundreds of agreements, explicit references to training are to be found in no more than 34 of them (op. cit. pp. 19-23), 17 of which are sectoral in character and refer primarily to the services. Responsibility for training, which can cover anything from giving lessons to guaranteeing training at an in-company centre, rests solely with the enterprises. The establishment of a link between training and promotion appears in one solitary agreement. On the other hand, the definition of occupational categories contained in the IRCT goes back several years. These categories were drawn up between 1975 and 1977 by people whose competence in such matters leaves more than a little to be desired. A feature of the system of industrial relations is its negligible capacity for adaptation and innovation. Its inflexibility stems as much from the rationale of its original articles as from the specific nature of trade union structures, which are very competitive and centralized.

Thus, the real situation is far removed from the provisions contained in the agreements. For example, the only wage agreement which is more or less adhered to is that on the minimum wage. With that exception, the wages paid are consistently above the agreed levels (this situation being attributable to the dearth of people with higher qualifications on the labour market) and do not bear the slightest resemblance to the written agreements. The necessary flexibility occurs on the fringes of the agreed norms. If a worker is promised no more than what is laid down in the agreement, the implication is that he is incompetent. Remuneration is expressed largely in terms of wages and not in terms of promotion from one category to the next. These categories are too inflexible, apart from which there are few opportunities of acquiring the training that would justify promotion. Here again, insiders confirm that there are two clearly distinct categories of workers: those who are promoted on the basis of seniority and experience and those who are recruited on the basis of their diploma, their relationship with the enterprise and the job differing radically, however. The coexistence of these two "occupational groups" poses enormous problems for the trade unions.

Here once more the same observation applies. The technical competence of the employers' organizations and the trade unions is well below the level required for them to be able to make an effective contribution to agreements on vocational training. F. Sellier notes that the level of negotiation depends on the capabilities of those involved (Sellier, 1986, p. 99) and in particular on how strong or weak the occupational identity of the employees is. Application of this argument to the situation in Portugal is very revealing. Given the virtual absence of

vocational channels within the educational system until very recently, it is only logical that occupational identity should be weak (less than 20% of workers in Portugal have a vocational diploma compared with 90% in Germany). The enterprises thus have a key say when it comes to promotion and classification. The low level of technical and social competence displayed by the employers and trade unions - and the extent of internal wrangling - means there is a marked inefficiency when it comes, for example, to changing the current scales in order to restructure workers' progress up the occupational ladder, as has recently been tried out in France. Rather than instituting the possibility of promoting those who are at the lower end of the scale the existing categories reinforce both the power of the enterprise and the privileged position of those who have access to training.

SECTION 3 THE LINKS BETWEEN FORMAL AND INFORMAL TRAINING AND DOUBTS ABOUT THEIR FUTURE COHESIVENESS

3.1 THE LINK BETWEEN INITIAL TRAINING AND WORK ORGANISATION

The importance of this link

Continuing training is still poorly organized in Portugal. Only very recently have efforts been made to structure and regulate it. In the following paragraphs we shall first characterize continuing training and then analyze the effects it has on work organization in the enterprise. In doing so we are not anticipating what will be dealt with in Part Two of this research paper, but will be taking a closer look at the general framework. It is obvious from what has been stated above that the current, long-standing weaknesses and "black holes" in the education and training system constitute one of the major obstacles to the modernization of production in Portugal. They account, in particular, for its low level of specialization and integration into the international division of labour. We will examine the root causes of these weaknesses before moving on in the second part of this section to an analysis of the problems enterprises and workers in Portugal will be facing in the near future. The cohesion that has existed in the past will be swept away. This will mean that all sides will have to adapt to a completely new situation.

The information available on continuing training does not permit any quantification of the data. Nevertheless, it is possible to state the following:

- the large amounts of money that were made available in 1986 for training led to hundreds of institutions being set up. Attempts are currently being made to regulate their activities and the quality of training they provide by means of a system of certification (Statutory Order No. 95/92). Organizations that have analyzed the results of the training these institutions provide have doubts about the replies they have received. Thus, the financing of training from in-company funds is around 5% in general and only reaches 20% in a few large enterprises (CEDEFOP, 1991, p. 112);

- from 1986 to 1989, priority was given to training young people, i.e. the funds were used to compensate for the weaknesses of the education system. However, the low percentage of adults undergoing training (no more than 30% of the total number of trainees) and the new guidelines laid down by the European Community led in 1990 to a reversal of priorities (cf. CEDEFOP, 1991, p. 123-125). In other words, recognition of the urgent need for an evaluation of continuing training came very late in the day;

- however, when older members of the workforce with a lower level of education were encouraged to undergo training (previously the focus had been on training middle management and highly skilled workers) their response was lukewarm. As a result, all the programmes involving vocational retraining or the long-term unemployed used up only a part of the funds provided;

the enterprises have indicated that there is a considerable need for training, nonetheless. A study of enterprises with more than 10 employees revealed that they themselves were prepared to recruit or train around one million workers or young people from 1990 to 1992, with the emphasis on improving existing skills or providing basic training (cf. Table 5).

The explanation we would offer for this state of affairs is that the vast majority of the working population are not in a position either personally or job-wise to engage in traditional training. However, while companies recognize the need to raise the qualifications of their workers they are far from being in a position to organize adequate training themselves. The difficulties they face are compounded by the fact that the level of initial training is very low. This underlines the need for learning and upgrading programmes for large numbers of workers which, however, are not always provided by the responsible bodies at the national level. Moreover, there is a need to think over how working times and pay can be arranged to facilitate access to training for these workers. After all, the enterprises will have to engage in modernization *with* these workers. In the year 2000, more than 80% of the working population will consist of those who are in employment today.

Access to continuing training leading to genuine qualifications will, therefore, mostly be of interest to younger sections of the population, i.e. those with the necessary schooling and the requisite mental abilities, which will lead to an increase in learning ability. In future, then, enterprises will face a two-edged problem. On the one hand, they will have to provide training for the younger generation because vocational paths are coming increasingly to depend on alternance training or in a course of practical training. On the other hand, it is their current employees who will be obliged to train the youngsters in their trade. However, these two groups have cultural and occupational backgrounds that are far apart. The one group is made up of those who have acquired their occupational skills on the shop floor in accordance with informal learning methods that are bound up with the tradition of craftsmanship, while the other consists of young people with general training who attach little prestige to a vocational ethos[6] as such. The crux here is that the two groups speak a radically different language. Know-how acquired on the job is specific in nature, i.e. it is not "universal" or transferable in any way, whereas the youngsters speak a language that is more formalized and is shared by the whole group. Making matters more complicated is the fact that the older workers are responsible for training their younger counterparts of the post-1974 era whose social upbringing has been completely different. Along what lines can a teacher-learner relationship develop in such a situation and how can the necessary authority be established? While this is a general problem in society, it is particularly acute in industry. Young people attach little value to industrial work not only because it is relatively poorly paid as compared with work in the services sector, but also because they sense that the world of production is based on social relations with which they are not familiar. The twin-track nature of the challenge makes the problems involved even more intractable. Not only are there two different vocational groups that need handling, one of which is still in the process of developing, there is also the issue of economic modernization to be tackled.

A study based on the connection between the level of education and seniority, training, age, size of the enterprise, and sex, came to the following conclusions (Lopes, 1990, p. 353-388):

- highly skilled workers and middle management achieve their status through the experience they have acquired because the training required for the positions they occupy is not available outside the enterprise. Until very recently, vocational training was obtained within the enterprise;

- there is a much higher proportion of apprentices and workers undergoing practical training in small and very small enterprises. Since these enterprises present limited

[6] We define vocational ethos as the relationship with an occupational activity. It comprises both the skills as well as the values and behavioral standards linked to the work.

career opportunities, it can be assumed that once young people have completed their initial vocational training they will move on to large enterprises or make their own way;

- workers whose job it is to teach others (team leaders, foremen, middle management) can look back on many years of service and are likely to be getting on in years. While they may stand in the path of innovation rather then helping to bring about change, they are also the only ones with the requisite vocational know-how;

- as enterprises grow in size, a greater range of skills is required and the number of workers with higher levels of education increases. However, it is also the large enterprises which admit the least number of apprentices in relative terms.

Linking elements and aspects of the past with the requirements of the future represents a major challenge. The system of mobility that is needed can only come about as the result of gradual adjustments and local compromises in the context of a wider-ranging social experiment. Given Portugal's highly idiosyncratic economic, cultural, historical and geographical features, importing models from abroad cannot be the answer. There is a need for structure and cohesion in society which can only come about as the result of a collective apprenticeship. The role of the state will be to bring together and generalize the results of this social experiment.

Linking enterprises with the education and training system and the problem of certification

The training system must respond to and anticipate the needs of enterprises and they, in turn, must recognize the qualifications certifying initial or continuing training. To quote B. Gazier, "the guarantees given to workers, the motivation they have, and the paths they take will vary considerably depending on how well education and production are integrated with one another" (Gazier, 1991, p. 314). One of the main means of addressing the challenge posed by qualification and of resolving the conflicts between all the sides involved in Portugal is certification, which is a key element in integrating formal and informal training. Up till now, the qualifications obtained in the course of the education system formed a starting point for the elaboration and recognition of occupational qualifications in Portugal. In-company training was given internal recognition, but often enough this took the form of a simple wage increase and did not comprise any higher status enhancing the worker's negotiating position on the labour market. This explains why positions above that of a trained worker are awarded on the basis of seniority. A typical feature of the internal markets is the basic similarity of the general categories of qualification, which accounts for the very low numbers of middle managers. Their functions are performed by workers whose lack of recognized school qualifications officially denies them appointment to such positions.

A new approach to certification and the recognition of skills appears to be essential if clashes between workers from the two groups described above are to be averted. Indeed, it is one way of gradually changing social values, breaking down hierarchies and altering social status, which currently centres far too much on white collar occupations. As we pointed out earlier on, the employers and unions are too far apart for them to be able to exercise a positive influence in this respect. Once more, then, a key role falls to the enterprises which not only have to transmit skills but also determine what they comprise. Basically, they should consist not just of the classical shopfloor apprenticeship, which entails minimum formal requirements, nor only of the transfer or acquisition of know-how generated outside the company" (Méhaut, Villeval, 1990, p. 18).

The Statutory Order (No. 95/92) instituting a system of vocational certification, which was introduced in 1992 at the instigation of the employers and unions, came into force just recently. It aims to set up a system of certification for vocational training which is "integrated into the employment system". The employers and unions claimed this would be a major way of securing recognition for the skills obtained by workers and acquired in the course of work

experience. The issue was seen primarily in terms of the international recognition of qualifications, however, with preference being given to training leading to a recognized qualification, although an "occupational title" is planned for those workers who do not have any formal training qualifications but can point to the appropriate degree of occupational experience.

Considerable technical, methodological and political difficulties have been encountered in putting this statutory order into practice. The certificates should in theory be based on occupational profiles incorporating all the skills necessary to perform the required job of work and then transformed into training profiles (Castanheira, 1991). This would fit in with the occupation analysis conducted by IEFP. However, there are no national models for occupational profiles at the moment and the employers and unions have yet to arrive at an agreement on how to put a certification system into effect. Progress is painfully slow and the system is not due to come into force until the end of 1993. Implementing it will be both a major challenge as regards the certification of skills and a remarkable opportunity for regulating the training market that will directly affect the development of organizational choices and the structure of employment.

To conclude - and by way of an introduction to the forward-looking approach we wish to adopt - let us refer once more at this juncture to "the essential features of the initial and continuing vocational training systems and their modes of institutionalization and regulation" proposed by Méhaut and Villeval (op. cit. p. 27). This will allow us to see where Portugal fits in as regards the situation in the recent past and in the near future:

- the outstanding feature of initial training was the absolute predominance of general training. While there has been a shift towards vocational training recently, this has not called into question the predominance of general channels;

- the involvement of the enterprises, above all the small and medium-sized enterprises, has extended to no more than the provision of haphazard and unstructured informal training. However, they should become more closely involved in the near future as they face the challenge of introducing their own training arrangements and taking advantage of the external training facilities on offer. The emphasis will be not so much on formal continuing training inside the enterprise as on close links with formal training provided outside;

- very little faith is placed in continuing vocational training on the labour market. It urgently needs upgrading and this is envisaged as part of the future system of vocational certification;

- the state is largely responsible for the degree of institutionalization that exists at the moment, the trade unions and employers' organizations being mainly involved in defining training policy;

- the relationship between training, certification and upward mobility is barely perceptible in the majority of vocational categories. The relationship between these three is a key element in the regulation of the labour market in general and in formalizing occupational paths, in particular. It is one of the very weak points in the overall "social model" and is closely related to the marked inefficiency of the collective bargaining processes;

- the way continuing training is regulated affects aspects of funding and teaching, but the conditions do not exist as yet for an effective assimilation of teaching standards by trainers' organizations.

3.2 PROSPECTS FOR THE FUTURE: UNCERTAINTY ABOUT THE DOMINANT MODEL OF SOCIAL COHESION

Choosing a model for apprenticeships

The analysis we provide below is basically our own interpretation based on decisions and official declarations made by those responsible for training. We do not claim that it reflects their intentions. Our analysis is founded, moreover, on what is *possible* in the light of the recent measures taken rather than on what is *probable*, since that depends on the absorption by society of the reforms that are under way. Continuing to apply the typology systematized by Méhaut and Villeval, it is appropriate to ask which model we proceeded from and what model we are moving towards. The approach outlined below would indicate a desire to move away from the "French model" without there being any clear idea of what the preferred model might be.

Overall, the general educational model has been one in which there was a bias against public involvement, illustrated by the gap between training and the labour market (cf. Méhaut-Villeval, p. 28). There are moves now, however, to bring in the enterprises, the employers and the unions as the state attempts to share responsibility at the local and regional level for certain training institutions (initial training in the case of vocational schools and continuing training in the case of the centres run jointly by the employers and unions). These moves form part of a fundamental restructuring of the entire system which indicates - for the moment at least - a preference for the German consensus model. However, that preference could shift rapidly in favour of the Italian model, which uses the labour market and the demand for vocational training expressed directly by the enterprises as instruments to "steer" the vocational training system. Judging from discussions among the employers, they would prefer the latter more liberal model. It strikes us, though, that the situation is too precarious - for the moment at least - to be able to delegate to society at large the responsibility for such essential matters as education and vocational training which involve qualifications "that hold out a great deal of promise for the future".

While there may be a certain propensity for existing models in Europe, there are several factors at work which limit the possibility of their application to Portugal:

- the German model is based primarily on the strong vocational ethos of the workers which has to do with the history of German industry. This vocational ethos also exists in certain branches of industry in Portugal (for example, in the capital goods sector). However, these branches play only a minor role in the infrastructure of the economy. Moreover, the old industrial schools, which made a major contribution to the development of this vocational ethos, have disappeared, making it doubtful whether an ethos of this kind can be maintained in the future. Therefore, the German model seems to us to be out of the question (even though the apprenticeship system was inspired by it);

- the Italian model rests on the strength of cooperation between the small and medium-sized enterprises and on the impact of regional identity. However, the fact that these aspects barely apply in Portugal, coupled with the improbability of their emergence (given the way enterprise managers behave in Portugal), leads us to regard this model as unlikely;

- the weakness of trade union control and powers of regulation, combined with a high level of conflict, means that negotiations and co-determination in training at the enterprise level are fraught with difficulties. Efforts have been made recently to give greater influence and responsibility to trade unions and employers' organizations in these matters;

- finally, the importance of public finance in training underlines the key role of the state in this sphere despite the attempts being made to extend co-determination procedures.

The upshot, therefore, is that the Portuguese model will have to be of its own making, which puts a question mark against its characteristic features and how stable it will be. It goes

almost without saying that innovation is always difficult, that major errors will be made and that the outcome will be largely unpredictable. On the other hand, processes of innovation are fundamentally democratic in that the whole of society is involved and must sanction the various stages these processes go through. That makes them irreversible and stable once they have been implemented. Given the privileged role of the state in these matters, where should it make its influence felt the most? As we pointed out earlier on, individual forms of apprenticeship appear to constitute the foundation stone on which a specifically Portuguese model might rest. This makes educational standards a key factor in Portugal today. These are laid down by the state in France and Spain and worked out with companies in Germany. In Portugal no great attention is paid to them, the question of how to regulate continuing training still being dominated by the consequences and the specific opportunities flowing from community financing. Bearing in mind what has been said about the challenge the enterprises have to face - how to handle two profoundly different groups of workers - the only way to resolve the conflicts and ensure effective coordination resides in making the enterprises places of learning. The key lies in the cultural and vocational training given to the young workers - in particular the importance that will be attached to inter-personal and motivational skills (the "savoir-être") - as well as to the company managers. It should be pointed out here that very few activities have been directed at the managers of small and medium-sized enterprises. They are essential, however, particularly since there is an abundance of experience in this field which is readily available in the more developed countries. Ultimately, the success of the future model of society, in terms of economic efficiency and political democracy, depends to a large extent on education and training.

Modernization, specialization in production and dualism in society

Our theoretical position - that preference should be given to apprenticeships - takes account of the fact that every enterprise in Portugal complains about the shortage or, indeed, the non-availability of skilled workers. It is true that the future of the Portuguese economy is at least as uncertain as the characteristics of the social model we have projected above and that the latter will influence the "conditions of employees in the enterprise and their paths of mobility". The fact of the matter is, however, that without a very considerable increase in the qualifications of the working population there can be no modernizing the organization of production in Portugal. On the other hand, uncertainty will disappear because the scenario of cumulative divergence between Portugal and the other countries of the European Community (Rodrigues, 1991, p. 25) will undoubtedly prevail. Whether the spheres of production in which Portugal has specialized can be improved depends on how the public at large digests the recent reforms of the education and training system. This, in turn, will require immense efforts on the part of the authorities to inform the public at large about the new windows of opportunity. Crucially, the information must be put over in a manner which the public can understand. After all, people with a low level of education have difficulties in *understanding* information. This can result in a low level of demand influencing the extent to which the financial resources available are exploited, as is the case with economic modernization plans.

Up till now, technological modernization of the major economic sectors - textiles, clothing - has led to a reinforcement of the Taylorist model. However, in other sectors, different types of organization that generate a greater level of skills have been introduced. It is tempting, therefore, to draw the following conclusions: i) sectors involving the intensive use of unskilled manpower must be preserved in order to maintain jobs for hundreds of thousands of workers who cannot retrain in the appropriate time; and ii) the viability of sectors requiring a higher level of skills depends, among other things, on the availability of qualified human resources. Both these types of sector will have to undergo modernization all the same, although their organizational approach may well be different. But, as Eyraud says, "apprenticeship consists in making the organization of work on numerically controlled machine tools compatible with the dominant organization in the enterprise" (Eyraud et al., 1984, p. 497).

In Portugal, there needs to be a twin-track approach to apprenticeship so that i) new technology can be matched with methods of labour organization that are appropriate to the

specific situation in Portugal, and ii) an economy and a population moving "at two different speeds" can remain mutually compatible. If these adjustments cannot be made and compatibility is not achieved, we shall witness two social models coexisting side by side: one that is characteristic of the less developed countries and the other that is comparable with the other European countries.

SECTION 4 SELECTING THE ENTERPRISES TO STUDY

4.1 THE AIMS OF THE PROJECT AND THE SITUATION IN PORTUGAL

Fittingly enough, the terms of reference of this CEDEFOP project attach priority to work organization, the theory being that new forms of work organization form part of the break with typical features of Taylorism. However, international studies - and in particular studies carried out in Portugal itself - have shown that technological modernization does not correspond in linear terms with an increase in the skill-generating dimension of work organization. A résumé of what was stated earlier on about the situation in Portugal may help to explain the cases we chose to study:

- Given the extent of functional illiteracy, unskilled jobs cannot be done away with on any great scale in Portugal because the "crisis posed by the low level of training" would then extend to the majority of the working population.

- Nevertheless, a clear distinction has to be made between the different economic sectors. It should not be forgotten that production in Portugal is structured very differently from that in the majority of the Community countries. It consists largely of what are termed traditional sectors where competition on a cost/price basis predominates. Studies show that the introduction of information technology in these sectors has gone hand in hand with a de-skilling of those operating it. Far from becoming looser, the bonds between men and machines have become closer as the rationalization of production goes hand in hand with an increase in the intensity of work.

- The situation is quite different in other industrial sectors where the workers already have higher qualifications. Here the recruitment of young people with recognized qualifications is parallelled by work organization that is potentially skill-inducing for all. To talk of occupational paths here is certainly meaningful regardless of whether they revolve around formal or informal training.

We are well advised to keep our feet firmly on the ground, however. No matter what the extent and quality of the reforms introduced recently in Portugal might be - and they are far from being comparable with developments in this respect in the countries of south-east Asia - we shall not be witnessing over the next few years a radical change in the role Portugal currently plays in the international division of labour. Even in the unlikely eventuality of a scenario of "ascending cumulative convergences" involving the Member States, sectors employing largely unskilled labour will continue to predominate in the near future, as will be plain from what has been stated above. Given that this is so, what enterprises represent an appropriate choice for a field study? Profitable companies in the textiles or leather sector where modernization leads to de-skilling and the old "foremen" are gradually replaced by a handful of engineers and large numbers of women without any vocational aspirations? Or enterprises in the capital goods sector, which are in the process of forging links with vocational centres and schools?

4.2 REPRESENTATIVE STATUS AS OPPOSED TO "FUTURE SIGNIFICANCE"

We are convinced that the "social model of the future" is more likely to be found among the latter group of enterprises. It is they that will have to learn how to handle the older and young

members of staff, introduce skill-generating organization, and liaise with outside educational and training institutions. The traditional sectors will continue to provide their workers with induction training involving the use of machines provided mostly by the enterprise itself. However, this training will not really be skill-inducing nor will the occupational groups be genuinely restructured. Relations between those involved in training within the enterprise will only reinforce the already pronounced characteristics. The weakness of the employers and unions will make the imposition and institutionalization of national standards difficult just as it will the in-company negotiation of training and skilling systems that generate mobility. The strength of the workers in these traditional sectors is tied very much to the concept of a vocational ethos, which only finds expression where it enjoys recognized status and is difficult to replace. The enterprises here will only become involved in providing training if the skills they require are complex in nature and involve activities lasting more than just a few hours.

The dilemma we face is the following:

- either we opt for representative status at the national level (in terms of the numbers of workers and the enterprises involved) and choose enterprises in traditional sectors where the relations that interest us are relatively weak, particularly as regards informal training;

- or we go for the standard-bearers of the new model of society and choose enterprises and minority sectors whose viability is very uncertain in the medium term, but whose options are representative of the challenges facing society as a whole.

PART TWO

CASE STUDIES

THE APPROACH AND THE METHODS USED [7]

1. REMINDER OF THE BASIC PREMISES OF THE PROJECT

The basic premises formulated in the specifications assume that new forms of work organization

a) require workers to have additional or different skills whose acquisition presumes new teaching procedures and, in particular, a new relationship between formal and informal training, while at the same time

b) providing new opportunities for apprenticeships and a chance to build on skills already acquired.

At this stage of the project priority attached to the relationship between work organization and continuing vocational training, both formal and informal. Mobility and forms of remuneration were two secondary but indispensable aspects that were also taken into account.

The main aim of the three Portuguese case studies was to establish the extent to which the above premises applied. This raised the following questions:

- Do the new forms of work organization really generate skills on a broader scale? This presupposes drawing up a balance of outdated as opposed to newly acquired skills. In actual fact, it is by no means self-evident that the new skills stemming from the new division of labour apply to all concerned or that the new skills are perceived by the workers as being "superior". This presents two difficulties: on the one hand, the outdated and newly acquired skills of the workers have to be identified and distinguished, which is an aspect labour psychologists and sociologists have not greatly concerned themselves with. On the other hand, having acquired these more far-reaching or higher skills, the workers themselves should really have the feeling that their working activities have been enhanced.

- Are these new skills genuinely the product of revamped and/or more demanding apprenticeships? Put differently, do they really flow from the new form of work organization? It is distinctly possible, in fact, that the new skills would have been acquired anyway in the course of customary work procedures. The greater know-how could be acquired, for example, during formal training that fits into a relatively unchanged division of labour and system of shop-floor apprenticeships, even though the work performed might indicate the attainment of a higher level of skills.

- What, then, are the criteria which make it possible to determine whether work organization generates skills or not? This brings us back to the two aspects mentioned above: a) the need for a typology of skills as a means of establishing whether they have been heightened and b) a means of identifying how higher and more varied skills are acquired/transmitted, i.e. via an increase in the level of "teaching and learning" within the production units themselves.

In the sub-sections that follow we shall attempt to define - in the knowledge that any definition will remain inadequate - what a skill-generating organization and enhanced skills might be considered to be before going on to present our three field studies and explaining how we proceeded.

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[7] THE GROUND WORK WAS CARRIED OUT BY HELENA LOPES AND GENOVEVA BORGES.

2. How can a "skill-generating" organization be defined?

Impoverished or "dehumanized" labour is traditionally associated with Taylorism. Logically enough, then, new forms of organization that break with Taylorism require new skills. The consequences of a break with Taylorist-style organization are likely to be abrupt in one or many ways.

- specialized functions will be a thing of the past. Work will no longer be distributed parcel fashion to individuals, but allocated to workers operating as a team;

- Taylorist time-and-motion studies and Fordist imposed time will be dispensed with and the unidimensional character of the circulation of products and information will be replaced by complex circulation networks based on flexible rhythms.

If this break goes hand in hand with technological innovations, it is quite possible - and in the context of this project desirable - for a distinction to be made between organizational and technological innovation.

However, other criteria need to be added to these basic elements:

- The "macro" report presented by the German team during the first phase of this project pinpoints five descriptive and structural categories characterizing skill-inducing production units (p. 22): innovation as opposed to identical repetition; allocation of tasks versus flexibility (polyvalence); horizontalization as opposed to verticalization; networked tasks versus individual assignments; and participation as opposed to strict determination of functions.

- The French report underlines the following aspects (p. 12): the need for new technical skills; the development of management skills; and formalization of the communication imperative.

Thus, a skill-generating organization is characterized as much by the organizational forms themselves as it is by the type of skills obtained. This is an aspect we shall be amplifying on below.

At the time of the case studies we attached the utmost importance to the elements and criteria presented below because they struck us as being essential for us to be able to talk with any degree of legitimation about a skill-generating organization. As regards our priority objective, the situation can be summed up briefly. A skill-generating organization is one which, instead of avoiding the use of qualified human resources, tries to utilize in the most rational way possible every available or potential skill. While this may appear to be plain common sense, it is nevertheless something radically new for whole sectors of production in most countries and, in particular, in Portugal.

3. What do skills consist of?

Since the main object of this project is to analyze how skills are generated, it is only appropriate to define the process that is involved very briefly here. The concept of skill generation was debated at length decades ago, but in recent years it has been abandoned somewhat in favour of the concept of abilities. It is customary these days to break down skills in the workplace into three parts:

- job skills, i.e. all the abilities that are required for a job to be performed;

- worker skills, i.e. all the abilities the worker has that come both from formalized training and from occupational experience;

- conventional skills, i.e. those grouped in categories which form the basis for the worker's remuneration.

While the concept of abilities - defined as the total knowledge and qualities brought to bear on the task at hand - covers the first two aspects, it takes no account of the third. This, however, is of fundamental importance for the project. We cannot strictly regard any organization as generating skills unless it upgrades the worker and *increases his value on the labour market*. The problem of certifying acquired skills was frequently raised at working sessions held in conjunction with this project: there is a clear need to assess the generation of *skills* in respect of how they can be turned to financial advantage on the labour market and not just to evaluate the quantity or quality of learning. That said, this "all-embracing" definition of a skill-generating organization strikes us as being a trifle too meticulous. For the purposes of this project and with pragmatic considerations in mind it is enough to establish whether skills are extended or enhanced in order to establish whether the organization involved is skill-inducing. Nevertheless, the question remains as to whether the structures introduced in the wake of organizational changes continue to engender or favour new kinds of learning.

Having made this point, we can now move on to look more closely at skills. What is it that is going to be generated by the new forms of work organization? Before dealing with the issue of certification or otherwise of the skills acquired, we need to identify precisely what it is that has been acquired.

The traditional distinctions between theoretical and practical, analytical and empirical, general and specific knowledge are of no great interest to us here for the simple reason that the matter under investigation - the link between formal and informal training - transcends these dichotomies. While it is apparent that extensive scientific or theoretical knowledge can only be imparted in the context of formal training - just as certain technical know-how can only be acquired on the job - there still exists a broad range of knowledge and skills located half-way between these two extremes which can only be acquired by means of various inter-related learning procedures. The sum of these procedures will make up what we have defined as being skill-generating work organization.

Given that such typologies of skills are virtually non-existent at the moment, one of the contributions these studies can make is to advance proposals to this end. Nevertheless, a number of distinguishing features can already be pinpointed.

Labour psychology provides us with certain definitions (GUILLEVIC, 1991, pp. 70-72):

1. The performance of a task requires *a conceptual grasp* of the work situation - which is temporary in nature and can be dispensed with when the task is completed - and *knowledge,* i.e. a resident cognitive capacity independent of the specific task;

2. *Reasoning,* i.e. the ability to draw conclusions, is an important mechanism in the performance of a task;

3. Resolving problems requires the development of intellectual processes that are based on a conceptual grasp, knowledge and reasoning. These intellectual processes range from the more or less automatic application of algorithmic rules of decision-taking to the use of what are essentially heuristic methods;

4. The processes needed to perform a task entail comprehension/analysis of the situation, planning of the action to be taken, and a controlled evaluation of the completion of the task.

5. The collective dimension of the work is essential in as far as it calls for a shared conceptual grasp and knowledge as well as the elaboration of common strategies. The importance of these processes of cooperation is largely determined by the way work is organized.

These specific features can be used to draw up an initial list of skills in particular those that can be acquired in the course of work, which is what we are trying to establish after all;

- a *conceptual grasp* that is specific to the work situation can be considered as an occupational skill in the strict sense, i.e. as knowledge acquired through experience in a process of gradual familiarization with the sphere of activity. The conceptual grasp will develop more quickly if the worker is integrated into a group or team.

- *know-how* comprises all the formalized knowledge - theoretical or technological, general or specific - that has been acquired. Some of this knowledge can be obtained at the workplace, but only to a very limited extent. You don't become a chemist by working on the shop floor, but you do acquire a great deal of precise knowledge which enables you to work in a practical way that is not taught in the lecture hall. The acquisition of knowledge in the course of work presupposes that the process of apprenticeship in a certain field, which is essentially cumulative and progressive, has already begun. The knowledge acquired will be all the greater if the worker concerned has the opportunity to talk to staff more qualified than himself, i.e. if the groups are heterogeneous in terms of the knowledge they have.

- *reasoning,* just like the work processes mentioned in point 4, assumes a minimum logical capacity. This capacity appears to us to correspond to the formal operations stage outlined in Piaget's typology, which is developed in secondary schools between the ages of 12 and 16 approximately. Workers with less than six years' schooling would, therefore, be worth a study in their own right in this respect. How can skill-generating types of work organization develop the potential skills of this category of worker?

- Work processes are often tacit in nature. This applies to tasks that are typical of Taylorist work organization, i.e. repetitive activities and procedures learned on the shop floor with a very low level of formalization. On the other hand, heuristic activities are much more stimulating and invigorating: the organization of work will be all the more skill-generating if the workers have to face up to new situations and resolve unfamiliar problems of a technical, occupational and inter-personal nature. Handling an apprenticeship assumes a fine balance between the novel and the routine.

Collective work itself provides opportunities for learning since communication between those involved will in all probability stimulate the transmission of knowledge and information that could not be drawn on beforehand.

Summing up, the skills we attempted to identify and evaluate during the case studies cover different aspects. Does the new work organization call for and provide opportunities to increase technical and occupational knowledge and/or inter-personal and behavioral skills and/or the capacity to research and reason? Management skills, which have not been examined so far, form part of the skills already mentioned.

However, they comprise a category in their own right just as on-the-job skills do. They must, therefore, be considered as specific and differentiated skills.

4. ANALYSIS OF THE CASE STUDIES AND SUBSEQUENT PROCEDURE

The number one criterion, i.e. the selection of units that had made "perceptible" changes in their work organization (regardless of whether this change was radical or progressive, formal or informal) thus forging a new link between formal and informal training, together with secondary criteria led us to choose the following enterprises:

- Enterprise A - a Portuguese subsidiary of a large French group manufacturing low-voltage electrical equipment. This enterprise meets exactly the criteria laid down by the CEDEFOP team.

- Enterprise B - a medium-sized Portuguese industrial company producing capital goods. Although the organizational changes have not been formalized, this case had the merit of being very representative of the difficulties involved in the generation of skills that will be typical of Portugal in the future, as was outlined in the macro report.

- Enterprise C - a branch of a Portuguese banking group. This enterprise is a pioneer in vocational training in this sector, having been one of the first to rationalize its organization in response to the new conditions resulting from international competition.

The first stage of this project entailed pinpointing the problems involved in the generation of skills at the national level, i.e. identifying the competing institutions (vocational training system, production system and/or employment system, system of collective labour relations). The second stage, and in particular the "Methodological Note on the Conduct of Interviews" identified the factors which compete with each other in determining the required/acquired skills within the enterprise: enterprise strategy, the development of technology, methods of managing human resources, forms of organization, skills required and, therefore, the ways in which they are acquired or developed.

Information was gathered from various interviewees on different aspects, which we can systematize as follows - the order matching that of the presentation of the cases:

- Discussions with one of the managers threw light on recent strategy as well as on the general internal and external social and economic conditions prevailing at the enterprise.

- Discussions with the head of the production unit we analyzed made it possible to characterize the organizational development of the unit in question by relating it to the general aims of the enterprise.

- Conversations with the person responsible for training and/or for the management of human resources allowed us to identify more precisely the development of the skills acquired and the manner of their acquisition.

- Discussions with workers who had different levels of qualification and, in some cases, were in a subordinate position to one another provided valuable information which, when combined with the information furnished from talks with other interviewees, helped to explain the development of the skills generated.

ENTERPRISE A: AN "ALL-EMBRACING" CASE OF SKILL-GENERATING ORGANIZATION

1 GENERAL CHARACTERIZATION

1.1 DESCRIPTION OF THE ENTERPRISE

Enterprise A, situated 20 kilometres from Lisbon, is the product of the purchase by a French multinational group of two companies producing low-voltage electrical equipment. These family-run companies, one founded in 1934 and the other in 1944, were rivals. The French multinational company bought the first company in 1981 and the second in 1988, the legal merger not being completed until 1991. From being rivals these two units came to complement each another while addressing different segments of the market.

The multinational group, the European leader in the branch, is moving in a big way into the Portuguese market. This takes 75 to 80% of its production, the rest being exported to southern European and other Portuguese-speaking countries. Nevertheless, it continues to face fierce competition on the Portuguese market from small and medium-sized businesses producing the same type of products. The fact that these companies are not so large enables them to put less expensive products on the market. These are of inferior quality, however. With the viability of these competitors being very uncertain at the moment in view of the enlargement of the Single European Market and the standardization of products, Enterprise A has had to considerably reduce its production costs while increasing its productivity.

Although Enterprise A markets other high-tech products manufactured in its other European subsidiaries, it only produces standardized products in Portugal. This involves large-scale series production necessitating large numbers of specialized workers who enjoy almost total financial and management autonomy. Alignment with European quality standards has meant an end to the manufacture of certain products coupled with significant staff cutbacks and a drop in utilization of the productive capacity. This has exacerbated the problem of profitability for one of the two former enterprises. It is only recently that staff numbers have begun to stabilize and the utilization rate has started to climb again.

1.2 RECENT DEVELOPMENTS IN THE EMPLOYMENT STRUCTURE

In 1985, Enterprise A had a total of 1,000 workers. In 1992, it had around 500 (400 being considered the ideal number), the reduction rate being around 100 workers per year. The difficulties faced by one of the former enterprises meant that during the 1980s some workers were paid late or not at all over a period of seven years. Many of the staff left as a result. Today most of the management team are new.

The only social audits we had access to were those from 1989 and 1990. This had to do primarily with developments in the legal status of Enterprise A, which made it difficult to analyze the data. Nevertheless, the trends that emerge from a comparison of the two audits can be applied by extrapolation to the past three years without any great risk of error, as we were told by the person responsible for training.

The major quantitative aspects in the development of the employment structure (a qualitative analysis will follow in Section III) are the following:

- virtually all the workers enjoy unlimited employment contracts since recruitment has been embargoed to all intents and purposes for several years now.

- The total number of employees fell by 18% from 1989 to 1990. The categories affected by a higher percentage drop than that were: middle management, foremen, skilled and highly-skilled workers (about a 24% drop). The structure of skills also reveals a trend towards bipolarization between upper management and specialized workers.

- Over 50% of the production workforce are women. The majority of those who have left are men. By leaving they have helped to boost the percentage share of female staff.

- Looking at the age structure, there was a drop of 25% in workers over 45 years of age from 1989 to 1990 and a drop of 30% among the 31 to 35-year olds. The majority of those who left did so by "mutual agreement" and not as a result of early retirement, for example. This would indicate an intention on their part to re-enter the labour market at some stage. However, we were given no information on this.

- The number of staff with a service record of over 15 years has remained stable. The majority of those who left had given 6 to 15 years of service.

- The number of workers with less than compulsory schooling dropped by 33%. If we put that figure together with the information given above, we can conclude that staff cutbacks in recent years have resulted in a slight increase in the educational level of those employed, although that does not mean, of course, that there has been an increase in the level of skills as such. This strikes us as having much more to do with demographic factors - departures being linked to the normal age of retirement rather than to an upgrading of the workforce, a phenomenon which can currently be observed in the majority of Portuguese enterprises.

In conclusion, it is worth underlining a number of points. The workers at Enterprise A have a very low level of skills. Their average age is fairly high (41 years) and a large proportion of them are women. The workforce shows little propensity for change and has little interest in taking up an apprenticeship. Is the introduction of skill-generating work organization, therefore, likely to extend and enhance skills and if so, how?

1.3 STRATEGIES AND OBJECTIVES

The group's strategy is one of expansion. It aims, in particular, to penetrate the North American markets and later on the markets of eastern Europe. Enterprise A has considerable room for manoeuvre and autonomy as regards its strategic and production options.

At the end of the 1980s, Enterprise A was forced to considerably reduce its production costs and to increase product quality and customer service in order to stabilize its position as the national market leader (its current share of the market being around 80%). To be more specific, it had to shorten its delivery deadlines and increase the viability of its products by a substantial increase in overall productivity.

Having contemplated the possibility of investment in technology and computerized control of the production process, Enterprise A decided to make a start by changing its approach to production, bringing in the just-in-time system (referred to hereinafter as JIT). The idea was to simplify matters and to bring about organizational changes before going over to full automation of the production process. Initially, it was a question of implementing manual kan ban and familiarizing workers with this new concept of production before automating the entire process during the second stage.

A partnership agreement was worked out with a firm of consultants to develop the *Shared Electronic Kan Ban System* (SIKE). This system makes it possible

a) to respond in real time to the needs of production control by updating the central production control system, and

b) to control the means of production by electronic updating of the kan ban production charts using optical character reading (OCR).

After the diagnosis stage, when attempts were being made to secure funds from Portuguese Industrial Development Plan's No. 5 programme (Productivity Projects), the advantages of the JIT system were regarded as being the following:

- a reduction in raw material stocks, materials undergoing processing, and finished goods;
- an improvement in the layout (production was carried on in different buildings and various products had to be transported to and fro thus increasing the amount of dead time and the number of defective products, particularly since a public highway had to be crossed in the process) and a reduction of the areas required;
- a reduction in production lead-time, i.e. the time required for the complete manufacture of a product.

The main aims as regards human resources were:

- to greatly raise the level of internal communication,
- to improve the conditions and work atmosphere,
- to train personnel at all levels by putting teaching on a qualitatively new level with a view to making the enterprise a model for Portugal in the field of training, while at the same time reducing the size of the workforce.

2 CHANGES IN ORGANIZATION

2.1 THE PRODUCTION PROCESS

Electrical equipment is manufactured in three more or less separate stages in three distinct production units in accordance with the traditional logic of factory management. Each of the two production divisions of Enterprise A thus consisted of:

- a "plastics" section where plastic components were manufactured;
- a metalworking section where the respective components were produced;
- and an assembly section where the manufactured elements were assembled, the workforce here being predominantly female in contrast to the other two sections.

One of the two divisions was still organized along these lines whereas the other had just completed a restructuring process preparing it for JIT. This enabled us to make a direct comparison between the two types of production organization, which was of great value for our analysis. It goes without saying that the division we chose was the one which had already been reorganized, the other still being in the initial stages of restructuring. Our study, therefore, focused on the production unit as a whole incorporating all the manufacturing operations described, which gave rise to its name "Integrated Multi-Technology Line".

Let us just recall very briefly at this stage the basic characteristics of the JIT system (also called manual kan ban), which consists of a purely organizational rearrangement of production:

- the basic principle is the programming of the components and raw materials requirements based on customer orders, i.e. production is scheduled and begins from the bottom upwards;
- to be precise, information flows are established in parallel with production flows, in the course of which each section or production unit places an order with the section or unit immediately preceding it, thus enabling the target of zero stock to be fulfilled;
- the entire information flow system is carried out using the kan ban system of cards and tickets;
- this system requires the complete reorganization of the production unit in order to linearize the entire process;
- JIT makes it possible to combine flexibility and productivity, although it cannot be generally applied to the production of all goods, being designed especially for large-scale series production where there is little differentiation.

This phase of "pure" reorganization was followed by an innovation phase that was more technological in character, the "electronic kan ban". This involves automating the entire process - in our case it was called SIKE, which is how we shall refer to it below - the aim of which is to manage in real time everything that is manufactured in the unit. The requirements for finished goods which stem, on the one hand, from sales estimates and, on the other, from customers' orders, are taken from Enterprise A's central data processing system via MRP (Material Requirement Planning). This information is then shown daily on the electronic screens showing the orders for each production unit. The entire circulation of finished goods and component parts is, therefore, based on optical character reading (OCR), thus doing away with numerical coding and enabling the "five zeros" - zero stock, delays, errors, mistakes and paper - to be achieved to all intents and purposes.

Implementing this integrated system took two-and-a-half years to complete and involved several stages: diagnosis, a conceptual model, selection and preparation of the pilot unit, making the unit functional, involvement of other units (assembly only), transfer of the layout (total integration of the other stages of the transformation process), accompaniment/improvements, electronic kan ban, JIT for the suppliers.

2.2 DEVELOPMENT OF WORK ORGANIZATION

The way the production process used to be handled meant that work organization was completely Taylorist in character, i.e. it comprised work on an individual basis, complete separation of concept/design and manufacture, fixed and measured times, extreme parcelling of work. Logically enough, this organization was accompanied by a pyramid-type decision-making structure: there were five hierarchical levels (the chief executive, production manager, department managers, team leaders, and workers).

The problems that stem from this organizational model are well known: a high level of absenteeism, a lack of communication between workers, a very low level of motivation and a high level of conflict. In the case that we were considering there was an additional problem: the different production departments had profoundly different occupational identities: the workers in the metalworking department, as was customary in their sector, had a relatively strong occupational identity while workers in the assembly department found themselves right at the bottom of the occupational hierarchy. This coexistence of pronounced occupational

identities - and the lack of them - combined with differences in pay constituted one of the major obstacles to genuine overall application of the system and in particular to the establishment of multiskilling throughout.

During the transition to the JIT system, the method of organization changed from the functional to the matrix type based on products. Six multitechnological production units were set up in the production division studied covering different processing stages: injection of plastic moulds, manufacture of metal components, assembly. Each unit had the equipment necessary for its own autonomy. At the central level, there were practically no stores for finished goods or raw materials. The number of hierarchical levels was reduced to two in the production unit: production management and the other workers. The other departmental heads and team leaders saw their functions transformed from control/supervision and the allocation of work into support activities for production and administration. Nevertheless, they were still informally perceived by the other workers as having a relatively high status. They were consulted by the workers when problems or difficulties arose. A former team leader told us that her job was now to "explain" the work, which was much easier and more pleasant than allocating it.

A clear systemisation of the organizational innovations that JIT involves has been provided by Coriat (CORIAT, 1990, pp. 99-102). His description corresponds very closely with what we observed ourselves in Enterprise A. This is why we referred to this form of organization as "all-embracing".

- In contrast to Taylorist or Fordist factory management, JIT production organization does not flow into production lines in the strict sense because they are situated prior to manufacture at the production schedule level. JIT does away with the Taylorist atomization of the functions of conception, preparation, execution, control, and manufacture.

- What is more, the traditional order of preparation followed by manufacture is reversed. It is the latter which determines the production schedules (viz. the principles of zero stock, error, mistakes, delay), control being reintroduced as part of the manufacturing process.

- The major functions that are bound up with, but are peripheral to, production can be characterized as follows (inspired by CORIAT, op. cit., p. 102):

    - manufacturing designs/concepts continue to be drawn up by a specialist design unit;

    - on the other hand, the production schedules are the responsibility of the production workers assisted by the research unit;

    - production operations as such are performed by the workers. The machines can be automated or not as the case may be (in our case, the plastic injection machines were the only ones that were automated, the assembly equipment was for the most part mechanical and operated by hand, the metalworking machines, lathes and others were conventional);

    - the flow of parts and materials is manual. In our case, it was carried out by OCR conveyor belts;

    - quality control is exercised by production workers during the production process itself and no longer at the end of the process;

    - the workers now deal with "minor" defects in their machines, adjust and maintain them;

- some times are allocated (to the production unit), i.e. a certain production must be completed within a certain deadline; others are negotiated (within the production unit), i.e. the workers decide themselves on the management and allocation of working times.

2.3 DEVELOPMENT OF THE DIVISION OF LABOUR

We come now to the heart of the matter. What are the tasks and functions performed by the workers? How has the content of their work changed? These questions need to be answered before we can analyze the new skills that are required. Obviously, the development of the division of labour is intimately bound up with the organization of work. In the case that concerns us here, the division of labour leads to an overall reduction in the parcelling out of tasks coupled with a substantial extension and enhancement of them.

The actual manufacturing work as such has not changed. In this respect there has been no technological development and no move towards automation or other operations, which have remained essentially the same. On the other hand, the work performed by the workers has been enhanced in two ways:

- by an extension of direct work, certain tasks having been added to those involved in manufacturing;

- and by a "downward flow to the shop floor" - to use Coriat's terms - as regards certain management tasks.

As we have already stated above, the extension of direct work involves the workers carrying out minor repairs and adjusting and maintaining equipment after prior consultation with the maintenance team. These tasks require a cooperative approach. One female worker replied to the question "What do you do when a machine breaks down?" by saying that the workers in the unit discussed the matter amongst themselves and if they couldn't come up with a solution they called in a specialist.

This extension of work performed on the shop floor stems directly from the organization of the work itself, which aims at achieving integration - in the interests of productivity - technological flexibility, and the lowest possible production costs. As a medium-term objective we might add the need to address risks and functional disorders (defects, changes in the assortment of goods, breakdowns ..) as quickly as possible and as near as possible to the place where they occurred and can be tackled.

The pursuit of these objectives leads to the setting up of limited work teams in which the dividing line between direct and indirect work becomes blurred. Enterprise A aims to achieve 100% multiskilling between the workers and machines, each worker being called upon to devote as much time as the others to routine material processing operations. The same applies to more abstract and complex operations associated with indirect work (diagnosis of breakdowns and defects, collective search for solutions, and performance of straightforward maintenance).

The assumption of management tasks on the shop floor is also a direct result of the basic organizational principles involved in JIT. Design units have not completely disappeared, but their role is no longer what it was. In the JIT set-up much of the information that was previously concentrated within these units now circulates among the workers. ("Now we're in the know about everything" was an expression that cropped up frequently in the course of the interviews we conducted). A large number of the decisions previously taken in these units are now made at shop floor level. The same applies to production schedules, planning, and the starting point for the manufacture of slightly different products.

The workers we questioned were involved in the management of their working time, the control of their productivity, product quality monitoring, stock surveillance etc. They themselves initially pinned up the respective rates and ratios on sheets throughout the workshop near every unit and displayed them later on computer terminals. These were proper management tasks as such: organization and planning, and participation - albeit indirect - in controlling the costs of the "circulating capital".

The number of hours worked has not changed. On the other hand, working times have become flexible - the workers decide amongst themselves how they are divided up - and they include a 30-minute meeting per day. In fact, it is during these 30 minutes that functions of management/organization are formally concentrated, the remaining hours being devoted to the implementation of the decisions taken.

A last point needs to be made as regards the extension of the division of labour. It proved impossible to introduce total multiskilling between the different manufacturing operations. Indeed - for the moment at least - the men who used to be in the plastic and metalworking departments cooperate in only a minor way in the assembly work. The plastic injection sub-departments in each production unit - a dozen men all told - work in a different manner: in three 8-hour shifts initially with a very low level of rotation among the workforce. While multiskilling in the machine tools department producing metal components is not total, it nevertheless reaches 50%.

It transpires that the real limits to multiskilling stem in part not from problems of schooling or occupational capacity but from differences in occupational identity and gender. The other aspect, the blending together of the workers in the respective production units, was made virtually impossible by the Collective Work Agreement, which determined the different occupational categories in accordance with the hierarchical level and the type of technical operation. While the balancing up of workers' pay levels remains a major objective, it is not feasible at the moment given the major differences stipulated by the grade scales. Occupational categories, therefore, remain the same as they were before, although the rules in the workshop and the functions fulfilled have become very uniform. The inflexibility of occupational categories is a very serious problem for enterprises that opt for major changes in their organization.

3. MANAGEMENT OF THE WORKERS

3.1 DEVELOPMENT OF THE MANAGEMENT OF HUMAN RESOURCES

Quantitative data on the development of the employment structure in Enterprise A were given in 1.2, some of which merit special attention before we move on to a study of the management of human resources. It is important to bear the following figures in mind: managers and team leaders account for 13% of the workforce; 63% of the workers are semi-skilled; only 3.6% of the staff have higher education while 90% of the workers have more than the compulsory 6 years of schooling (11% have less than the compulsory six years). As we have already pointed out, staff levels are still being rapidly reduced (20% on average over the past three years) with redundancies affecting primarily workers with a low level of schooling.

The general tendency is towards a marked reduction in paid labour, which is an important factor in the productivity gains that have been recorded in the past few years. The overall thrust of the management of human resources forms part of and is determined by this massive cutback in the number of jobs and the need to achieve considerable gains in productivity.

There is no longer a Human Resources Department as such. This has recently been dissolved, the idea being that the management of human resources must be integrated and

decentralized, which means that entities of this kind have lost all relevance. The Department has, therefore, been divided up into autonomous sectors which operate closely with one another in the administration of personnel and in the communications and training sectors.

For the reasons that were given earlier on, recruitment is more or less at a standstill. The small numbers of young people who have been admitted to the enterprise - above all those with a higher level of recognized qualifications working in the commercial section - have been employed by the person in charge of the section concerned following consultation with the managing director of Enterprise A. There is no longer a central head of recruitment since recruitment is now almost exclusively in the hands of the person in charge of the respective section. However, in accordance with the stipulations of the recent labour agreements reached in Portugal, employment entails an initial trial period of six months on average before a definitive work contract can be signed.

The majority of dismissals have come about as the result of agreements between the two parties - meaning a "severance bonus" in the vast majority of cases -with early retirement being relatively insignificant over the years. Staff reductions have, therefore, occurred without any collective bargaining taking place and without any major conflicts ensuing, the enterprise putting up lists for those wishing to leave.

Relations with education and training institutions are virtually non-existent. An attempt was made to establish a cooperation agreement on the recruitment of commercial staff with a short-cycle advanced secondary educational institution, but this was abandoned in view of the difficulties encountered. Staff recruitment is carried out with the help of the firm of consultants which is helping to implement the JIT system. Relations with the Job Centres of the IEFP (Institute for Employment and Vocational Training) extend to little more than the filing of applications for ESF (European Social Fund) financing and the taking in of trainees involved in the apprenticeship system, although these apprenticeship contracts were terminated prematurely at the request of the apprentices. Overall, Enterprise A has cut itself off from the local job and training markets, which is not surprising for an enterprise in which there has always been and continues to be a strong internal job market.

A striking illustration of the strength of the internal job market was provided by the level of seniority. 85% of the staff had been with the company for over 16 years, indicating a very strong attachment to the enterprise. However, none of the vocational channels was properly organized apart from that for the employees in the design unit, i.e. technical engineers who have to spend a certain amount of time in production before a decision is taken on where they will actually work. By its very definition, the JIT approach does not envisage any ladders of promotion in the future, since the lower levels of the hierarchy will disappear, or any horizontal paths since multiskilling will in theory be total. In the new organization as well as in the old, training is geared to adaptation and updating but not to promotion. If anything, training has acted as a means of selection. Workers who have refused to undergo training have not been able to stay in the enterprise because they would not be adequately equipped to carry on working. An appreciable number of employees have thus excluded themselves.

One of the two former companies had been at the heart of the political struggles in the 1970s. However, the workers gradually lost political interest and by the time Enterprise A was set up the number of trade union members had dropped considerably. In the wake of modernization, in which the trade union representatives have not played any significant role, trade union influence has been reduced still further to the point where nobody was elected to the staff committee at the last elections. Given the lack of any organized counter force, industrial relations at Enterprise A are free of conflict.

The grade scale officially in force is valid for this sector of industry. However, it was regarded by all those we spoke to as completely outdated. The functions and posts included in this scale no longer correspond to the actual situation at Enterprise A. For its part, the enterprise has not seen any need to work out an internal grade scale of its own. There is no skill

evaluation system. Assessment is informal in character, being carried out by supervisors, and has no direct bearing on the wages paid. For the moment at least there is no intention of introducing any form of varied pay scales. On the other hand, there is no direct connection between training and wages. All these aspects of human resources management have not basically altered since the organizational changes were introduced. The system of mobility is almost exclusively horizontal, a fact confirmed by the workers themselves.

Control/supervision, by contrast, has changed in nature. It is no longer exercised by immediate superiors, having been decentralized. In other words, it is now the workers who supervise themselves by means of the various controls of production, quality, deadlines etc. When the JIT system was being worked out, the workers assessed themselves, having drawn up for this purpose a chart in which each person's skills were entered. A collective learning process was thus set in train until total multiskilling was achieved, i.e. the uniform distribution of skills and knowledge.

Attempts are now being made to update wage policy. Workers' pay is more or less up to the levels negotiated for the sector, although basic pay was increased by an average of 30% as the JIT system was gradually introduced. A graded wage system is currently only in force in the commercial sector. Ultimately, the aim is to use pay as a means of mobilizing the workers, although the terms have yet to be agreed.

A scheme entitled "Wage Project" deserves to be mentioned in this context. Since a number of employees complained about insufficient pay, the enterprise gave them the opportunity to take part in a project in which they could explain what they thought they might do for the benefit of the enterprise. They were also asked what level of pay they thought they should receive in return. Ten projects were carried out and analyzed, nine of which have been accepted, including the one calling for suggested pay levels. While the proposals have proved to be interesting, they were made exclusively by the more qualified staff at the enterprise and have remained random in character.

3.2 TRAINING POLICY AND PREPARATION FOR CULTURAL CHANGE

Training did not take place on any serious scale at Enterprise A until 1989. It is one of the more general instruments used in the project to prepare for "changes in the corporate culture". The main thrust of this project is to put each worker in control of his own occupational situation as part of the attempt to get the entire staff to identify with the aims of the enterprise. Problems have begun to crop up recently due to the fact that the expectations of the workers have risen substantially while the vocational channels open to them within the enterprise do not correspond to the attempts at promotion that have been made in the meantime.

The training sector works closely with the communications sector and has its own relatively sophisticated facilities and equipment. However, there are only four full-time training staff. A number of trainers have been recruited from outside the enterprise and a team of trainers from inside the enterprise has been set up, but they only teach every now and then. Training acts more as a means of support for the strategy of the enterprise and its projects than as an entity whose initiatives stem from within.

The training plan covers several years and has two major objectives: to reach 100% of the employees (its major element being general training aimed at establishing a technical and general corporate culture) and to prepare the workers for the enterprise's projects, notably the JIT system. The content and form of these two objectives are different but complementary:

- General training lasting about 200 hours includes such subjects as mathematics, Portuguese, technical drawing, metrology, statistical control, self checking, industrial engineering, hygiene and security, electromechanical technology. This training lasts for 18 months and is rounded off by three other modules: the development of

communication skills (21 hours), the aim of which is to develop constructive action, self-motivation and negotiating techniques; training for total quality; and French language training (72 hours). This training plan has drawn on various teaching methods, using external trainers for the general subjects and internal trainers and audiovisual techniques for more specialized subjects. Most of the training takes place in the training centres with some alternance training being held in the workshop.

- Other training has taken place at the same time. Managerial staff have attended courses on leadership as well as more specialized courses on new management techniques. Most of these lessons have been held outside the enterprise and sometimes abroad; the internal team of trainers (some 15 workers, who are mostly former or current team leaders or heads of department, have undergone 30 hours of teacher training (none of these in-company trainers has been relieved of his other duties).

- Other schemes are also worthy of mention. Grants are available for workers who wish to complete their secondary school studies or higher education (however, these grants are only available to workers who have already had 9 years of schooling, even though this applies to no more than a minority); seminars and conferences have been organized on corporate culture, some of which have been general in character (given by invited specialists from France), while others have involved a detailed discussion of the culture and the values of Enterprise A.

All these activities have been financed with assistance from the ESF fund and from in-company sources (about 20% of the total budget). Training has not been made the object of formal assessment. The general impression is one of results that are a) sometimes mediocre as regards assimilation of the contents of the training itself and b) satisfying with regard to the general objective, which was to bring about a change in vocational attitudes. The training has succeeded in changing the attitude of the majority of workers (motivation, occupational aspirations and identity, type of work relations etc.). Overall, 90% of the staff have undergone training over the past three years for an average period of 60 hours.

3.3 TRAINING FOR ORGANIZATIONAL CHANGE

Training for organizational change, i.e. the preparation of the workers for JIT organization, also lasted several months. Before the JIT system as such was introduced, the workers underwent general training, which will be dealt with below. This later came to be called "JIT training". It consisted of teaching units which were very varied and innovative by Portuguese standards and were held exclusively at the place of work.

In the initial stage, a project team was set up which was composed of a production engineer and three or four shop-floor workers. This team subsequently set up several working groups. The aim of these working groups was to teach all the workers about the tasks and functions they would be obliged to fulfil in their respective units - bearing in mind the overall objective of total multiskilling. All the workers went through these groups, which were headed by a supervisor with someone from the commercial or financial department generally in attendance.

In the second stage - and it was only after all the workers had acquired the knowledge relative to the former aspects - these groups were replaced by sub-groups which, once they had established themselves, became production units in the form in which they exist today. It should be noted that the workers were allowed to choose the members of their workteam themselves. Gradually these units of the future learned all about the operations involved in the overall production process, making them fit for the total integration of the process in accordance with the JIT system.

The third and final stage consisted of a "Manufacturing Process Game". This was a simulation of the JIT method which allowed the workers to assess themselves and to take part in fictive

apprenticeships, those who had performed a certain operation well explaining it to their fellow-workers who were having difficulties. Once everybody had acquired the skills needed, all the teams/units were ready for the real and viable functioning of the production process.

Preparation for organizational change was very gradual, comprising stages which, at first sight, were only very indirectly connected with JIT as such. However, it strikes us that, given the specific characteristics of the workforce - a low level of schooling, routine and fixed attitudes, and an indifferent approach to mental and shopfloor work - preparing them in advance for the planned changes was absolutely essential. Naturally enough, they had to think things through first of all, i.e. engage in cognitive and abstract work, since the training began with general subjects that were inevitably far removed from the working situation. However, more technical and precise skills were dealt with as well: metrology, technical drawing, and statistics. Moreover - and this is an important aspect - there was a very varied team of trainers: young university graduates for Portuguese and mathematics, fellow workers for technical subjects. Enterprise A thus succeeded in motivating a group of employees whom many other enterprises prefer to exclude and replace by workers who have cultures and recognized qualifications that are a priori more appropriate and amenable to adaptation. During training, which mostly took place in working hours, the majority of workers stayed on after clocking-off time to discuss or ask for additional explanations.

Today, these workers make specific - although naturally limited - suggestions for innovations and improvements of technical or organizational aspects of their working conditions. This is only possible if they have a complete understanding of the overall production process. Clearly, the new abilities have been learned by means of a very tight-knit, complex and delicate link between formal and informal training, the latter being intimately bound up with practical know-how derived from occupational experience and practice. The level of interest in their work and the degree of motivation shown by the employees at Enterprise A has increased to such an extent that there are signs of frustration creeping in: "Now there's nothing more to learn and things are going to get repetitive", they say.

4 THE LINK BETWEEN THE DEVELOPMENT OF SKILLS AND TRAINING ASPECTS OF WORK ORGANIZATION

4.1 THE DEVELOPMENT OF REQUIRED AND ACQUIRED SKILLS

From all that has just been dealt with and explained one clear-cut conclusion can be drawn: the skills required by the new form of work organization are more *abstract* in nature. This is a direct result of the "downward flow to the workshop of indirect work". Apart from specific operations performed on tools and products the workers now also take charge of operations such as i) the interpretation of information shown on electronic production charts and computer monitors; ii) the taking of decisions affecting the organization of their working time and of production; iii) the diagnosis of breakdowns or other problems to do with the equipment and products; iv) the collection of information concerning production times, quality, productivity and their organization/formalization on sheets with a view to their statistical treatment; and v) the communication in various ways of production information. This movement is "all-embracing" in the sense that it affects all the categories of workers who now have very similar occupational profiles.

One different aspect of this move towards abstraction is the more complex nature of the work performed. Indeed, it is possible that the work is more abstract without it being more complex. Overall, there has been a marked increase at Enterprise A in the diversity and complexity of the tasks performed. The abilities required comprise not only a greater cognitive element, but also a higher level of behavioral, inter-personal, management and organizational skills. The new skills that are required are multi-dimensional and run counter to traditionally Taylorist and

Fayolist functions, tasks and other limits. This is obvious and certainly no coincidence when one examines the contents of training and observes the new organization of work and production.

As regards the development of know-how, we can confirm that:

- know-how has lost the eminently routine character it once had. However, it remains adaptive rather than innovative in nature, although the innovative aspect does play a certain role;
- it is geared as much towards the product as towards the organizational system;
- by nature it continues to be more empirical than analytical. The aim is to render an organizational system operational by repetition of the same operations even if these are relatively diverse and complex. However, the organizational system needs no further structuring being already completely defined. This leaves little room for manoeuvre for analysis as such, which leads in essence to *new* solutions.

By applying the typology of skills presented in the section above on concepts and methods we can now draw the following conclusions:

- The new work organization has led to a substantial increase in the understanding of work situations, whereas previously the entire production process was controlled and run systematically on a daily basis. This increase at the level of understanding was achieved more as a result of the "JIT training" than of the general or cultural training. Communication within the group and/or work teams was crucial in this respect. The uniform nature and the flexibility of the temporary groups that were set up during training certainly played a major role;
- The need to *use powers of reasoning* during work came about with the new form of organization, since the old form was based on the repetition of actions. The increase in - and, above all, the lack of resistance to - the exercise of rational faculties seems to us to have been transmitted during general training. Indeed, the most important thing here, bearing in mind the nature of the workforce involved, was the *motivation to learn* as such. Of course, this motivation was certainly triggered by the fear of redundancy, but the element of fear by no means applied in every case. The discovery of the use of rational faculties in everyday working activity strikes us as being the cause of occupational efforts made at a later stage;
- On the other hand, one can hardly say that the new organization of work allows room for "heuristic methods" bound up with the analytical knowledge already referred to and commented on above.

To sum up, the required skills are technical and occupational in nature as well as being inter-personal and behavioral. However, little research and innovation are called for. Nevertheless, the improvement in status attached to human resources is astounding.

4.2 Does the new form of work organization really generate skills?

Before outlining our conceptual approach, we listed several criteria which make it possible to define what a skill-generating organization is, i.e. it should involve a break with Taylorist practices and a need for extended skills. Both these aspects applied to Enterprise A. A further criterion was also underlined: the teaching and learning aspect of occupational activity, each individual being transformed into a trainer/apprentice, on the one hand, and the work team - via communication networks and the flow of information - having to incorporate a teaching function into its organization, on the other. This indicates that to be properly skill-generating

an organization must be in a process of development. It is not enough to prepare the workers once and for all for changes in organization and the content of work. This organizational form and the abilities it requires must, by nature, be evolutionary. In the case of Enterprise A, these conditions by no means applied. Once the system of skills and organization was installed it did not seem to create a dynamism that would enable it to go on developing.

If we take up Méhaut's typology (MÉHAUT, 1989), the implementation of the JIT system and the training that accompanied it seems to us to underline that there is a logic of *mobilization*, but not a logic of accompaniment or anticipation, which are typical of developing work situations and of a constant need for the acquisition of new skills. In the case of Enterprise A, employees needed to be prepared for new ways in which the production process was to function, which were bound up with new demands in quality, viability, and competitiveness. Training was designed to adapt the know-how of the workers, even though it also included major aspects of general culture. The medium-term aim was for all the workers to understand the production process, while the ultimate aim was to raise economic efficiency through individual development and improvement in collective performance. Immediate superiors were given a role as trainers and various new forms of apprenticeship were introduced (for example, the "JIT training" process) without this being regarded as repetitive.

This interpretation is reinforced primarily by the information we received from the workers themselves. They confirmed without the slightest hesitation that the work they do is far more interesting now because it is more complex and has greater variety; that coordination and communication have substantially increased and improved; that their scope for taking the initiative and making decisions has widened; that they have acquired new technical, general and inter-personal skills (although no-one claimed to have raised the level of their practical skills); and that they are now involved in maintenance work and minor repairs on their equipment.

On the other hand, they thought the new tasks could be learned quickly. Some talked of a month, others of six months. This would indicate that the skills they have acquired have more to do with adaptation and adjustment than with genuine qualifications. Others cannot remember what they were taught at the internal training centre during their general training modules. This "entry into the material" during training seems to have functioned more as an incentive to learn rather than as an opportunity to raise the level of skills, this being corroborated in statements made by those responsible for training. In a nutshell, everybody thought that training was very important for working life but no-one thought it would lead to promotion.

The most frequent observations made were the following: "We're in the picture about everything now", "It was difficult at the beginning but now everybody knows how to do everything", "You've got more freedom", "Training's alright but it's specific training that's important" and as regards the prospects of promotion: "That's difficult because there aren't any posts to take up". In certain sectors by contrast - what you might call trade sectors or internal job markets - remarks such as "You're always learning something here" were made again and again. None of the workers at Enterprise A referred to the development of job situations and skills as being natural.

Our conclusion, for the moment, is the following: the changes in organization are undoubtedly made possible by raising the level of existing skills and enabling new skills to be acquired. However, there is every justification for assuming that what we are dealing with here is not the kind of organization that genuinely provides "all-round" qualifications in the long term. What about the skills that were acquired, however?

4.3 THE TRANSFERABILITY OF ACQUIRED SKILLS

The transferability of abilities can be defined as the capacity of the individual possessing these abilities to apply them in a wide variety of situations. By the same token, the *transferability of*

skills can be defined as the capacity to bring these skills to bear on the labour market outside the enterprise. We will start by examining the latter and then move on to discuss the former.

For a *skill* to be transferable, i.e. for it to be a negotiable asset on the labour market, it has to be certified, i.e. it has to be acceptable to and recognized by employers. Now, the training provided by Enterprise A was not recognized in any way either in the form of a vocational certificate that would upgrade the status of the workers on the external labour market or by any changes in occupational categories or the level of skills within Enterprise A itself. Given the extremely limited scope for mobility at Enterprise A, this lack of certification has relatively little importance for the working life of those employed by the company. As regards recognition on the labour market, it is quite apparent that the workers at Enterprise A find themselves in exactly the same situation as before since enterprises accord higher status to diplomas than to experience acquired on the job.

In addition, this lack of certification dispenses with the problem of organizing a system of categorization based on skills or, to be more precise, the establishment of a system of remuneration based on skills. The issue of categorization is a difficult nut to crack as regards both the management of human resources and the general status of workers. Those affected have only just begun to discuss the issues, which remain unresolved for the moment. We are forced to conclude that the workers at Enterprise A do not seem to have raised the level of their skills in terms of the recognition generally accorded by the employers and unions. This is all the more remarkable in that very few enterprises have introduced the JIT system in Portugal. The fact of the matter is that the workers at Enterprise A have achieved no more than a minor increase in their status on the labour market.

However, this is in no way to do down the importance of the discussion on the transferability of skills. They can always be recognized in an informal manner by the employers because they undoubtedly constitute an increase in the occupational status of workers, semi-official though that increase may be. The transferable or specific character of a skill can be largely determined by analyzing the content of the task performed. Is it a straightforward repetitive activity revolving around certain tools and equipment or is it an activity requiring a capacity to adapt and adjust to a variety of different situations?

Ever since the issue of transferability was raised, one aspect has cropped up again and again in specialist circles - that of key skills. The definition of what key skills are is still somewhat vague and hazy at the moment, but the indications are that they comprise the following:

- skills which a person needs to successfully complete an apprenticeship, i.e. the capacity to learn, which is reputedly non-existent among those described as having "a low level of qualification";

- skills that enable a person to acquire available information and thus master a particular situation. The scope here is particularly broad since this assumes cognitive skills (logical thinking, selection and assimilation of information), inter-personal skills (oral expression and critical analysis, the capacity to negotiate and communicate), and organizational and management skills (classification, planning).

Quite clearly, the abilities acquired by the workers at Enterprise A in the wake of the organizational changes, which were dealt with in the previous sub-section, indicate that they acquired the aforementioned key skills in the sum of their parts. As such this is a considerable achievement bearing in mind that the workers in question were categorized as having "a low level of qualification". In no way are they irrevocably excluded from "modernization" or "abstraction", nor are they forced to attend long-winded training modules that are generally associated with the capacity for cognitive education. The case of Enterprise A shows that such workers can adapt to the new competitive conditions and obtain an increase in their occupational and personal status thanks to the introduction of skill-generating forms of organization even if a "qualification" of this kind does not incorporate all the potential aspects.

ENTERPRISE B: A LIMITED BUT "SOCIAL" CASE OF SKILL-GENERATING ORGANISATION

1. GENERAL CHARACTERIZATION

1.1 DESCRIPTION OF THE ENTERPRISE

Enterprise B, 30 kilometres from Porto, is a family enterprise that was founded in 1921 and is now being managed by the third generation after the founders. It started out as a foundry but then went on to produce agricultural implements before switching to the manufacture of capital goods for the textile industry around 1940. The enterprise reached its current staff levels - between 80 and 90 workers - in the 1960s. Its organization was by then already relatively complex and rationalized with a close watch being kept on quality and new products appearing in the more advanced European countries.

Today, Enterprise B is run by the founder's two sons who have degrees in economics and mechanical engineering respectively. It is divided up into two main sectors: the foundry and the production of machine tools for metalworking. Our study was only concerned with the latter. 85% of production consists of conventional and numerically controlled lathes, which are manufactured in small series and very occasionally by special order. One of the CNC lathes was designed completely by the enterprise itself basically by copying already existing machines. The managers are banking on this latter machine, which was first marketed three years ago, to enable them to gain a foothold on western markets and inaugurate a far-reaching process of reorganization in the future. To market this product Enterprise B has regularly attended international trade fairs in the machine tool sector in recent years.

25% of the conventional lathes are exported to African countries and to a much lesser extent to more developed countries such as France, Spain, Canada and Israel, to which the CNC lathes are also exported. There is plenty of competition on the market for Enterprise B's products, notably from countries in south-east Asia. The fierceness of this competition has led Enterprise B to abandon production of small lathes in order to concentrate on the manufacture and sale of medium-size and large lathes. These products are sold abroad by commercial agents operating in the main export countries.

1.2 RECENT DEVELOPMENTS IN THE EMPLOYMENT STRUCTURE

In 1988, the enterprise had 110 employees. However, this number has decreased slightly over the past few years. The current workforce is now stable at 84. From the directors' point of view this figure is a little higher than the ideal number. However, they point out that staff reductions would necessitate a complete reorganization of the company and a rearrangement of the workplaces. This is envisaged but only in the longer term. The majority of the workers have unlimited employment contracts. 15 of them, the last to be taken on, are still undergoing a trial period and, as we were told by the employers, they do not yet have a permanent contract.

It proved impossible for us to compile the information we wanted on the employment structure and the composition of the workforce. On the one hand, the enterprise is not large enough to have to draw up a social audit and, on the other, the documents we were promised were not sent to us even though we enquired after them on several occasions. All we have, then, are lists of employees that we were given when we visited the enterprise. However, the information they contain is far from adequate.

Some interesting facts emerge nevertheless:

- The majority of workers are comparatively young. Only ten are over the age of fifty. They are highly skilled workers or team leaders. The oldest employees have left the company of their own accord over the past few years;

- Around 12% of the staff are senior or middle level managers or team leaders;

- A large proportion of the staff - around 36% - are classified as skilled workers with a significant number being described as highly skilled, which is typical of this sector;

- 10% of the staff are apprentices. These are either young people on alternance training courses integrated into the formal apprenticeship system or youngsters with very little schooling who are obliged to undergo informal "training" within the enterprise to obtain the status of a "worker". As is the case in most other enterprises, there is a very high turnover amongst these members of staff. Many apprentices fail to complete their training while large numbers of youngsters on introductory practicals leave because they are unable to do the work required of them.

- The biographical information we were given indicates that the majority of the workers have no more than the compulsory level of schooling. While that may be true, it is, nonetheless, a typical feature of this sector of industry that a number of the older members of staff, who are team leaders, heads of sections or highly skilled workers, attended the former Industrial Training Schools (which were disbanded in 1976/77). These were veritable "nurseries" that produced excellent skilled workers and even factory managers. The disappearance of these schools is largely responsible for the demise of a vocational ethos among the younger members of the working population;

- Another typical feature of this sector is that women are only employed in administrative jobs, all the blue collar workers being male.

1.3 STRATEGY AND OBJECTIVES

In the view of the people we talked to, the prospects for the machine tools sector in the next few years indicate a modest increase in sales mainly because there will be a reduction in supplies of this type of product in Europe. However, if the enterprise is to remain competitive major changes will have to be made to its approach to production. The key objective is to cut production costs in the face of competition from south-east Asia and to increase quality for the same reasons.

The major problem facing the machine tools sector in Portugal is the absence of sub-contractors capable of guaranteeing good quality products. This means that the enterprise is forced to produce a number of components itself which it would be more profitable to have produced by sub-contractors. By the same token it is forced into unwanted diversification. Industry in Portugal - at the local level at least - faces a very uncertain future which makes it difficult to lay down any clear-cut medium-term objectives.

Over the past three years the strategy pursued by the enterprise has been to focus on product modernization; reduce the range of products in order to concentrate on the production of CNC lathes; reduce the cost of conventional lathes, in particular by having sub-contractors produce certain components; and finally to set in motion a process aiming at decentralizing power and intensifying the flow of information between research and planning units and the production workshops. NC lathes and milling machines have gradually been introduced into the workshops. This strategy will be continued in the near future. Large-scale restructuring projects are planned but whether they are implemented or not will depend very much on how

sales develop, in particular the sales of CNC lathes. The aim is to move in a big way into the Spanish market, which the company directors hope will take 40% of production exports.

The short-term aims are to make the organization of production and work more flexible in order to bring about systematic improvements in the product. A restructuring of the human resources is a key element here. The enterprise needs to increase the number of middle and top-level managers in order to create different structures for the exercise of responsibility, which is currently considered to be too personalized and centralized. In actual fact, it is as much a matter of changing the vocational culture of the workers as it is of introducing more decentralized decision-making mechanisms and, in particular, of improving communication between the departments.

2. CHANGES IN ORGANIZATION

2.1 THE PRODUCTION PROCESS

Although the enterprise produces relatively advanced lathes, most of the production equipment still consists of conventional lathes and milling machines that are either non-programmable and manually operated or semi-automatic. Programmable NC machine tools are in a minority in the enterprise's machine park, 25% of the machines being produced in the enterprise itself with the other 75% being imported from the more advanced European countries.

The production cycle is five months, the majority of components (about 600) contained in the final product being manufactured in the enterprise and 400 components (those incorporating advanced technology) being imported or produced by sub-contractors. The products are designed and developed by the research units while the planning and production control departments work out production times and procedures in the traditional manner. The production process itself begins in the foundry with the components passing from there to the manufacturing section where they undergo various processing operations before going on to be assembled. Quality control is carried out after each manufacturing stage by a separate department with specialized personnel. This is one of the two aspects which management would like to change as soon as possible by integrating quality controls into the production process.

The enterprise is organized along traditional lines. The research and planning units are responsible for product development; the head of production is responsible for the distribution of work amongst the various work teams, thus assuming in part a function that has to do with methods, while the team leaders supervise the preparation and performance of the work and provide direct assistance. In other words, there are four levels in the hierarchy: senior engineers responsible for production; managers; team leaders and supervisors, who are stilled called "foremen" in accordance with prevailing traditions in the sector; and workers.

On the shop floor, work is organized by teams specialized in certain types of operation and equipment, which leads to a reduction in multiskilling. The millers do not work on lathes nor are they involved in manufacturing operations using manual tools, and the same applies vice versa to the lathe operators. However, these different tasks require very similar basic knowledge. It strikes us that the phenomenon of "separation" stems as much from the relative inflexibility of the organization of work and production as it does from the traditional conviction that millers and turners have two quite distinct occupational identities and belong to separate trades.

The equipment is serviced and maintained by a specialized team with the workers only being responsible for making adjustments and carrying out minor repairs. The sectional heads, called "foremen", have an important teaching function to fulfil which they perform with the

gratitude and pride that is indicative of their vocational ethos. This role is particularly important in Enterprise B because until very recently there were practically no opportunities for technical or vocational training in the education system or elsewhere and, therefore, no training in engineering trades. However, the recent arrival of managerial staff and graduates in the enterprise is bound to upset the separate identities and the balance that exists between them. Ultimately, only the workers who are able to adapt will survive.

2.2 ORGANIZATIONAL DEVELOPMENT AND THE DIVISION OF LABOUR

The major innovation consists in the establishment of an understanding and closer cooperation between the research and planning units and the manufacturing department that began with the development of the new machine and the successive improvements which followed. One of the directors said that the research unit could only anticipate two-thirds of the problems ensuing from the use of the machines and, therefore, only two-thirds of the respective solutions. So the enterprise had to adopt a learning-by-doing approach.

Two major problems arose when the new inter-functional relations were being established within the enterprise. This had to do with the development and increase in importance of the services provided by the research and methods unit.

- At the start, the workers were asked to express their views on the new machine during the development phase. As a result they became regular visitors to the research unit. Later on, their direct and intermediate superiors were given the task of passing on their suggestions. This did away with a number of inter-personal problems, the team leaders being unhappy about what they perceived as an undermining of their authority and position.

- On the other hand, it transpired that an inter-personal approach of this kind meant the workers needed more formalized knowledge. The introduction of a system of this kind will only come to full flower when the number of graduates in the workshop has increased and all the workers have greater technical knowledge, since a selection and greater clarity of the upward-bound information are clearly desirable.

For the process to progress smoothly a production engineer (previously employed mostly in the research unit) needed to be more directly involved full time on the shop floor. Since this affected the customary distribution of roles and functions, conflicts occurred which ended with some of the older team leaders leaving the company. Things have stabilized in the meantime, relations have developed more naturally and the increase in productivity is accepted by everybody.

The division of labour has not changed in any significant way, although the following developments have been noted:

- The number of multiskilled workers working on conventional and NC machines has increased. This has proved to be particularly important for flexible production since the new product constitutes a considerable break with its predecessors. However, there are no plans at the moment for a switch from product-based to equipment-based organization.

- The control and supervision of the workers involves an element of co-determination. However, this is limited to suggestions on procedures and products as responsibility still rests with the immediate superiors.

- The level of autonomy of the workteams, which were already semi-autonomous, has increased slightly although there has been no genuine "downward flow of management tasks to the shop floor". This is a typical feature of other sectors, too, particularly those

run on strictly Taylorist lines. The work content has remained exclusively technical, i.e. it consists of direct work. Nevertheless, the directors are in favour of a certain decentralization of decision-taking to the team leader level, which will lead to an increase in the autonomy of the sub-sections.

- The jobs whose profile and content have changed the most are those performed by the foremen/supervisors. Their coordinating function has increased while their direct involvement in the production process has decreased. At the same time, the managers and supervisors are increasingly being asked by the technicians for information on times and procedures. They are gradually taking on aspects of work that traditionally have to do with methods and are becoming privileged technical mediators between the developers and planners and those involved in manufacture.

On the one hand, the workers have been encouraged to impart their knowledge of product technology wherever this product is the tool they work with. On the other hand, direct superiors and second tier managers are being increasingly urged to intervene in matters affecting "industrial engineering". The directors have drawn two fundamental conclusions from these changes: i) the new information flows have done more to enhance the knowledge of the technicians in the research and planning units than of the workers; ii) if these networks are to be fully efficient the level of formal knowledge of the entire staff has to be increased. The organizational changes revolve in essence around the introduction of a new system of inter-personal relations in the enterprise based on a desire for status and the rational use of human resources. Thus, organizational innovation leads above all to a new concept of human resource management and, in particular, to new attempts to link formal and informal training.

3. MANAGEMENT OF HUMAN RESOURCES

3.1 DEVELOPMENT OF THE MANAGEMENT OF HUMAN RESOURCES

The new relationship between the different functions of the enterprise, which are dictated by the need for economic efficiency, has led the directors to define desirable occupational and training profiles even if they are not the subject of explicit formalization. The management of human resources mobilises all means available to provide the workers with the skills that are deemed necessary. The personnel department at Enterprise B concerns itself solely with administrative management. Other functions are basically the responsibility of the various heads of sections within the enterprise and of one of the directors.

The latter thinks the company is suffering from a chronic shortage of staff and that a) more qualified people are needed at the middle management level to take on the new functions and responsibilities that will make up the new profile of middle management; b) at least two top-level managers are required, a technical engineer with commercial qualifications to promote the new CNC lathe and a research and project engineer; and c) several trained and highly-skilled workers - mechanics and set-up men, millers etc. Since such highly-skilled workers are not available on the labour market at the moment or are employed by large-scale enterprises with a strong internal market and prohibitively high pay levels, the enterprise has no choice but to resort to a system of internal training that links formal training with work experience. This combines in the most effective way the workers already employed at the enterprise and the new recruits, for the most part youngsters without training or in the process of undergoing training.

For the purposes of recruitment Enterprise B maintains close relations with the Vocational Training Centres run by the Institute for Employment and Vocational Training (set up in the

second half of the 1980s) and, in particular, with the jointly managed centres[8] operative within the industry, and with the university. Young apprentices or trainees from these centres are admitted to the enterprise and everything is done to keep them on when they have completed their courses. However, a large number of these youngsters end up leaving the company mostly by mutual agreement. "Because they are not in love with their work" say the "foremen", for whom a love of their "art" is indispensable to the exercise of their profession. Those who remain undergo genuine socialization and training in the enterprise, which has to pay a certain price primarily to cover the costs of the apprenticeships. A young person can only be deemed capable of performing the required tasks after at least two years of occupational experience. Given the lack of young people with a minimum of technical training, the directors do everything they can to stop these young people leaving after they have completed their training.

The same applies to top-level managers. It is difficult to acquire specialized engineers since there are very few of them around and they command very good salaries. However, another far more complex matter makes this problem even worse. There is no part of the education system which trains people for such occupations as technical engineer with commercial qualifications, for instance. While people with qualifications of this kind are required everywhere, Enterprise B needs them badly. Commercial qualifications do not count for much among engineers however. They, therefore, refuse to take up such jobs. It is difficult, of course, to provide in-company training for jobs of this kind, no matter how innovative an enterprise might be in generating skills. The problem here is as much a technical issue as one of identity. The fact of the matter is that engineers are not interested in selling things.

In addition to the lack of certain types of training and specialization as such, there is the problem posed by inflexible or low-status occupations - salesmen, blue-collar workers, certain traditional "functions or occupations" - which constitute one of the main obstacles to the generation of skills by the enterprises. After all, the enterprises not only have to produce the required skills themselves "with the means they have at their disposal". They also have to generate a sense of identity and professional commitment which runs counter to the dominant values in society.

There have been major changes in the criteria for recruitment. Given the lack of qualified staff - young or otherwise - the enterprise is attempting to recruit only young people who have completed general secondary education. However, in view of the shortage of this type of candidate, the majority of recruits almost all have no more than nine years schooling, which has been compulsory since 1986. In the view of the directors and management, this level (of compulsory schooling) provides no guarantee that the young people will turn into good workers, although it does guarantee quick apprenticeships plus a minimum understanding of how the production process works and of the tasks that have to be performed. The "foremen" confirm that the better schooling the youngsters have, the more open-minded they are. They are well educated and have greater vision. It is a pleasure to teach them their job.

After the candidates have been interviewed by the production engineer, they undergo a trial period in the factory. They are generally assigned to conventional lathes for six months, doubling up with or being supervised by a team leader in order to acquire the necessary "sensory and perceptive knowledge" (an apprentice is regarded as needing four years to become a good turner on a standard machine). The youngsters considered to be the most intelligent then move on to NC lathes, on which they become efficient after four to five months.

The grade scale used is that which applies throughout the machine tools sector, although the majority of categories are now judged to be outdated. According to the people we interviewed, the gap between the theoretical roles and functions and actual practice is

[8] Vocational training centres run jointly by the IEFP and "civilian promoters" (which can be local authorities, employers' associations, or trade union organizations).

increasing day by day. A CNC turner, for instance, not only supervises his machine but also fulfils many other functions. In Enterprise B, one of the turners is also involved in the training and preparation of his fellow workers who are gradually being assigned to the CNC machines. The director is thinking of promoting this worker to be a programmer. In other words, he is contemplating transferring him to the research unit. The director at Enterprise B would very much like to have operator-programmers, but that is out of the question given the composition and abilities of the current workforce.[9] Vocational channels of this kind, which we shall go into in more detail in the next sub-section, are not normally envisaged. Arranging such channels and the evaluation of workers will never fit into formalized or planned scales. As the director pointed out, "Everything develops as a result of the personal trust that exists among the staff working at the enterprise".

There is no trade union presence at the enterprise. The workers are not organized and the employees have no official bodies to represent them. Decisions are taken without exception by the directors. There is nothing special about wage policy. Average pay levels are 20 to 30% above what is stipulated in the collective wage agreements in this sector, which is the minimum necessary to keep the good trained workers in the enterprise.

3.2 OLD AND NEW SYSTEMS OF MOBILITY

Overall, the labour market is hybrid in nature:

- The typical features of this sector and of the jobs that it traditionally involves are inclined to make one think that one is dealing with an "occupational" type of labour market. In actual fact, the average length of service is comparatively short. A number of the workers we talked to have left and rejoined the enterprise a number of times. There is, indeed, a high rate of rotation between companies, the best workers going where the highest wages are paid. Occupational reputation is determined and recognized by the peer group and does not necessarily involve belonging to a certain enterprise. The levels of one's skills and occupational status are often linked to considerable mobility throughout one's working life. They have more to do with the vocational group itself rather than with any attachment to a particular company.

- However, other factors indicate that, until very recently at least, considerable importance attached to the internal market. This has a lot to do with the nature of the education and training system. Because it produces very few trained skilled workers, vocational training takes place over many years at the place of work. The acquisition of skills in this manner does not lead to any formal recognition. So, with the "community" in question remaining relatively small in the industrial zones in Portugal, several years pass before the workers are approached by other employers or are in a position to negotiate terms with other enterprises in the light of the occupational experience they can point to.

Certain features of the labour market at Enterprise B are typical of internal markets, whereas others are typical of occupational markets. The tendency, however, is more towards the latter, as became apparent during a study of the past and present occupational paths of the workers. Without any doubt, the development of the system of mobility is closely bound up with the new opportunities for training that have emerged in Portugal recently.

Careers and occupational paths at Enterprise B are not pre-arranged in the sense that prospects are mapped out for certain people or in conjunction with certain appointments. However, while such matters are not formalised in any way, it is nevertheless clear that

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[9] A recent study has shown that certain machine tool enterprises in different regions "are going to transfer part of the programming work to the shopfloor". However, even in cases of this kind the vast majority of those performing such dual functions are under the age of 35.

ladders of promotion are "sketched out" in the minds of the directors once they get to know the workers, their abilities and their potential. On the other hand, there are departments within the enterprise that have traditionally functioned as "training departments". This applies, in particular, to the quality control departments where young recruits spend several months after taking up their jobs familiarising themselves with measuring techniques and, above all, preparing for the accuracy and precision that they will be obliged to demonstrate during their work in the manufacturing department. The head of this department, a trained worker who is getting on in years, calls his department a "trainers' clinic".

Promotion is decided by the directors following consultations with the immediate superiors. It is always based on merit and not on training. Here, as in many other enterprises in Portugal, training tends to take place after an appointment to a new post and at any event after rather than before an appointment decision is made. This shows, incidentally, that there are few instances of people deciding to go in for training off their own bat, although such cases do obviously occur. New channels of promotion are opening up which make a more or less clean break with those that existed in the past. Upward mobility has traditionally proceeded along the following lines: introduction of the young person to the manufacturing department either straightaway or after having passed through the control department; gradual progress up the occupational ladder (second-class, first-class lathe operator etc.); and then, if things go very well, a job as supervisor.

Now, however, these channels of upward mobility are no longer open or at least not to the extent they were in the past.

- To obtain a higher position, basic training is necessary which is indispensable for inter-departmental communication. For example, when the new inter-personal system was put in place the directors chose an experienced turner who, although he worked in the research unit, was given the job of talking to the workers because "he spoke their language".

- Persons trained outside the company in educational and vocational training institutions rather than on the job are more capable of attaining the level required today for middle managers who have to take more decisions and coordinate them with the different departments, thus incurring greater responsibility.

- The directors feel the need to bring "new blood" into the enterprise at various levels so that the experience of other more advanced enterprises can be exploited in the company and sections and departments that have got bogged down in routine can develop a new dynamism. New ideas and a critical spirit of this kind certainly need to find their way into the company.

- Increasing importance is being attached to formalization. Whereas promotion used to be based on informal evaluation by immediate superiors, the skills needed today require more formalised knowledge. Enterprise B has, therefore, sent several workers to be trained outside the company (for a total of between 119 and 130 hours) who, when they return, will take up positions in middle management in the manufacturing department or elsewhere. It is becoming progressively more difficult to acquire the abilities that are needed for promotion within the enterprise alone. Nobody in the company is capable of imparting such skills since they are of a different category, being no longer just of a procedural and empirical character, but rather scientific, technical and organizational. In a nutshell, what is required is formalized and not empirical knowledge.

The new paths can be characterized as follows:

1) Blue-collar advancement, which involves starting out as an apprentice or trainee and moving up to highly skilled worker, has remained more or less as they were: work in twos

or under supervision followed by several spells in various sub-sections that are directly bound up with work in the manufacturing department.

2) The careers leading to a management position are becoming more varied. Promotion can still be obtained on the basis of experience alone but a higher level of basic training is increasingly required. Moreover, it is felt that middle management should be rejuvenated in part, rejuvenation being understood in terms of age or after a brief period of service in the company. This is very important in the research and methods units.

3) Access to jobs in the research and methods units continues to be via the manufacturing department in some cases, although direct access is increasingly becoming the norm. One of the employees in the research unit at Enterprise B, who himself came from the shop floor, has spent the last few months preparing a young person with secondary school education for work as a programmer-projector. Here, too, diversification of educational channels is going to change the situation. What the enterprises do now with the means they have at their disposal to bring in the young vocational secondary education training or short-cycle higher education graduates they will certainly do with a completely different professional approach.

4) Finally, access to senior management positions is impossible without the appropriate recognized qualifications. Managers with such qualifications are rare in Portugal, most enterprises continuing to be run by senior staff who have climbed the ladder of promotion or by the founders' descendants.

3.3 THE IMPORTANCE OF VOCATIONAL TRAINING

Considerable emphasis has been placed hitherto on the importance of initial training quite simply because without it there can be no apprenticeship proper. Initial vocational training is obviously very important, too. The forms this has taken in Portugal in recent years have meant the involvement of the enterprises in practical training schemes or alternance training, which in turn have given them the opportunity to select and take on young people. Continuing vocational training, too, is not only gaining in importance. It is becoming indispensable.

We will now examine the ways in which Enterprise B has made use of the vocational training opportunities provided by the various organizations set up and run in the vocational paths described above, because from now on occupational progress in this sector will be closely allied to periods of training.

- Among the young people on vocational path 1 (blue collar vocational training) there are trainees from the Centres for Vocational Training (CFP) of the IEFP. It is mostly the youngest workers who are chosen to work on the NC machines, those who demonstrate "a will to learn and to succeed". They are sent to the CFP to receive training for NC machines.

- Managers have attended courses for vocational trainers in the same CFP, including the oldest amongst them, one of whom can barely read or write but who desperately wanted to attend such a course. Vocational path 2), therefore, involves training activities that have more to do with behavioral than with technical matters, which is only appropriate in the light of the new functions. The new profile for middle management is in the hands of a young worker who is taking a year off to obtain his training diploma and who will be appointed section head upon his return.

- Workers from the research unit have likewise been sent for training in methods and computer-assisted design (CAD).

Three other aspects deserve to be mentioned. The majority of training takes place outside working hours. This presumes a high level of motivation on the part of the workers, particularly since the CFP are often far from the workplace or home. The directors, on the other hand, complain of the employees' lack of enthusiasm for the training opportunities open to them. It should also be noted that there are plenty of funds available in Portugal today for vocational training. The majority of training courses involve some form of remuneration, i.e. the "trainees" are paid while they undergo training, the rates involved being by no means paltry. It is not clear whether as much training would take place if it had to be financed either by the trainees themselves or by the enterprises. Thirdly and finally, although Enterprise B does not have any internal formal training or trainers, it is itself preparing its workers and technicians for elementary programming. To this end it has developed software simulating the way the CNC lathe produced by the enterprise functions. Both the workers and customers are shown how to operate the lathe by a young member of staff.

Human resource management at the enterprise is aimed at diversifying the occupational profiles either through continuing training or recruitment. Indeed, it appears that a combination of continuing training and the recruitment of workers at different levels with different initial training is the only way to achieve the envisaged targets. The challenge consists in "mixing" the different types of staff in the workshops and units.

The opinions of the people we interviewed differed in this respect. While the three people responsible for integrating and "teaching" the young recruits claimed not to have encountered any particular inter-personal problems (with the exception of one who said he preferred youngsters with a higher level of schooling), those on the management side confirmed that knowledge is only transmitted efficiently if the two persons involved - one older, one new - have the same level of basic schooling and belong to the same generation. The directors also said that the young people feel ill at ease if they have to work with employees who are considerably older. These young people have to show that they have understood what they are being told without hurting the feelings of their older colleagues and without upsetting the established relations of power within the enterprise. The various remarks and conflicts that the directors are aware of have led them to believe that the transmission of skills will only run smoothly if those involved have the same level of academic training.

There was, however, no hint of these conflicts when we talked to the young people and their immediate superiors. It is, therefore, difficult to have differing views on the subject. It seems, indeed, that for the upper levels of management the most difficult question is to find the right tone when enforcing their authority: a harsher tone with staff who have been with the company for many years and a gentler approach to younger members of staff. The criteria for dealing with these two types of employees should in themselves be different but this creates a certain degree of embarrassment among the directors. As for the inter-personal difficulties in the departments, they apparently end up by solving themselves. Along with the standard and ideal channels corresponding to current needs, the enterprise has decided to install transitional channels allowing a kind of relay from one generation to the other.

While the overall tendency is to emphasise the diversity of the profiles within each production unit, the main thing is to implement interaction between experienced staff and young graduates. This should prove fruitful in improving the occupational qualifications of each worker as well as in revitalizing the entire enterprise and the way it functions. From what we observed, it can take anything up to two years to integrate young recruits. This indicates the degree of "socialization", both organisational and technical, which has to be accomplished before a satisfactory degree of familiarization can be achieved with the procedures and rules of the enterprise. The more experienced employees have an essential role to play in this process since they alone are able to ensure a gradual transmission of knowledge and authority while maintaining the smooth running of production.

Such processes do not take place without casualties occurring. According to the information we were able to gather, some of the older workers have left of their own accord for reasons

that clearly have to do with various inter-personal relationships within the enterprise. On the other hand, it is even more difficult to establish the number of young people who have failed to become integrated. After all, the occupational rotation of young people is important at the start of their working lives, an aspect which applies to all the sectors we had the opportunity to study.

4. DEVELOPMENT OF THE ACQUIRED SKILLS

4.1 DEVELOPMENT OF ACQUIRED/REQUIRED SKILLS: THE NEW VOCATIONAL ETHOS

Whereas at Enterprise A the direct supervisory positions have been subsumed in a changed blue-collar profile, the situation is completely different at Enterprise B. The various levels have been maintained and skill profiles of both workers and team leaders or heads of sections have developed noticeably.

Looking at the workers first, their new skills profile can be characterized as follows:

- The number of good turners on conventional lathes is decreasing noticeably. This goes hand in hand with a reduction in the importance of sensory or empirical knowledge. However, this knowledge is far from disappearing altogether. The youngsters continue to be put together with experienced turners in the first stages of their apprenticeships even though the enterprise no longer generates this type of occupational profile given the development of production technology. The youngsters themselves confirm that the CNC lathes are "easier to handle but are more complicated because of the programming". According to the information we have, the transmission of skills in such cases is quite clear. The old turners will never be assigned to the new lathes. Their role is, therefore, restricted to passing on the knowledge and skills they have acquired.

- A well-trained manufacturing worker now has different skills to perform. Today he is only a link in a chain and no longer an "artist", as the older workers like to call themselves. On the contrary, he needs to demonstrate analytical skills and, above all, have a new attitude to work. A change can be detected in the nature of the skills themselves away from machines and more towards electronics and information technology. While this may be a comparatively minor change for the youngsters, since such new skills have already found their way into the culture of the young, it is a major change for the older workers and one that is often beyond their reach.

- Whereas the traditional vocational ethos used to be sufficient unto itself in that occupational identity was determined by membership of a particular trade group rather than of a particular enterprise, engineering workers today are called upon to show an active commitment to the enterprise, to accept responsibility and participate in the life of the enterprise, in other words to make suggestions on how to improve the products and the technology involved in production and to develop an identity not just in relation to their equals but with the production unit in which they are actively involved.

As regards the supervisors and team leaders, two aspects deserve special mention:

- Their role as partners and trainers is becoming more and more important as is their role as coordinators. The trend is towards an increase in their inter-personal skills (e.g. the training that the old "foremen" are undergoing so that they can train others).

- On the other hand, preparation for the work they are in charge of can no longer be handled on a day-to-day basis as it requires a greater degree of formalization. Their role as technical and economic administrators is becoming more demanding and necessitates productivity calculations carried out beforehand by the research and

methods units. To a certain extent, there is an increase in the "indirect" aspect of their work accompanied by a diversification of the skills they require, which is to the detriment of the direct work they do (e.g. training for administrative functions pursued by sectional heads and the training course taken by a young worker in order to become a head of section on his return).

The following conclusions can, therefore, be drawn:

- There is a general movement towards an *abstraction* of the work performed in the case of both the workers and the supervisors, which is bound up with an increase in the formalization of the content of the work performed and a concomitant decrease in the importance of the empirical factor. Overall, the trend is towards an increase in analytical as opposed to empirical activity. This is readily apparent if one recalls the importance of vocational training, the content of which is almost exclusively general, scientific or technical.

- The skills that were never of a routine nature in this sector are becoming more adaptive and innovative in character as regards not only the product but also the organizational system and manufacturing technology. All the staff are called upon to participate in innovation and to help find new solutions.

4.2. Overview of the skill-generating nature of the new work organization

In contrast to Enterprise A, the skill-generating nature of the new work organization at Enterprise B is indirect to the extent that it requires the acquisition of formal knowledge by means of training activity in the full sense of the word. However, on-the-job training has by no means diminished in significance and represents an essential form of generating occupational skills, as is apparent from the statements made by the workers, some extracts of which are given below. In this respect, Enterprise B certainly represents one of the better examples of the link between formal and informal training, which seems to us to stem from the sector we analyzed.

The importance of initial training was confirmed to us in particular by the older workers who pointed out that the better trained the younger workers were, the faster they learned. They regretted not having had such opportunities for training when they were young themselves. As we have stressed elsewhere, the importance of initial training is very clear when one talks to those responsible for working out the criteria for recruitment and the new occupational profiles that are being introduced in the sector.

Continuing training, in turn, appears to be absolutely indispensable for everyone at the enterprise from the workers to the supervisors and from the technicians to the managers. Asked whether they thought it was very important to undergo training on the job, three workers said that was, indeed, the case since their promotion depended on it. One technician, who said he had learned everything on his own using books and his personal computer at home, was a good example of the embryonic character of the new importance attached to continuing training in Portugal, which is still largely enterprise-based and owes its existence to the favourable opportunities attaching to it. It is worth recalling that it was only at the end of the 1980s that training centres were set up and training activities launched thanks to European Community programmes.

Apprenticeship within the company was an aspect that was regularly mentioned by the people we interviewed. As one trainee pointed out, "At school you learn the basics, but here you learn the essentials". Another said: "I worked in other companies before coming here but they taught me nothing". Asked who had taught them their job, most of those we interviewed referred to an older colleague. Very few mentioned their immediate superiors with the exception of the technicians who referred to the engineers. This underlines the importance

of working in pairs and demonstrates that the job is learned on the shop floor hour by hour over many months. If the "foremen" are given responsibility for and actually carry out training they are not continually involved in the work that is going on. It is in the course of the work that is performed that the apprenticeship actually takes place, however.

Another aspect is whether the organization develops skills or not. Again, the situation is clear. Skills are acquired throughout working life. A failure to keep learning and adapting the skills that have already been learned may ultimately mean the loss of one's job. The typical remark: "You're always learning something here", which we heard frequently in the course of our interviews, combined with the accepted need for continuing training, underlines the evolutionary character of the skills required and the need for various means of acquiring these skills. What is involved here, without the slightest doubt, is a "teaching and learning" form of work organization even though much of the transmission and acquisition is a one way street.

Training seems to us in this case to have an element of *accompaniment* since its aim is to restructure certain occupational groups and to transform the rules of internal mobility. In this case, the restructuring of skills is parallelled by technical and organizational developments. Even if the overall process at Enterprise B is not formalized - there is no forward planning of human resources, for instance - the tendency is nevertheless to map out the channels of mobility in such a way that the enterprise and its employees are in a position to move with the changes.

There is a final element which confirms the skill-generating nature of work organization at Enterprise B in the medium term - the positive replies given by the workers to the question: "Do you think you have a chance of being promoted in this company?". The only negative answers we received to this question came from the over 50-year-olds who thought their careers had already peaked. The prospects for promotion were considered to be very good because the employees we interviewed were all working on NC machines and/or were attending training courses.

This assumes that the abilities they are acquiring are transferable and capable of development, i.e. they are valid for a wide range of work situations both now and in the future. In this respect there is no doubt whatsoever that the acquisition of skills is recognised by the enterprise and can lead - and the emphasis here is on *can* since there is no formalized structure - to a raising of the occupational grade or level of qualification. The transferability of skills in terms of their status and market value outside the enterprise is guaranteed, although not in any formal way. In actual fact, since training normally ends with the issuing of a certificate and the prospects of occupational advance within an enterprise are bound up with training at centres recognised within the industry, the workers have every prospect of having their newly acquired skills recognized by other enterprises. However, there is nothing in the collective agreements - and this applies throughout Portugal - to link the acquisition of skills or diplomas with in-company promotion, since priority is still given to seniority. This is an important brake on the recognition of skills obtained by the workers and is bound up with two recurrent problems in Portugal: the certification of training and a review of the instruments of collective bargaining.

In conclusion, then, let us return to our typology of skills in order to characterise those required and acquired by the workers at Enterprise B:

- the new work organization is accompanied by an extension of the occupational abilities of all the workers since it implies knowledge of and communication with the technical departments as well as a commitment to the life and functioning of the enterprise;

- knowledge has also been broadened since it incorporates a familiarity with new fields: electronics and information technology for some and the formalization of inter-personal or organizational skills for others, plus an all-round increase in abstraction and formalization;

- not just the capacity to reason is required. "Heuristic" methods are needed, too, because the idea is to incorporate the workers in the search for new technical solutions affecting the product and manufacturing technology as well as organizational solutions. The directors said in this context that they were on the lookout for people with critical and analytical faculties, although they conceded that such people were hard to find;

- the trend is not towards an increase in the importance of work in teams. On the contrary, it is moving in the direction of an increase in the flow of information. To that extent one might say that the apprenticeship opportunities are very much better because there is a diversification in the number of partners.

The new work organization at Enterprise B can be regarded as skill-generating even if it proceeds via the acquisition by the directors of knowledge that the workers have. This phase of systematization and rationalization of the production process unsettles and excludes some of the skilled workers and supervisory staff. For employees to be able to remain in the enterprise they have to make a great effort to add to and diversify their skills. From what we were able to observe there are very few redundancies at the moment and those who are employed in the enterprise are very much committed to their new apprenticeships.

ENTERPRISE C: SKILL-GENERATING ORGANIZATION BY "FORCE OF CIRCUMSTANCE"

1. GENERAL CHARACTERIZATION

1.1 THE ENTERPRISE AND THE CONDITIONS FOR THE CASE STUDY

Enterprise C, one of the major Portuguese banks, was founded in 1969. It was nationalized in 1975 but regained its status as a public limited company in 1988. A large part of its capital is held by Portuguese shareholders with smaller amounts being in the hands of Spanish shareholders. The bank is at the centre of a financial conglomerate and this has enabled it to diversify its products and services following the recent increase in the number of companies within the group.

Enterprise C concentrates for the most part on retail banking, an area in which has considerable advantages thanks to its sound position on the market. Its share - in terms of liquid assets - of the commercial banking sector was 11% in 1991 (8.8% in 1988). This was 7.3% of the overall financial market (5.7% in 1988). Enterprise C, therefore, ranks fourth in this sector, its share of the market having increased significantly in the past few years. In addition, its profitability rate (financial margin, liquid assets and business results/equity capital) is above the average in commercial banking and the finance sector as a whole.

Having been cut off from international developments for a long period, the Portuguese financial sector is currently in the throes of far-reaching changes brought about, amongst other things, by the establishment of a single European financial market. It has been opened up to private initiative and has become progressively more liberal and deregulated. This, in turn, has led to a considerable increase in competition from both domestic and foreign operators. In the short term, therefore, the profitability of the traditional banking sector is going to diminish. This will engender major efforts to raise productivity and improve services and to move into new sectors on the market.

This new situation naturally affected the conditions for our study. Despite the good will demonstrated by the administrators at Enterprise C, it proved impossible to go into as much depth as we would have liked. While the talks we had with several responsible officials from Enterprise C - an administrator, the director of human resources, and a head of department - raised no problems and proved very fruitful, we were not able to make direct contact with the employees. This restricted quite substantially the amount of information we were able to gather, particularly as regards the development of work relations and the acquired/required skills stemming from the changes in organization. The information we obtained on these aspects, therefore, came from "privileged observers" and specialists on human resources in the banking sector. Most of the data we compiled reflects the views of the managers at Enterprise C and those responsible for training in the banking sector which, however, do not incorporate the way the employees themselves see things.

Despite these restrictions, the study of Enterprise C strikes us as being sufficiently interesting to merit inclusion in the project. We should like to point out, however, that much of the information interpreted and analyzed below stems from documents we were given as well as from conversations we had with those we interviewed, which underlines their "official" character.

1.2 RECENT DEVELOPMENTS IN THE EMPLOYMENT STRUCTURE

In 1991, Enterprise C had a staff of 4,142 as opposed to 3,162 in 1962. It underwent a considerable degree of fluctuation in the period under consideration. The following figures on the staff employed at Enterprise C and its development deserve special attention:

- from 1977 to 1982 the workforce increased by between 6% and 8.6% per year, totalling 4,872 employees in 1983. From this point onwards the trend was reversed and the number of new members of staff dropped well below that at the outset. This brought about a considerable increase in productivity, at the same reducing the under-employment of human resources that was characteristic of the period between 1977 and 1982.

- The number of departures can be explained by retirement and, to a lesser extent, by terminations of contract at the request of the employees. In 1991, 235 employees left the bank, 60% of whom left "because no work could be found for them over an extended period" (the reason given in the social audit) and 35% at their own request. On the other hand, the number of workers promoted or reclassified has increased steadily affecting 264 persons in 1991, 36% of them middle or top-level managers.

- In 1991, 3.5% of the staff had limited contracts, almost all of whom were classified as semi-skilled workers. These contracts have diminished steadily in number over the past few years.

- Looking at the age structure of the staff, the most numerous group is that of the 45 to 49-year-olds (22% of the total), the average age in 1991 being 41 years. That is the average for the banking sector, although it is still relatively high especially if one bears in mind the fairly large number of people going into retirement in recent years and the intake of young graduates.

- Length of service is also very pronounced. This is common in a sector which benefits from a very protectionist collective agreement. 75% of the employees have been with the bank for over 10 years and 30% for more than 20 years. The groups whose length of service has increased the most are those who have been with the company for 11 to 15 years and 21 to 25 years. The average length of service now amounts to 15 years.

- The qualifications structure represents a class on its own when compared with that of the working population in Portugal as a whole. Middle managers are unusually well represented (13.3% of the total) as are managers in general - top and middle level managers and heads of department - (26%). The great majority of the employees are classed as highly-skilled professionals (67%), which is another considerable difference compared with the average for other economic sectors and, indeed, with the average for the banking sector. Thus, the staff employed at Enterprise C are very well qualified, indicating that it puts its employees in higher grades than the majority of banks do.

- The employment structure based on the level of training is certainly going to change greatly in the years to come. The proportion of people with less than six years schooling was still as high as 20% in 1991 and 40% of the staff had only a certificate confirming school attendance for nine years. Whereas these groups of employees have decreased in size from year to year, there has been an enormous increase in the number of young people holding a secondary school-leaving certificate - 25% between 1989 and 1991. (In 1992, the bank had already taken on 100 new secondary school-leavers in the course of the first semester). The people we interviewed told us, too, that it is becoming the exception for staff to be taken on with training below this level.

1.3 STRATEGIES AND OBJECTIVES

The health of the banking sector depends largely on the performance of the Portuguese economy in the near future and on practical aspects of the Economic and Monetary Union. The slowdown in economic growth, an anti-inflationary monetary policy, and the new national and international rules on the way the sector functions will exacerbate the problems the credit institutions will have to address and this will certainly lead, in turn, to a restructuring of the finance sector. This is a major challenge for Enterprise C, whose strategy over the past few years and in the medium term aims at reinforcing its traditional position without taking any excessive risks.

Enterprise C's overall strategy is one of controlled expansion, i.e. the aim is to increase the volume of business, although this objective is subordinated to the interests of security and the profitability of operations. The strategy has the following aims:

- to achieve maximum profit from the presence of the bank not just at the national level but on the major international financial markets where its position has been steadily reinforced;
- to consolidate its position on the national market in order to remain among the three largest commercial banks;
- to reinforce its traditional reputation as the retailers' bank while extending its presence in new fields of banking thanks to its link with the new enterprises within the group.

To achieve these aims the following policies are being pursued:

- extension of the distribution network with the opening in 1992 of 40 to 50 offices with reduced staff levels (which will make a total of 250 branches within Portugal itself) and two branches abroad;
- rejuvenation and motivation of the staff, which should lead to substantial increases in productivity;
- an increase in productivity by means of reorganization within the bank - improvement of the flow of information from management, increase in functional autonomy at the workplace, computerisation of departments and managerial operations.

In the course of this study we shall be examining what skills have been made necessary by the changes in organization over the past few years that have resulted from the effort to modernize technology. A strategic information plan was drawn up for the period from 1989 to 1993 which is now being implemented throughout the bank.

2. CHANGES IN ORGANIZATION

2.1 THE PRODUCTION PROCESS

The new products and services available to the customers, which are directed as much towards small and medium-sized businesses as they are to private individuals, are developed by the Marketing Studies Department, which forms part of the Research and Planning Department, and distributed to the different points of sale in the branches and offices. Before being launched on the market the products are subjected to various checks and improvements on their way through the different bank departments so that various experts can comment on them. The staff who will be in charge of selling the products are informed and trained at their place of work by "mobile training teams" appointed for the purpose. The whole

process is relatively new since it is only in the past few years that there has been a significant diversification of bank products in Portugal. To that extent the work of the great majority of employees has been transformed and considerably enhanced.

Another important element of change stems from the technological modernization that has affected both banking equipment and the system of information used. The vast majority of banking operations and the management of banks themselves have now been computerized. Departmental computerisation has gradually affected all the bank services from the public counters to central services. Enterprise C has made a considerable financial outlay, investment per employee having gone up continuously since the Strategic Plan came into force. There is a corresponding steady drop in the number of employees per terminal. It was already below two at the end of 1991.

Enterprise C's activities are based on a Three-Year Plan laying down the general guidelines, which was drawn up for the first time in 1988 and has been renewed since. Each department then bases its own objectives and strategic lines of approach on these general guidelines. The Personnel Department, in turn, draws up its provisional plan of employment and skills required, one of the main objectives of which is to map out career prospects for all the employees. In the first few years, this plan established strict criteria for recruitment and appointment to important positions. A more flexible concept was then developed, since the excessive rules and regulations considerably demotivated the staff. There is, therefore, personalized management of occupational paths based on the detection and active encouragement of employees with a high level of potential.

Officials at Enterprise C regard management at the bank as being largely decentralized and having an element of co-determination. This applies both to the autonomy of the various departments - heads of department meeting quarterly to discuss the respective action plans - and the consideration of candidates for promotion.

2.2 ORGANIZATIONAL DEVELOPMENT AND THE DIVISION OF LABOUR

The organizational structure at Enterprise C has not changed. As is frequently the case in the banking sector, it is based on functions and a division into geographical zones. On the other hand, developments in technology and products have brought about important changes in the way the offices function and in the skills required by the staff as a whole. We shall describe the organizational development of a typical office below, not having had the opportunity to make a detailed study of a specific office ourselves.

The major objective of the Strategic Information Plan is to improve the flow of information so as to accelerate the taking of decisions, which have become more complex in nature. The person we interviewed referred to this objective as being in a way an attempt to arrive at a decision "just in time", to do away as far as possible with paper, delays, errors and intermediaries while at the same time gaining in flexibility and productivity. Clearly this is impossible without the computerization of the departments and the establishment of a permanent liaison network with the central information system.

Enterprise C has, therefore, had to gradually and quickly convert all its establishments. This technological conversion process has been accompanied by far-reaching changes in the occupational profiles of the entire personnel. The hierarchical structure has remained the same although the demands made on management in terms of responsibility and coordination have increased considerably. The work content for the majority of employees has grown in complexity with more tasks and functions needing to be performed. Their autonomy has increased. Today, the employees are responsible for more products. This involves selling the products while assessing the risk involved, which is a traditional element in the banking sector, as well as negotiating the price of products, which is a completely new element. The

decisions that need to be taken no longer affect standard products but products that involve negotiation, which presupposes initiative and the prompt resolution of problems.

As regards work organization, there has been a very important increase in multiskilling and in the specialization of financial, technological, management and research functions. In the front office there has been a gradual development away from a multitude of workplaces, each one specialized in a single operation, for instance cashing a cheque, verification, payment, booking etc., towards two workplaces: the Integrated Counter and the Personal Advisory Desk. The division of work has thus diminished considerably in favour of a rearrangement of tasks and functions. This, together with the greater complexity of products and the systematic increase in autonomy, is a sure indication of the de-Taylorization of bank work and of its enhancement.

On the other hand, there is also an increase in the importance of team work stemming from the increase in multiskilling mentioned above and from the relative "democratization" of the way authority functions. The importance of the coordination of work performance is increasing at all levels and affects both fellow members of staff and departments.

At the higher levels of qualification the composition of the teams envisages a variety of profiles so as to allow groups of people with different personalities to function as a unit, for example "cautious" individuals make up a team with those who are more "daring". The same applies to complementary specialities or degrees of experience, older employees with a great deal of experience being put together with young recruits who have more formalized abilities. This mixing of different personalities, which is closely bound up with the strategy of rejuvenation and the renewal of human resources, is a response to various objectives:

- to give the departments a shot in the arm by introducing "new blood";
- to organize apprenticeships and the transmission/acquisition of skills among those with different professional profiles;
- and to progressively replace the older managers by young graduates through having some of the latter double up with older colleagues.

For the young graduates, at all events, there is a need for the organization of work to have a teaching/learning element, as a result of which they not only learn occupational skills and familiarize themselves with the culture of the enterprise, but are also selected and subjected to rigorous evaluation. Work within this type of team involves the incorporation of those with higher education qualifications, while the rest of the staff operates under different and more traditional conditions, as will be explained in the following section. In this case, as with Enterprise B, the development of skills is determined and is most noticeable at the level of human resources management.

3 MANAGEMENT OF HUMAN RESOURCES

3.1. DEVELOPMENT OF THE MANAGEMENT OF HUMAN RESOURCES

The Personnel Department is directly subordinate to the Administrative Council. As we mentioned earlier on, a provisional model of medium-term employment (three to four years) provides a guideline for the management of human resources. This model, which is currently being revised "so as not to create bureaucracy", determines exactly the profile of abilities required by the enterprise as well as the channels for individual advancement. One might talk in this context of formalized career management.

Recruitment is decentralized for ordinary clerical staff, for whom there is more or less an employment embargo at the moment, and is carried out by someone from the personnel department. The relations the bank has with educational institutions would appear to be limited to the Schools of Economics and Management where the bank goes talent spotting. The young hopefuls are tested and interviewed and the best of them are taken on provided they have the required abilities. In accordance with the policy of rejuvenation and improving staff qualifications - a key preoccupation in the management of human resources - the young recruits are prepared to take over in the short or medium term from employees over the age of 50 who are "tired out and overstretched even after having taken part in continuous training courses". Possession of a higher education diploma is gradually coming to be a criterion of recruitment.

The reduction in the workforce mentioned in 1.1 has come about as a result of premature retirement and individual negotiations involving financial compensation. We were not able to assess the degree of conflict (wherever it occurred), which would have thrown light on these partly enforced and partly voluntary departures. On the other hand, the ostensible objective of replacing the older members of staff in responsible positions seems to have upset the latter, particularly since the younger members of staff with great potential often benefit from privileges never previously granted, which are designed to ensure they stay with Enterprise C in the long term.

However, these conflicts are not carried out in the open and are always resolved in the latent manner in which they arose.

The young recruits are subjected to a rigorous assessment. The quarterly reports that are drawn up on each of them ultimately decide their progress up the career ladder. Assessment of the entire staff is very formalized. Assessment charts are used (based on the extent to which the assigned objectives have been attained, the charts being filled in by the immediate superiors) and these have a direct influence on career progress. This process of individual evaluation only applies to members of staff from a certain level of qualification upwards - level 14 out of a total of 18 levels. Above this level the activity of the whole of the department is subject to assessment.

The assessment chart used in the banking sector is not considered to reflect the abilities and functions that are required nowadays. The bank has, therefore, drawn up an internal assessment chart of its own which reflects more accurately its needs and organizational requirements.

The staff we interviewed at Enterprise C said virtually nothing about the influence of organized representative bodies. These bodies - trade union and workers' commissions - are only actively involved in matters of hygiene and safety at the workplace. They are not consulted when important decisions are taken. In particular they have no influence whatsoever on training policy. They are only informed about certain decisions when the labour laws dating from the post-revolutionary period state specifically that this must happen. Relations with the trade union representatives are considered by the administrators and managers at Enterprise C to be "good", the meetings providing an opportunity for the former to reveal any "existential doubts" they may have. That said, the training organized by the trade unions in the banking sector is regarded as being behind the times and inadequate in the light of the ongoing developments in the banking sector.

Wages are an important motivating factor. Staff pay can be anything up to 40% above the minimum level stipulated in the collective agreements. A selective incentive policy involving individual productivity and merit bonuses has also been introduced to raise staff efficiency and productivity. This means that 50% of the staff receive a variable form of additional income over and above their basic salary along the lines of "work more, earn more". Over the past few years the bank's wage costs have gone up less than the inflation rate. This is an indication of the very significant increase in productivity rates and a drop in the ratio of overall payroll to

gross value added. Not surprisingly, then, the area that has seen its costs mount considerably is that for retirement and training.

3.2 CAREER MANAGEMENT AND TRAINING POLICY

It used to be the case that careers were made almost exclusively within the very tightly structured and relatively closed internal market. Management status was gained by working your way from the bottom up, starting out as an employee and gradually gaining promotion. One interviewee told us that five years in a managerial position were the equivalent of a university degree in economics, which indicates that the corresponding skills can be acquired by professional experience and a certain degree of training. Today, upward channels of this kind have become generally more complicated. The rules of mobility have changed. Many managerial positions are filled by outside candidates. The skills that need to be acquired call for many years of education and training. Feelings about this are unanimous: "There's less and less room for the self-educated", "It's very difficult to make a career for yourself these days".

In recent years, the rules of the internal market have undergone quite radical changes, the older members of staff being asked to leave and subsequently being replaced by young graduates. It should be pointed out that this management policy has greatly demotivated the employees and has reduced the social status of the banking profession. Enterprise C has reviewed the way it manages the internal mobility system and, as a consequence, has opened up new promotion prospects in conjunction with new training opportunities.

As regards the latter, it is worth noting the establishment in 1991/92 of the Higher Institute of Bank Training which prepares students for a first level university degree in banking management and is open for the most part, although not exclusively, to those employed in banking. This institute forms part of the Institute for Bank Training, a body which has existed for the past ten years. Financed by the Portuguese Bank Association, it provides training for all banking employees. Naturally, participation in these Institute courses, either after working hours or in the form of correspondence courses, is a crucial factor - a sine qua non, indeed - for promotion. The fact that these institutes are for the most part situated in the large urban centres acts as a form of geographical discrimination in terms of access to the courses they provide.

Promotion also presupposes a considerable degree of geographical flexibility. Whereas access to lower level managerial positions is decentralized and is decided at branch level, the directors and upper managerial positions are appointed by the bank administrators. This means there are limited career prospects for those employed outside the major urban centres although, in theory at least, there are neither vertical nor horizontal limits to promotion and occupational paths.

Training and mobility management can be summed up as follows:

- The increase in external mobility of human resources requires a varied approach to the organization and form of apprenticeships:
  - all the young recruits have three weeks of basic training, which is designed to give them essential information about how the bank is structured and functions and what occupations the sector offers;
  - the young graduates double up with a more experienced member of staff in order to acquire skills that are more "operative" in nature. At the same time, they receive systematic specialized training for their particular function;

- we had no knowledge of any training especially for those starting out in the occupation. In contrast to what happens in certain sectors or countries where there is a major overhaul of the training organization for the purpose of retraining the workers, nothing of this kind has taken place in the banking sector in Portugal.

- Intensification of internal mobility has been accompanied by an increase in the pursuit of training. Certain types of training are more specially designed for retraining and for upgrading existing knowledge, above all for the more qualified staff.

- Special types of training (for computers, oral and written communication, financial and other markets, total quality etc.) are used to prepare staff in various ways - depending on the level and type of the function involved - for adaptation to the "strict" development of products and equipment.

The major objectives of the career development and management plan are :i) to identify and train future managers at Enterprise C from among the staff already employed at the bank; ii) to search and secure from outside the company "young people with a high level of potential" to bring new blood to the top level of management; and iii) to rationalize the use of existing human resources by means of changes and internal restructuring.

The first objective has been attained by the introduction of a structure within the human resources department which is devoted to Group 1 Employees' Careers (PAI and PAP, see above). This attempts to re-establish in some form the possibility of internal occupational advancement up to the management level that has traditionally existed within the banking sector, thus raising the level of motivation of the entire staff in this group, who make up the vast majority of the employees. This path clearly requires the applicants to put great efforts into continuing training. Professional experience must be accompanied by almost permanent continuous training. The level of motivation must be very high for such a commitment to be undertaken. One of the most notable aspects of training recently has been motivation training for the entire management. Further meetings have been organized to teach those in positions of responsibility how to motivate their staff. Enterprise C is regarded as one of the most "democratic" in the banking sector. Although a university degree is undoubtedly becoming increasingly necessary and has greater status attached to it, it is nevertheless possible to pursue a more traditional internal career within the bank.

Training, the costs of which have risen annually by 30% since 1987, (although staff increases over the same period have been slightly less) takes place mostly within the bank itself. Outside training is far from negligible, however. As has already been stated, training is structured as follows:

- basic training for recent recruits. The programme focuses on knowledge of how the bank is structured and the way it functions;

- follow-up training for Group 1 employees but without any technical or management functions - reception and inter-personal relations, economics, banking operations, booking, law, markets and new products. This training lasts for between three and five days;

- management training for more qualified personnel - new management techniques, marketing, and the same programmes as in the previous course but with a greater level of depth. Again, this training lasts for between three and five days;

- specialized training aimed at all the staff (dealt with in detail above).

In addition, specific training is organized in the branches themselves when new products are being launched. A simulation office has been set up in Lisbon where young recruits as well as older staff (the objective being to ensure attendance by all those involved with sales) are

prepared for new reception techniques and relations with customers. Internal changes have been considerable, increasing by more than 20% per year since 1987. In 1989, they affected 500 employees with various levels of skills. However, it is promotion that is most important in quantitative terms. More then 1,000 people were promoted in 1991 (835 on professional merit and 237 on grounds of seniority).

4. DEVELOPMENT OF THE ACQUIRED SKILLS

4.1 DEVELOPMENT OF ACQUIRED/REQUIRED SKILLS

It will be readily apparent from what we have detailed so far that the development of work in the banking sector requires new abilities and that there is an overall increase in the skills required. The main features of these new abilities and the distinction between them according to the level of skill involved can be systematized as follows:

- One feature common to all the functions is an increase in complexity. This trend was apparent both in the talks we had with the interviewees, almost all of whom confirmed to us that "it's now impossible to monitor and control everything", and from an analysis of the documents relating to the development of the work content of ordinary clerical staff.

- A second feature common to all the occupations is an increased capacity to resolve problems and to take decisions quickly. This aspect is bound up with the greater autonomy that typifies most of the occupations in the sector. Part of the authority to take decisions is gradually being decentralized and the employees nowadays have to take decisions - and risks - that would previously only have been taken by those with the appropriate qualifications. This delegation of power, which corresponds to an increase in responsibility, is one of the aspects that make up the more complex nature of the tasks performed.

- A third common feature is the need for greater analytical skills, for example the capacity to analyze risks, and the interpretation of economic and financial developments.

- For management - administrators, directors and managers - one element of their skills is particularly important: corporate culture, an understanding of it and their involvement with it.

When it comes to contacts with the customers, systematic mention is given to behavioral skills in conjunction, naturally enough, with the new technical skills that are required. This aspect is of especial importance in Portugal where relations with the public have traditionally been far from professional. Quality culture - some would call it a quality mentality - and service with a smile are beginning to make an appearance in the country. This specific element of jobs in the service sector, extending from reception to information and from advice to negotiations, is passed on by the immediate superiors, but it also comes about as a result of specific training, often involving dry runs simulating real situations.

One of our interviewees, a specialist in training in the bank sector, ranked the skills required by staff in the various offices as follows: 1) inter-personal skills, communication, teamwork, and negotiation; 2) computer literacy; 3) intimate knowledge of banking products.

The first type of skills is bound up with a major development in work organization. A Taylorist organization would have nothing to do with the majority of skills of this kind. While they may not be radically new as such (having been required since banking began) there can be no doubt whatsoever that they are bound up today with a much higher level of *professionalism*. This is certainly the most notable innovation.

This professionalism, which affects all the skills required, can no longer be acquired in the course of work alone. To be more precise, it is increasingly rare for it to be acquired by experience. Formal training is essential. The Portuguese educational system at both the secondary and tertiary level is far from being advanced enough to put onto the market young people who are specialized in banking. The financial establishments, therefore, recruit young people with a good level of general knowledge - at the end of the secondary or higher education - who then undergo specialist training either in the enterprise itself or at the Bank Training Institute. The latter provides specialist training in banking which corresponds to the level at the end of secondary school or at the beginning of the tertiary level. This training is rewarded with a national level certificate issued by the Ministry of Education.

To take up Méhaut's terminology (Méhaut, 1989), the training provided at Enterprise C can be classified as *anticipatory* training catering for long-term development, although admittedly only in part since a major share of the training is devoted to *mobilization* and *accompaniment*. The aim is to bring about an increase in the general level of skills, often certified by a diploma. This type of training has a number of specific features:

- it assumes a serious commitment on the part of the workers since training is carried on after working hours and occasionally by means of a distance learning course;
- it makes it possible to spot those with considerable potential in work, motivation and technical terms;
- it aspires to provide transferable skills, i.e. skills that will be marketable both now and in the future.

We can, therefore, conclude that we are dealing here with a genuine increase in skills. The skills imparted through training, which are formal and certified in certain cases, are negotiable on the market as well as being transferable, i.e. they can be used in different situations. These two conditions characterize the generation of skills as we defined it at the outset. However, other features must be analyzed before one can classify the organization of work at Enterprise C as fully skill-generating.

4.2 DOES THE NEW WORK ORGANIZATION REALLY GENERATE SKILLS?

It is quite clear that the new work content of bank jobs engenders new skills that are more satisfying and more diversified. The manner in which these skills are acquired does not link up formal and informal training in any particularly original way, even though the formal training consists of distance learning courses, self-learning, simulation exercises, as well as training both inside and outside the place of employment.

On-the-job training is considered to be very important, particularly in terms of job mobility, for gaining access to positions such as director or manager and more technical posts such as organizational or computer analyst. This importance is underlined by workers over the age of 35 and by managers, while workers between 20 and 34 years of age tend to attach greater significance to formal training. The people we spoke to recognized that the limits to training through experience are becoming steadily more apparent and that this type of training is less important than it used to be. This is corroborated by the fact that, whereas management continues to play a key role in training, the function of management itself has not changed substantially in this respect. It is characterized above all by motivation and mobilization for training and occupational progress. Our interviewees, therefore, concluded that it is difficult to say whether the organization of work at Enterprise C -and at enterprises throughout the banking sector - has a strong element of teaching and learning or not. Whereas working in various departments is important in that it increases the opportunities for learning, the importance and indispensable character of formal training are such that one cannot speak of a truly pedagogical dimension to the organization of work.

Let us take up again, in conclusion, our skill typologies in order to assess the extent to which the workers at Enterprise C have raised the level of their skills and to what extent they are of a permanent and developing character:

- Overall, the occupational skills, which we have called *comprehension skills*, have been enhanced, this having been made necessary by developments in banking itself. The increase in multiskilling, the reduction in the number of posts, the introduction of an internal information system, and the need for decentralized decisions indicate how complex the banking profession has become. There has been a very considerable increase in the amount of information that has to be obtained and processed.

- There is no need for us to point out yet again that the diversity and depth of formal theoretical, technical and specific skills have expanded considerably. There is an increasingly urgent need for these skills to be put to good practical effect. This is indicated by the increased need for and raising of the level of general training at the time of recruitment.

- The ability to reason clearly is accompanied at Enterprise C by the need to solve complex problems, which in turn is bound up with the need to take decisions in a very short space of time. These skills are without doubt analytical. However, it is more difficult to say whether what we are dealing with here is *heuristic* in character, i.e. whether it has a capacity for innovation. It strikes us that the skills required tend to assume the application of certain rules and procedures - which, admittedly, need to be applied flexibly and handled carefully and accurately - rather than the search for new procedures and solutions, as has been observed in a number of enterprises where innovation genuinely comes from the grass roots. In the case of Enterprise C, innovation and the strategic guidelines are centralized without context. The implementation of these policies and the pursuit of these objectives requires the other workers to have complex skills without them being asked to be innovative or especially critical themselves.

By way of conclusion, we can state that the work organization is not per se skill-generating. It is the competitiveness in the banking sector and technological developments that have brought about the enhancement of the work. The work organization has undoubtedly introduced more skill-generating forms, but it has been "pushed" to a very considerable extent by outside factors. However, this conclusion remains polemical. It stems from a general impression left by the people we interviewed rather than from the actual facts.

PART THREE

SUMMARY [10]

Helena Lopes

[10] The first version of this manuscript was edited by Helena Lopes. Further changes were made following a discussion with Maria João Rodrigues who edited the final version.

1. PRELIMINARY REMARKS

In view of the small number of case studies it is clearly impossible to make any generalisations about the trends observed in the development of skills, the methods of formal training adopted by the enterprises, or the development of occupational activity, all of which would otherwise result from the objectives of this project. Nevertheless, conclusions can and must be drawn if the findings based on empirical observations are to be linked up with the national level and specific social factors. To do this, an analytical framework must be worked out which makes it possible to identify the relationship between the different factors involved and, in particular, where and how organizational choices are made. In the first section, therefore, we will systematize the results of the case studies and then go on in the second part to link the results with specific aspects of Portuguese society and, in particular, with the system of education and vocational training.

Initially, the "type of work organization" was made a focal aspect of the study, the assumption being that this had a major influence on the skills required of the workers, which are generated by a mixture of formal and informal training. However, other factors were taken into account at the time of the case studies, whose effects on skills and work organization need to be specified:

1) "external"[11] factors, such as the degree of sophistication or differences between products, the uncertainty and fluctuation of the market and demand, the rhythm and nature of technological development, the specific strategy of the enterprise etc. have a major influence on organizational choices[12].

2) The content of the *direct* occupational activity performed is and always will be more varied than that of other activities (machine tool versus assembly or monetary operations as compared with overall distribution, for instance). This content largely determines the required skills, which is where the forms of work organization come in. Although they are subject to external influences, as has been pointed out in 1), they largely run counter to the sectoral effects.

3) This implies that the micro-economic choices have a determining influence on the skills of the workers. The skills generated in the enterprise by a combination of formal and informal training are clearly no substitute for the skills which have to be provided by the education and vocational training system. However, they are also very important in terms of the value placed on human resources and as a source of increased productivity. In addition, as was apparent in the case of Enterprise A, these skills make it possible to upgrade workers who are excluded from traditional training.

Recognition of the importance of the choices that enterprises have and of their "power" to generate skills can be found in what certain researchers have termed the "upgrading" of the role of the workshop. This makes it a "strategic location within the enterprise", provided the needs of production (MERCHIERS, 1990a, p. 23) and economic optimization (CORIAT, 1990, p. 205) are respected. This upgrading of the workshop also ties in with the new principles of productivity in post-Taylorist organization which "no longer seeks to establish standards of action and put them into effect, but rather to allow the subjective forces to express themselves so that they can be better steered as a result .... Control of the processes of socialization and apprenticeship by the careful handling of educational and occupational careers constitutes the new "chronometer" in business management (HILLAU, 1988).

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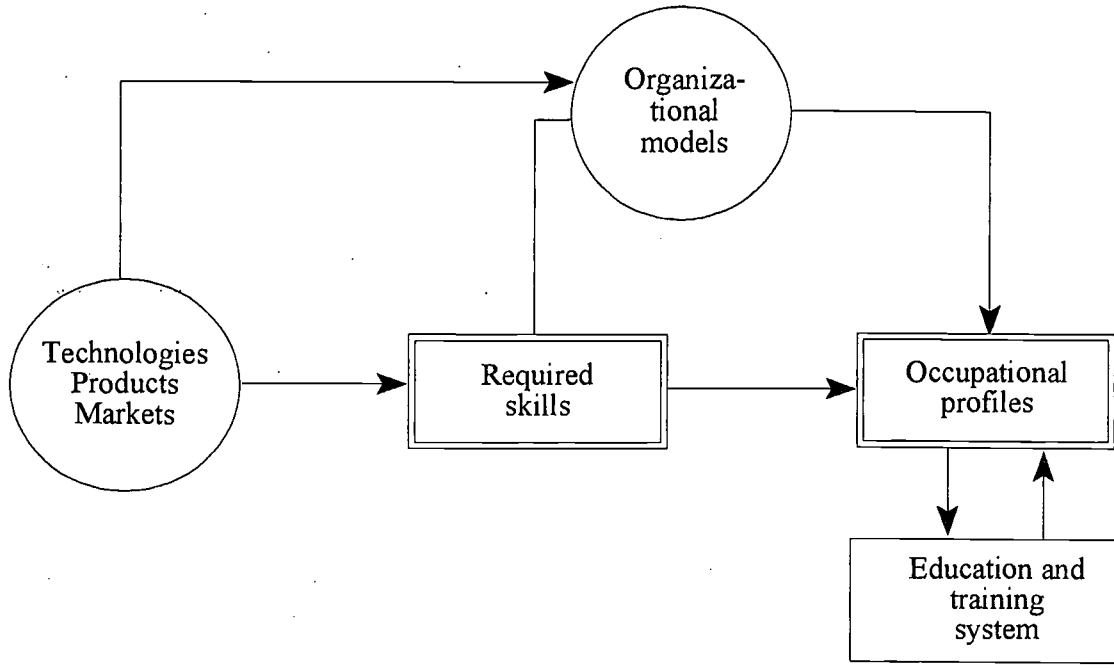
[11] i.e. external to the objects of the study as such, i.e. the skills, organizational models and training

[12] Certain organizational models being more efficient than others in accordance with their significance and the constraints placed on them, as AOKI has demonstrated.

The link between the case studies and the national level, which follows from what has just been stated - can be systematized in the following diagram:



The skills the workers have depend, therefore, i) on the activity in which the enterprise is engaged (sector, product, technology etc.): ii) on the way in which it is organized (Taylorist division of functions and tasks as opposed to multiskilling and explicit integration of functions) and the skills that are generated as a result: iii) on the knowledge transmitted and acquired in the educational and training institutions. What we see here is the emergence of the "occupational profile" factor, which can be explained as follows:

1) the skills required for the production of a certain product are grouped under various occupational profiles. Depending on the choice of work organization, these profiles determine the overall skills the workers have;

2) this factor is important for a study of the links between the enterprises and the system of education and training. In fact, far from being broken down into modules, this system does not impart "units" of skills but prepares trainees in a more or less precise manner for the pursuit of an occupation;

3) In addition, the indispensable nature of this factor for a micro-macro relationship analysis makes it possible to demonstrate the sequence of influence "in reverse"; arrow a) indicates the "adequacy factor", i.e. the extent to which the educational system responds to the demands of production and offers training which is adequate for the purposes of the latter, while arrow b) indicates the "anticipatory or pro-active factor", i.e. the extent to which the occupational profiles drawn up in the education and training institutions can influence organizational choices. Recognition of these normative aspects is crucial for Portugal at the current "historical" moment in time when decisions are being taken that will affect the future structure of society and the economy.

While the system of industrial relations is absent from this diagram it nevertheless has a significant role to play. It constitutes a kind of "lubricant" enabling relations as a whole to

function smoothly. On the one hand, the influence of the trade unions and employers' organizations is crucial both to the certification and institutionalization of the skills workers have and to the protection of workers in the light of the external economic constraints and the competition the enterprises face, the burden of which they are trying to distribute among the workers. On the other hand, the employers and the unions are the mediators whose views can be expressed in different parts of the system when major decisions are being taken on educational choices and organizational matters.

Now that the framework for analysis has been outlined and the procedure that will be adopted in the following sections has been explained we can proceed to a summary of the case studies.

2. SUMMARY OF THE CASE STUDIES

Not having been able to question the workers at Enterprise C, it is difficult to press ahead with an analysis without sacrificing some of the stringency of our approach. We will, therefore, only include the cases studied at Enterprises A and B in this section, although the conclusions we shall present in the section concerning links with the macro level will also include the conclusions drawn from the observations made at Enterprise C. The following paragraphs will not repeat the elements contained in the presentation of the case studies, which we will regard as being fixed in the reader's memory, but will contain extensions designed to prepare an analysis of the links between the national level and the micro-economic level.

2.1 ORGANIZATIONAL MODEL AND OCCUPATIONAL PROFILES AT ENTERPRISE A

The organizational choices at Enterprise A formed part of its overall strategy. Work organization was not chosen so as to "carry out" a certain kind of production in the best possible manner. The strategy rather was to use organizational change to respond to the exigencies of competition. The organizational model included electronic kan ban, work in groups with total multiskilling, and product-based matrix organization. The following skills were required of *all* the workers: general technical skills; knowledge of the production process and economic constraints; a capacity for organization, supervision, communication and cooperation; the ability to resolve non-routine problems. The apprenticeship methods used were extremely varied and innovative: formal training of a general and technical kind at the in-company training centre; new approaches to teaching; a uniform trainers' profile; variety in the content of the training; three years for the entire training process.

The skills generated at Enterprise A, which were described in the previous chapter, stem from an "organizational effect". The enterprise regrouped, allotted and coordinated the tasks in a radically different manner from that which is typical of Taylorism (for a systematic overview of kan ban organization see CORIAT, 1990, p. 102). Two things are worth stressing as regards occupational profiles:

- The workers have moved towards a profile which Coriat has described as being that of a "manufacturing worker" (op. cit., p. 225), i.e. one whose work involves a high degree of multiskilling, a mixture of direct and indirect tasks, involvement in and responsibility for the smooth functioning of the equipment and the quality of the products. A different typology, which is no less interesting, sees the workers at Enterprise A as having a "predominantly polyfunctional profile" (CAMPINOS-DUBERNET, 1991), which likewise matches the different descriptions we have already provided. It is worthwhile noting that

the author refers to initial training at the Baccalauréat or CAP-BEP level[13], which is much different from the training workers at Enterprise A receive. A similar level, in terms of the occupational requirements involved, has been obtained thanks to the variety of learning models that have been used.

- Developments with regard to the foremen are by no means exclusive to this branch. On the contrary, they are fairly well established in the machine tools sector. It is not only the technical skills required of a foreman that have been upgraded (in addition to the knowledge bound up with automation and the reinforcement of his role as coordinator) but also involving the exercise of his authority (the disciplinary side of his job has been increasingly replaced by the need for him to provide assistance and support in learning). Liu (LIU, 1983, p. 41) provides a good overview of the relative amounts of time devoted to diverse activities performed by foremen before and after the introduction of semi-autonomous groups.

In conclusion, we should like to underline once again the point at which this model seems promising, always bearing in mind the specific situation in Portugal. It provides an opportunity to improve and extend the skills of people who are frequently excluded from "modernization". Nevertheless, it is important to stress that the positive effects of this kind of work reorganization only emerge if the process of organizational transition is specifically adapted to this particular type of worker[14]. All forms of organization (of which Just In Time is only one) that are geared to linking up the work situation with the training situation are very appropriate given the position in which Portugal finds itself. For "experience shows that the lower the level of somebody's initial training is, the greater is that person's need to be closely integrated into daily work and the enterprise... Training in an occupational environment is a source of reassurance for workers, for whom school is often a distant and unhappy memory. Monitoring on a personal basis helps to overcome the fear of training. It encourages verbal expression whereas the traditional teaching environment tends to hinder it ... Without leaving the sphere of *activity* they become involved at their level in a different technical culture, that of *knowledge*" (KIRSCH, 1990).

2.2 ORGANIZATIONAL MODEL AND OCCUPATIONAL PROFILES AT ENTERPRISE B

At Enterprise B, the organizational model was not the object of an explicit configuration determined ex ante. It resulted rather from attempts at marginal transformation imposed by the need for product quality and by the exigencies of competition. Its typical features are a classical Taylorist form of organization with an intensification of the flow of information between the workshops and technical bureaux as a novel feature. Thus, the skills required tend to be determined by technological developments: formalized technical knowledge, enlargement of skills in electronics, increase in inter-personal skills. The skills generated at Enterprise B involved an expansion and extension on a lower level than that experienced at Enterprise A. On the other hand, this sector presents various means of acquiring and imparting skills, giving it a "nursery"-type character: links and cooperation with the education and training institutions; on-the-job training for young workers by putting them together with older workers; the use of various informal methods of teaching and learning on the job, such as doubling up, sponsorship, and tutorship. The novel aspect here, which is comparatively recent in Portugal, consists of the close link between shop-floor apprenticeships and more formal apprenticeships in public education institutions involving the acceptance and skilling

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[13] CAP - Certificat d'aptitude professionnelle (certificate of vocational aptitude)
BEP - Brevet d'études professionnelles (diploma of occupational studies)

[14] In fact, the more demanding the new forms of organization are in terms of cognitive skills, the greater is the risk of those with a low level of schooling being excluded if the appropriate training measures are not taken. Moreover, the employment of workers with few skills is a typical feature of intensification in the Taylorist and Fordist mould.

of trainees and apprentices. However, according to the workers, not all the enterprises are thereby "skill-generating". The people we interviewed stressed the fact that more varied know-how can be obtained, in particular, in very small enterprises, the large enterprises only being able to apportion access to a certain type of machine. In addition, the ability to operate automatic machines can only be acquired in modern enterprises, which are also the only ones to provide formal training opportunities. In this respect there are enterprises that are "better" than others for learning - from the point of view of the workers, that is - and these are basically the kind of small and medium-sized companies that we studied.

As regards the type of organization, we are currently witnessing in Portugal what one might call a speeding up of history with organizational changes that have taken place in two separate stages in other more advanced countries being introduced at one go. It is, therefore, very important to consider whether it is possible to pass directly from a pre-Taylorist form of organization to non-Taylorist forms of organization. The possibility of such "short cuts" in work organization makes an analysis of the situation in Portugal particularly interesting.

Up to the start of the 1980s, sociological studies in France analyzed the process of automation as a "paradigm of functional integration which amalgamates the functions of manufacturing, methods and maintenance in an automated system that leads to de-qualification, over-qualification, and a re-definition of qualification" (MERCHIERS, 1990a, p. 18) that affects all occupational categories. However, having integrated the economic conditions of the 1980s in their analysis, the researchers then turned to a study of flexibility and different forms of automation. The basic choice still open to enterprises is, therefore, that of maintaining a strong vocational ethos in manufacturing or not. While Japan has clearly opted for a "downward flow to the shopfloor" of its programming function, "the development of this new skill (by blue-collar workers) brought about by technological developments clashes today with the conciseness of the Taylorist-Fayolist model in French enterprises" (op. cit., p. 20).

The situation in Portugal - as observed in this sector at least - has a number of special aspects. On the one hand, there is a clear overall depiction/emphasis on the classical Taylorist form of organization (for a general overview see CORIAT, 1990, p. 102) and, in particular, a reinforcement of the function of methods, which is largely responsible for programming. On the other hand, the enterprise managers hope at the same time to see the workers playing a much greater part in the "optimization" of production. If one can believe the statements of the owners/administrators, it appears that they are not engaging in an organisational restructuring because it is out of the question in economic terms and, above all, because it places limits on the number of apprenticeships and on the extent to which the staff can adapt[15]. They have, therefore, arrived at a hybrid compromise, which we described when examining enterprise B, i.e. the traditional organization of production and work combined with new flows of information, suggestions and requests. This process of organizational transition, which has all the hallmarks of a "trial and error" experiment, certainly deserves a more thorough analysis. A systematic study of the enterprise's experience would enable others to benefit from the results. The risk which is inevitably bound up with any organizational change would, therefore, be reduced in overall terms.

What we are talking about here basically is the profile of workers' skills. This raises two problems: i) the choice by the enterprise concerned of a form of organization which is genuinely appropriate to the new economic constraints; ii) the capacity of the workers to undergo the necessary apprenticeships (which includes the capacity to adapt to the real cultural and identity change involved). This is what makes the choices and educational strategies in Portugal so crucial: either these choices pave the way for organizational change,

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[15] This brings us back to the results of the works of Aoki: the relative efficiency of "horizontal" organization stems i) from external factors (fluctuations in demand, differences in the products) and ii) internal factors (the speed at which information is assimilated, capacity for apprenticeship in the workshops).

which will be a "change with social connotations", or they render it impossible. This issue will be discussed in the next section.

In essence, the problem in terms of skills revolves around the occupational profile currently emerging in Portugal, of "shopfloor technician as opposed to elite worker". Let us, therefore, quickly examine the different occupational profiles of workers by using typologies drawn up by other authors, which will permit a systematic approach:

- The workers we met at Enterprise B match the "destabilized occupational worker" profile described by Coriat (CORIAT, 1990, p. 212). In other words, these are workers i) whose knowledge is the subject of a process of acquisition by the heads of enterprises, ii) who are called upon to acquire new abilities related to automation, and iii) who see their autonomy vis-à-vis the production technicians reduced. However, these same workers can be described as "technological workers" (op. cit., p. 226-228) participating in the search for better methods because there is a trend towards the establishment of channels and rules of promotion and an intensification of information flows. In the typology used by Campinos (CAMPINOS-DUBERNET, 1991, p. 2-3) what we are dealing with here is a "profile with a dominant occupational character" characterized by "an increase in technical skills which cannot be used as a substitute for the knowledge acquired in the working situation and does not allow a reduction in the time needed for the acquisition of occupational skills".

- The changes in the "shopfloor technician" and the "worker/programmer" profiles, the need for which is already being felt since they lay the foundations for the kind of work organization that breaks with Taylorism-Fayolism, take as their starting point an EEC level 3 of general skills and technical training. In other words, the skills required incorporate the capacity to anticipate, to think abstractly, and to express oneself in written, oral or coded form, all of which are acquired almost exclusively in the course of school education. In the enterprises we studied there is a general shortage of this type of trained worker and the functions they should be fulfilling are performed by others from production engineers to foremen including method technicians. The managers are nourishing more or less secret hopes that the young trainees they have at the moment will remain in the enterprise to make a career for themselves (the wages enterprises in other sectors can pay are tempting for the youngsters). Overall there is a new occupational profile in the making here.

3. THE ISSUES RAISED BY THE FUTURE MODEL OF PORTUGUESE SOCIETY

"The competitive potential will depend on the capacity to develop human resources that will allow society to use its past to enter into the future ... in a delicate process of synthesis between modernity and tradition" (d'IRIBARNE, 1989, p. 175). Enterprises which have replaced their workers by young graduates with new skills have ended up in a situation where their technical repertoire is impoverished and their social cohesion is in peril. Similarly, economies that are quick to imitate the recipes of others run the risk of threatening the existence of a large section of the working population and of enterprises by involving them in incoherent choices between them and its tradition. It is easy to see, therefore, the challenge posed by organizational and educational choices which need to take into account the social and economic facts of life in Portugal.

Whereas attempts have been going on for some time at the grass roots level to introduce the kinds of work organization that will enable workers to acquire increasingly complex skills (viz. the "job ladders" described by DOERINGER and PIORE, 1971, which spread workers' training over a wide range of positions), the term "skill-generating" organization is comparatively recent in French research (notably that carried out by SAURET, 1989).

This research is based on a calling into question of Taylorist organization, which Hubault has succinctly formulated as follows (1991, pp. 151 and 157): "Taylor's scientific management has functioned and continues to function in perfect symmetry with classical economic theory: the perfect organization responds to the perfect market in an epistemological unity which is remarkable for two of its basic conditions: information is perfect and time is reversible. But everything comes to nothing if the legibility becomes hazy and if the variations become less and less controllable... In our view the invocation of the human order, of which the economic order *also* forms a part by expressing its ecological contingency and the context of its deployment, is a major epistemological and practical imperative. The specific skill always stems from a relationship between an *instruction* and an *opportunity*. This is an effect of *organization*". Elsewhere Hubault writes (HUBAULT, 1989, p. 3): "The general Taylorist model is that of performance. Taylorism determines the work of *somebody who knows nothing*... or, to be more precise, the work of *somebody who learns nothing*... Were this not so, Taylorism would not have survived the changes that have taken place in western societies. Be that as it may, the enterprise generates knowledge that it does not steer and it administers values that are non-productive".

The question of the model of society which is now being constructed in Portugal will be dealt with below in terms of the occupational profile issue since the aspects affecting society in general have been elaborated on elsewhere. Rather than trying to cover all the issues involved we would prefer to examine them by focusing on one central aspect (as was clearly outlined in section 1).

Resuming our analysis of supervision, we find a very diverse situation, as was apparent in the case studies. Enterprise C attaches to this function, which is political as well as technical, a profile that still bears the hallmarks of Taylorism; at Enterprise B direct supervision still has a great deal to do with the traditions of craftsmanship, as is indicated by the continuing use of the term "foreman". Overall, however, the tendency seems to be to move closer to the French model with its logical administrative hierarchy than to the German model with its vocational ethos. Nevertheless, as we indicated when studying the machine tool sector, the enterprises are attempting to construct a specific in-company profile for the function of foreman by attaching to it a dual role: that of teacher and privileged mediator between the technical bureaux and production. This development is reinforced by an education and training policy which attempts, in some instances, to make enterprises solely responsible for the occupational training of youngsters.

However, it does not strike us that charting occupational profiles is the most fruitful approach given the way things are at the moment. Traditionally, access to supervisory positions has been via internal upward mobility (the replies given by various interviewees left little doubt in this respect). Any changes brought about through the development of this occupational category will, therefore, be very slow. The individual characteristics of the team leaders or foremen show us that both the type of instruction given to these workers and their "mentality" are from being a key category in important changes. On the other hand, it is rare for enterprises to resort to the external labour market to fill these positions directly, which also explains why no path within the education and training system prepares trainees directly and specifically for this function.

From the point of view of the link between the educational system and the realm of production the *occupational profile issue* does not appear to be one of supervision but of "workshop technician versus worker-programmer". There are two key reasons for this: on the one hand, this profile - like supervision - is a specific feature of the forms of organization that every society has while, on the other, it is directly determined by the educational choices each country offers. We shall, therefore, develop these two aspects in order to better identify the issues and to clarify the specific nature of the situation in Portugal.

There are tremendous differences from country to country as regards the role of technicians in the organization of work and the division of labour. In Japan, this category does not exist.

It has neither a socio-occupational identity nor any status in the supervision of staff since the function fulfilled by the technician is divided up into that of the engineer and the operator: "This dividing up of the category of technician puts the engineers and the operators face to face with one another and encourages the direct communication that paves the way for technical osmosis. It is this technical osmosis, a truly collective effort, which appears to be at the heart of Japanese industrial creativity, whereas the dynamism of team apprenticeship seems to be throttled by job delimitation in the United Kingdom and by the fragmentation of the categories of wage-earners in France" (NOHARA, 1990, p. 44). In France, the technician issue is one of a closer relationship between the workshop and other technical services (which is being aimed for, but which is difficult to achieve). As we have seen, this closer relationship is not an issue in Japan given the scope of qualification and the categories involved there. The importance accorded to this category in France, therefore, constitutes one of the specific features of the solution that has been found: "On the one hand, this category replaces that of skilled workers who used to be promoted to the status of technical agents... while, on the other hand, it enables a certain relationship to be maintained between the workers and the engineers, thus making it possible to bridge the occupational and social divide that separates these two extremes. However, the development of this category could also have unwanted effects by limiting the workers' paths of development ... A gap consequently arises between the occupational strata, who do not have common points of reference and who tend to keep out of each other's way, through the restoration of precisely the type of dysfunctioning that the introduction of the category of technicians was designed to eliminate." (MERCHIERS, 1990, p. 28).

As we already pointed out in the national study, social and occupational stratification is very marked in Portugal. Engineers, for example, refuse to be considered as higher category technicians and claim management status. This leads to a very distinct polarization between the occupational categories within the enterprises.

"Cooperation between production technicians and worker-operators has become the very backbone of the new organization of production as regards both the functioning of the machines and equipment as well as of the performances that can be obtained from them" (CORIAT, 1990, p. 217). Company managers in Portugal are becoming increasingly aware of this fact. Given the current features of Portuguese society, the trend is more towards the French companies' approach of finding and training technicians who can handle this role of cooperation rather than the Japanese companies' approach where the organization of production and the level of education of the workers permits the establishment of direct communication. However, the "technician solution" is not a long-term one, as Merchiers points out, and the change seems to be of a larger dimension. It implies not only the technical composition of the working class but also the overall social composition. What is at stake behind the diversity of the organizational forms and the occupational roles and profiles is the material benefit resulting from the skills required ... and, therefore, of the validation and certification of the skills that workers have.

At the current moment in time, when major educational guidelines have been laid down in Portugal and there is little likelihood of an "advanced" and radically new organizational model being directly imposed on our production system, clear and explicit choices as regards the occupational profiles drawn up by the education and training institutions are proving to be essential. Indeed, the "enough will do" aspect of the training for jobs offered by the enterprises needs to be replaced in Portugal by strategic choices affecting the definition of skill profiles, which in turn encourage the selection of appropriate forms of organization. Not only should these forms be encouraged as a means of attaining the economic performances achieved in other countries. They should also be examined to see whether they are appropriate to the social and cultural situation as it is in Portugal. While the education system may well be in a position to anticipate and help to set up the new social and occupational order, its powers are nevertheless limited because the products of the educational system have to fit into the structures and meet the needs of the social groups that already exist in the country.

Two types of educational paths have therefore been targeted: i) the vocational schools and the technical and occupational training schemes provided at secondary schools must be assessed for the training they provide to future graduates at EEC levels 2 and 3 (skilled workers and technicians) since what is at stake here is the restructuring of the working class in terms of both identity and technical skills: ii) the task facing the polytechnical institutes is to train higher-level technicians (EEC level 4) who not only have technical skills but are also well prepared for inter-personal relations (teaching role and relations with the other occupational categories in particular).

It is comparatively easy to identify the obstacles that have to be avoided. All that is required is for the lessons to be learned from the French experience. Young people who have undergone short-cycle technical training in France (BEP/CAP) face direct competition from those who have received a higher level of training (DUT/BTS). This is particularly the case now that the quality of teaching and the educational choices in France have led to a downgrading of the former, which in some cases has been dramatic (see, inter alia, the analysis in TANGUY, 1991, and in a more applied fashion in CORIAT, 1990, chapter V). This is where the dichotomy between the categories of occupational worker/technician and engineer has its roots: in the formation of identities and a vocational ethos in the education system prior to the production system. While the "work model" to which the educational choices lead has "functioned" up till recently, the costs in social and human terms will continue for a long time to come.

In Portugal, the grave weakness over the past twenty years of paths leading to middle level occupational qualifications has meant that the category of technician is now more or less extinct. It is currently being revived somewhere between the educational institutions and training placements in enterprises. Level 3 and 4 training profiles, as defined in the official texts, make no explicit reference to any organizational form. Where the problem is of training being inadequate for work profiles and of no consideration being given to the whole range of functions and how they fit together, it can only be concluded that the underlying organizational model is in the traditional Taylorist mould.

Portuguese society is engaged in a process of "modernization" which means, on the one hand, that change is inevitable and, on the other, that choices have been made which are going to structure the society of tomorrow. The fundamental dilemma facing Portuguese society concerns what type of modernization it should go in for:

1) modernization based on a Taylorist/Fordist model, even though the appropriateness of such models for a wide range of sectors/segments of production is being increasingly questioned at the international level given the new competitive constraints (flexibility, quality, innovation). This modernization, which ends up in inertia and tendential development, polarises qualifications, downgrades a very large number of jobs and alienates the younger generation from industry;

2) modernization that goes in a different direction by putting to advantage the new forms of work organization which are better adapted to these competitive constraints. This type of modernization would have the added benefit of more easily reconciling the generations in very different training environments.

This second path, which is more promising in terms of development and competitiveness, is nevertheless the more difficult to pursue. In a way it takes what one might describe as an historical "short-cut". It requires a greater spread of the process of organizational transition, which must be supported by individual and collective apprenticeship processes. This "short-cut" organizational reorientation of Portuguese enterprises will not be possible without the organization of these apprenticeship processes.

An approach of this kind directly affects training policy.

The first option will probably lead to an extension of formal training in the Taylorist mould which will be bound up with a weakening of the pre-Taylorist tradition of informal training.

On the other hand, the alternative option requires a revival of this tradition by means of organization and support of informal training in the enterprises and a redefining of the contents, channels and networks of formal training.

Both will evidently be present in the future development of Portuguese society. What is at dispute is their relative share in each sector and in each region.

To conclude, we suggest below a number of policy initiatives and measures which could contribute to developing the second path:

- analyze and explore the prospects of organizational change leading to new forms of work organization which take into account the specific conditions Portuguese enterprises face;
- make these solutions known to company managers, the employers and the unions;
- promote an intensive and general increase in the level of training among the working population (in terms of basic education and occupational training);
- reformulate the contents of training by gearing them more to new forms of work organization and notably by incorporating the new general skills required by these organizational forms;
- redefine occupational profiles in order to enable the workers to gradually master these new forms of organization; this effort of redefinition is particularly critical for highly skilled workers (level 3) and technicians (level 5);
- define the validation procedures, certification and reward for training that is obtained in an informal manner;
- support (in technical and financial ways) the adoption by enterprises of more skill-generating organizational forms;
- support (in technical and financial ways) the definition of training strategies combining different modes of training - formal and informal - that bring together the generations in different training schemes;
- launch initiatives making it possible to extend contractualization and co-responsibility among the employers and unions.

APPENDICES

TABLE 1 - DEVELOPMENT AND EDUCATIONAL AIMS

	Socio-economic development aims	Educational aims					
		Pre-school education	*Basic education*	*Secondary education*	*Higher education*	*Vocational training*	*Scientific research*
1st Devpt. Plan 1953-58	• Protectionist approach to the economy • Growth based on traditional industry and substitutes for imports • Development of production infrastructure: Electrical energy Transport Iron and steel industry Maritime ports Hydroelectricity			Various references to do with technical education			
2nd Devpt. Plan 1959-64	• Rapid industrialization based on exports • Research into new markets • Acceleration in growth : GDP (2,7% over 6 years) Investment	Very limited perspective of the education system Some references to the role of technical education in connection with economic growth					
Intermediate Pan 1965-67	• Plan to promote integrated economic development • Selection of strategic industrial sectors (manufacturing, construction, tourism) • New markets for new products • Maintenance of hte level of employment • Growth in GDP (6.1 % p.a.))	• More global approach to education • Modernization and enlargement of the network of schools • Coordination of research activities					
			Develop-ment of school network	Develop-ment of technical education		Reference to training of workers	Develop-ment of applied research
3rd Devpt. Plan 1968-73	• Rapid growth based on modern export sector • Reduction in sectoral and regional imbalances • Technological development • Growth in GDP (7 % p.a.) • Increase of gross fixed asset formation in industry (from 19 % to 25 % of National Defence)	• Functionalist approach to education underlining the role of technical education in the economy • Linking of scientific research to the technological needs of industry					
			Ensuring 6-year	Developing schools' compulsory schooling	Reform of education network	Increase in vocational training activities.	Increase in the number of re-searchers
4th Devpt. Plan 1974-79	• Establishment of a high-tech production structure with a view to European integration • Growth of productivity in the high-tech sectors •Growth in GDP (7.5 % p.a.) and in the gross fixed asset formation (from 9 % to 11 % p.a.)	• More global approach to education with respect to individuals and links with development					
		Progressive general-isation	Expansion	Extension of school attendance from 6 to 8 years	Setting up a short cycle in higher education	Devpt. and coordination of vocation-al training activities	Increase in the allo-cation of research funds (1 % of GDP)
Medium-Term Plan 1977-80	• Consolidation of a new production structure and new relations • Development model based on the everyday essentials approach • Reduction in unemployment and external imbalances • More balanced distribution of income • Integration into the EEC • Structural restabilization of the agricultural sector	• Reform of general educational aims • Increase in the efficiency of the education system • Development of culture and science					
		Creation of training centres for trainers	Promotion of effective compulsory schooling	Curriculum reform: devpt. of vocational charater of courses	Definition of new paths of training	Start of new vocational training at post-secondary level	Integration into develop-ment planning
Basic Principles of the Education System - Outline Law 1979		• Global approach to the system, taking into account relations with the other systems (social, economic, technological and cultural) • Reorientation of the aims of education					
		General-isation	Balanced expansion of 9-year schooling	Creation of 12th (final) year of study gear-ed to work	Start made on higher polytechni-cal education	Coordination of vocatio-nal training activities.	Coordinatio n of research activities

In : AMBROSIO T., AVAKOV R., "Structures industrielles, changements technologiques et enseignement supérieur au Portugal", UNESCO, IIPE, Paris, 1983

TABLE 2 A - WORKING POPULATION BY LEVEL OF EDUCATION (%)

LEVEL OF EDUCATION	1990
Lower than basic education	6,4
Basic education	79,4
Secondary education	6,8
Intermediate education	2,7
Higher education	4,5
Other levels	0,2
TOTAL	100,0

Source : Inquérito ao Emprego", Instituto Nacional de Estatística

TABLE 2 B - BLUE-COLLAR WAGE-EARNERS BY LEVEL OF EDUCATION (%)

LEVEL OF EDUCATION	1984	1991
Lower than primary school	9,9	5,2
Primary school	68,0	48,6
Preparatory school		19,5
Secondary education (general)	16,1	9,7
Secondary education (full)		11,7
Intermediate education	0,5	1,5
Higher education	2,6	2,7
Various	2,9	1,1
TOTAL	100,0	100,0

Source : "Quadros de Pesoal", D.E.M.E.S.S.

TABLE 2 B - BLUE-COLLAR WORKERS BY LEVEL OF TRAINING (%)

LEVEL OF EDUCATION	1991
Senior managers	2,2
Middle managers	2,0
Formen/team leaders	4,1
Highly skilled workers	4,2
Skilled workers	39,0
Semi-skilled workers	18,1
Unskilled workers	10,8
Trainees and apprentices	11,6
Various	8,0
TOTAL	100,0

Source : "Quadros de Pesoal", D.E.M.E.S.S.

TABLE 3A - EMPLOYMENT AND VOCATIONAL TRAINING PROGRAMMES (ESTIMATES)

Program	Description	Number of individuals				
		1990	1991	1992	1993	Total
PO 1	Vocational training of workers	67000	69000	69000	114000	319000
PO 1.1	Training for workers without qualifications	20000	30000	30000	50000	130000
PO 1.2	Training for worker with qualifications	20000	16000	16000	28000	80000
PO 1.3	Training for middle, higher management employers	27000	23000	23000	36000	109000
PO 2	Development and support of employment and training structures	31530	35137	26073	26153	119253
PO 2.1	Development of employment	22101	24303	12660	13820	72885
PO 2.2	Training for technicians and for reinforcing employment structures	1629	1713	1773	1773	6888
PO 2.3	Training for trainers and for reinforcing training structures	7800	9120	11640	10920	39480
PO 3	Apprenticeship	12000	15500	17600	20000	65100
PO 4	Vocational training in new information technologies	13690	15910	18200	25260	73060
PO 5	Vocational training for the long-term unemployed	6055	6690	6705	6705	26155
PO 6	Employment programmes for long-term unemployed adults	6617	8947	8947	8947	33458
PO 7	Training and employment for long-term unemployed adults	1235	1295	1480	1645	5655
PO 8	Women	403	942	1300	1000	3645
PO 9	Adult immigrants	492	300	300	300	1392
PO 10	Vocational training for the occupational integration of young people	22344	15980	16185	24300	78809
PO 11	Employment programmes for young job-seekers	13575	19073	19073	19073	70794
PO 12	Training/employment for handicapped young people	3140	3210	3290	3510	13150
PO 13	Young women	221	484	880	615	2200
PO 14	Young immigrants	169	169	169	169	676
Total		178471	192637	189202	252037	812347

In : "Relatório de informacão de base - MISEP", IEFP, 1990, Lisbon

TABLE 3B - DEVELOPMENT OF TRAINING IN THE IEFP CENTRES FROM 1987 TO 1990

a) Development in the number of trainees 1987/1990

VT centres State-managed	Devpt. in (%) *	VT centres State/employer managed	Devpt. in (%) *	Total p.a.	Devpt. in (%) *
2796	-	13004	-	15800	-
4334	55.0	17392	33.7	21726	37.5
6755	55.9	21342	22.7	28097	29.3
9568	41.6	28706	34.5	38274	36.2

* X - (Year X - 1) / (Year X - 1) x 100

b) Development in the number of training hours 1987/1990

VT centres State-managed	Devpt. in (%) *	VT centres State/employer managed	Devpt. in (%) *	Total p.a.	Devpt. in (%) *
154000	-	371745	-	525745	-
195790	27.1	563138	51.5	758928	44.3
271525	38.7	805343	43.0	1076868	41.9
398013	43.6	948387	17.8	1346400	25.0

* X - (Year X - 1) / (Year X - 1) x 100

In : Relatorio de Actividade - Formação profissional, IEFP, 1990, Lisbonne

TABLE 4 - INFORMATION ON VOCATIONAL TRAINING IN ENTERPRISES

		Size of the enterprise (number of workers)			
	Total	**10 - 49**	**50 - 99**	**100 - 499**	**500 et +**
Percentage of enterprises with VT in 1989	12.1 %	8.3%	20.1%	37.2%	64.9%
Number of workers doing VT in 1989	219 600	19 500	11 300	48 600	140 100
Percentage of enterprises thniking they need VT in 90/91/92	41.5%	37.3%	57.0%	60.5%	74.4%
Number of workers deemed by enterprises to need VT in 90/91/92	927 300	304 100	109 200	222 000	291 900

From, : "Inquérito às Necessidades de Formação Profissional - 1990/91/92", série Relatórios e Análises n° 23, DEMESS, Lisbon, 1991

The same source indicates, incidentally, that of 100 workers deemed by the ebterprises to be in need of vocational training :

- 3% needed to be trained as part of the apprenticeship system
- 26% needed to have initial skilling/training
- 56% needed further training
- 11% needed refresher and retraining courses
- 3% needed to attent courses to obtain promotion in their careers

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