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AN EVALUATION STUDY OF THE EDUCATION AND TRAINING OF  
CIVIL ENGINEERS IN THE COTE D'IVOIRE WITH REFERENCE TO  
THE HIGHER NATIONAL SCHOOL OF PUBLIC WORKS (ENSTP) AND  
TO THE GRADUATES' PERFORMANCE ON THE LABOUR MARKET

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## A B S T R A C T

This thesis is an evaluation study of the outcomes of the education and training of civil engineers in the Côte d'Ivoire. It examines the ways in which the training system in operation at the Higher National School of Public Works (Enstp) has or has not achieved its objectives in supplying the labour market with the requisite technical manpower. It focuses on three main questions: 1.) To what extent can the skills acquired during training be described as relevant for employment? 2.) What factors, if any, influence the relationship between training and work? 3.) What measures can be taken to achieve a better match between training qualifications and the skill requirements of jobs?

The conceptual framework adopted, seen as a working hypothesis rather than a paradigm, and referred to as combination theory, draws on existing approaches to the issue at stake according to their relevance for the points raised. In this way, it seeks to compensate for their limitations when applied in isolation. The methods used for data collection and analysis are mainly qualitative, though comprising some basic statistics.

From the analysis of data, collected in a questionnaire survey and interviews involving respectively 93 Enstp graduates and 47 employers, there appears to be a consensus between all parties concerned that training qualifications are relevant for professional practice. The weaknesses observed are described as insufficient practical experience in some engineering subjects (e.g. engineering design), and lack of general education as well as skills in the management of financial resources, public administration and language.

A number of factors associated with working conditions, the socio-political environment of workplaces and behaviour, are quoted as causing distortions in the relationships between training and jobs. These include recruitment and placement procedures, unclear job description and career structure, imperfect reward systems, rigid hierarchies and inter-personal conflicts.

In the light of the information thus derived from the survey and the interviews, it is suggested that measures should be taken to turn the Enstp into a "centre of specialization" catering for all initial and in-service training needs in the engineering profession and operating as a training and research institution for all Francophone countries. This requires some adjustments to existing training programmes and changes in the rules regulating the planning, management and financing of training. It is also recommended that measures be taken in workplaces to ensure that "the right persons get access to the right jobs."

DEDICATION

TO

My Late Grand Mother Koménan Amoin

and

My Late Uncle Bé Kouadio

for their instrumental role in my education

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LIST OF ABBREVIATIONS

AAU	Association of African Universities
ASECNA	Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar
BCET	Bureau Central d'Etudes Techniques
BNETD	Bureau National d'Etudes Techniques et du Développement
CAPEN	Centre d'Assistance et de Promotion de l'Entreprise Nationale
CIADFOR	Centre InterAfricain pour le Développement de la Formation Professionnelle
CFC	Centre de Formation Continue
CNRA	Comité National de la Réforme Administrative
DCGTX	Direction et Contrôle des Grands Travaux
EEC	European Economic Commision
EECI	Energie Electrique de la Côte d'Ivoire
ENA	Ecole Nationale d'Administration
ENIT	Ecole Nationale des Ingénieurs des Techniques
ENS	Ecole Nationale Supérieure
ENSA	Ecole Nationale Supérieure d'Agronomie
ENSEA	Ecole Nationale Supérieure d'Economie Appliquée
ENSG	Ecole Nationale des Sciences Géographiques
ENSI	Ecole Nationale Supérieure des Ingénieurs
ENSPT	Ecole Nationale Supérieure des Postes et Télécommunications
ENSTP	Ecole Nationale Supérieure des Travaux Publics
ENTE	Ecole Nationale des Techniciens de l'Equipement
ENTPE	Ecole Nationale des Travaux Public de l'Etat
ENTS	Ecole Nationale de Techniciens Supérieurs
ESP	English for Specific Purposes
ESTP	Ecole Spéciale des Travaux Publics du Bâtiment et de l'Industrie
FPI	Front Populaire Ivoirien

GFCI	Groupeement Foncier de Côte d'Ivoire
INA	Institut National des Arts
INJS	Institut National de la Jeunesse et des Sports
INSET	Institut National Supérieur de l'Enseignement Technique
ISTED	Institut des Sciences et des Techniques de l'Equipement et de l'Environnement pour le Développement
MERSE	Ministère Chargé de la Réforme des Sociétés d'Etat
MTPT	Ministère des Travaux Publics et des Transport
PAA	Port Autonome d'Abidjan
ONFP	Office National de Formation Professionnelle
PDCI	Parti Démocratique de Côte d'Ivoire
RDA	Rassemblement Démocratique Africain
SETU	Société d'Equipement des Terrains Urbains
SGRA	Secrétariat Général de la Réforme Administrative
SICF	Société Ivoirienne des Chemins de Fer
SICOGI	Société Ivoirienne de Construction et de Gestion Immobilière
SODECI	Société de Distribution d'Eau de la Côte d'Ivoire
SODEPALM	Société pour le Développement du Palmier
SOGEFIHA	Société de Gestion Financière de l'Habitat
SONITRA	Société Nationale Ivoirienne de Travaux
SOPIM	Société de Promotion Immobilière
UMOA	Union Monétaire OuestAfricaine
UNDP	United Nations Development Programme
UNESCO	United Nations Education, Scientific, and Cultural Organization
UNICEF	United Nations Children's Fund
USA	United States of America
USAID	United States Agency for International Development

## INTRODUCTION

### Problem Statement

In June 1987 the final year students of the Ivorian Higher National School of Public Works in Yamoussoukro celebrating the completion of their training in civil engineering, adopted as their motto the French phrase 'Non à la Tour D', i.e. '(We say) no to Tower Block D'.

To people who have been to Abidjan, the capital city of the Côte d'Ivoire, the 'Cité Administrative' - the headquarters of the administrative services - may be a well known place because of its majestic multistorey buildings which stand glittering in the sunshine just outside the city centre, called Plateau, and close to Saint-Paul's Cathedral, one of the most beautiful and modern architectural designs in the country.

However, the mention of one of the buildings, Tower Block D, in the students' motto may come as a surprise to those visitors who are unaware that the offices of the Ministries of Public Works and Transport, and Housing and Urban Planning, are located there. As the majority of the graduates of the Higher National School of Public Works are recruited to work as civil servants in these two Ministries, Tower Block D has gradually become an inevitable destination for those who are requested to stay in Abidjan.

Allegedly the main function of these new graduates in service consists in performing tasks which do not always correspond to their qualifications nor require them to exploit their full capacity. Hence, the 1987 final-year students' reaction against Tower Block D. It could be inferred from the focus of the conferences and seminars held during their five-day celebration that they were looking for alternative destinations, most possibly in the private sector.

To the author of the present dissertation this particular event indicated that something somewhere was causing distortions in the relationship between the engineering school and the employment sector, and that urgent measures were probably needed to bring the situation under better control.

But what measures were there to be taken at what level? Was it the training system which had to be reformed in terms of policy orientations and/or curriculum content, and if so, with what new inputs - in a period of severe budgetary constraints - regarding financing, staffing, and the design and production of teaching materials? Or was it the employment policies of the Ministries concerned which required reconsideration for a better use of the technical personnel available?

A lot of questions like these were prompted by the situation just described and, eventually, led the author to the idea of conducting this study. The topic chosen was inspired by current theoretical debates over the relationship between education and the labour market.

### The aim of the study

One of the major criticisms of formal education nowadays is that it does not equip students with the skills required for productive work outside school. This attack has intensified the demand for more technical and vocational education and training, and institutions have been built at all levels of educational systems throughout the world to cater for the specific manpower needs of particular sectors of national economies.

For many countries, however, and especially for African countries, it is not clear yet how this kind of education can be made the most effective in preparing young people for employment in economic activities. The case just mentioned of the Ivorian engineering school is but one illustration of the seriousness of this concern.

A common approach to the question has been to establish close links between training institutions and the labour market through such practices as the incorporation into the teaching staff of professionals from industry and services, visits to work sites with trainees, the execution of real project works as practice exercises or evaluation methods in training schools, and industrial attachments by trainees. Manpower forecasts have also been taken into account in these schools for the yearly planning of their student intakes.

Surprisingly, however, data from existing literature still indicate that the qualifications acquired through formal training systems remain, in many cases, irrelevant for the skill

requirements of jobs in the labour market. Large numbers of graduates from training institutions now in employment in various places in Africa are described as doing jobs for which they have not been prepared. For instance, in Kenya, cases have been cited of high-level engineers like those in the Côte d'Ivoire performing administrative functions or doing repair works rather than 'designing' or carrying out research in technological development (Bennell, 1982).

It is even believed that formal training systems can hardly ever be in tune with the world of work because of such factors as:

1. the uncertainties caused in the labour market by continuous developments in science and technology, followed by constant changes in employment patterns, and inaccurate manpower forecasts (Blaug, 1973 and 1980; Psacharopoulos, 1985).
2. The inability of training institutions to adapt to shifts in the labour market and the use in these institutions of technology which is often regarded as out-dated or too sophisticated compared with the equipment available in industry (Blaug, 1973).
3. People's attitudes to work and their expectations from existing careers (Foster, 1965 and 1980, Clignet, 1964; Silvey, 1969).

If these observations are correct as demonstrated in the literature, then it must be explained what is meant by 'relevant' qualification and how this is measured outside educational

institutions. In other words, given all the factors just mentioned, how can training be expected to relate to the labour market and what methods can be used to evaluate the relevance of a training system?

The aim of this dissertation is to investigate these issues in the particular case of engineering education in the Côte d'Ivoire. The main goal is to try and find out what measures can be taken to solve the problems affecting the relationship between the engineering school - hereafter called the Enstp, to use its French acronym - and the employment sector.

To fulfil this purpose, attention will be focused on three major questions:

1. To what extent can the training system in operation at the Enstp be described as effective in terms of occupational qualifications? That is, how far can the skills acquired through it be seen as appropriate for work in the engineering profession in the Côte d'Ivoire?
2. What factors inside or outside this training system influence its relevance for the skill requirements of jobs?
3. Considering the answers to 1 and 2, what measures can be taken for a better match between training and employment?

More specifically, attempts will be made to find answers to the following set of sub-questions:

1. How far is the former trainees' recruitment into employment dependent upon their initial training skills?

2. How many of these former trainees consider themselves or are described by their employers as well qualified and efficient, i.e. how many of them can be seen as competent?
3. How is competence measured?
4. In what specific areas of the former trainees' daily work has training at the Enstp proved the most useful or the least so?
5. What causes poor performance? Lack of sound theoretical knowledge? Insufficient practical experience? Unfamiliarity with certain specific tasks? Working conditions? Personal characteristics like motivation, morale, open-mindedness, risk-taking abilities, adaptability to new situations, etc.? Or other factors like living conditions and health problems?
6. How can training qualifications be made more appropriate for present day skill requirements of jobs and future needs in the engineering profession?
7. What makes the school, or prevents it from being a suitable place where such qualifications can be acquired?

#### Reasons for undertaking this study

A study of this kind seems quite desirable at the moment not only because of the contribution it can make to the solution of the problems mentioned in the opening paragraph above, but essentially also for the following other reasons: first, despite

the former trainees' growing discontent with their utilisation on the labour market, empirical research involving all parties concerned, especially the employers, has not yet been undertaken to draw a clear picture of the situation and inform policy making at school level.

Secondly, as a member of the teaching staff of the Enstp, the author wishes to take advantage of this opportunity to learn about human relations and communication systems in the engineering profession in order to identify the possible ways in which the teaching of social sciences, and particularly that of languages, could be improved.

Finally, given the lack of educational researchers in training institutions in the Côte d'Ivoire, it is hoped that the findings of the study will be significant enough to convince the school authorities of the Enstp and those of similar tertiary-level training centres of the necessity for them to recruit permanent staff to deal with such pedagogical matters as those which will be raised in the analyses.

#### Scope and limitations of the study

This thesis is mainly concerned with the evaluation of the external effectiveness of the training system under discussion. It is an attempt to measure the outcomes of this system by critically examining the former trainees' performance on the labour market. In this sense, it is basically an enquiry into the merits and demerits of the training process, a kind of illuminative evaluation, as defined by Parlett and Hamilton

(1972), intended to establish what 'those directly concerned' in this process 'regard as its advantages and disadvantages'.

Given this focus and the limited space assigned to this dissertation, matters relating to the internal efficiency or quality of training will not be discussed. The data collected during fieldwork will be analyzed in relation to training policies, course objectives, and the management of the Enstp as an institution. Some curriculum issues will be raised too, especially in the case of social sciences and languages, but, for reasons of competence, these will not be extended to aspects of curriculum design and implementation requiring expertise in scientific and technical subjects.

The population of the former trainees involved in the study is also limited in size. It is composed of graduates from 1982 to 1987. The intention here is to concentrate on a target group whose training took place after major changes were carried out in the training system as the Enstp was transferred from Abidjan to Yamoussoukro in 1979. Further details will be given on this later when methodological considerations are examined. For now it must be stated what constitutes the main points of the study.

#### The main points of the study

The first chapter deals with the political and economic history of the Côte d'Ivoire. It is intended to highlight the most significant features of the context in which the country achieved its independence and embarked on vast programs of national development. It is also meant to describe the important

role attributed to public works in these programs and the ways in which engineering education has been organised since the early days of independence to cope with manpower requirements in the engineering profession.

The second chapter discusses the conceptual framework of the study. It starts with a review of the theories on the relationship between education and the labour market and summarizes the major arguments brought against them in the literature. It then carries on to explain why preference is given, for the purpose of this dissertation, to a model called 'combination theory' which draws on existing ones but allows variables like space and time to be taken into account in the analysis.

The third chapter is concerned with field methods. It takes up the issue of quantitative versus qualitative evaluation and argues in favour of an eclectic approach similar to Parlett and Hamilton's illuminative evaluation model. This is followed by observations on the design and implementation of survey materials, sampling methods, and fieldwork.

In chapters four, five, six and seven the data collected in the survey are presented and discussed. Chapter four provides a summary of the major findings and comments on their validity, then chapters five, six and seven set out to analyze them using the conceptual framework defined in chapter two.

Given the points made in the analyses, Chapter 8 examines the possible ways of making the training system more responsive

to the requirements of its socio-economic and political environment. It focuses essentially on pedagogical and management matters.

The concluding chapter recalls the main issues raised in the study and indicates what results have been achieved regarding the problems stated in the opening paragraph. It ends with the implications of the study for the theoretical debate over the relationship between education and the labour market, and for future research on the training of civil engineers in the Côte d'Ivoire.

## CHAPTER ONE

OVERVIEW OF THE POLITICAL ECONOMIC AND  
EDUCATIONAL SYSTEMS OF THE COTE D'IVOIRE

Two years before the Enstp graduates reacted as they did against Tower Block D, the Ivorian President speaking at a press conference in Abidjan expressed his satisfaction with the performance of the country's public administration in the following terms (Fraternité Matin, Special Issue, 1985:5)):

'I would here like [...] to underline the important role of our public sector in the employment market, and in the provision of jobs for our young people at every level. By far, and for a long time, the largest employer in the Ivory Coast, the public sector is also the largest single recruiter. The growth of its establishment between 1980 and 1985 shows that during this period it actually engaged 20,000 new civil servants in all categories, without this involving an excessive inflation of the overall number of officers, which rose by only 12,000 units, and without incurring expenditure that would put an unreasonable strain on our budgets.

These satisfying results were possible thanks to the modernization and rationalisation of our administration, as well as to better management of the development of manpower [...]. Work in progress, in particular in the national committee for administrative reform, should make further improvement in results possible, and endow our country with the rejuvenated and dynamic public administration it needs for its development.'

These positive remarks make it difficult to understand why such serious problems as those facing the Enstp graduates in public services still exist. Have the 'satisfying results' achieved between 1980 and 1985 been short-lived and given way to unsuccessful 'management of the development of manpower', or is it the Ministries employing these graduates which have failed to cope with new developments in their particular situations? These questions need to be examined before turning to those just raised in the introductory section, and to do this, it seems necessary

to focus attention on the political and socio-economic context in which training institutions and the labour market function. The rest of this chapter, therefore, consists of an overview of the political, economic and educational systems of the Côte d'Ivoire, and a description of the main characteristics of the labour market for civil engineering practitioners. It is a historical survey intended to highlight the macroeconomic and political constraints facing the country, and the ways in which these affect the operation of socio-economic institutions.

### 1.1 The Political System<sup>1</sup>

Like many other former French colonies in Africa, the Côte d'Ivoire became independent in 1960, with the election of the present President Félix Houphouët-Boigny, as the country's first head of state. Since then it has distinguished itself politically by its stability under the leadership of a one-party régime. This is generally considered as an unusual achievement in Africa but opinions differ whether or not it is a successful experience. The purpose of this section is to give a brief account of the various points made in this controversial debate and thereby underline the dominant aspects of the Ivorian political system. Positive views will be examined first in 1.1.1, and negative ones later in 1.1.2.

#### 1.1.1 The Ivorian Political Experience as a Success

The political analysts who describe the Ivorian political experience as a success base their argument on what they see as

the 'state's capacity to translate its policies into reality' (Crook, 1989). They attribute such an outcome to President Houphouët-Boigny's personal leadership style and to the relative effectiveness of the country's administration. These two elements themselves derive their strengths from a number of factors identified as follows (Crook, 1989:212-226):

The President's leadership style: The presidency constitutes a source of control and patronage which operates through a political and administrative core élite linking the main institutions of government, i.e. the President's Office, the party's Political Bureau, the National Assembly and the Economic and Social Council. It skilfully distributes power and material wealth by co-optation of targeted groups (e.g. urban élite); ethnic balancing (e.g. geopolitical distribution of cabinet membership), decentralization (e.g. the division of the country into an ever-growing number of départments, sous-préfectures, and communes,<sup>2</sup> and the creation of the Comité Directeur within the party, in addition to the Bureau Politique<sup>3</sup>), expansion of state-financed job opportunities (e.g. creation of parastatals), and regional balancing (e.g. the sugar projects in the North and the West of the country).

Administrative effectiveness: The effectiveness of the Ivorian administration hinges on the bureaucratic values prevailing in institutions (e.g. emphasis on skilled manpower educated to French standards, replacement of expatriates by local technocrats through a policy of gradual Ivorianization, and organizational commitment (e.g. stability of élite membership<sup>4</sup>, loyalty to the

presidency and to the administrative accountability (the civil service is controlled by, and accountable to the political élite, centred on the Presidency).

These observations reflect the ways in which President Houphouët-Boigny himself assesses the situation, as appears in the report of the press conference he gave on 14th October 1985 (Fraternité Matin, Special Issue, 1985) after his party's eighth congress (Fraternité Hebdo, 1986):

Why a single party system in the Côte d'Ivoire: 'In our country at the present time, if we enter into multi-party politics, we are going to have a Baoule Party, a Bete Party ... We do not want that! We want first of all to be Ivorians. That is why we hold to the single party system. We have written into our Constitution that there will be several parties, when the right conditions have been created. They have not been. We do not want division, We are still struggling for national unity.'

The results achieved: 'We are surmounting the differences between the generations. Look around us. There have been no ruptures. In the Ivory Coast, the older generation has gradually given way to the new. That is the beauty of our party: that it knows how to stand aside for its own, its sons and its grandsons. [...] Unity, the transcending of the tribes - we are almost there. The generation gap virtually does not exist in our country. [...] Effective solidarity is not an empty term with us. Tolerance is absolute. We do not have political tribunals. We have never spilled the blood of others. We assume our responsibilities at the head of this country. [...] We don't have opponents. Our

opposition is extreme poverty, and it is that which must be fought.

'Houphouëtism': 'I personally, have never spoken of "Houphouëtism". I have done what I could to serve my country, by bringing together our sixty tribes - by working them in a harmonious process of development, and giving equal opportunities to our farmers. They earn the same wages for their work, whether they are in the north or the west. Whether it is for crops or coffee, cocoa, cotton, hevea, palm seed, it is the same price. The State undertakes to provide transport. We also give equal opportunities to our children, irrespective of their social background. From primary level to university, education is free for the best. We practise solidarity between us. [...] Some say "that is Houphouëtism". And yet, you know, I never wrote a thing. [...] I am a humble man [...]. But, I [...] have disciples. Let the disciples speak, and write about "Houphouëtism". Don't ask me to define it.'

Cooperation with France: 'Cooperation is an encounter of giving and receiving. When General de Gaulle spoke to me of cooperation, for the first time, I said to him, "General, I know you want to respect our dignity; that is why you speak of cooperation. For the moment, you send us, at our request, teachers, doctors, engineers. What do we send you in return? Nothing! That is assistance. The word doesn't frighten us. But, we are determined to work in such a way that we might not be like the Dead Sea, that receives the waters of the Jordan, without letting anything pass through. Tomorrow, this cooperation must open onto exchanges." We have moved in that direction over the last twenty-

five years. We, who were the last in Africa - at the time of independence, we had nothing; there were hardly even forty-eight undergraduates. [...] We did not have enough pupils in primary education. [...] We are involved in a cooperation programme with France. The objective of this cooperation is to train people who tomorrow will be capable of replacing, with the same degree of efficiency, the workers now participating in the cooperation programme. That is what we have done over twenty years.

[...] We are not [the] game preserve [of France]. It is an insult to say that, for France - and even more so for us. It is the "ordinary" French here, who show their confidence in us, and not big financial capital. It is thanks to them, and to genuine cooperation, that we have achieved these results - without a simple litre of petrol, without a kilo of copper, manganese, uranium or bauxite - thanks only to our people, with France. [...] Today, we have relations with everybody, including West Germany. In the Ivory Coast, West Germany has done a great deal for the North. [...] West Germany built the Port de San Pedro. Where is the game preserve? You must preserve yourselves - from all accusations! With regard to our regional cooperation this exists already. At the UMOA, the Ivory Coast controls 60% of the finance. The other partners hold 10 to 20%. But, we pool it together, and this resource serves everyone, for their peaceful development. This is real cooperation - not just lip-service.'

These quotations from the President's speech confirm the observations made by such political analysts as Crook that the Ivorian political achievement derives for the most part from the leadership style of the Presidency - referred to as

'Houphouëtism' - backed by French assistance and operating through the leaders (the President's 'disciples') of the single party (the PDCI). This experience is a success inasmuch as policies have been implemented and their desired goals reached in an unprecedented stable political climate conducive to élite cohesion and grass roots support. Critics disagree with these views and make severe attacks on the ruling party's records.

#### 1.1.2 Criticisms of the Ivorian Political Experience

The arguments raised against the description of the Ivorian political experience as a success centre around two main points: the President's leadership style and his insistence on a single party system, and the links between the Côte d'Ivoire and France. With regard to the former, most commentators characterize Houphouët-Boigny's régime as a typical example of (neo-) patrimonialism or clientelism (Gbagbo, 1983; Sylla, 1985; Amondji, 1986; F.P.I., 1987; Séry, 1990; Hughes and May, 1988). They argue that it has only succeeded in consolidating the basis of a personalist and authoritarian leadership, with little concern for democratic principles. They hold it responsible for corruption, nepotism and all forms of malpractice observed in public administration throughout the country. Due to its close relationships with France and the continuing presence of French expatriates in government institutions, they accuse it of collaborating with French neocolonialism and perpetuating foreign culture to the detriment of local traditions. In a word, they see no difference between the Ivorian political experience and other one-party régimes in Africa.

Without dwelling too long on the details of such negative comments, suffice it to point out that, for the purpose of this dissertation, it is worth bearing in mind two important issues raised in this political survey, namely the practice of élite recruitment by co-optation and the application of French-style administrative rules and management in government institutions. The former has contributed to the politicization of civil servants and to the emergence of conflicts between those among them who wish to get promoted to élite status, as connections rather than competence, according to a Gallup poll conducted in 1981 (*Jeune Afrique Economie*, No.1, October 1980:37-39) give the best chances of selection. Career advancements, even in a profession like civil engineering, tend to be determined the same way by personal contacts in high places rather than by achievement on the job. Since the administration is organized on the French model, i.e. structured in rigid bureaucratic hierarchies, decision-making procedures are highly centralized and this, combined with the lack of objective criteria for promotion to positions of responsibility, causes a lot of frustration among government workers. Further comments will be made on these issues in the analysis of data. For now, attention will focus on the economic system of the country.

## 1.2 The Economic System

The economic results of the Côte d'Ivoire have been subjected to much more comments than its political experience. Like in the latter case, some analysts see them as a success or even a 'miracle' and others as a failure or a 'mirage'. In the context of the present financial crisis, views continue to differ

about the country's fate. The aim of the present section is to review the literature and try to establish what lies behind the 'miracle', what turns it into a 'mirage', and what to expect in the years ahead.

### 1.2.1 The main features of the Ivorian economic 'miracle'

The key factor in the Ivorian economic record, besides the country's political stability and what Crook (1989) identifies as 'state capacity', is thought to be the policies adopted, i.e. encouragement of foreign investment and production of export crops. These arguments are developed in Decraene (1964), Grossen (1966), Tuinder (1978), Boelman (1981), Marcussen and Torp (1982), Ridler (1985), Schaum (1986) and Fieldhouse (1986). Other details of the implementation and outcomes of the policies just mentioned appear in Boguinard (1972), Diabaté (1973), Zartman and Delgado (1982), and Turquin (1972). Whether or not such policies are effective, the results achieved are described as outstanding. The following figures illustrate this point (Ministère de l'Economie et des Finances, 1981 and 1987; Ministère de l'Industrie, 1987; World Bank, 1988 and 1989; Riddell, 1990):

GDP (growth rate per annum): 1965-73: 8.5%, 1973-80:7%, 1980-1987:2.2%

#### Production of export crops:

1) Coffee: 1960-61	:	185,000 tonnes
1980-81	:	366,838 "
1985-86	:	265,684 "

The Côte d'Ivoire is the world's third largest producer of coffee.

- 2) Cocoa: 1960-61 : 93,605 tonnes
- 1980-81 : 418,333 "
- 1985-86 : 563,336 "

The Côte d'Ivoire is the world's largest producer of cocoa.

- 3) Cottonseed: 1976-77 : 75,443 tonnes
- 1980-81 : 136,603 "
- 1985-86 : 189,314 "

The Côte d'Ivoire is the third largest producer of cotton in Africa.

Industrial production: 1) Average growth rate: over 13% since 1960.

- 2) As a percentage of GDP: 1960: 4%;  
1985: 16.5%
- 3) Number of enterprises: more than 611 in 1985.<sup>5</sup>
- 4) Industrial employment: 1960: 13,000  
1980: 71,400  
1986: 94,000

Foreign trade: 1) Trading partners for exports:

France: 19% of total volume in 1983; the Netherlands: 11.6%; Italy: 8.8%; the United Kingdom: 4.5%; EEC countries: 32.5%; the United States: 12.4%; African countries: 18.2%.

The volume of export stands as follows (in billions): 1977: 529,212 CFA francs, 1980: 663,920 CFA francs; 1986: 1,108,809 CFA francs.

## 2) Trading partners for imports:

The EEC: 51% of total purchases from abroad in 1983 (with France as the first supplier: 35.2%), Germany: 5.4%, Japan: 4.5%; the United States (fourth supplier): 7.2%; African countries: 17%. The volume of import stands as follows (in billions): 1977: 429,566 CFA francs, 1980: 631,899 CFA francs, 1986: 687,193 CFA francs.

Urbanization: The urban population is estimated at 38.8% (1980), 43.1% (1985) and 47.4% (1990) of the Ivorian population: 8.189,544 in 1980, 10.092,735 in 1985, and 12.568,012 in 1990. This corresponds to a growth rate of 5.5% between 1980 and 1985, and 5.6% between 1985 and 1990, against 3.3% and 3.6% respectively for total population growth rate in the same periods.

Modern sector employment: Annual growth rate: 1975-80: 7%, 1980-90: 2.3%. (Marchés Tropicaux et Méditerranéens, No.2085:8). The greatest increase appears in services (the tertiary sector): 57.6% in 1975, 58.6% in 1980, 62.1% in 1985, and 63.1% in 1990. The public sector and parastatals account for 120,000 jobs, i.e. over 40% of modern sector employment, as of 1988 (Ministère de l'Economie et des Finances, 1981-1985 Five-Year Plan:744; Fraternité Hebdo, 27 Oct., 1988:8).

Infrastructure: 1) Roads: 67,400 kilometres in 1987, of which 4,200 kilometres in tarred roads (including a 143-kilometre motorway). In 1960, there were only 25,500 kilometres, of which 700

- in tarred roads (Ministère des Travaux Publics et des Transports, Direction Générale des Transports, Inventory, 1988).
- 2) Housing: From 1960 to 1980, 90,000 houses have been built with government (financial) assistance, including 6,900 houses in rural areas (Jeune Chambre Economique de Côte d'Ivoire, OLM de Yamoussoukro, 1989: 20 & 21).
  - 3) Energy: The total production of electricity (average per annum) stands at 3,900 GWh (3,500 GWh during the dry season) according to estimates by the electricity board in 1980 (MTPT, 1980: 103). The figure for 1965 stands at 220 GWh.
  - 4) Water Supply: 10,043 water pumps have been installed in villages from 1973 to 1982 (MTPT, 1980:108).

It must also be noted, in addition to these statistical data, that the Ivorian economy is still considered as viable (Maarouf, 1985; World Bank, 1987 and 1988; and Davenport and Page, 1991) despite some weaknesses identified in it and the weight of the country's estimated US\$6 billion foreign debt (Lane, 1989:11). The World Bank (1987, Vol.1:5) calculates that the structural adjustment programmes in implementation since 1980 will result, during the 'transition phase 1986-1990', in 'a moderate rate of growth of GDP led by an expansion of exports', and during 'the self-sustained growth phase 1990-1995', in an increase in 'the growth potential of the economy [and

consequently in] sustained growth of per capita income'.

These results are conditional on strict control of domestic credit and public spending, and the adoption of new industrial incentives regarding imports and exports. For this reason, the salaries of civil servants are blocked, recruitment into public services is kept to the minimum, government institutions and public agencies are subjected to budget cuts and strict financial control, most parastatals are planned for privatization, and subsidies on some agricultural products (e.g. free fertilizer supply to cotton farmers) and consumer goods (e.g. bread and rice) are discontinued (Chomley, 1988; Duruflé et al., 1986; Hiey, 1988). An (aborted) attempt was even made in the second term of 1990 to reduce salaries by 40, 25, 17, 14, and 8 per cent, depending on their levels (Fraternité Matin, No.7648, 2 April 1990:8). There may be light at the end of the tunnel but most critics believe, like Susan George (1988) that this is a 'fate worse than debt' and feel rather sceptical about the outcome of adjustment programmes without 'human face', to use Unicef's terminology (Cornia, Jolly, and Stewart, 1988).

#### 1.2.2 Arguments against the Ivorian Economic 'Miracle'

The economists who view the Ivorian economic achievement as a 'mirage' rather than a 'miracle' base their arguments on what they describe as ineffective policies and weaknesses, in the structure and the management of the country's economy. Most of the facts they quote in support of their views can be found in the economic systems of other African countries, but some are typical of the Ivorian situation. The former include the

following (Hawkins, 1991:18-22):

Economic policies: The 'comparative advantage' model of development adopted, with its exclusive reliance on the export of primary products and import-substitution policy of industrialization, has made the economy vulnerable to variations in the world price of the products concerned (i.e. essentially coffee and cocoa), and led to the creation of an import-dependent fragile and uncompetitive industry (Riddell, 1990) which had only weak linkages with local suppliers and domestic inputs.

Structure: The economy is dominated by a limited number of cash crops, namely coffee and cocoa, which account for about half the total of exports (59.59% in 1985), and by foreign industries, due to the scarcity of indigenous industrialists (Diabaté, 1973:122-123). Besides, the state enterprises created to compensate for the lack of local entrepreneurship are White Elephants or 'loss-making ventures', as illustrated by the failure of the majority of them and their subsequent closure or privatization in recent years (Crook, 1989; Diabaté, 1977).

Management: The handling of 'abrupt external shocks', whether positive or negative, has proved unsuccessful. As Collier explains (1991:15-16),

'during [a boom period] expenditure rises rapidly following revenue, whereas as revenue falls expenditures are maintained.'

Ridler (1985:412) and other critics consider that even though the financial difficulties of the Côte d'Ivoire are

mainly attributable to the falling terms of trade after 1977, the situation can also be blamed on the authorities of the country who decided on investment projects during the boom as if the prices of coffee and cocoa, as of that period (1976-1977), were the norm and failed to adjust public spending to the fall in these prices in the years that followed, thinking that it was a short-term drop.

The other weaknesses identified in the Ivorian economy relate to the country's financial system and the continuing dominance of expatriates in management positions. As a member of the Franc Zone in the context of the monetary union (UMOA) created by French-speaking West African states in 1962, the Côte d'Ivoire has virtually no real control over its monetary policy. As Lane observes (1989:8):

'Monetary policy in Côte d'Ivoire operates in an institutional environment that in many respects restricts the range of policy options available to monetary authorities. As the largest member of [the UMOA], Côte d'Ivoire cannot set interest rates independently of other union members nor can it unilaterally change its exchange rate, which has remained pegged to the French Franc since 1948. The union also manages its foreign reserves collectively and controls credit expansion which influences the direction and magnitude of the monetary stance that individual countries may follow.'

Other pessimistic views of this monetary system appear in Duruflé (1988), Vallée (1989), Adda and Smouts (1989), and Chabal (1991). In addition to these, the banking system of the Côte d'Ivoire has deteriorated, leading to severe liquidity shortages in 1987 and to the liquidation of some banks (Lane, 1989:18-19).

As regards French expatriates, it is less the size of their population, which grew from 1,260 in 1960 to 3,976 in 1980 before dropping to 2,185 in 1985 (Ministère de l'Economie et des

Finances, 1987:75), than their cost and their influence in government institutions and on local culture that are mostly criticized (World Bank, 1987, Vol.IV:10; Riddell, 1990: 163 and 164; Crook, 1989:216-219; Hazera, 1981:34-38; Zartman and Delgado, 1984). Not only are they paid high salaries (seven times greater than those of the Ivorians in some cases), but they also contribute to the increase in financial outflows (estimated at a quarter of domestic savings in the early 1970s, and at 16% of export earnings from 1975 to 1984). Besides, as Riddell comments (1990:164), 'the ease with which foreign skilled workers could be hired has not only inhibited the training of more nationals but [...] has frustrated the development of a cadre of local engineers and of associated skills.' Culturally, the high population of foreign labour has stimulated the demand for luxury consumer goods and the spread of values and ideologies like 'liberalism' and 'pragmatism' which sometimes contradict aspects of local culture (Diabaté, 1973:123).

Based on these negative observations on the Ivorian economic situation, some economic analysts think the country's future is rather bleak. The Economist Intelligence Unit (1988, No.3; 1989) and Riddell (1990) find the World Bank calculations too optimistic, especially as applied to the short-term and to industrialization. As Riddell points out (1990:187):

'It is difficult [...] to avoid the conclusion that substantial structural change is very unlikely within the parameters outlined by the World Bank. [...] If the objectives of the Bank's base case scenario were to be achieved, [the] types of structural changes [advocated] would be likely to be reinforced as a result of a predicted sharp decline in sub-sectors linked with investment (construction and engineering) and a more rapid expansion of sub-sectors involved in food processing and textiles (Michel and Noël, 1984:113). Such a future would be one tinged with déjà vu: perpetuating into the future the post-1977 era, which so singularly failed to remove the overall

dependence of the economy on a handful of export crops or the dependence of the manufacturing sector upon primary processing.'

In addition to these structural difficulties, the other obstacles to the country's economic recovery are the poor prospects for agricultural products (as commodity prices are expected to remain low), the 'high and rising budget deficit' and the resulting financing problems experienced in central government, the increase in total external debt and in annual debt servicing (calculated to be no less than US\$1,500 m. in the second half of the 1990s (Riddell, 1990:177), and the over-valuation of the CFA Franc.

These are the characteristics of the Ivorian political and economic systems. Whatever way they may be interpreted, positively or negatively as just explained, the financial crisis is a reality to reckon with in an evaluation study like this one, given its effects on the day-to-day running of socio-economic and political institutions. The next section deals with this point concentrating on training and employment in the civil engineering profession.

### 1.3 Training and Employment in the Civil Engineering Profession

Since the early days of independence, the Ivorian government has made education and training a priority area for public spending. It has devoted over 40% of its recurrent budget (45% in 1980 and 42% in succeeding years) to this sector ever since (Grootaert, 1988: 10 and 11), a figure considered as the highest in the world. It has encouraged parents to send their children to school and achieved this way universal primary

schooling in urban areas (overall enrolment ratios for 1985 are estimated at 83.8% for primary schools, 30.4% for secondary schools (13 to 19 years of age), and 2.2% for tertiary education (20 to 27 years of age)) (Grootaert, 1988). It has also sought to establish a close link between education and the world of work through tight control of enrolments in educational institutions and a policy of 'Ivorianization' requesting employers to give priority to Ivorian nationals in their staff recruitment. Besides, since the creation of the Ministry of Technical Education and Vocational Training in 1970, a lot of efforts have been made to increase public awareness of the importance of practical skills, as opposed to general academic knowledge. However, under the circumstances of the country's current economic crisis, both general and technical educational institutions are faced with inextricable problems in their attempts to improve their relationships with the labour market. The present section examines this situation with reference to the education and training of civil engineers, but before that, it must be explained how higher education is organized in the country.

#### 1.3.1 Higher Education in the Côte d'Ivoire

The Ivorian education system was built on the French model. It is geared towards the modern sector of the economy and as such, its main function is to supply industry and public services with the requisite manpower. It is centrally controlled by three Ministries of education (one for primary schools, a second for secondary and tertiary education, and a third for vocational and

A G E			A G E		
G _____ 11 _____ 18					
Primary Education			Secondary Education		Higher Education
Preparatory	Elementary	Upper Primary	Lower Secondary	Upper Secondary	- University - Grandes Ecoles

The upper secondary level divides up into two options: general academic education and technical and vocational education. The baccalaureate certificate awarded on completion of this cycle is therefore identified in different ways to reflect the option taken by individual students and predetermines choices for further studies at tertiary level. For instance, A-type baccalaureate certificates give access to the faculty of humanities and social sciences, B and G ones to studies in economics and business, and C, D, and E ones to science,

technology and medicine. A committee called Commission Nationale d'Orientation (CNO) is responsible for the selection of baccalaureate holders for post-secondary education.

Higher education started in the Côte d'Ivoire in 1958 with the creation of the Centre d'Enseignement Supérieur d'Abidjan, converted into a university in January 1964 (Diarrassouba, 1979). The Université d'Abidjan was in reality a French university built in Côte d'Ivoire, as it was structured on French models and the diplomas and degrees awarded were regarded as equivalent to French ones. The decision to nationalize it was taken only in 1977 when it was transformed into Université Nationale de Côte d'Ivoire. To date, this institution comprises seven faculties and schools, and several research institutes. In addition to these, tertiary-level education is carried out in other institutions called Grandes Ecoles. They include the schools of teacher training (ENS), agronomy (ENSA), public works (ENSTP), public administration (ENA), technology (INSET), statistics and applied economics (ENSEA), telecommunication (ENSPT), arts (INA) and sports (INJS). Total tertiary enrolment was estimated at 18,000 in 1988 (Fraternité Matin, 10 Oct. 1989:20).

Although most higher education institutions are autonomous, they are placed under the tutelage of the Ministries concerned with their individual areas of specialization. They also come under the Conseil des Enseignement Supérieurs (The Council for Higher Education) and the Commission Permanente des Enseignements Supérieurs (the Permanent Committee of Higher Education) set up to coordinate their activities. The problems facing them as a consequence of the country's bad economic state are of two kinds:

the reduction of their financial resources, and of their student population. In the years 1987, 1988 and 1989 for instance, the university, the INSET and the ENSTP had their budgets cut down as follows (in billion CFA francs) (Côte d'Ivoire Sélection, 1988, 5 Mars; Direction des Budgets et Comptes, 1990:147-155):

	University	INSET	ENSTP
1987 :	5,008	3,426	2,832
1988 :	5,747	3,369	2,514
1989 :	5,144.2	2,991.7	1,845

Enrolment in higher technical and professional education institutions (i.e. the Grandes Ecoles) rose from 23,006 to 26,569 from 1980 to 1983 but fell to 25,675 in the academic year 1983-84 and has been declining ever since (ONFP, 1986:16). This is due to a deliberate attempt by the government to cut down the size of the student population and thereby keep its education expenses within the limits imposed under structural adjustment programmes. The Enstp has particularly been hit by these measures, as will be shown in the next sub-section.

### 1.3.2 The Higher National School of Public Works (ENSTP)

The Higher National School of Public Works is the only tertiary educational institution providing training in civil engineering in the Côte d'Ivoire. It functions as an autonomous public agency (établissement public à caractère administratif) with its own budget, although placed under the tutelage of the Ministry of Public Works and Transport. In colonial times, starting from 1903, only topographers and draftsmen were trained

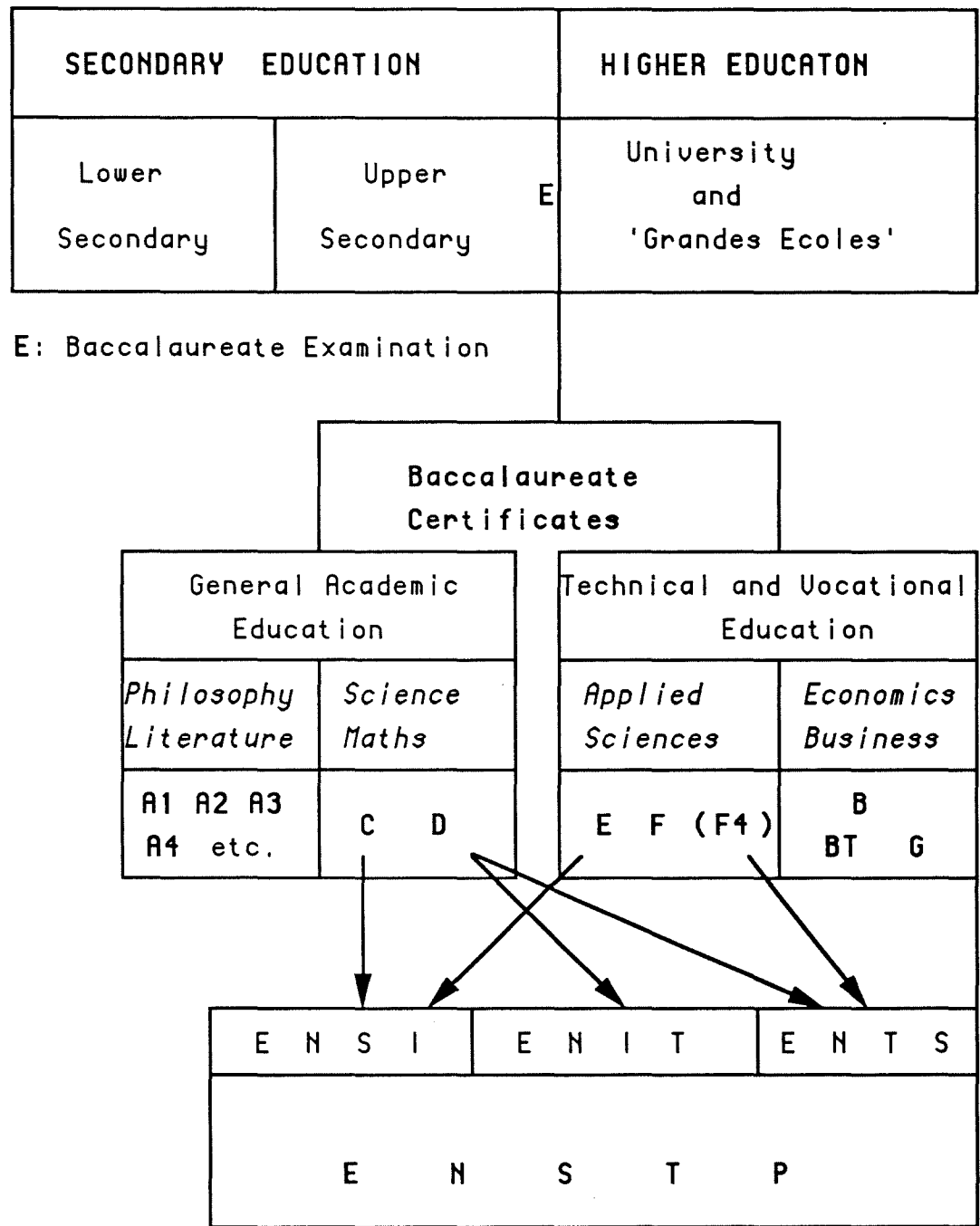
in a federal school, the Ecole Pinet-Laprade, in Dakar (Senegal) and its substitute, the Ecole Technique Supérieure de l'Afrique Occidentale Française in Bamako (French Sudan, now Mali) created in 1940 (Désalmand 1983:195). From Bamako, most trainees used to be sent to France for further studies at the Ecole Eyrols and other French schools. However in November 1962, shortly after independence, a decree was issued to create the Enstp for the organization of training in Abidjan instead of Bamako and Paris. Under this new training scheme, only the first and second most successful students were sent to French schools (Ponts et Chaussées, mainly) for further studies. The Abidjan school was designed for 220 students but the demand for engineers and technicians was so high that enrolment rose to 420 in 1975 (Enstp, 1988, Special Report:5). It was then that discussions started to determine how to reorganize the school and expand its intake capacity. Eventually the decision was taken to build a new school in Yamoussoukro, outside Abidjan (240 km away).

The Yamoussoukro school, a 70-hectare campus (against 1.7 in Abidjan), opened in 1979. It is designed for 1500 students, and its mission is: 1) to provide initial and in-service training for building and public works engineers and technicians for the manpower needs of public services, parastatals and private enterprises, and 2) to contribute to the development of applied research in civil engineering. It comprises four schools: the ENTS, or school of engineering technicians, the ENIT, or school of technician engineers<sup>7</sup>, the ENSI, or school of design engineers, and the CFC, or school of in-service training. Access to these schools is limited to the holders of C, D, E and F<sub>4</sub>-

types baccalaureate certificates (Figure 2) selected by the CNO. The courses offered include building, hydraulics, mining, road building, transport, surveying, and urban planning. Training takes three (ENTS), four (ENIT) and five (ENSI) years. On completion of the courses, successful students are awarded national certificates which give them direct access to the engineering profession. They are then recruited by the Ministry of Public Services for work in different Ministries, essentially in the Ministry of Public Works and Transport, the Ministry of Housing and Urban Planning, the Ministry of Mining, and the Ministry of the Interior. Some of them enter the private and semi-private sectors.

Although the Enstp is placed under the control of the Ministry of Public Works, its topmost decision-making body, the Advisory Council, consists of representatives of five other Ministries (the Ministry of the Economy and Finances and those concerned with higher education and civil engineering) and of three professional associations (those of construction engineering businessmen, the former trainees, and Ivorian engineers, architects, urban planners, surveyors and technicians). The preparation of the school's budget, staffing, proposals for policy and curriculum reforms, and the recruitment of new trainees are all matters that are taken to this Council and subsequently to the Ministry of Public Works. It is a top-down management style (see Figure 1.3 for the administrative structure of the school) which excludes teachers (and students to some extent) from decision-making procedures (the teachers' representatives sit on a committee called 'Conseil des Professeurs' but this group has no decision power). The staff of

Figure 1.2: Criteria for admission to the Enstp



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the school is composed of 300 administrative workers and 99 full-time teachers (against 600 students in 1990). Expatriates account for more than half the permanent teaching staff (there were 129 of them in 1973-80, against 20 Ivorians) but almost all part-time teachers (a total of 34) are recruited from among local engineers.

### 1.3.3 Employment opportunities in the engineering profession

In a study undertaken by French experts from September 1975 to August 1976 (Petit, 1976:21-28), the requirements for engineers and technicians for the period 1976-85 were estimated as shown in Table 1.1 below.

Table 1.1: Demand Estimates for 1976-85

	Engineers	Technicians	Total
Private enterprises	150	150	300
Parastatals	330	475	805
Public services	170	275	445
Overall total	650	900	1550

These calculations were based on the demand created by the rapid growth of the Ivorian economy in the 1970s and essentially also on the assumption that the policy of Ivorianization would lead to the replacement in workplaces of a sizeable number of foreigners by local engineers and technicians. It was estimated that by the end of 1976, 44 private engineering enterprises had offered only 15% directorship positions to Ivorian engineers and recruited a mere 4% Ivorian engineers and technicians (Petit,

1976:23). Similarly, it was found that 54% of top management positions and 53.5% of all other managerial functions in parastatals and 'public multinationals' were assigned to non-Africans, leaving 46% and 46.5% for Ivorians and other Africans. The figures for public services were not provided, due to 'lack of reliable sources of information'.

On the basis of these manpower projections, the new school was allowed to train from 1976 to 1985, 1091 engineering specialist, i.e. 294 design engineers, 442 technician engineers, and 335 engineering technicians (see Figure 4). The number of technicians fell short of the projected figure (900) because of the extension of the training from two to five years in that period. As for the 'surplus' of engineers - 736 instead of 650 - it was caused by the creation in 1979 of a middle-level qualification, the technician engineers, to satisfy the demand by private enterprises for middle management technical manpower. Despite all the calculations made, the public sector turned out to be the largest employer of Enstp graduates, as the private sector failed to absorb its projected share (see Figure 1.5).

In fact, of the three employment sectors concerned with training at the Enstp, i.e. the private, the semi-private and the public, the latter has always been the largest recruiter.<sup>8</sup> Parastatals come second but most of their engineers and technicians are civil servants seconded to them from the Ministry of Public Works and Transport. The dominant ones are Sodeci, Sicf, Eeci, Sodepalm, P.a.a., Asecna, L.B.T.P. and 'Grands Travaux'. Private enterprises are mainly local branches of foreign companies like Bouygues, Setao, Colas, Jean Lefebvre,

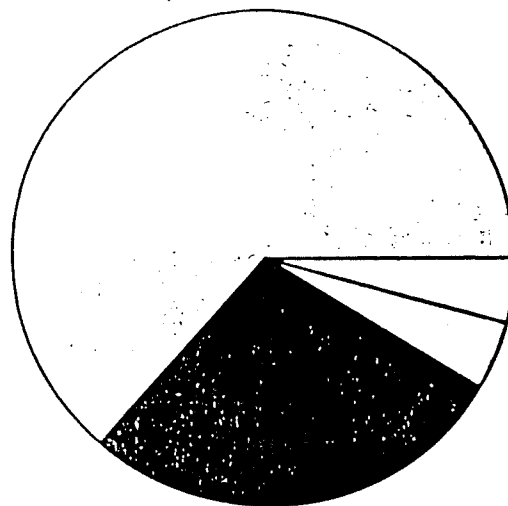
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Figure 15: Distribution of the graduates  
between employment sectors

Public services 63,6 %



Further training

4,1 %

Private sector

4,3 %

Parastatals 28 %

and Shell, but some local ones (e.g. Sonitra) have developed substantially. Working conditions are described as much better in the private sector and in parastatals than in public services but they have deteriorated in all three sectors with the financial crisis. While salaries are blocked and recruitment kept low in public services, most private and semi-private enterprises have stopped paying fringe benefits (in kind or in cash) and tightened up recruitment. There are constant fears of salary reductions and job losses in most workplaces.

This poor state of the labour market has forced government authorities to limit enrolments. From 1963 to 1988, the Enstp trained 1776 engineers and technicians (1569 Ivorians and 207 nationals of neighbouring countries). Its student population rose to a peak of 1045 in 1980 but given the present adverse economic climate, it was cut down to just 430 in 1988-89 (see Figure 1.4) before it was brought up to 600 in 1989-90. There are no more manpower projections to guide decisions regarding the yearly intake of the school. What counts in this respect is the size of the budget that can be allocated each financial year. Under these circumstances there is no more interest in matching training with the manpower needs of workplaces and the major preoccupation of school authorities is to improve the quality of training as much as possible so as to increase the graduates' competitiveness in employment.

It may be concluded therefore, that the political and economic situation of the Côte d'Ivoire, as exists these days, affects the day-to-day running of the Enstp and other higher educational institutions. The resources needed for the

organization of training in good working conditions are not readily available any longer and the number of students enrolling in the courses has become unpredictable. Decision-makers are more concerned with macro-economic issues relating to the management of the country's heavy debt burden than with the particular preoccupations of socio-economic institutions. The future is uncertain and little is known about training needs. This is the context in which this evaluation study is carried out. The next chapter describes the theoretical framework chosen for the analysis and interpretation of data.

### Notes

1. At the time of writing, the Côte d'Ivoire shifted from one-party régime to multi-party democracy in 1990. In addition to the PDCI-RDA, still in ruling position, more than ten new parties are reported to have been created, with the Front Populaire Ivoirien (FPI) emerging as the most influential. President Houphouët-Boigny has now nominated a Prime Minister to lead the Government. It has not been possible to incorporate these changes into the present discussion.
2. Since 1985, the Côte d'Ivoire has been divided into 50 Départements, 183 sous-préfectures and 136 communes (Fraternité Matin, 1988, An 28:43; Ministère de l'Economie et des Finances, 1988:31).
3. The PDCI, the ruling party of the Côte d'Ivoire, is the Ivorian branch of the RDA, the African Democratic Assembly, created in 1946 at Bamako (Mali). The RDA itself originates from the African Agricultural Union created in 1932 at Abengourou (Côte d'Ivoire). The PDCI is led by a President (President Houphouët-Boigny), and a Secretary General (Mr. L.D. Fologo, a former Minister). It is structured into three élite groups: the Bureau Politique (58 members, led by the President), the Comité Exécutif (13 members, all members of the Bureau Politique), and the Comité Directeur (206 members) (Ministère de l'Intérieur, quoted in Ministère de l'Economie et des Finance, 1988:29-30).
4. Bakary (1986, quoted in Crook, 1989:216) explains that 'of those appointed to the Political Bureau [in 1980], 88 per cent were public sector, and 95 per cent of the government ministers were ex-civil servants.' He also observes that in the same year (1980), 'the generation born between 1920 and 1934 accounted for 63 per cent of the political élite and that the average age of ministers and Political Bureau

members [was] 42 and 47 respectively, [while] the average term of office of a minister was 7.5 years and one-quarter of ministers [in 1981] had been in office for over 10 years.'

Besides he notes that 'Of those who held office between 1960 and 1980, half were graduates, and 40 per cent secondary school graduates; but amongst government Ministers, the percentage of graduates went up to 68 per cent. [...] In occupational terms, 75 per cent were public sector, that is middle or high rank servants [including such jobs as teachers, doctors and other technical professions].'

5. The figures relating to the number of enterprises are unreliable, as noted in Riddell (1990:156). Variations occur according to the size of the enterprises included into the statistics.
6. On the occasion of a cabinet reshuffle on 30 November 1990, the Ministries of Primary and Secondary Education were combined into one single Ministry of National Education. Similarly, the Ministry of Vocational and Technical Education and the Ministry of Scientific Research were integrated to form the Ministry of Scientific Research and Vocational and Technical Education.
7. The ENIT was closed in 1988 officially because private enterprises failed to recruit their quota of technician engineers, thereby leaving the public services to absorb all the graduates from this school. In actual fact, the measures taken were also dictated by the conflicts between technician and design engineers, as will be explained later in Chapters Six and Seven.
8. A study conducted in 1987 by the Enstp's Centre for In-service Training indicates that only 55 of 1200 graduates currently in employment in the Côte d'Ivoire are in the private sector, leaving the remaining 1145 in public services and parastatals. It also estimates, using data supplied by the Union of Employers (reference not given), that about 600 positions suited for 'cadres' of the kind produced by the Enstp still remain to be Ivorianized in this sector. The implications of this situation for training were to be examined after more data were collected on the nature of the tasks concerned and as far as is known this matter is still under consideration (Enstp, Cfc, 1987: 1 and 2).

## CHAPTER TWO

### TOWARDS A COMBINATION THEORY FOR THE ANALYSIS OF THE RELATIONSHIP BETWEEN EDUCATION AND THE LABOUR MARKET

The relationship between education and the world of work has long constituted the focus of a variety of studies carried out by researchers of different backgrounds. The analyses made of this complex topic so far fall into two broad categories identified in the literature as labour market and social reproduction theories.

The studies dealing with labour market issues comprise those based on human capital theories, the manpower requirements approach, the theories of labour market segmentation, and the 'screening' hypothesis. Within social reproduction theories, a distinction is usually made between the 'correspondence' interpretation of the process of reproduction and the 'contestation' or 'resistance' version. All these approaches are worth examining here for a better understanding of the conceptual framework chosen for the present dissertation. The intention is to try and identify in existing research what findings can help explain the problems under investigation before attempting to design a model of analysis.

#### 2.1 Human Capital Theories

Human capital theories can be traced back to the 1960s when the American economists Mincer, Schultz, Denison and Becker published their research findings on the effects of educational

experience on earnings. The basic idea defended is that education contributes a great deal to productivity and to the economic development of a country. The arguments put forward to support this claim centre around the concept of 'human capital' which is defined in the literature as 'individual capacities', i.e. 'cognitive skills' or intellectual and technical abilities.

Since these skills have been proven by empirical research to be closely related to productivity, human capital theorists assimilate them to 'capital' in the economic sense of the term. As a consequence, they believe that anything undertaken to develop an individual's skills can be regarded as an investment, even if such undertakings, like formal education and training, often involve 'non-market activities'<sup>1</sup> (Mincer, 1984: 195). The following explanation is given by Becker (1975:9):

'Some activities primarily affect future well-being; the main impact of others is in the present. Some affect money income and others psychic income, that is, consumption ... These effects may operate either through physical resources or through human resources... [The] activities that influence future monetary and psychic income by increasing the resources in people... are called investment in human capital'. (emphasis added)

At micro-economic level, the benefits gained from investment in human capital are found in lifetime earnings, and the fact that more educated people - i.e. those with higher levels of schooling - are paid higher salaries than the less educated ones has led to the conclusion that 'wage differentials among workers are due primarily to difference in the sizes of human capital stocks' (Mincer, 1984:197). This practice of rewarding people according to their 'stock of human capital' further explains why, most of the time, individuals continue to invest in themselves after school.

At macro-economic level, a distinction is made between 'human capital as embodiment of skills' and 'human capital as a source of new knowledge'. The former contributes to national economic growth in such a way that an increase in its size leads to higher marginal product of physical capital and, subsequently, to higher total output (Mincer 1984: 201). The second type of human capital is directly associated with innovation in technology and, therefore, with 'world-wide economic growth'.

These are the major characteristics of human capital theories. It is not made clear how schools manage to develop a person's skills before he or she enters the labour market and, as some critics point out, the nature of these skills and their distribution within complex occupational structures are not seriously analyzed. Besides, some studies (Oxenham, 1980; Little, 1980 and 1986) suggest that salary differentials are not always appropriate measures of variations between the productive capacity of workers, and that social skills may be as important to employers as cognitive skills. There exist therefore some weaknesses in the 'human capital' explanation of the relationship between education and the world of work. For the purpose of this dissertation, the point worth keeping in mind is the idea of investment in human capital. It is argued later in the analysis of data that some situations observed in the field seem to support this view.

## 2.2 The Manpower-requirements Approach

Like human capital theories, the manpower-requirements approach establishes a tight relationship between education and

the labour market. It is considered as 'the principle rationale for the rapid expansion of higher education' in the 1950s and early 1960s (Blaug, 1984: 110) or 'the leading method throughout the world for integrating educational and economic planning' (Blaug, cited in Woodhall, 1977:47).

In fact, what this approach has introduced into the debate over the relationship between education and work is the belief that 'it is possible to forecast or to project a country's manpower structure [in terms of the number of workers with particular skills]' and then make sure 'that the education system [produces] neither too many nor too few people with the necessary educational qualifications' (Woodhall, op. cit., p.47).

Such projections are usually made for a minimum time-scale of five to ten years. The methods of forecasting most often adopted include:

1) employer's estimates of future manpower requirements, 2) manpower-population ratios, 3) international comparisons, and 4) extrapolation of fixed input-output coefficients (Woodhall, op. cit. p.65).

Some users of the approach have been particularly interested in forecasting demands for specific skills like those found in engineering and science because it is thought that the link between education and such occupations is tighter than in the case of non-scientific manpower. On the whole, however, manpower projections have constantly proved inaccurate, and educational planning - both in technical and vocational training and in general academic education - has failed to create a

balance between the supply of and the demand for a qualified labour force. This is one of the most difficult problems facing the engineering school in discussion here. The data analysis will try to show what imbalances exist at the moment between training output and the capacity of the employment sector to absorb trained personnel.

### 2.3 The Theories of Labour Market Segmentation

Labour market segmentation theories focus mainly on the different types of jobs - or segments -existing in the employment sector. They argue that workers are recruited and rewarded, not because of their personal characteristics (or human capital), but according to the rules governing the particular segments they get access to. These segments are described by Carnoy as follows (1980:31):

1. the 'primary independent' labour market  
e.g. professional occupations, managerial  
and administrative jobs)
2. the 'primary routinized' labour market  
(e.g. production workers)
3. the 'secondary' labour market  
(e.g. bus boys, farm labourers, and secretaries)

The effect of education and training experience on educated people's performance on the labour market can mostly be seen in the 'primary' segments, but it takes the form of a device for selection into employment and for promotion, not because of any economic benefits (such as high productivity) expected from these people, but essentially because of institutional regulations and such factors as race, sex, external market, bureaucratization, power and monopoly.

The 'technological control' variant of segmentation theory defined by Michael Piore sees productivity as a function of technology. In other words, as Carnoy explains it (1980:33), this model considers that:

'Given particular amounts and types of machines and particular levels of human skill and competency, a definite level of productivity more or less automatically ensues.'

What is called 'human skill and competency' here consists of 'task specific' and 'task-general' traits (Piore, 1973:p.20), the former of which are acquired by observing and doing -i.e. through experience - whereas the latter are learned through formal education. Task-general learning is needed for 'specific tasks never before encountered' (like managerial or technical jobs in some firms where technology requires low-level skills), and task-specific learning prepares for 'multi-task, semi-skilled and skilled jobs' (Carnoy, 1980:35). Workers are selected and allocated to these different types of skill levels to increase productivity while using changing capital-intensive technology.

The 'social control' variant of segmentation theory has been formulated by Gordon, Reich and Edwards (1973a and 1973b).

For these economists, productivity is a function of social rather than technological relations. They consider that workers are divided and placed in different competing positions in their separate segments in order for managers and capitalists to be able to keep control over the labour force and the production process (Carnoy, 1980:38). High general education is required for access to the 'primary independent' segment as a means to separate out workers and make the better-educated identify themselves with management rather than with their fellow workers.

Carnoy (1980:40-54) finds both variants of segmentation theory insufficient in their explanations of the conflicts existing in the labour market. For him an analysis of these must equally deal with 'the interactions of technology, workplace social relations, and "class-based" worker characteristics'. He goes on to distinguish four, rather than three, segments of jobs or 'clusters of jobs' which he describes as follows:

1. the (well-paid) 'high-education' segment (e.g. as in 1 above)
2. the (monopolized) 'unionized segment' (e.g. jobs in large-scale, capital-intensive production sectors like industry and transportation services)
3. the (low-wage and low-education) 'competitive segment' (e.g. jobs which lack highly specialized skill or special education requirements, and jobs for which there is no competition. They are all 'dead-end' jobs, providing no upward mobility)
4. the (dwindling) 'crafts segment' (e.g. jobs which require traditional manual skills).

In this third version of segmentation theories, the effect of education on either productivity or wage levels varies according to whether the workers are employed in a competitive or non-competitive industry. In competitive environments, little is gained from additional experience and education, but in non-competitive ones, there is a 'much higher salary pay off'.

For Carnoy, these variations in the effect of education are due to the fact that the social situation of the persons asking to work in the competitive (private) sector (e.g. minority groups like women and blacks in the United States) allows the employers to create and maintain 'a reserve army of unemployed labour' which enables them 'to extract more surplus from workers than in labour markets where either workers have organized ... unions or where skilled labour is still necessary for production

and is in relatively short supply'.

Workers in the 'high-education' segment are particularly required to have education and training experience, as the managerial/administrative and technical or scientific jobs in which they are involved need 'thinking and decision-making', skills in 'symbolic manipulation, deductive reasoning, verbal facility, etc. as well as familiarity with particular bodies of technical and professional knowledge and details of the firm's operation'.

In the unionized sector, such a high level education is a waste because it is 'likely to render the work even more stultifying and boring than otherwise, and ... likely to be associated with greater ambition for upward mobility and new experience than fixed seniority systems in this sector can accommodate'. As for the competitive segment, it is a 'low-skill, generally low-education market'.

The main argument defended in all three variants of segmentation is that the relationship between education and the labour market is dependent upon the structure of the latter and the interplay (e.g. competition for monopoly) between industries and services within the same segment. Given this situation, educational experience is valued differently from one occupation to another and, in any case, it is not associated with workers' productive capacity nor with wage levels.

Critics raise two important points against these views: first, they reject the assumption underlying all three versions

that there exist no possibilities for mobility between segments and, secondly, they believe that such theories can be applied to explain 'stable, long-term phenomena' in the labour market, rather than short-term problems (Blaug, 1984:121).

Despite these weaknesses, however, segmentation theories are seen in this dissertation as valuable sources of inspiration. It is interesting, for instance, to note that attempts are made, as in Piore's 'technological' version, to show how individuals acquire their 'particular levels of human skill and competency'. Moreover, it is very illuminating to read the comments made in Carnoy's version about the effects of organizational factors and 'class-based worker characteristics' on the relationship between education and the world of work. It is argued later in this study that such variables are worth examining when trying to assess the links between a training system and the employment sector.

#### 2.4 The 'Screening' Hypothesis

The 'screening' hypothesis defines the main function of education as consisting in separating out 'bright' students from 'dull' ones on two occasions: first, when selecting candidates for admission into educational institutions and, second, when 'passing or failing' those enrolled in a course (Arrow, 1972:5). This is a reaction against human capital theories according to which education increases people's productive capacity and, therefore, contributes to individual and national economic growth. For Arrow, one of the most frequently cited advocates of the screening hypothesis,

'(higher) education serves as a screening device, in that it sorts out individuals of differing abilities, thereby conveying information to the purchasers of labour' (Arrow, 1972:2)

This means that education plays the role of a sorter for the benefit of those who employ an educated labour force. Some of the theorists who share this idea with Arrow explain the 'filtering' function of education by the fact that employers rely on educational qualifications to discriminate among workers when recruiting them. For them this practice shows that workers' ability to perform well on the job is predicted on the basis of their educational background and, therefore, that credentials are used as proxy measures of workers' capacity at the time of their recruitment into employment. This is the 'soft' or 'weak' version of the screening hypothesis.

Another interpretation of this approach, described as the 'strong' version, argues that not only do educational records serve as evidence of educated people's ability to do well on the job, but they also function as selection devices for their promotion to higher positions. Berg (1973:33) substantiates this as follows in a study conducted in the United States:

'In most industries the employers sought to justify the decision to use education as a "screening device" by claiming that educational achievement is evidence of an ability to get along with others and to make the most of opportunities. They also made reference to the greater potential of better-educated workers for promotion to higher-paying, more skilled and responsible jobs.'

What Berg and all other theorists in favour of the screening model seek to demonstrate is that education is a system which sorts out people all their way through the different levels of schooling and, subsequently, provides the employers with a basis for further filtering when recruiting or promoting workers. This

reduces the role of education to one of 'certification', as most critics would put it. It also implies that intellectual and social abilities are innate and cannot, or need not, be developed in some form of educational practice (Blaug, 1984: 126-127; Layard and Psacharopoulos, 1974). As Arrow expresses it concerning higher education (1972:2):

'[it] contributes in no way to superior economic performance; it increases neither cognition nor socialization.'

It should be noted, however, that both Arrow and Berg regard professional education and scientific courses as exceptional cases where 'real skills valued in the market' are imparted (Arrow, op. cit. p.2) and where 'educational differences' do not 'wash out among employees at any organisational level' (Berg, 1973:34). This latter observation means that given a particular level of employment in organizations, the differences in educational and training experience remain significant factors which determine workers' positions in this employment. Evidence of this is given in Berg's survey of careers in urban telephone, power and electrical manufacturing companies. Such a view limits the applicability of the screening model to general academic education and confirms human capital theories as far as professional and scientific education and training are concerned.

If it be so, then one wonders what makes professional and scientific education so exceptional: is it the nature of the skills imparted in professional and scientific educational institutions? The training methods used in these institutions? Or the ways in which professional and scientific occupations are organized and run? These issues need serious investigation but neither of the 'soft' and the 'strong' variants of the screening

hypothesis does it. Until some answers are provided, therefore, the most positive contribution of the whole screening model to the foregoing discussion is its insistence on what Blaug calls 'the psychological components' of the relationship between education and the world of work (Blaug, 1984:119), that is, the effect of educational qualifications on the employers' assessment of educated people's abilities.

For the present purpose, this 'psychological' explanation is seen as a useful complement to the structural analysis offered by the theories of labour market segmentation. Attention is focused here on individual behaviour (the employers' attitudes towards school credentials) rather than on occupational structures and interpersonal relations within categories of jobs. Even though, in many cases, credentials are not the only elements which determine recruitment and promotion, it is nonetheless found worthwhile, for this study, to bear in mind the major issues raised in this respect.

## 2.5 The Social and Cultural Reproduction Theories

Turning now to the theories of social and cultural reproduction, one first point to mention is their Marxist or neo-Marxist orientation. Concepts like class, structure, capitalist mode of production, consciousness or unconsciousness and ideology are central to their analyses. In fact their basic argument is that education serves as a means for the reproduction of existing social classes and dominant ideologies. To explain this, they adopt two different approaches known as the 'correspondence' and the 'contestation' or 'resistance' theses.

The 'correspondence' thesis describes the reproduction process as one in which schools function practically in the same way as the economic structure and feed people into social inequalities. For instance, it is pointed out that schools share with industry its organizational structure because knowledge is taught in a fragmented form and social relations in educational institutions are determined by power and control strategies.

Althusser (1971) drawing on Marx ideas distinguishes what he calls the 'repressive state apparatus' (RSA) - e.g. the government, the administration, the police, etc. - from the 'ideological state apparatus' (ISA) - e.g. families, political parties, the press, religious and educational institutions, etc. These RSAs and ISAs constitute the 'superstructure' level of society and operate at this level to reproduce the forces and social relations which make up the 'infrastructure' or the 'base' level, that is, the capitalist mode of production as it functions in workplaces (Althusser, 1971: 123-173).

Bowles and Gintis illustrate this point in their work Schooling in Capitalist America when they demonstrate how 'different levels of education feed workers into different levels within the occupational structure and, correspondingly, tend toward an internal organization comparable to levels in the hierarchical division of labor' (1976:131-132).

To the proponents of the 'contestation' or 'resistance' thesis, this explanation of the reproduction process appears rather mechanistic and reductionist as it 'posits a simplistic notion of functional dependence between the school and the social

structure' (MacDonald, 1977b:9) and neglects 'the complex interactions between economic, social, cultural and linguistic factors which together make up the process of reproduction' (Kemmis et al, 1986:90-91). For this reason, the 'contestation' model focuses on a 'system of production and reproduction' (Apple, 1982a:22) rather than a simple reproduction mechanism.

Central to this second variant of the reproduction thesis is the idea that 'super-structural institutions such as schools have a significant degree of relative autonomy (Apple, 1982a:17) (emphasis added), that is, some degree of independence from the state - Bourdieu's sense - or from the production system - in Bernstein's sense. This relative autonomy allows the schools to perform their 'reproductive' role in apparently neutral and objective conditions which leave room for the dominant ideologies being taught to be contested or resisted by such different actors as school administrators, teachers, students and parents.

Another consequence of the relative autonomy of schools is that the skills and attitudes acquired through education and training relate only indirectly to those required by the mode of production (Bernstein, 1977 & 1982). Besides, in the particular case of technical and administrative training, it is believed that schools do not only respond to the needs of the economy, but they also increase their own legitimacy through the knowledge they teach. This is due to the fact that the petty bourgeoisie, their clientele, relies on them 'for the reproduction of their own credentials, positions, and privilege for their ultimate employment in the state and industry' (Apple 1982a: 54 and 55).

The 'production' function of schools consists in creating what Bourdieu calls a 'cultured habitus' (Bourdieu, 1971: 166), that is, patterns of thought or general dispositions which develop in individuals and 'govern and regulate their mental processes without [necessarily] being consciously apprehended and controlled' (Bourdieu, 1971:165). These patterns of thought remain part of the general culture of society but, due to the ways in which they are imparted in schools, they 'mark off' educated people and distinguish them from those who have no schooling experience while at the same time separating them into distinct groups like technicians versus graduates of general academic schools.

These are the ways in which the advocates of the reproduction model describe the relationship between education and the world of work. In the final analysis, their major concern is how ideologies and social classes are produced, distributed and maintained in society, but they raise important points which explain, to some extent, aspects of the problems under investigation in this dissertation, especially when they analyze contestation and resistance in schools. The information gathered for the present study favours the second interpretation of the process of reproduction rather than the correspondence one. However, even in this case, a lot of questions remain unanswered.

For instance, how do schools acquire their relative autonomy? What causes educators to be in disagreement with the ideologies they are instructed to teach? How do individuals who have been subjected to a 'distorted' education totally biased

towards the requirements of industry, manage to develop a critical mind which allows them to discover the 'conspiracy' and react against it? To put this differently, through what mechanism do educated people, like the reproduction theorists themselves, become conscious of their 'unconscious', this 'cultured habitus' or cluster of master patterns, to use Bourdieu's terms, which schooling builds in them in a disguised form of neutrality and objectivity?

Furthermore, if knowledge as taught in schools is necessarily biased to serve ruling classes or reproduce existing social inequalities, what other kind of knowledge can replace it, and how is it going to be worked out to avoid other biases in its content and in the ways in which it is imparted? Is the answer to this to be found in a Rousseauian type of education, which Gramsci and other critics describe as too spontaneous and likely to leave the child to develop 'haphazardly by incorporating principles and values chaotically from his general surroundings' (Gramsci, 1975:162, quoted in Partington, 1988:80)? Or is it in 'deschooling' as suggested by Ivan Illich in his work Deschooling Society (1971)?

Theories have their strengths and weaknesses. They cannot exhaust all the questions they set out to address, especially when the issue at stake is the relationship between education and the world of work. What has been attempted so far, therefore, is to identify in existing literature the research findings which can help elucidate the situation under consideration with the aim of using them as sources of inspiration without necessarily conforming to the theses they are built on. Some contributions

made by labour market and social reproduction theories have been seen as quite instructive in this respect but the shortcomings of these analyses indicate clearly that none of them can explain fully, if applied in isolation, the ways in which education relates to employment. The suggestion here, therefore, is to make a synthesis of them all and create a conceptual framework in which this study will be conducted. By synthesis is meant a combination of the different theories just discussed into a single model of analysis which draws on them according to their relevance for the problems under investigation. The next paragraph takes up this point and examines the practicability of such a 'combination' model.

## 2.6 Proposals for a 'Combination Theory'

### 2.6.1 Terminology

While the idea of a combination analysis originates from the insufficiencies observed in the different theories reviewed, the terminology used has been borrowed from David Apter's Politicial Change (1973: 163-176).<sup>2</sup> In this work on politics and economic development, the expression 'combination theory' - also termed 'combination analysis' - refers to the author's deliberate attempt to apply different forms of analysis to the study of phenomena which are thought to lie beyond single theories. For Apter, in fact (1973: 165 and 167),

'combination theories [can be seen as] specific analytical and empirical strategies self-consciously integrated in terms of particular problems. [They are research tools designed to help establish the] degrees to which structure at the macro level relates to the behaviour of micro-components.'

This definition describes quite well the style which is felt

should be adopted for the present purpose. The central point here is eclecticism, that is using Apter's words, 'conscious sensitivity to sets of rules' rather than confinement into the boundaries of 'narrow orthodoxy' (Apter, 1973: 68-69). Through such an approach, it is believed that complex issues like the relationship between education and the labour market can better be understood, as the different forms of analysis in application throw light on different aspects of the problem under study. The question some may ask, though, is how to work out the combination and use it without causing confusions by raising too many issues that would appear difficult to handle in an efficient way. In other words, how are combination theories designed and how do they operate to achieve the expected results? The answer to these requires an explanation of the assumptions underlying a combination analysis.

#### 2.6.2 Assumptions underlying a combination theory

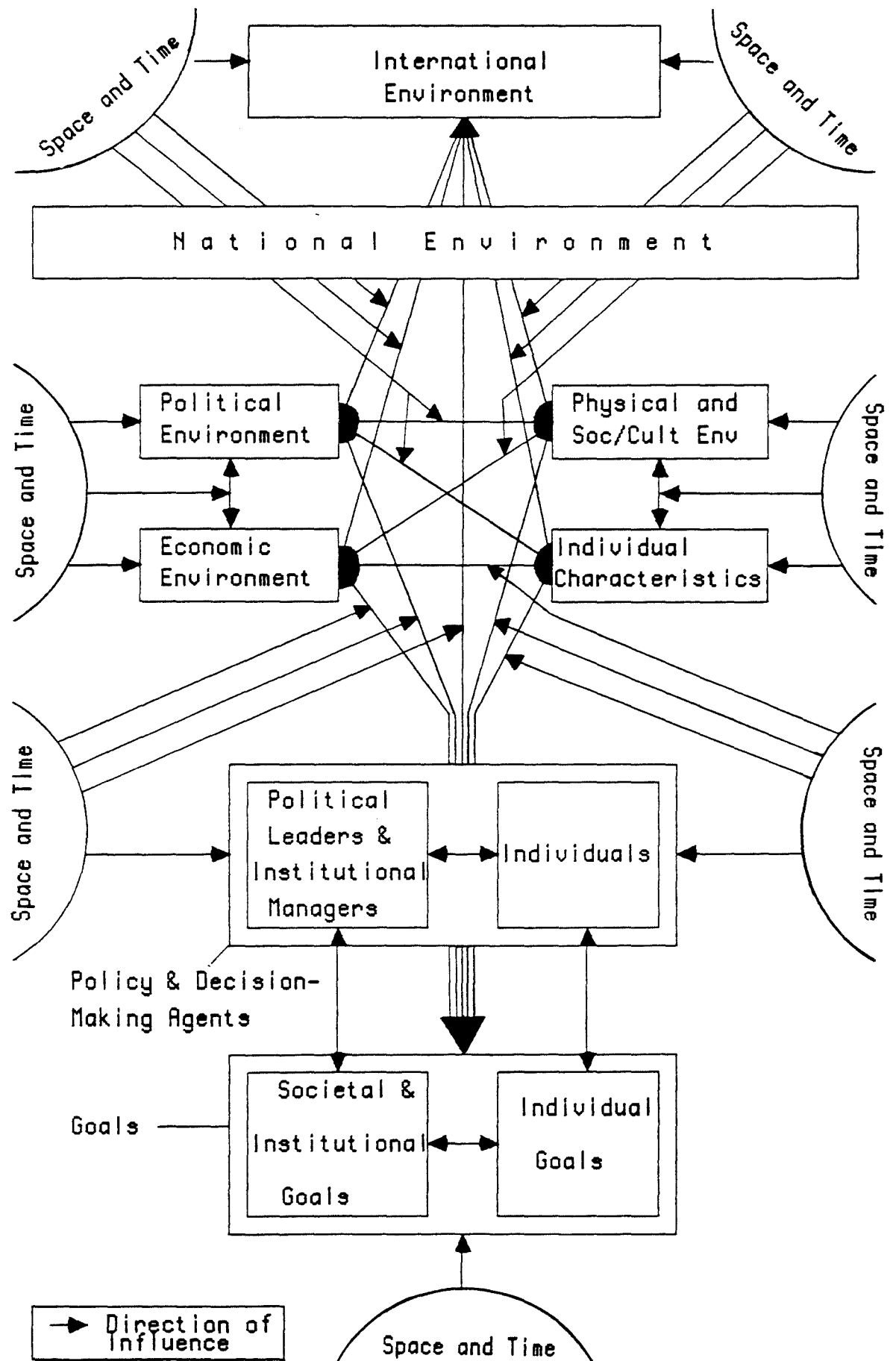
One fundamental idea behind the combination analysis suggested in the present dissertation is that education is a social institution located within a nexus of intricate relations between individuals and members of state or private organizations. As such, it is subjected to a variety of influences exerted in different degrees by those directly involved in its day-to-day running and the consumers of its products. Professional education, in particular, is seen as a good example illustrating this view, as it functions to serve the interests of governments, training institutions themselves, students, parents, employers, and competing groups of practitioners. Given this situation, it is the contention of

this study that different perspectives are needed for a complete description and a clear understanding of the ways in which educational systems relate to the 'outside' world.

It can be argued, for instance, concerning the relationship between education and the world of work, that the issue at stake is one of policy and decision making, that is, choice: choice of strategies to achieve specific societal and institutional goals, and choice of ways to fulfil personal goals and desires. The people involved in such a process comprise political leaders and their collaborators - like institutional managers - as well as individual members of society marked by their personal characteristics and experience of human existence. The policies adopted and the decisions taken are influenced by a number of factors attributable not only to these people, but also to the national socio-cultural, political and economic settings, and to the international environment. All the variables at play in the whole process of policy and decision-making are subject to the space and time factor, which means that they may change over the years from one context to another and thereby cause, in most cases, significant alterations to the relationship between the different agents. Such a complex reality needs to be looked at from different angles to be accessible to the 'inquisitive' mind of the researcher. Figure 2.1 gives a picture of this 'reality' as has just been described.

Another belief underlying the combination model advocated here is that the studies of the relationship between education and society should be flexible in their approaches and remain sensitive to the characteristics of particular situations in

Figure 2.1: Dialectic Forces Influencing Policy and Decision-Making



individual countries. By this is meant that researchers should be open-minded instead of sticking to the one-sided views they hold from academic disciplines. It does not seem efficient, when dealing with complex issues like the one at the heart of the foregoing debate, to behave like ostriches and continue to 'bury our heads in the rigours of science while the war of values is upon us', to paraphrase Lasswell (1950:151)<sup>3</sup>.

So far, in the literature, the major concern of most educationalists appears to have been the search for a paradigm, that is, in Kuhn's sense, a 'scientific theory encompassing the entire constellation of beliefs, values, techniques and so on shared by the members of a given community' (Kuhn, 1970:173). In this context, many theorists have treated education as a homogeneous undertaking organized the same way for the same purposes everywhere in the world, even though the bulk of the data used in their works consist of facts recorded in the United States of America. In so doing, they have created rigid typologies of models describing the relationship between education and the 'outside' world in a decontextualised manner and in static terms. Such models are both atemporal and ahistorical, that is, they remain practically insensitive to the particularities of individual countries and to the changes that may occur in these particular characteristics as the years go by. The present dissertation wishes to fill this gap by setting up a model of analysis which allows different perspectives to be adopted simultaneously and gives due consideration to the space and time dimensions, that is, to regional or country specificities and to the effects of history. Table 2.1 below

Table 2.1: Areas of Focus of the Different Theories

Focus Theory	Norms & Values	Structural Variables	Individual Characteristics	Space & Time
Human capital	*		**	
Segmentation	*	**	*	
Screening	*		**	
Reproduction	**	**	**	
Combination Theory	**	**	**	**

\*\* Main areas of focus

\* Other areas of focus

furnishes a summary of the major areas of focus of this model in comparison with existing theories; the following expressions appearing in it are used to mean:

norms and values: the principles and beliefs underlying the behaviour of individuals and institutions.

structural variables: the organizational and administrative characteristics of educational and training institutions and the labour market.

individual characteristics: personal traits and all other factors relating to people.

space and time: all variables attributable to the physical and historical environment of institutions and their members.

These four elements which constitute the main areas of focus of the study are the units of analysis central to the foregoing debate. Their treatment in existing theories is found limited because they have been discussed in deterministic terms without much emphasis on their dialectic relations and the changes that may occur in them. For instance, the principle underlying human capital theories can be interpreted as one in which man appears as a 'maximizing' individual who uses education as a means to invest in himself and develop his human skills to get profits on the labour market in terms of productivity and earning. The larger the size of the investment - that is the higher the level of education and training - the greater the benefit and, therefore, the definition of the relationship between education and the world of work should be seen in terms of this correspondence between level of individual characteristics - human skills, for that matter - and educated people's achievement on the job.

The advocates of the labour market segmentation theories have been prompt to identify the missing point in such a single-

mind view and complete it with an analysis of the effects of structural variables. They shift emphasis from skills as individual characteristics to skills as job characteristics bearing on institutional factors. In doing so, however, they themselves tend to ignore the fact that situations evolve and that institutions and individuals in them adapt to what they perceive as the requirements of their ever-growing desires for profit maximization. More precisely, they fail to realize that upward and downward mobility is possible between segments, and that the segments themselves adopt different recruitment and promotion strategies to take account of changes in technology, availability of qualified manpower and a number of other factors influencing national economies and policy and decision-making<sup>4</sup>.

In the Côte d'Ivoire, for example, due to severe shortages of skilled labour force in the early days of independence, some positions in public services which required high-level educational qualifications for managerial and administrative functions used to be filled with workers who had no such intellectual background. In the engineering profession, for instance, as will be discussed later, some technicians were appointed as directors in the central administration or at regional level. Today, by contrast, engineers are competing for these same positions and, in other occupations, the constant spread of unemployment is forcing some degree holders to turn to once low-level education segments for work.

The screening hypothesis also considers, like the human capital theories, the importance of individual characteristics,

but it focuses on the employers and their attitudes towards credentials rather than educated people's skills. This approach appears even more limited than the labour market segmentation ones because it does not provide any explanation of the variables attributable to institutions and to variations in these from one occupation to another and from country to country. It gives little attention to the actual utilization of educated personnel in workplaces and describes recruitment and promotion methods as if school credentials, for being awarded after a series of screening stages, were the only criteria determining selection into employment and posting.

Concerning social and cultural reproduction theories, their idea of an 'infrastructure base' - defined as the system of production - dominating and reproducing itself more or less systematically through a 'superstructure' composed of ideological and repressive state apparatuses sounds deliberately truncated so as to fit in its Marxian or neo-Marxian frame. It is quite illuminating to read all the arguments demonstrating how the reproduction process works, but the reduction of man and human actions to economic determination remains questionable, at least to those people whose primary preoccupation may be other than material wealth. The view defended in this dissertation against such a position is that the institutions set up to help societies and individuals fulfil their goals constantly influence one another and benefit their users in ways which vary according to factors internal and external to these very institutions and to the countries in which they are situated.

Man has often been described in 'one-dimensional' terms,

to use Herbert Marcuse's expression (1968) and alternately defined as homo politicus, homo credens and homo economicus <sup>5</sup>.

It is believed here that 'multi-dimensional' men whose lives and actions are determined by their political, religious and economic environments altogether exist as well. There are even cases of 'liberal' men who conceive themselves as free 'to pursue their own preferences in religious, economic and political affairs' <sup>6</sup> (Held, 1990:42).

Moreover, whether or not 'critical thought' has been lost and man's 'inner life and his consciousness have become contained and determined by technological requirements', as Marcuse (1976) observes in his explanations of the concept of 'one dimensional man' - much to the delight of reproduction theorists - the fact that educated people moving into employment may have different motivations points to the possibility for schools to produce some 'thinking' men still capable of some degree of self-determination. Another argument supporting this point is that the 'products' of schools, particularly highly qualified scientists, technologists and managers, are those active workers who become innovators and introduce new technology and new ways of performing certain tasks into workplaces. This would not be possible if the agents of such innovations were individuals just trained to fit passively into a production structure on which they could not exert any influence of any kind.

Besides, the existence of discrepancies between levels of qualification and job structures clearly indicates that the relationship between education and the labour market cannot be

reduced to a simple reproduction thesis. It looks rather more appropriate to describe the situation as one in which some dialectical forces are at play and make both sides act upon each other. In this case, it may be more rewarding to examine it from different perspectives, as has been argued so far, and to try and identify the effects of the major factors characterising it rather than limiting attention exclusively to elements which can help confirm individual theories. Here follows a summary of the ways in which this approach can be articulated:

1. Education is a social institution set up in a complex network of socio-economic and political relations between people, organizations and countries;
2. The ways in which it is used or functions vary according to the nature of the particular socio-economic and political goals it is meant to serve at individual, institutional, national and international levels;
3. The pursuit of such socio-economic and political goals is based on ideologies which are themselves embedded in wider national and/or international patterns of thought which may or may not change over time;
4. In this context, policy and decision-making processes in the day-to-day running of institutions are subjected to a multitude of dialectic forces resulting from the interplay between these institutions and their socio-economic and political environment;
5. Therefore, a study of educational and training outcomes, seen as the relation between schooling experience and achievements in the 'outside' world, should seek to establish how the most significant components of the socio-economic and political network influence events inside and outside education and training institutions.

It is the contention of this dissertation that this complex undertaking requires the application of a combination approach focusing on such units of analysis as those under discussion in the present paragraph. The question arising about this is how to design such a model and make it work. Attention will now be turned to this issue.

### 2.6.3. The design and operation of a combination theory

The design of a combination theory requires data on the problem under investigation. It is the nature of this problem and the data collected for its examination which determine what combination is most suitable for the purpose of the tasks to be performed. As Apter puts it (1973:170), 'combination theories... do not exist in the abstract. They must be designed for a particular task'. Under these conditions, different situations need different kinds of combinations. In Apter's own study, for example, the model chosen draws on sociology, psychology, anthropology, and political economy, as the author's concerns centre around individuals, 'national societies' and organizations.

The other elements contributing to the design of a combination theory are the units of analysis. They constitute the 'main areas of focus of the study and, as such, they help find in the theories brought together in the combination what arguments can be borrowed to deal with particular issues. They are described in Apter's work as 'micro' and 'macro' components of the situation under consideration and comprise normative, structural and behavioural factors (Apter, 1973:168), that is, people and institutions' individual characteristics, role relationships, ideologies, and concepts like tradition and modernity, and democracy and authoritarianism. Like in sociology, psychology, anthropology or political economy, quantitative and qualitative data have been gathered on these variables by means of questionnaires and interviews, observations, documentary surveys and experiments (Apter,

1973:158-165).

For the present dissertation, interest in the theories selected derives from their individual contributions to the debate over the relationship between education and the labour market. As the areas of focus consist of norms and values, institutional variables, individual characteristics and space and time, some arguments developed in these theories have been found useful and worth bearing in mind - except in the case of the latter variable. The combination model suggested for this purpose, therefore, comprises human capital theories, the labour market segmentation approaches, the screening hypothesis, and social reproduction theories, as illustrated in table 2.1. Concerning the methods adopted for data collection and analysis, their discussion requires a review of the controversies over the value of quantitative and qualitative approaches to evaluation research. This is the purpose of the next chapter.

#### NOTES

1. Mincer (1984:196) identifies four categories of investments in human capital: 1) pre-school investments (e.g. resources in child care and child development), 2) investments in formal school education, 3) investments in working life (e.g. job choice, on-the-job training, labour market mobility, and work effort), and 4) investments in everyday life (e.g. investment in health and other maintenance activities).
2. Lê Thành Khôi (1986) prefers to use the term 'general model of analysis' of education. Like Apter, he advocates a 'general theory' that attempts 'to define the meaning and role of education from empirical analysis' by focusing on 'all dimensions of society and economy, of ideas and values, of social and political structures, and of education'. He thinks that philosophy and sociology of education are complementary, rather than mutually exclusive, and that they can be combined in a 'general theory' for research in education.

3. The exact sentence quoted reads as follows in Lasswell's work (p.151): 'Those who excel in naturalistic analysis may proclaim the virtues of "objectivity" and refer with condescension to those who imagine the world is interested in the lengthy elaboration of their system of private preferences. The specialists on normative styles of speech may refer disparagingly to the absence of ethical fervor of *the ostriches who bury their heads in the sand of science while the war of values is upon us*' (emphasis added).
4. Other illustrations of these phenomena appear in Ducray (1979), Foster (1965 and 1980), Levin and Rumberger (1985), Little (1980, 1983, 1984); Windolf (1984).
5. The English for these terms are 'political man', 'religious man', and 'economic man'. They are used in the present study to refer to the 'forces' which prompt people into action. The *homo politicus* hypothesis, developed by ancient Greeks, conceives of the 'ideal' man as an 'active citizen whose very being is affirmed in and through political action' (Held, 1990:36). For the Greeks, citizenship meant 'participation in public affairs... by giving judgement and holding office' (Held, 1990:17). *Homo politicus* is, therefore, an individual whose actions are mainly, if not solely, determined by political factors.

The idea of *homo credens* has been put forward by Christians in reaction to the Greek *homo politicus*. It defines man as a 'believer' whose preoccupation is to find ways to 'live in communion with God' (Pocock, 1975:84). In this sense, man's life is determined by a spiritual power rather than by a secular one, and he lives almost exclusively to fulfil God's will.

The term *homo economicus* describes man as being determined by economic interests, that is, by his concerns for material well-being or material power. To all these distinctions of man, the reaction in this dissertation is that man is altogether political, religious, and economic, though at a particular point in time he may be one more than the others. Besides, it is also believed here that human actions are governed by other forces like emotions, feelings, self-interest as well as altruism, and desires for security, love, respect (as expressed by Maslow, 1950, in his definition of 'basic needs'), justice, independence or freedom (as claimed by 'liberal' movements and atheistic philosophers like Sartre and Nietzsche).

6. This is not to say that 'liberalism' means absolute freedom from all sorts of influences, but that this reaction against the dominance of unchallenged absolute powers demonstrates the existence in man of a 'critical mind' which remains unassailable and allows him to transcend 'egoistic' preoccupations or 'enslaving' powers for more philosophical and ethical actions meant to benefit humanity as a whole.

## CHAPTER THREE

## METHODOLOGICAL CONSIDERATIONS

Choosing a method for data collection and analysis in evaluation research is as difficult an undertaking as defining a conceptual framework for the explanation of the relationship between education and the world of work. Like the economists, the sociologists and the psychologists who have attempted to describe the ways in which education relates to employment, the theorists and practitioners in the field of evaluation have developed a variety of methods to carry out their tasks. The concept of evaluation itself is interpreted differently, too, and the role of the evaluator is seen in terms which vary from one methodological approach to another. The controversies over these points are worth reviewing before deciding to follow a particular model in an evaluation research, and to do this, the different forms of evaluation must first be examined. This is the aim of the present chapter.

### 3.1 The Different Forms of Evaluation

Using House's article on the "assumptions underlying evaluation models" (1978), Kelly's analysis of "the politics of meaning and policy inquiry" (1987) and especially Guba and Lincoln's examination of "the countenances of fourth-generation evaluation" (1987) and Guba's observations on "the context of emergent paradigm research" (1985), current evaluation practices can be classified in four 'generations', identified as the technical model, the descriptive or Tylerian model, the

judgemental or neo-Tylerian model, and the responsive model.  
(Guba and Lincoln, op. cit. pp 203-230).

The technical model, that is, the first generation, is concerned with measuring effectiveness by matching outcomes with predetermined sets of criteria and norms. In this sense it is meant to establish, for instance, if 'pupils measure up to the "specifications" that the school has set' for admission to a particular course or for graduation, and if individual teachers and schools provide their pupils with 'good quality' learning (as can be measured by the pupils' test scores). Such an evaluation uses measuring instruments developed by psychologists in the form of intelligence, aptitude, and achievement tests (Guba et al, 1987:203). The methods of data collection and analysis consist of surveys or experimental designs, and the results of the evaluation research are reported quantitatively using statistical calculations and diagrams. One typical form of this model is what House refers to as 'systems analysis', to indicate that it is rooted in the systems perspective underpinning organization theory and 'scientific' management (House, 1978: 4, 7 and 12). Rivlin is quoted as a proponent of this approach.

The second generation, that is, the descriptive or Tylerian model, originates from an evaluation project undertaken by the Bureau of Educational Research at Ohio State University, with Tyler as the major evaluator. The project (launched in the late 1930s and completed five years later by 1942) was meant to furnish information on the extent to which the objectives of new curricula developed and implemented in a number of secondary schools were achieved. It was a kind of formative evaluation

(though the results were published after the implementation phase was completed) intended to describe the strengths and weaknesses of the programmes in order for the schools to be able to make appropriate refinements and revisions. Some forms of 'measurement' were used but norm and criterion-referenced tests constituted other devices for data collection and analysis. House refers to this model as 'behaviourial' objectives; and considers Popham in addition to Tyler, as one of its proponents (op. cit. pp. 4 and 12).

The third generation, the judgemental one, adds to the technical and descriptive functions of evaluation that of judgement. The need for this third dimension derives from the fact that educators expected the evaluator to do more than describing. As Stake (quoted by Guba et. al., 1987:206) puts it:

'the specialist sees himself as a "describer", one who describes aptitudes and environment and accomplishments. The teacher and the school administrator, on the other hand, expect the evaluator to grade something or someone as to merit. Moreover, they expect that he will judge things against external standards...'

The forms taken by this model include Stufflebeam and Alkin's 'decision making' approach, Scriven's 'goal-free' approach, Eisner and Kelly's 'art criticism' or 'connoisseurship' approach, Provus' 'discrepancy evaluation' approach, and Stake's 'countenance model' (House, op. cit. pp. 4, 5 and 12; Guba et al., op. cit. p. 207). These different approaches were developed from the late 1960s (1967) till the late 1970s (around 1979). The difference between them lies in their definition of the evaluator's role as a 'judge'. The 'soft' version of this corresponds to the 'decision-making' approach (Stufflebeam et

al., 1971) whereby the evaluator limits his role to the supply of information (descriptive and judgemental data) and leaves this for use by decision-makers (i.e. the administrators and managers), in order not to involve himself in political matters or substitute himself for the very persons he serves. On the 'strong' or more assertive side comes the connoisseur model (as in Eisner, 1979 and 1981) which, according to House, operates the same way as art and literary criticism, and consists in critically examining programmes and approving or disapproving of them (House, op. cit. p. 5). Questionnaires, interview surveys and site visits are among the methods used by one or the other of the different approaches for data gathering.

The fourth and most recent generation, that is, the responsive model, differs greatly from all previous approaches in that it focuses on, and remains sensitive to 'the claims, concerns, and issues put forth by [the] audiences who are in some sense involved with the evaluation' (Guba et al, 1987:208). It is a model in which evaluation is seen as a negotiation process allowing for the views of all participants (both agents and beneficiaries) to be equally assessed and taken into account in the analyses made. The value differences between these people are considered important factors that need to be revealed if consensus must be reached on the outcomes of the evaluation practice. The proponents of the model describe it as 'responsive evaluation' (Stake, 1975), 'illuminative evaluation' (Parlett and Hamilton, 1972), 'naturalistic inquiry' (Guba, 1978; Guba and Lincoln, 1981) or 'naturalistic evaluation' (House, 1980), 'utilization-focused evaluation' (Patton, 1978), 'democratic evaluation' (MacDonald, 1974), and 'adversarial evaluation'

(Wolf, 1975).

The differences between these versions of the fourth generation model still need clarification by their authors. Jacob has attempted to furnish some explanation of the situation in her article 'Clarifying Qualitative Research: A Focus on Traditions' (1988) arguing that 'the confusion arises from discussing qualitative research as if it is one approach' while 'different authors, drawing from different traditions or trying to present a transtradition approach, have focused on different features' (Jacob, op. cit. pp. 16 and 23). She then goes on to describe the 'traditions' from which qualitative research has emerged, namely human ethology, ecological psychology, holistic ethnography, cognitive anthropology, ethnography of communication, and symbolic interactionism (Jacob op. cit. pp. 17-19). However, she fails to indicate which qualitative approach is rooted in which tradition and, therefore, leaves the confusion unclarified.

Despite the variety of terms used to identify the responsive model, all the different forms in which it appears share some common features. The following constitute their major traits as seen by Parlett (1985, pp. XIV-XV). They are naturalistic, i.e. evaluation takes place in 'natural settings' rather than in 'contrived, laboratory, or experimental [ones]' (Guba, 1985, p. 102) holistic, i.e. the evaluators attend to the various contexts of the programme being evaluated and carry out their investigation from different perspectives, responsive, i.e. sensitive to the different value positions of the participants, heuristic, i.e. the research design is continuously refined

during fieldwork rather than being determined once and for all at the start of the evaluation process, and interpretative, i.e. clarifying (or 'illuminating') the complexities inherent to the programme under examination. A final major characteristic of the responsive approaches is their extensive use of qualitative data to the exclusion, in many cases, of any forms of quantification (2). A summary of the major shifts in evaluation research is provided below, focusing on the most significant differences between what appears in the literature as the quantitative versus qualitative, or the positivistic/phenomenologist dichotomies.

### 3.2 Positivism versus Postpositivism

Positivism and postpositivism are used here to refer, respectively, to the technical, descriptive, decision-making, and goal-free models of evaluation on the one hand, and to the judgemental (excluding decision-making and goal-free) and responsive models on the other hand. The major changes from the first group to the second can be found in their philosophical base, their perception of the evaluation task, their focus, their definition of the role of the evaluator, their methods of data collection and analysis, the outcomes of the evaluation process, and their political ramifications. These points of divergence will be examined successively.

#### 3.2.1. Change in the Philosophical Base of Evaluation Research Models

The first two generations of evaluation research - the technical and descriptive or Tylerian models - are described in

the literature as founded on positivism, a philosophical doctrine initiated by Saint-Simon (1760-1825) and developed by Comte (1798-1857), his secretary, and Durkheim (1858-1917). As Scruton explains in A Dictionary of Political Thought (1983, pp. 85 and 364), the term 'positive' here means 'that which really exists and can be observed, as opposed to the dubious fancies of theology and metaphysics'. It is a term 'used to denote knowledge and understanding which confines itself to the actual empirical world, and refuses to transcend it in search of hidden causes and final ends'.

Positivism, as defined by Comte, holds that 'all genuine human knowledge is scientific and methodological, and no question that cannot be answered by science has any answer' (Scruton, op. cit. p.85). For positivists, 'social facts exist independently of the individual', i.e. reality exists 'outside' human beings and can be discovered only by scientific research. The evaluators following this school of thought believe, therefore, that 'evaluation information' needs to be 'scientifically objective' (House, 1978, p.6), hence their insistence in starting evaluation practices with a clean predetermined hypothesis and research design, their use of 'objective' instruments like tests and questionnaires, their analysis of data by means of quantitative techniques like statistical calculations, and their concern for quantitative outcomes which remain reproducible and verifiable.

The adoption of this 'scientific' model by researchers in the field of education is linked to the 'scientific management' movement which attempts to find ways to improve programmes by

increasing accountability, efficiency, and quality control. In this context, evaluation has something of a watchdog function', to use House's expression (op. cit. p.6). The methods developed in this framework are meant to collect information for use by administrators and managers. Cost benefit analysis is a good example of 'managerial evaluation'. No wonder, therefore, that international agencies (like the World Bank) assisting developing countries in their efforts to improve their educational systems have almost exclusively resorted to this method.

The other end of the dichotomy in the evaluation models, the postpositivistic models, rejects the 'scientific' perception of reality (3). Based on phenomenology, as can be traced back to the German sociologist Max Weber (1864-1920), postpositivistic models conceive of social phenomena as identifiable 'in terms of a "sense"...attached by social beings to all their actions, and which is the true object of social knowledge' (Scruton, 1983:491). Weber, the most prominent defender of phenomenology, explains this view of the world as follows (Scruton, op. cit. p.491).

'"Sense" can be understood only by Verstehen (German for 'understanding'/meaning), which therefore becomes the distinguishing mark of social sciences. However, Verstehen needs to be supplemented by causal explanation, and both require a theoretical model or ideal type [that provides the language for the description of social reality and suggests causal explanations of this reality]'

For Weber, it is 'the neglect of the peculiar categories through which we observe and create our social behaviour [that has] been responsible for many of the failings...in the older theories of class' (Scruton, op. cit. p.491). Like all phenomenologists, he considers that

'the human being [is] a person, acting from reasons, and in accordance with fundamental values [and, therefore,]

without 'understanding', no social reality is perceivable, since its lived essence lies outside the observer's grasp.'

Justification rather than rational explanation is what phenomenologists are interested in. Postpositivistic specialists of evaluation adopt these ideas in their approaches to educational questions. As Parlett explains focusing on his illuminative evaluation (in Richards, 1985: xiii), their model of evaluation is characterised by:

'its custom-built research strategy, its relative lack of interest in formal statements of objectives, its scepticism concerning elaborate statistical procedures, its willingness to employ so-called "subjective" methods..., and its primary interest in the "informing" function of evaluation, rather than the more usual "inspectoral" or "grading" functions.'

### 3.2.2. Some other major changes in evaluation research

Given the fundamental shift in the philosophical base of evaluation models, other changes appear at different levels in the field. Many of these have already been mentioned in the paragraphs dealing with the various evaluation methods but there is a need for a broad summary here. One first change can be noticed in the focus of evaluation research: in place of objectives, decisions or effects, attention is now geared towards value differences and cultural variables in a particular context. Another change occurs in the meaning of evaluation: it is now seen as the interpretation in context of reality as constructed in varied forms by the people involved in a particular case rather than measurement, description or judgement. A third change consists in identifying the evaluator, not as a technician, a describer, or a judge, but as a mediator/negotiator, a collaborator, a learner/teacher, a reality

shaper (Guba and Lincoln, 1987: 220) and an interpreter (Parlett, 1985: XV). The fourth change appears in the kind of audience evaluation is meant for: with positivists, the major audiences were economists, psychologists, administrators and managers; in the case of postpositivistic evaluation models, the outcomes are also expected to serve the interests of consumers, teachers, the general public and practitioners, i.e. in brief, all stakeholder groups (Mark and Shotland, 1985, Weiss, 1986). The fifth change concerns the methodology used by the evaluators: in place of the hypothetico-deductive approach of 'scientific' methods requiring reliable (i.e. internally consistent and stable over time) measuring devices, preference is now given to inductive methods allowing for constant readjustment of the evaluation design and the research instruments to new developments in the situation being investigated. The sixth major change relates to the evaluation outcomes: the positivists are concerned with efficiency and 'scientific truth' (i.e. 'objective' reality as can be observed by a 'competent' researcher using reliable instruments), whereas the postpositivistic evaluators' findings consist of reality as interpreted by those involved in the evaluation process (objectivity here meaning 'being free from bias or distortion' rather than 'intersubjective consensus' among peer researchers (House, 1978, pp. 7 and 8)). One final change occurs in the political ramifications of evaluation research: moving from its 'watchdog' function in the scientific management movement, as noted above (p. 7), evaluation has now taken on a political role since, as Guba and Lincoln express it, (1987:216):

'value differences that result in different constructions cannot be resolved on rational bases alone, but only through political negotiation.'

It must be noted here, however, that the political nature of

evaluation does not turn evaluators into politicians. Rather, it is recognition by evaluators of the political dynamics of educational programmes and of the need to include this reality into the evaluation process. The evaluator (i.e. the professional evaluator and universities) is still encouraged to retain his/her stance as a technician and preserve 'the symbolism of neutrality' (Palumbo, 1987:20).

### 3.3 Eclecticism and Other 'Reconciliation' Models

The controversy over the value of the positivist and postpositivist approaches to evaluation research has led some evaluators to suggest 'middle ground' positions, to use Miles and Huberman's expression (1984:23). At the level of conventional 'scientific' evaluation, attempts have been made to reduce biases in the research design and to take account of time and contextual factors. The methods developed for these purposes include quasi-experimental designs (Campbell and Stanley, 1966; Cook and Campbell, 1979), unobtrusive measures (Webb et al., 1966) or nonreactive measures (Webb et al., 1981), multiple regression, multivariate analysis, and path analysis in modern statistics (Guba, 1985:98). For Guba, though, these approaches cannot work because they are still concerned with 'general laws'. As he puts it (op. cit., p.99):

'[These approaches] ignore the fact that phenomena are not only influenced by the factors of time and context but derive their very meaning from them. It is this order of interdependence that statistics cannot now and never will be able to handle.' (Emphasis in original).

Other eclectic approaches have emerged from the postpositivists' side. Calls have been made for a 'rapprochement' (Morgan, 1983), 'reconciliation' (Trend, 1979), 'mix and match strategies'

(Patton, 1982), 'ecumenical approaches' (Miles and Huberman, 1983, 1984a and 1984b; Miles, 1979), and a 'dialectical synthesis' (Cook and Reichardt, 1979). In practical terms, suggestions have been made for an integration of fieldwork and survey methods (Sieber, 1973) and a systematic way of displaying evaluation results - for instance, by means of networks (Bliss et al., 1983), charts, matrices, codings, diagrams, maps, etc. (Miles and Huberman, 1984b). The latter authors also believe that there is a need for ways of improving fieldwork procedures (i.e. to make them more methodical) and the methods of data analysis. To all these suggestions, Guba and Lincoln answer categorically that it is just impossible to effect a compromise between conventional evaluation methods and new ones. They see the main reason for this in the fact that (Guba and Lincoln, 1987: 227-230; Guba, 1985: 100):

'Empirically, there is still no evidence that positivist inquirers [understand the role of values] and do take them into account; we see no reflexive accounts in their reports, and the reconstructed logic of their inquiries, which they present in their methodological sections, still hews the traditional line. Further, admitting to the penetration of values to this level is superficial at best; it betrays no insight into the possibility that the theory and the method may also be value-based, that contextual values may impinge to prevent the facts from "speaking for themselves", and, worst of all, that there may be resonance or dissonance among all these value positions.'

Hurst (1987:70) makes an even more trenchant criticism of the solutions adopted by some postpositivists; for him,

'Imaginative, efficient and internally cogent forms of displaying evidence and analytical results do not address the problem of validity [for which positivists reject qualitative evaluation]. Smart-looking displays might aim at and succeed in convincing the reader that a well organised display of data is ipso facto honest, externally valid and represents a replicable exercise. But in science the medium is not the message, and the method of display is not equivalent to the method of testing.'

These objections to eclectic models leave the controversial debate unsettled without even pointing to any direction as to the ways in which evaluation research might develop in the future. As things stand now, it is up to researchers to define their own position according to their philosophical stance in social sciences. Maybe practice, rather than theoretical considerations, will help find a balance between the sets of models offered so far in the literature. Whatever the form this solution may take, reliability (of evaluation instruments) and validity (of findings) will most possibly continue to serve as important criteria for meta-evaluation, and this will require qualitative researchers to furnish a clearer explanation of their research procedures regarding their research design and their data collection and analysis. As Hopkins et al. put it (1988:76): 'The acid test for using a particular technique is its ability to contribute to the validity and trustworthiness of outcomes'.

For the purpose of this study, preference has been given to a middle ground position heavily biased towards qualitative methods and similar to Parlett and Hamilton's illuminative evaluation model. Attention will now concentrate on the practicalities of this approach.

### 3.4 Fieldwork Methods

#### 3.4.1 Method selection

One important question raised earlier on and still remaining to be examined is how data collection and analysis are organized when using a combination theory. To answer this now,

further comments need first be made concerning the debate over methods. Besides the issue of validity and reliability which opposes positivists and phenomenologists, another central point in the controversy is whether or not theories tie their users to specific methods. That is, for instance, can an educational researcher adopting a positivist stance apply a qualitative method of data collection and analysis? The hard-liners on both sides of the polemical debate, especially the phenomenologists Guba and Lincoln (as in Fetterman, 1988:89-115), believe that theories constrain method selection and that any attempt to break the links between these two elements can only produce meaningless results. The advocates of eclectic approaches agree to the existence of logical linkages between paradigm and methodology, but they argue that these do not preclude methodological flexibility. For them, not only is it possible for researchers to make combinations, but it is even desirable that they should do so because that is the way in which they can be 'situationally responsive' to match research methods to the nuances of particular evaluation questions and to the idiosyncrasies of specific decisionmaker needs' (Young and Comtois, 1979, quoted in Patton, 1988:121).

The thrust of the arguments thus made by the defenders of eclecticism is that researchers should feel free to use the methods of data collection and analysis they think are most appropriate for their purposes and for the particular context in which they carry out their studies. As Patton puts it (1988:128):

'The belief that evaluators must be true to only one paradigm or the other in every situation is an extremely narrow and limiting perspective that underestimates the

human capacity for handling ambiguity, duality, and mind-shifts...Evaluators would do better to worry about understanding and being sensitive to the world views and evaluation needs of their clients than in maintaining allegiance to or working within one perspective.'

Such is the position defended in the present dissertation concerning combination theories. The same assumptions underlying the combination approach adopted as a frame of reference apply to the selection of data gathering and analysis methods. It is not the theories included into the combination which systematically determine the choice of methods, but the research questions under investigation, the setting of the study, and the outcomes expected by all the parties involved. Data in this context is what helps achieve the stated goals, that is, a clear understanding of the situation under consideration, rather than preconceived information of a specific kind meant to fit into models. For this reason, different situations require different methods, and this calls for adaptability rather than methodological purity.

In the case of the present dissertation, the middle ground position adopted consists in integrating into field methods, conceived as qualitative for the most part, some elements drawn from quantitative paradigms. In practice, this means that the research design and the procedures used for data collection and analysis share aspects of both quantitative and qualitative traditions. This eclectic approach has been chosen not only because of the conceptual framework adopted, but essentially also for five other reasons: firstly, the aim of this study is to try and elucidate specific questions and explain a particular situation, rather than to test hypotheses and generate

'scientific' rules (hence, the bias towards qualitative methods); secondly, given the nature of these very questions, both quantitative and qualitative data (numerical data, opinions or judgements, etc.) appear as valuable sources of information; thirdly, the time and financial constraints on the study make it necessary to opt for fieldwork techniques which can be applied with some degree of economy (e.g. a questionnaire survey for large samples); fourthly, the academic requirements of the thesis in terms of clarity and conciseness are seen as elements justifying the combination in data analysis and interpretation of such 'verbal' techniques as summaries and comments with some figures and graphic illustrations, as exist in basic descriptive statistics.

To sum up let it be sufficient to say that theories and methods may have logical linkages between them, but the view held in this dissertation is that decisions concerning the selection of fieldwork methods reflect the researcher's epistemological stance. For the advocates of eclecticism and combination models, flexibility and pragmatism are constantly preferred to rigid dogmatism and insensitivity to the characteristics of particular situations. What counts for them is to meet the requirements of their studies as determined by the setting in which these are conducted, rather than epistemological purity. They are more concerned with the actual operation of the models they choose than with the match between these models and individual theories. In this regard the major questions arising relate to the techniques used for the design of research instruments, sampling, data collection, data analysis, and the display of research findings. The next sub-chapter and the first section on data

analysis address these issues in detail focusing on the present dissertation.

#### 3.4.2 Instrumentation, Sampling and Data Collection Techniques

In their description of the organization of illuminative evaluation, Parlett and Hamilton (1972) identify three stages consisting in observing (exploratory stage), inquiring further (focus studies), and explaining (explanatory stage). For them, as is common with qualitative methods in general, these stages are interrelated and the transition from one stage to another takes place during fieldwork as the problems under investigation 'become progressively clarified and re-defined'. This means that the evaluation task is a circular and iterative process involving observation, for familiarization with the setting, inquiries about the issues selected for the study, and data interpretation. Information is gathered by means of interviews, questionnaires, tests, observation, and documentary surveys. Although particular interest is given to qualitative data (e.g. viewpoints and attitudes), quantitative information is not totally excluded. With these characteristics, illuminative evaluation takes the form of an adaptable and eclectic approach, the kind that has been found most suitable for the present purpose. However, given the particularities of this study (a thesis written mainly for academic purposes rather than a real-life evaluation project), its application has required some adaptation, as will now be shown in the discussion of the practical aspects of fieldwork.

The most significant modification needed appears in the overall organization of the data collection and analysis process:

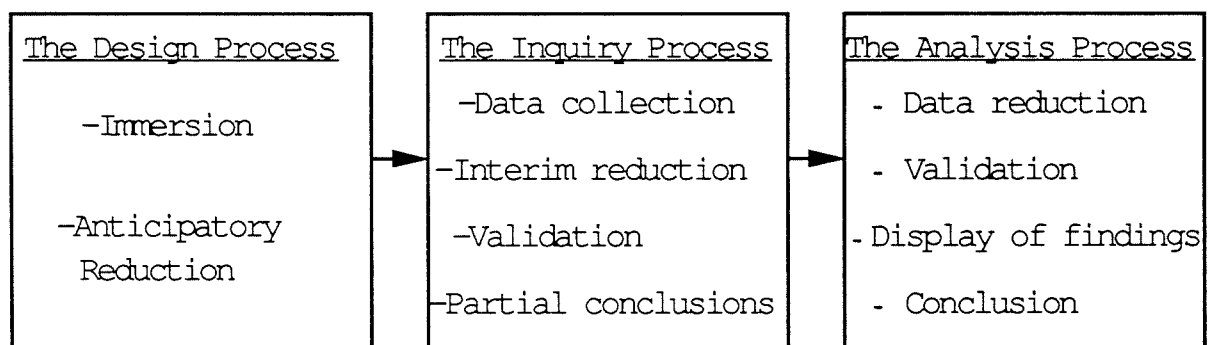
the approach used in this dissertation is linear rather than cyclical. It comprises three distinct stages identified as the design process, the inquiry process, and the analysis process (See Figure No. 3.1).

### The Design Process

This first stage is a preparatory phase consisting of two main activities described as immersion and anticipatory reduction, a terminology borrowed from the literature on qualitative research and particularly from Miles and Huberman (1984:23-25) and Hopkins et al. (1989:64-65). Immersion here means getting acquainted with the setting in which the study is planned to be carried out, that is, in the present case, the training system operating at the Enstp and the environment in which the graduates of this school are utilized. Anticipatory reduction refers to the preliminary attempts to define the area of focus of the study and delimit the inquiry process. These first two major activities, that is, immersion and anticipatory reduction, have been undertaken in two different periods before the actual data collection: once as part of the process leading to the definition of the research questions, the theoretical framework, and the methods of sampling and data collection, and another time within the context of an exploratory survey organized to ensure that the research design and the data (cf. Appendix C.1) collection instruments are suited to the setting of the study. The particular tasks marking each period include:

immersion 1) before the research design: informal talks with some members of the Enstp teaching staff and former trainees, collection and reading of

Figure 3.1: Stages in Data Collection and Analysis



documents on the training system (e.g. the school's annual reports from 1983 to 1987), and collection and reading of research reports on the labour market for higher education graduates and particularly for civil engineers (e.g. research reports by the National Centre for Vocational Training, the Onfp, as in 1980 and 1984; and Ciadfor's monthly bulletins 43, 79 and 86).

- 2) during the exploratory survey: visits to workplaces, informal observations, talks with some members of the engineering profession (both junior and senior members), panel meeting, and documentary surveys.

reduction 1) during the research design: besides the definition of the research questions, the theoretical frame-work, and the methods of sampling and data collection, two other important tasks involved in anticipatory reduction consist in drafting the evaluation instruments and establishing a time schedule for fieldwork and a list of the resources needed.

- 2) during the exploratory survey: review of the research questions, redefinition of categories or chapter headings, reorganization of the structure of the evaluation instruments, final sampling, and adjustment of the time schedule.

It must be explained, concerning instrumentation, that a questionnaire was used together with an interview guide. The former was intended for the graduates belonging to the target

population and the latter for their bosses. These two instruments were chosen for the following reasons: 1) the questionnaire was found more economic in terms of time and financial resources, as it could be distributed to a large population within a short period with the help of some former trainees, 2) the interview was better suited to the employers (i.e. senior civil servants and managerial staff in the private sector), given the status of these people and their preference for face to face contacts and discussions over questionnaire surveys. Besides, interviews could create good opportunities to meet decision makers in the engineering profession and question them as thoroughly as possible on the themes under investigation.

To keep both questionnaire and interview surveys in line with the purpose of the study and to facilitate the analysis of data after fieldwork, they were designed to focus on the same areas of investigation, that is, on the participants' opinion about the quality of the training system operating at the Enstp, their assessment of the relationship between this training system and the labour market, their description of the factors influencing this relationship, and their ideas about the possible ways of improving the situation. To increase the complementarity between both instruments, closed questions were used alongside open-ended ones in the questionnaire, the same way as the semi-structured interview guide was designed.

The techniques used for sampling correspond to what qualitative researchers call purposive (Patton, 1980) or purposeful (Bogdan and Biklen, 1982) sampling, a method consisting in selecting informants on the basis of different

purposes in order to achieve maximum variation and contrasts between them. Given the nature of the questions under consideration in the present dissertation it was found necessary to select the participants in the survey according to their individual position in the social structure of workplaces, their role in policy and decision-making, their experience of the engineering profession in the Cote d'Ivoire, and their involvement in the discussion of matters relating to this profession or to the training of its practitioners.

Thus, with regard to the interview, directors, deputy directors, and heads of department were all identified as important cases. Snowball sampling techniques were used to find out which of them could make specific contributions to particular points in the survey. An analysis of organizational charts also proved useful in this respect (cf. Appendix C.2). As a result, about 60 people were pinned down as key informants to get in touch with and subsequently, 47 of them were interviewed (cf. Appendix C.2). The organizational charts in Appendix C2 illustrate the bureaucratic hierarchies in which they hold their positions.

For the questionnaire survey, the target population consists of all the graduates of the Enstp from 1982 to 1987, that is, a total of 871 engineers and technicians comprising 134 design engineers, 357 technician engineers, and 380 engineering technicians (Enstp, Cfc, 1987 and 1988). As stated earlier in the introductory chapter, these cohorts have been chosen because they constitute the first 'products' of the new training system adopted in 1979 when the Enstp was transferred from Abidjan to its present location in Yamoussoukro.

Even though the school has a record of its alumni, tracing any particular group among these remains a difficult task, as changes in their addresses are not reported, and there is no other institution, besides the school itself, that keeps track of individuals in the various workplaces. Some departments in the public sector do not even establish a detailed list of their technical staff that can reveal at a quick glance such basic information as level of qualification, year of graduation, and professional experience. Under these circumstances, it appeared unrealistic and practically impossible, within the time limits of this study, to stick to the initial idea of involving all members of the target population. On the other hand, sampling could not be carried out in a systematic way to achieve a balance between the different sub-groups (cohorts and levels of qualification) proportionately to their size in the whole population; nor was such a methodical approach found really useful for the purpose of this dissertation since inter-group comparisons in data analysis focus on the larger strata determined by the three levels of qualification in the engineering profession (i.e. the design engineers, the technician engineers, and the engineering technicians) rather than the smaller ones that are defined by cohorts and areas of specialization (e.g. surveying, urban planning, hydraulics, transport, etc.).

The purposive sampling techniques used for the selection of the participants in the questionnaire survey were based on the geographical distribution of the former trainees concerned with the study and on the need to take account of the disparities existing between the different regions of the country in terms

of working conditions. It must be explained here that the Côte d'Ivoire is divided into eight geopolitical areas, namely, the Greater Abidjan area, the South, the South-West, the Centre (or Midlands), the Western Central area, the West, the East and the North. The largest cities of these regions are, respectively, Abidjan (for both Greater Abidjan and the South), San-Pedro, Bouake, Daloa, Man, Abengourou, and Korhogo. Yamoussoukro is in the centre like Bouake but it tends to be cited as a distinct region for being made the political capital of the country. Most public services, especially the Ministries of Public Works and Transport, Housing and Urban Planning, Mining and Industry, and some private enterprises have their regional representations in these cities. The engineers and technicians working in such regional offices feel differently about their working conditions depending on the specific socio-economic and political characteristics of each region. For this reason, it was thought necessary to include samples of each regional group in the survey and efforts were made to send copies of the questionnaire to all of them. The difficulty, though, was that the exact distribution of the former trainees targeted among regions was not known. Approximate figures were often used as the basis for deciding how many questionnaires had to be left with distributors.

The planning of the actual data collection process went through a number of reforms due to unpredictable events like the celebration of the 25th anniversary of the Enstp on 16th and 17th December 1988, and the three-month period spent on the exploratory survey and the refinement of the research instruments (from October to December). Eventually, the most appropriate time found for the beginning of this phase of the study was

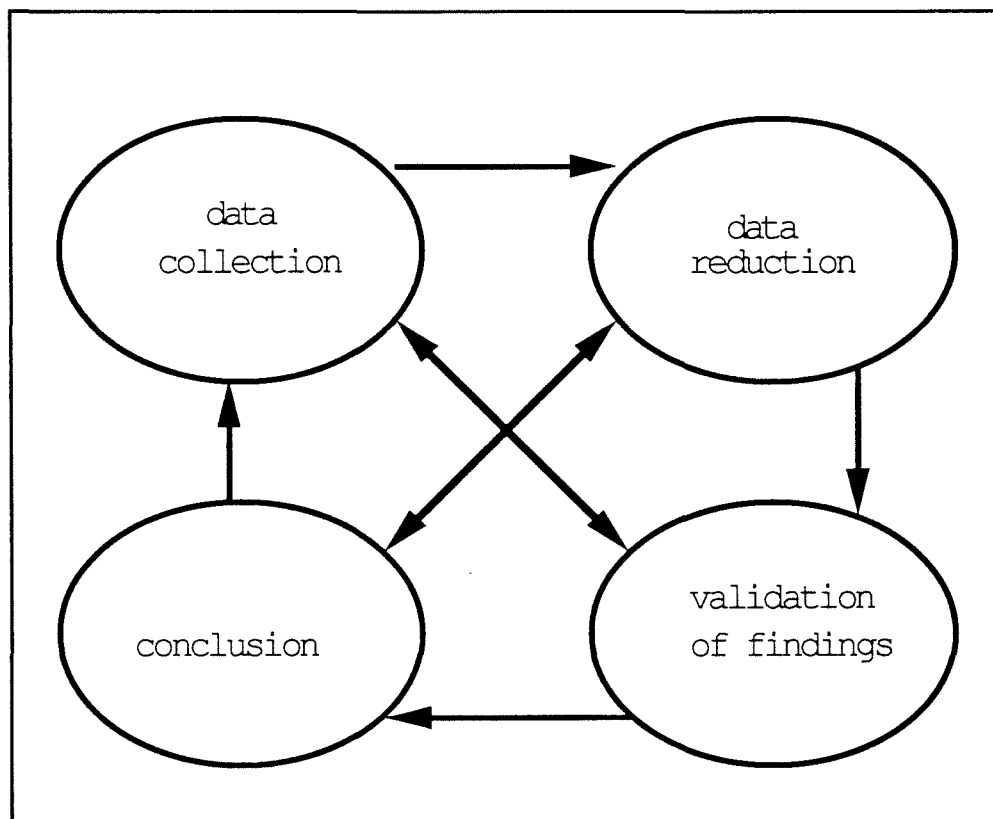
January, when everyone was back to work after the end-of-year celebrations. The financial problems were harder to solve for lack of sponsorship. Besides, fieldwork had to be combined with the performance of academic duties in term time (an average of eight hours' teaching per week), and this, added to the financial constraints, caused the author to limit face-to-face contacts with informants and interview surveys to those regions which were easily accessible, that is: Yamoussoukro, Bouake, Dimbokro, Abidjan, and Abengourou.

### The Inquiry Process

Data collection was not done through questionnaire and interview surveys alone but also through informal observations and the analysis of documents. The style adopted at this stage is an adaptation of Miles and Huberman's 'flow model' of data analysis (1984:23). It is a cyclical process involving four major activities: data collection, data reduction, the validation of findings, and partial conclusions. These four activities are closely related, as is common with qualitative research methods, and form what is referred to in this dissertation as interim data analysis (See figure No. 3.2).

The aim of the interim data analysis is to immerse in data as deeply as possible in order to ensure that all aspects of the issues under investigation are properly and fully covered. In practice, it implies that the information gathered in the field is attentively examined and then used to guide further investigation of particular points. This process is repeated throughout the whole inquiry process every time new data are collected. The term interim data analysis used to describe it

Figure 3.2: Components of the Interim Data Analysis



is meant to distinguish it from the final data analysis which takes place after fieldwork and is treated as the third stage in the overall organization of the study. Its four major components just cited comprise the following specific tasks:

Data collection: interviews (cf. Appendix C2 explains how the interviews were conducted), informal talks, fieldnotes, informal observations, film taking and documentary surveys.

Data reduction: focusing and sorting out data, identifying the gist of these data as well as the emerging themes, and making summaries.

Validation of findings: cross-checking interview notes with fieldnotes and incoming responses to the questionnaire, searching for (in)consistency or biases in responses, and matching observable phenomena (as illustrated in pictures or recorded in fieldnotes) with 'verbal' data.

Conclusion: interpretation of data, i.e. 'reading between the lines' to find out the 'contextual meaning' of particular utterances or the values and beliefs conveyed by such utterances, linking data to theory, establishing which specific points in the information gathered require further clarification, and deciding whether or not some specific actions need to be taken during the course of the survey.

This way of proceeding has the advantage not only of allowing the researcher to keep a check on the validity and reliability of data, but also of turning fieldwork into a detective-like investigation (à la Sherlock Holmes, as Parlett would put it) which illuminates most aspects of the questions under study, sometimes quite vividly, and paves the way for data analysis. Besides, such an approach increases awareness of the

intricacies of qualitative research and of the skills needed to carry out a study of this kind. More comments will be made on this later when analyzing data.

### The Final Data Analysis

The final data analysis differs from the interim data analysis in three ways: first, it starts with data reduction, as data collection is completed; secondly, it involves the display of findings in the form of texts, figures, and diagrams; thirdly, the conclusions drawn are those of the whole evaluation study rather than partial ones. The next chapter explains this further. For now, it may be useful to recall the major points raised so far in the discussion of fieldwork methods.

It has been argued in this chapter that the choice to make is not an either-or one opposing quantitative and qualitative methods, but one that attempts to find ways of compensating for the shortcomings of each individual method in the context of a particular research project. Central to this approach is the idea of eclecticism allowing for pragmatism and adaptability to the specificities of each research project. Quantitative and qualitative methods are seen as complementary rather than conflicting, and for this reason, the combination of the techniques developed in both traditions is admitted as one of the possible ways of making methods more responsive to the requirements of a particular study. This explains the choice of such an eclectic approach in the present dissertation following the model of illuminative evaluation. The analysis of the data collected during fieldwork follows in the next chapter.

## NOTES

1. Richards (1985) refers to this as 'cost-effectiveness' or 'system approach' or 'bureaucratic approach'. He defines it as 'the measurement of the degree to which the objectives of the system are achieved'. For him, such an approach is used 'to suggest new patterns of resource use in order to improve the system's performance'. He calls its users the 'reasonable social scientists' as opposed to illuminative evaluators.
2. Further details on the characteristics of qualitative models can be found in the following: Guba and Lincoln (1981), Nevo (in House, 1986:15-29), Patton (in Fetterman, 1988:116-137), Popham (1975), Smith (in Fetterman, 1988:153-175), Stufflebean and Webster (1980), and Worthen and Saunders (1973).
3. A good account of this opposition between positivists and post-positivists appears in the following materials: Eisner (1983), Guba and Lincoln (1985), Guba and Lincoln (in Fetterman, 1988:89-115), House (1978), and Philips (1983).

## CHAPTER FOUR

SOME PRELIMINARY NOTES ON THE DATA ANALYSIS  
PROCESS AND THE GENERAL OUTCOME OF THE SURVEY

This chapter and the succeeding ones deal with the final data analysis. Their purpose is to present and discuss the major findings of the survey using the theoretical frame of reference described earlier. This particular chapter explains how the whole data analysis has been carried out and provides an overview of the general outcome of the survey. This paves the way to a more profound examination of the findings in chapters five, six and seven.

4.1 The Data Analysis Process

It has been indicated in the preceding chapter that the final data analysis, as opposed to the interim data analysis, constitutes the third stage in the present evaluation study. What needs to be specified now is how this analysis process has been organised and what techniques have been used to handle all the data collected.

The final data analysis comprises four major elements: data reduction, the validation of findings, the display of findings, and the conclusion. These elements involve the execution of the following tasks:

data reduction: data coding and categorizing (to focus and sort out data), identifying the various points raised by the respondents, and drawing summaries.

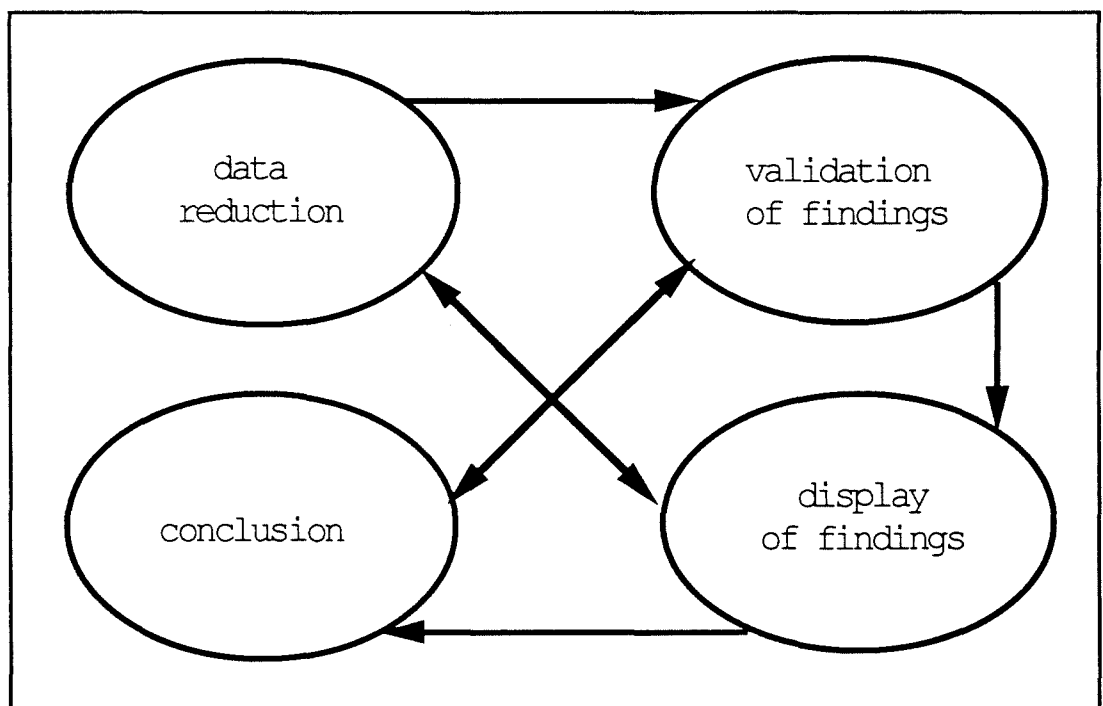
validation of findings: as in the interim data analysis, but with particular attention to the validity and reliability of data, and to the match between these data and the theoretical frame of reference.

display of findings: working out percentages and frequencies, drawing diagrams to illustrate specific points worth stressing, and making quotations, summaries and syntheses.

conclusion: interpreting the findings (i.e. incorporating these findings into the theoretical framework), establishing the scope and limitations of the findings, and defining what actions may be taken to improve the situation under investigation.

These four groups of activities can be undertaken sequentially from data reduction to conclusion through the validation and the display of findings, or cyclically as the case may be (See figure 4.1 below). Such a procedure is used as a measure to ensure sound data processing and a clear understanding of the themes emerging from these data. It is also an attempt to eliminate or reduce biases in data and data interpretation so as to increase the credibility of the findings. Triangulation (consisting mainly in testing data against one another or against fieldnotes and other research findings), data saturation, summaries, intuition (based on tacit knowledge and fieldwork experience), and basic descriptive statistics, constitute a great asset in this analytical technique.<sup>1</sup> The results achieved in this way will now be presented and discussed starting with a brief description of the content of research instruments and comments on the scope and limitations of the findings.

Figure 4.1: Components of the Final Data Analysis



#### 4.2 Content of the Research Instruments

The questionnaire and the interview guide were both designed to cover the four units of analysis mentioned earlier in the discussion of the theoretical framework, i.e. norms and values, structural variables, individual characteristics, and space and time factors. Accordingly, the items making up their content address issues relating to those units in four major areas of investigation: first, the respondents' social and educational background, and their professional aspirations; secondly, the definition of some key concepts lying at the heart of the debate over the relationship between education and work, namely quality of training and competence; thirdly, the impact of the respondents' training on their job performance; and fourthly, the constraints on the relationship between this training and work. One final point was added to these four to collect the respondents' views on the possible ways of improving the situation under discussion. A copy of both the questionnaire and the interview guide can be found in appendix A.

#### 4.3 Scope and Limitations of the Findings

The information gathered needs to be examined bearing in mind the possible effects of some negative factors on the survey. First, as already mentioned in the preceding chapter, the sample population for the questionnaire was difficult to define on a systematic basis, due to lack of documents on the whereabouts of the former trainees targeted. The actual sample size corresponds to the 413 copies of the questionnaire which were sent out. Adding to these the 60 people identified for the interview, the

total figure for the complete sample size of the whole survey becomes 473.

Secondly, the timing of fieldwork caused some confusions. For instance, because the Enstp and the Ministry of Public Works conducted their own surveys in 1986-1987 for the former, and 1988 for the latter, the present one was thought to be intended for either of these institutions, particularly for the Enstp. The researcher's position as a member of the school's teaching staff enhanced these beliefs, despite the explanatory notes inserted into the survey instruments. The negative attitudes expressed towards the first two studies may have jeopardized the chances of this one to win support.

Thirdly, the design and administration of the questionnaire were fraught with three major weaknesses: one was that the respondents were asked to identify themselves plainly, giving their names and addresses. This most possibly exerted a deterrent effect on those who would have preferred to remain anonymous. A second weakness in the design was lengthiness: some respondents found the questionnaire too long to complete, even though they liked the focus of the questions. The other weakness appeared in the administration of the questionnaire: as contacts with most subjects in the target population were made through some of their own colleagues, the distribution and collection of the materials remained out of the researcher's control and, consequently it was practically impossible to keep track of them and make sure that they reached those for whom they were intended. This problem could have been solved by mailing the materials had the respondents been sufficiently motivated to

contribute to the survey.

Finally, the complete closure of the school of technician engineers in 1988 left the graduates of this school so disappointed that most of them were rather reluctant to take part in the study.<sup>2</sup> As a consequence of all these factors, the overall response to the questionnaire survey fell short of what was expected: 93 responses in all, i.e. about 20 per cent of total. The present analysis is concerned, therefore, with these 93 responses, plus 47 formal interviews, and personal notes taken during or after informal discussions with another 35 individual members of the engineering profession.

It may be useful to note that the other two surveys conducted by the Enstp and the Ministry of Public Works were faced with the same difficulties as regards response rates. For instance, in the case of the Ministry of Public Works, there were so few answers to the questionnaire (20 out of 900 to 1000) that no analysis of data was made.<sup>3</sup> The Enstp had a much better result, as 103 responses (i.e. about 16 per cent) were collected out of 650 questionnaires sent out (Enstp, Cfc, 1987:1). Some of the findings of the latter study are similar to those obtained in the present one, despite the differences in sample size. This has been used in the analysis process as a basis for checking the validity and reliability of the elements concerned.

Besides all the factors just described, the interpretation of data requires particular attention to the limitations imposed by the epistemological stance adopted for the present purpose.

As stated earlier in the chapter dealing with methodological issues, this study is seen as predominantly qualitative and, as such, its major concern is to try and illuminate the particular situation under investigation, to sharpen the discussion of the issues relating to it, rather than to establish 'scientific' truth. The concepts of validity and reliability which are commonly used to evaluate research works are defined here as can be found in the literature dealing with qualitative methods, that is:

validity (of research findings): The internal consistency of findings with the highest possible degree of objectivity.

reliability (of research findings): The fit between data and phenomena (what actually occurs in the setting under study), rather than literal consistency across different observations (Bogdan and Biklen, 1982:44).

Interest is first and foremost in the themes emerging from the data collected, whether idiosyncratic or common with most respondents, rather than in the confirmation or refutation of theories. These themes are used for purposes of substantiation in the discussion of the issues raised and their relevance for this is given precedence over their suitability for theoretical considerations. It may sound somewhat 'reductionistic' to set barriers to data interpretation and confine this to the way in which the researcher perceives his study, rather than taking account of the possibility for other researchers to consider it in a wider perspective. This is in congruence with the 'relativist' position adopted here and with the contention that time and space variables need to be included in the units of

analysis. Within this epistemological stance, much credence is given to what has turned out to be known as Nietzsche's 'perspectivism' (Poole, 1990), that is, to the idea that 'all views of the world are the creation of a particular set of interests and a particular location with respect to the world'. This implies that the meaning of the data under examination is tightly linked to the circumstances of data collection and analysis (e.g. the purpose of the study, attitudes towards the researcher and the study, the timing of fieldwork, etc.) Generalizations, therefore, remain tentative rather than definitive, especially as the bulk of the data consists of opinions and judgements. Here follows an account of the main findings of the survey before further comments on their meaning.

#### 4.4 Summary of the Main Findings of the Survey

##### 4.4.1 The Questionnaire Survey

This first section of the report relates to the 93 questionnaires received from respondents. It is a synthesis of the results achieved in this part of the evaluation study, that is, a succinct presentation of the themes emerging from the responses. Attention is focused on crude facts and on areas of significant agreement between respondents. Variances, contradictions, and idiosyncrasies are dealt with later in chapters five, six, and seven. The question numbers in the questionnaire are indicated after the headings, and the results are reported with reference to the whole sample size, called Enstp, and to the three levels of qualification in the engineering profession, known as I for design engineers, IT for technician engineers and TS for engineering technicians.

# I. Respondents' Identification (QQ 0.1-0.4)

Information on the respondents' identity is provided in Appendix B. For reasons of confidentiality, the details given relate only to levels of qualification, areas of specialization, age, professional experience, and sectors of employment. The design engineers are under-represented in the sample mainly because senior managers and most heads of department were not concerned with the questionnaire survey. Sex was not included in the variables, due to the very limited number of women in the engineering profession.

## II Quality of Training

### Respondents Evaluation of the Whole Training System (QQ 1.1 & 1.2)

On the whole, the respondents have a positive opinion of the Enstp's training system. They describe it as 'very good' (9 out of 83), 'good' (38), 'satisfactory' (11), or in various other positive ways (21).

### Respondents' evaluation of their own training (QQ 1.3, 2.13 & 2.19)

Comparing themselves to those who completed their studies at the Enstp before or after them, the respondents make the following remarks:

- 1) with regard to theoretical knowledge, most of them (46) think that they received a training of the same quality, 20 think that their own training was better and 17 think theirs was poorer;
- 2) with regard to practice, comments remain the same as in the case of theory: 43 respondents out of 82 find the quality of their training the same as that of the training received by older

or younger generations, 23 find theirs better, and 16 find theirs poorer.

Referring to the skill requirements of their jobs, 72 per cent of respondents (57 cases out of 79) find themselves well equipped in scientific and technical subjects, but about half of them (37 out of 76) admit having 'some weaknesses' as far as practice is concerned, and 'a lot of weaknesses' regarding general knowledge. Group results show that the I and IT identify their weaknesses as relating more to practical experience (10 I out of 15 i.e. 67 per cent, and 17 IT out of 27, i.e. 63 per cent) than general knowledge (7 I out of 14, and 17 IT out of 29), but the TS see theirs more in terms of general knowledge (64 per cent) than practical experience (35 per cent). Unlike these cases, some 18 respondents (2 I, 6 IT, and 10 TS) consider that they knew all technical and administrative aspects of their present jobs on graduation.

#### The Concept of 'quality' in Training (Q.1.4)

The respondents define 'quality' in training, i.e. 'good' training, as the combination of theoretical knowledge and practice (28 cases out of 67, i.e. 42 per cent), or the provision of training leading to adaptability and problem solving abilities (9 cases out of 67), employability (5 cases out of 67) and various other considerations. The I list adaptability second after theory and practice, and problem solving abilities and employability third. The IT list problem solving abilities second and adaptability third without mentioning employability. For the TS, employability comes second after the theory and practice, and problem solving abilities and adaptability third.

### III Impact of Training

#### Recruitment, posting and promotion (QQ 2.1, 2.2 and 2.4)

As most Enstp graduates are civil servants, the Ministries of Public Services and Public Works constitute almost exclusively the only channels through which they enter the labour market (78 cases out of 88). Selection into a particular job is mainly dependent upon speciality or professional experience (8 cases each out of 39), individual characteristics (7 cases out of 39) and academic achievements or acquaintances (2 cases). Most respondents are not concerned with promotion (59 cases out of 91) but for the few who are (34 in all) it is obtained through 'internal recommendations' (i.e. those made by members of staff in the respondents' workplaces) (28 cases) and connections (5 cases). There is only one case of 'external recommendations'. Among the 88 respondents 43 had an interview on recruitment, but 45 did not.

#### Job Characteristics (QQ 2.7 & 2.8)

a) Duties: The duties fulfilled by the respondents fall in five categories: management, design, execution, inspection, and supervision. The majority of the I consider management and inspection as their primary duties and classify them as 'very important' or 'important', the IT and TS graduates see inspection and execution as their primary duties.

b) Technical versus administrative tasks: The majority of respondents (64 cases out of 88, i.e. 73 per cent) estimate the proportion of their technical tasks, as opposed to that of their administrative ones, at more than 50 per cent: between 90 and 100

per cent in 18 cases, between 70 and 80 per cent in 31 cases, and between 50 and 65 per cent in 15 cases. Nevertheless, group results reveal that this observation is mainly true for the IT and the TS, as 9 I out of 16 give their administrative tasks a higher proportion than their technical ones.

#### Communication skills (QQ 2.22 & 2.23)

Communication at work requires the production of three main written materials in French: reports, business letters, and notices. A large number of respondents say that they are involved in the first two: 70 cases out of 80 for reports and 45 out of 80 for letters. Notices are the concern of only 19 cases out of 78, among whom 8 I (50 per cent), and 10 IT (34.5 per cent) and just 1 TS.

English is not used at all in 51 cases out of 87 (59 per cent). Among the 36 respondents who use it, there are 6 I out of 17, half the IT (17 out of 34), and over two thirds of the TS (28 out of 36). In all these cases, the reading of technical materials constitutes the only language activity mentioned. It is not indicated how much reading is required.

#### Relationship between training and work (Q2.11)

On the whole, the respondents consider that there exist strong links between their training and their present jobs. They estimate these at 80 to 100 per cent in 29 cases out of 91 (i.e. 32 per cent) and 50 to 55 per cent in 19 cases (i.e. 21 per cent). For some 33 cases however, these links are seen as lying below 50 per cent, and for another 10, they simply do not exist.

Further training after graduation (Q2.19c)

After graduation, 69 out of 76 respondents (91 per cent) received some form of practical training. Forty of them received theirs on the job, 16 had a formal training either in the Cote d'Ivoire (8 cases) or abroad (8 cases), and 13 received both formal and on-the-job training in the Cote d'Ivoire.

The concept of 'competence' (Q 2.14)

Competence is defined as comprising the following elements: ability to adapt to new situations (90.3 per cent), initiative and risk-taking (79.6 per cent), quick and efficient execution of tasks (78.5 per cent), ability to apply knowledge (74.2 per cent), practical experience (68.9 percent), self-confidence (61.3 per cent), team skills (49.5 per cent), and effective communication (46.2 per cent).

In all three groups, adaptability appears as the predominant element of competence. It is followed, in the I and IT cases, by initiative and risk-taking abilities and then by quick and effective execution of tasks. For the tS, 'quick execution of tasks' comes second after adaptability, ability to apply knowledge third, and initiative and risk-taking fourth. Practical experience, most interestingly, is listed fifth by the IT and TS and sixth by the I. Effective communication is last in the TS cases and penultimate in the I and IT cases (team skills come last in these two groups).

Employers' evaluation of respondents' performance (Q. 2.15)

The respondents' bosses, referred to here as their 'employers',

see them as 'well qualified and efficient'. This applies to 70 cases out of 85, comprising 14 I out of 16, 26 IT out of 34, and 30 TS out of 35. The grades attributed to these cases in their first two years of employment are 3 or 4 on a five-point rating scale. The common grade is 3 (40 cases out of 88) but the fact that 20 cases got 4 twice and 24 others 4 once (in the second year) corroborates the employers' overall judgement and portrays as many as 44 respondents (half of them) as excellent workers. Virtually all of them (79 cases out of 81) have never received any sanctions.

#### IV Constraints on the Links between Training and Work

##### Attitudes and feelings (QQ 2.5. 3.1 & 3.3)

On the whole, the respondents reacted positively to the news of their appointment to their present jobs. The majority of them (53 out of 81) felt 'happy and very much interested'. These include 10 I out of 17 (65 per cent), 18 IT out of 32 (56 per cent), and 24 TS out of 32 (75 per cent). Nevertheless, among the 81 respondents, 21 were 'indifferent and not much interested' (5 I, 9 IT, and 7 TS), 3 (all IT) had 'no particular feelings', and 2 (IT and 1 IT) were 'worried' because of the importance of the position offered to them.

At the time of this survey, just half of 91 respondents (46) said they felt 'completely at ease' at work, while 39 (43 per cent) of the other half thought they were 'not completely at ease' and 6 (7 per cent) 'not at ease at all'. The first half includes 10 I out 16 (59 per cent), 17 IT out of 37 (46 per cent), and 19 TS out of 37 (51.5 per cent). Among those 'not completely at ease', there are 6 I (35 per cent), 18 IT (49 per

cent), and 15 TS (40.5 per cent). The group of those who did not feel at ease at all comprises just 1 T, 2 IT, and 3 TS.

On the other hand as many as 59 out of 71 respondents (83 per cent) consider that they derive no satisfaction at all from their present jobs. Among these are 11 I out of 11 (100 per cent), 23 IT out of 28 (82 per cent) and 25 TS out of 32 (78 per cent). Only acquaintances made through work, are mentioned by 61.5 per cent of 70 cases as exceptional sources of job satisfaction.

#### Professional preoccupations (QQ 3.2 , 3.10 & 3.11)

If they had the opportunity to change, 31.5 per cent of respondents (26 out of 83) would like to be appointed to a position similar to their present one in another service or company, 30 per cent (25 out of 83) would prefer another profession than civil engineering (medicine or pharmacy), 26.5 per cent (22 cases) would rather opt for another position (in engineering) in another workplace, and 12 per cent (10 cases) would make various other choices.

The vast majority of respondents (87.5 per cent or 77 cases out of 88) are looking forward to opportunities for further studies. These include, 71 per cent of the I (12 cases out of 17), 86 per cent of the IT (30 cases out of 35), and 97 per cent of the TS (35 cases out of 36). Most of them (5 I out of 17, 20 IT out of 31, and 21 TS out of 32) want this further training in their present area of specialization, but some prefer economics and/or management (4 I, 4 IT and 3 TS), and some others engineering technology (1 I, 3 IT and 3 TS).

While the I and IT are mainly interested in engineering or doctoral-level studies depending on the subject, the TS are preoccupied with raising their level of qualification to that of technician or design engineers. In some cases (17 out of 59) such training is perceived as a means to achieve better working conditions (i.e. promotion and better pay), but in others it is seen as a way of increasing one's competence (9 cases out of 59), developing skills for self-employment (5 cases out of 59), and acquiring some prestige (4 cases out of 59).

Most I (10 out of 17, i.e. 59 per cent) and IT (23 out of 33, i.e. 70 per cent) hope to have their training abroad (in Europe or in the U.S.A.) whereas more than half the TS (19 cases out of 34) hope to have theirs in the Côte d'Ivoire rather than abroad (10 cases out of 34). A total of 74 per cent of respondents in all three groups (61 cases out of 82) wish the opportunity for this training could arise as soon as possible.

#### Reward systems (Q 3.4)

In addition to their salaries, about 32 per cent of respondents, comprising 10 I out of 17, 11 IT out of 35, and 7 TS out 37, have been provided with a car by their company or service. Only very few of them are granted other fringe benefits like free lodging (as in the case of 2 I, 2 IT and 4 TS) and some forms of financial rewards (as in the case of 1 I, 2 IT and 4 TS).

#### Difficulties (QQ 3.5 to 3.7)

At the beginning of their career, 80 per cent of the I (8 out of 10), 48 per cent of the IT (12 out of 28), and 43 per cent of the TS (13 out of 30) were faced with 'professional problems'

described as difficulties to adapt to work and working environment. A few IT (3 out of 25) and TS (4 out of 30) also experienced administrative problems related to their recruitment and posting.

The I attribute their difficulties primarily to the socio-political environment characterizing their workplaces (4 cases out of 10) and to their own weaknesses (3 cases out of 10); the IT attribute theirs to their own weaknesses first (8 cases out of 21) and then to the socio-political environment of their workplaces (4 cases out of 21) or to their working conditions (3 cases); the TS blame theirs on their working conditions (11 cases out of 21) and, in a few cases, on the socio-political environment of workplaces (4 cases out of 27) or on their own weaknesses (4 cases).

At present many respondents (36 cases out of 52, i.e. about 58 per cent) still have difficulties at work but they blame them now almost exclusively on their working conditions rather than the nature of the tasks to be performed or the socio-political environment. Besides, a lot of them (63 out of 79, i.e. 80 per cent) believe that there exist obstacles to their professional advancement. The I (10 of 13, i.e. 80 per cent) see these as resulting from the socio-political environment in which they work, but the IT and the TS think that they are caused by their working conditions (9 IT out of 28, and 11 TS out of 27), or by these and socio-political environment together (5 IT and 6 TS), or by the latter alone (5 IT out of 28 and 2 TS out of 27). In fact the socio-political environment is cited as the major factor contributing to 'success' in the engineering profession in the

Côte d'Ivoire. 44 per cent of respondents hold this view, though another 15 per cent (10 out of 66) link such a success to work in parastatals or in the private sector, and another 6 per cent see it as a result of competence and efficiency or connections and wealth.

About half the respondents (26 cases out of 57) also feel that there are obstacles to their personal advancement (i.e. as individuals) but in these cases, it is not made clear what constitutes such obstacles. The item in the questionnaire which deals with this particular point seems to have been misunderstood.

#### The economic environment (Q 3.12)

In 62 cases out of 89 (70 per cent) comprising 8 I out of 16, 28 IT out of 37, and 26 TS out of 36, it is reported that due to the financial crisis which has crippled the economy of the Cote d'Ivoire, there are shortages of equipment in workplaces.

#### v. Suggestions for Improvement (QQ 4.2 to 4.4)

Many respondents failed to react to the part of the questionnaire inviting them to make suggestions for the improvement of the relationship between training at the Enstp and the labour market. The main reason for this, as can be inferred from observations on the survey, is the conviction most former trainees have that their views will hardly ever be taken into account by decision-makers in their profession. The IT particularly see no reason why they should contribute anything to this point, as their school has been closed down and they are not involved in decision-making in their workplaces.

However, from the few answers received from about half the total sample, some important ideas can be singled out for particular attention when examining the ways in which the links between training and employment could be improved. Firstly, with regard to training it is suggested that:

- 1) new subjects be introduced in scientific and technical courses (32 per cent of responses), especially engineering technology,
- 2) the focus of some courses in engineering, social sciences and languages be changed to allow some points considered as essential for work to be dealt with thoroughly during training (43 per cent).

Secondly at the level of the labour market, it is thought that:

- 1) recruitment, posting and promotion procedures should be based on the principle of 'the right person in the right place' (in French, 'l'homme qu'il faut a la place qu'il faut') (51 per cent). This means that decision-making in these respects should be informed and guided by such elements as job profiles and people's abilities.
- 2) the government and industries should together set up a job creation scheme to increase employment opportunities (14.5 per cent).
- 3) salaries should be increased (52 per cent of responses) and/or supplemented by fringe benefits (24 per cent),
- 4) the unpleasant atmosphere in workplaces (e.g. unfriendly attitudes) should be cleared up (55 per cent).

Lastly, a study like the present one is seen as an essential part of the measures required for keeping training and work closely related, as it can be used as a means to:

- 1) increase decision-makers' awareness of the problems in the civil engineering profession (15 cases out of 64, i.e. 23.5 per cent),
- 2) improve the quality and the external efficiency of training (also 23.5 per cent).
- 3) achieve the two points just mentioned together (17 per cent)
- 4) and establish links or improve the relations between trainers and employers on the one hand, and between employers and employees on the other hand (11 per cent).

#### 4.4.2 The Interviews

This second part of the report consists of summaries of the views expressed by top and middle managers on the points raised in the questionnaire. A distinction is made between public services, parastatals, and the private sector, but this does not constitute a sound basis for a comparative analysis, given the reduced number of interviewees from private companies. The numbers quoted in the text refer to individual respondents.

##### I. Identification of the Interviewees

Among the 47 interviewees, 5 are from four private companies, 11 from nine parastatals and one town council, and the remaining 31 from public services. The vast majority of them are members of the engineering profession, but there are also some economists and public administrators.

## II Quality of Training

### Evaluation of the whole training system (Q 1.3)

There have not been any negative comments on the overall quality of the training system adopted at the Enstp. Rather, most interviewees describe it as 'very good' or 'good', particularly with regard to scientific and technical subjects. The reasons given to support these views centre around three main points:

1. the comparability of training standards to those achieved in universities and higher education institutions in Europe, and especially in France (100 & 130).
2. the relevance of qualifications for the skill requirements of jobs, as can be deduced from the graduates' direct employability on recruitment and their successful performance on the job (106, 114, 118, 122, 125 and 128).
- 3) the graduates' ability to adapt to new situations (105, 119 & 122).

### The Concept of 'quality'

A 'good' training system is seen as one in which the three elements just mentioned combine with the system's adaptability to new developments in technology and the teaching of sound theoretical knowledge and practical experience (105 & 114).

## III Impact of Training

### Recruitment, Posting and Promotion (Q.2.1)

Recruitment into public services is exclusively through the Ministry of Public Services. Although posting is dependent upon area and level of qualification (112), there are no explicit criteria for the distribution of new graduates between departments and services. The needs of the department in

technical personnel and the graduates' preferences for particular departments or services may or may not be taken into account (100). What counts is the size of the budget allocated to Ministries.

Promotion, i.e. career advancement and salary increases, takes place every other year. It is based on evaluation grades attributed yearly to civil servants and, as such, it becomes automatic for those who get a minimum of 3 out of 5 (on a five-point rating scale). Appointment to directorship or headship depends on no objective criteria (103).

Recruitment in parastatals often starts with an interview. Successful applicants must go through a number of formalities leading to their secondment from their initial department in public services to the parastatal they are dealing with. There are no particular criteria for selection, as in most cases, the graduates apply to enterprises to which they have been on attachment some time during training.

Private companies organize interviews, too. Their primary interest is in individuals who can perform their tasks successfully, i.e. in those who have some practical experience and can adapt to new situations (128).

#### Job Characteristics (Q 2.2)

The tasks assigned to the graduates are described as technical, managerial and administrative. Private companies and parastatals offer, for the most part, technical and managerial tasks, and public services involve all three kinds of tasks in varied

degrees according to their size and the nature of the programmes or projects they are working on in a given period (100, 107, 108, 110, 112, 121 & 129).

The skill requirements of these tasks are described in all three employment sectors as comprising the following:

1. 'taught skills', i.e. those that can be acquired through formal education and training: in addition to engineering, a working knowledge of economics, management and public administration. The teaching of these subjects is expected to lead, not only to employability and productive capacity, but essentially also to adaptability and organizational and problem-solving abilities (100, 102, 103, 104, 109, 118, 119, 125 & 127).
2. social skills and a variety of personal characteristics: especially team skills, sociability, common sense, humility, self-confidence, integrity, respectfulness, accessibility, availability and courage (103, 106, 108, 120, 122, 125 & 127).

#### Supply and Demand

Almost all the interviewees refute the idea of oversupply of graduates, but agree to their underutilization. They attribute the 'apparent' overproduction of engineers (and technicians, to some extent) to three main factors:

1. organizational factors: unclear organisational charts and job description, lack of human resource development plans, centralization of decision-making processes, and uneven distribution of tasks and human resources between

institutions and regions (101, 105, 108, 111, 114-117, 133).

2. the employment policies of:

- the Ministry of Public Services, consisting in recruiting staff on the basis of budget allocation rather than manpower needs (104, 120, 123, 133 & 134).
- some parastatals which continue to recruit expatriates from Europe (102).
- some private companies which are dependent on their central managers abroad (in parent companies) for the recruitment of high-level workers, or refer to their parent companies for the execution of design and research works and thereby avoid using local engineers (112, 128 & 129).

3. political factors: lack of political will to create jobs (in public services), and the political forces which allow some people to remain in employment despite their incompetence or in cases of overstaffing (108 & 133).

The underutilization of graduates is seen as resulting from organizational problems, as just explained, and the existing financial crisis which has caused a slump in economic activities and forced the Government and institutional managers to cut their budgets and cancel new investment projects (100, 110, 115, 117, 131 & 135).

### The Concept of 'Competence'

Competence is associated with adaptability (i.e. ability to apply knowledge in context), effective and quick execution of tasks, leadership skills (e.g. assertiveness, initiative and decision-

taking abilities, and open-mindedness), communication skills (particularly language skills), honesty and a sound general education (106, 109, 117, 119, 122 and 129).

#### Evaluation of the Graduates' Job Performance (Q 2.3)

When asked to evaluate the graduates' job performance, most interviewees make a distinction between technical competence and behaviour. With regard to the former, they feel 'satisfied' with the results achieved and describe all three groups of graduates as efficient, competent and showing problem-solving abilities (102, 103, 105, 122 & 129). In some cases, however, the IT and TS are found more competent (because more interested in their jobs and more practical) than the I (whose approaches to problems are seen as theoretical) (111, 117 & 124). With regard to behaviour, some graduates are criticised for their laziness and lack of good physical condition, promptitude, self-confidence, and commitment to their jobs (100, 103, 118 & 121).

In public services, the criteria for the evaluation of job performance are spelt out in the evaluation sheet used by all staff managers. They include 10 elements related to professional qualification, initiative-taking abilities, commitment, productive capacity, integrity, sociability, dedication, self-discipline, punctuality, and appearance (i.e. clothing). Some parastatals (124) have adopted these criteria for their own purposes. No such list was obtained from private companies.

#### IV Constraints on the Links Between Training and Work

##### Attitudes and Feelings

Comments made on the graduates' attitudes and feelings towards

their work reveal that a lot of them are 'disappointed' because of the unchallenging tasks they are asked to perform and the 'poor' reward system existing in public services. Most of them are said to lack commitment to their jobs, and some are described as conceited (given their level of qualification) and resentful against hierarchies in workplaces (particularly when they hold the same degree as their bosses) (100, 107-109, 111, 115 & 124).

### Reward Systems

The salaries paid to civil servants holding engineering qualifications range from A1 to B3 on the scale adopted by the Ministry of Public Services. A1 is meant for design engineers, A2 for technician engineers, B1 for engineering technicians, and B3 for technologists. In the first year of employment, these correspond approximately to a monthly pay of £260 for A1, £230 for A2, £170 for B1 and £148.5 for B2. Directors and their deputies are paid respectively £167 and £125 extra in fringe benefits. Allowances are also paid for site visits in the Department of Mining. Parastatals and private companies are said to have better reward systems but no precise information was obtained to help establish how big the differences are (103, 104, 112 & 121).

### Difficulties

The difficulties facing private and government institutions involved in civil engineering activities can be classified in six categories:

1. the financial crisis and its corollaries (125, 126, 128, 129 and 131).
2. organisational problems (as above).

3. working conditions: poor reward systems, shortage of unskilled workers, lack of appropriate equipment, unchallenging tasks, lack of career structure, etc.
4. behaviour: superiority complex, inaccessibility of some directors and heads, lack of solidarity among peers, despotism, self-interest, lack of objectivity in decision-making, resentment against hierarchies in workplaces, and conflicts between the design and technician engineers, between directors, and between directors and their deputies (102-105, 108, 115, 121, 136).
5. weaknesses in training, especially in the areas of economics, management, public administration, language, mining and geology, design, and water supply in rural areas (115 & 116).
6. political constraints: instability of administrative structures and people in them (due to cabinet reshuffles mainly), lack of trust in local engineers (as opposed to their expatriate counterparts), and the feeling of older generation engineers and technicians that they have been 'cast aside' too early by political decision-makers to make room for younger generations (102).

## V Suggestions

The suggestions made by the interviewees to help improve the situation described so far can be summarized as follows:

### Training

1. Enrolments should not be reduced too much, as an economic recovery may increase manpower needs.
2. Training should be directed towards skills for self-

employment.

3. There should be a better balance between subjects, and standards in social sciences and languages should be raised.
4. For a better organization of inservice training courses,
  - the School of Inservice Training should be granted some autonomy, especially with regard to financing,
  - selection procedures for in-service courses should be designed to test practical experience and general skills rather than knowledge of specific theories,
  - more emphasis should be laid on short courses.
5. The administration and management of the school should be improved, that is:
  - there should be a better co-ordination of managerial functions,
  - teaching staff should be involved in decision-making processes,
  - and systematic actions should be taken to develop the corporate identity of the school and sell its 'products'.

### The Employment Sector

#### A. Managerial and Administrative Measures

1. Increase financial resources
2. Set up clear organisational charts in public services,
3. Design a career structure for engineering civil servants,
4. Adopt more democratic and fairer decision-making procedures based on transparency and mutual respect among peers,
5. Reward 'efficiency' rather than 'seniority',
6. Create opportunities for in-service training.

### B. Measures Relating to Behaviour

1. Eliminate prejudices,
2. Give due respect to hierarchies in workplaces.

### C. Political Measures

1. Trust all members of the engineering profession,
2. Enforce policy of 'Ivorianization' in companies and public services,
3. Leave road maintenance to private companies.

### D. Miscellaneous

1. There needs to be a code of ethics for the engineering profession.

Such are the main findings of the survey. The remaining chapters examine them in detail using the theoretical framework described earlier. Chapter Five focuses on norms and values, Chapter Six on individual characteristics and institutional or political factors, and Chapter Seven on the theoretical interpretation of the facts just described. Suggestions for possible ways of improving the situation under discussion are considered in Chapter Eight.

### NOTES

1. Further details on this procedure may be found in Miles and Huberman (1984: 23-25), Hopkins et al. (1989: 64-67), Bogdan et al (1988), Firestone et al (1988), Skrtic (1985), Todd (1979), and Strauss (1987).
2. Source: informal conversation with some technician engineers.
3. Source: Enstp, CFC (informal discussion with survey organiser).

## CHAPTER FIVE

### NORMS AND VALUES IN THE RELATIONSHIP BETWEEN PROFESSIONAL EDUCATION AND THE WORLD OF WORK

A Baule proverb in the Côte d'Ivoire goes that 'thinking reveals reality better than a mirror'. This means that one needs to transcend observable facts to be able to grasp their full significance. The facts just described may give an idea of what the situation is like in the field, but their real meaning for the present purpose still remains to be clarified. For instance, in what ways does the respondents' evaluation of the training system operating at the Enstp contribute to the discussion of the issues at stake here? How can their views be used for the measurement of training outcomes and how do they fit in the theoretical framework used in this study? The answer to such questions requires a thorough examination of the information gathered, a kind of 'thinking' exercise concerned with the interpretation of this information within its context.

The purpose of the present chapter is to highlight what is seen here as the values and norms that shape people's perception of the relationship between education and work. Attention concentrates on the questions relating to the quality and impact of training at the Enstp. Concepts like 'relevance' in education and training, 'skill', and 'competence', are analysed, together with views on the role of education in national development.

### 5.1 The Concept of 'Relevance' in Education and Training

'When I went to Paris, I was able to follow the courses. I was not lost.' (130)

'The various subjects taught at the Enstp are all very useful. They relate to many of the aspects of jobs in the field.' (125)

'The Enstp graduates have the minimum knowledge required to start work in our company.' (128)

'Training does not necessarily consist in linking initial qualifications with a job: the graduates must adapt [to their jobs]. And the Enstp graduates do so in a very short time: three months, at most.' (119)

'Training has been kept in tune with advances in technology. Projects are better organized, and the emphasis on scientific subjects is welcome.' (114)

On the basis of the respondents' answers to the survey questions relating to the suitability of training qualifications for the skill requirements of jobs in the engineering profession, it can be stated that the Enstp has achieved its goals, i.e. its graduates are found well equipped for their professional functions outside school. The quotations above are examples of comments made to support this view. However, taking a closer look at such arguments put forward to defend individual positions regarding this issue, there does not seem to be a consensus on what is seen as 'relevant' qualifications, and this needs to be discussed.

From the summary of the survey results made earlier, it appears that different people interpret 'relevance' in different ways, or more precisely, that 'relevance' is a multi-faceted concept. At times, reference is made to internal qualities of the training system itself, and at other times, to the graduates' capacities as professional workers. Relevance

as a characteristic of the training system is determined in terms of training standards (130) and the system's adaptability to new technology (114). Relevance as a characteristic of the graduates' qualifications is associated with their ability to fulfil their duties, i.e. their employability (125 and 128), and to adapt to new situations (119). In other words, relevance in training is measured against the requirements of the labour market as well as those of the training system itself. The trouble with this dual conception of relevance is that training standards do not necessarily correspond to needs in the labour market, and employability requires specific skills whereas adaptability calls for generic ones. How can these be reconciled in a training system and then be used as measures of relevance?

The 'reality' behind this rather ambiguous situation is that 'relevance' is a value-loaded concept deeply rooted in ideologies about professions and professional qualifications. Its meaning derives from the dialectics between a profession, the labour market, and society at large.

#### 5.1.1 Relevant knowledge as a defining trait of professions

At professional level, relevance is a matter of standard, i.e. the level of qualification that must be reached for the sake of quality. In this sense, it constitutes the very essence of professions and the foundation of all claims by graduates for professional identity and competence. As most social scientists express it, knowledge, and particularly knowledge which is hard to acquire because of its esoteric

nature, remains the 'defining trait' of professions (Car-Saunders, 1928; Elliot, 1972; Freidson, 1971; Larson, 1977; Jarvis, 1983; Goodlad, 1984). This is so, according to Larson (1977:14-18 and 40-49) because:

1. 'If their products or commodities are to be given a distinct form [on the professional market], the professionals must be adequately trained and socialized.'
2. The conquest of official privilege and public favor requires devices for ideological persuasion, and for professions, this has come to mean securing the uniqueness or exclusiveness of their cognitive base.
3. Superior expertise and cognitive exclusiveness serve as devices, not only for establishing social credit, but also for achieving market monopoly.
4. Competence and credibility constitute the basis on which discretionary power, i.e. autonomy, is granted to professions for the determination of 'the scope of the service'.
5. 'Cognitive commonality, however minimal, is indispensable if professionals are to coalesce into an effective group'.
6. 'A scientific basis stamps the professional himself with the legitimacy of a general body of knowledge and a mode of cognition, the epistemological superiority of which is taken for granted in our society.'

This shows that the knowledge base of professions is the central argument for which they get public confidence, prestige, autonomy, and market monopoly. More importantly, it functions as a bonding agent in the internal unification of professions.

In the particular case of civil engineering in the Côte d'Ivoire, it can be added that the cognitive base of the profession serves as a means to conquer international credibility, especially in European countries and in the U.S.A.. The comparability of training standards to those found in institutions in these countries not only confirms the quality of this training, but it also gives the members of the profession the greatest sense of dignity, as they feel fit for competition on the international market. The quotation above (130) of a respondent's definition of 'good training' illustrates this point quite well. Another manifestation of this appears in the views expressed by the Enstp authorities that one of the best tests of quality in training is the former trainees' successful performance in Western universities. The secretary general made the following comment during an interview with a local newspaper covering the celebration of the 25th anniversary of the school (Fraternité Matin, 13 December, 1988:29).

'The first Enstp graduates sent to France in 1970 for further studies at the Ecole des Ponts et Chaussées and the Ecole Centrale were required to take entry tests. As they did well on these tests and subsequently made a brilliant performance on their courses, those who followed in the succeeding years were admitted straight away on the basis of their Enstp qualifications.' (Original in French).

Even the national policy of Ivorianisation, advocated in the country's five-year development plans since 1970 hinges on the comparability of qualifications to European standards. It urges against 'l'ivoirisation au rabais' (i.e. Ivorianisation 'on the cheap'), as will be explained later. In actual fact, it is a common attitude in most developing countries to use Western standards, as a reference when discussing relevance in education and training. The Kenyan civil engineering

profession, as in Bennell (1982 and 1983) and Bennell and Godfrey (1983), and the Ghanaian and Indian medical professions, as in Johnson (1973), are but a few other examples quoted in the literature. Early Unesco documents on African tertiary education (1961) also consider 'international gold standards' (Sir Eric Ashby, quoted in Fafunwa, 1967:114) as one of the goals to be achieved at that level:

'In addition to its traditional functions and obligations to teach and to advance knowledge through research, the role of higher education in the social, cultural and economic development of Africa must be [among other things], to maintain adherence and loyalty to world academic standards.' (emphasis added)

Relevance, therefore, may have little to do with the suitability of qualifications for work when measured against training standards. It may even turn out to be 'irrelevant' in some cases and cause job dissatisfaction due to over-education (Levin, 1980:161-164), or result in the brain drain from poor to rich countries.

#### 5.1.2      Job-related relevance as a strategic device for competition on the professional market

When seen in reference to the labour market, relevance is measured in terms of the instrumental value of training qualifications. The fundamental issue in this case is the match between these qualifications and the skills necessary for a successful performance on the job. Theoretically, as it is in the essence of professional training to prepare the trainees for the specific needs of the professional market, there should not be any concern for relevance, especially when the trainers are experienced professionals as in the case of the Enstp. It sounds almost

like a tautology to speak of relevance in professional education. In practice, though, experiences in a number of African countries show that discrepancies happen to emerge between the graduates' proficiencies and the characteristics of the jobs available to them on the market. These often take the form of over-qualification, insufficient practical experience and lack of social and communication skills (cf. survey results, in Chapter 4).

Even where qualifications are found suitable for work, some questions still remain to be answered. For instance, how can employability and adaptability be used together as a measure of relevance given that the former requires specific skills and the latter generic ones? What is the most appropriate balance between these two elements? Who defines the appropriateness of such a balance, and how is it incorporated into training objectives and programmes to justify its use as a measure of relevance?

The answer to these questions seems to be linked to the profession's struggle to keep control over the professional market. One way of seeing this is that relevance as a close fit between training and jobs (i.e. employability) serves to justify the utilitarian nature of professions. By definition, as Larson puts it (1977:50 and 51), a 'profession appears to be a structure which links the production of knowledge to its application in a market of services', i.e. the function of a profession is to put theory into practice. This makes practical skills vital to professional qualifications. On the basis of these skills directly tied to tangible results, professions

assert their technical expertise and claim control over the market of services. To quote Larson again (ibid:30-31), 'the visibility of a profession's accumulated skills and achievements, its "demonstration effect" vis-à-vis the public at large and its specialized clients, is a potent source for ideological persuasion.' What must be explained, however, is the nature of these skills in a profession like civil engineering.

Relevance as adaptability is another way of linking professional qualifications to work. This interpretation of the world calls for skills that can be applied to 'all' jobs. The value of such a relevance derives from the fact that it demonstrates the 'usefulness' of what is often called basic skills and it adds to the 'marketability' of professional qualifications, as these are shown to have an in-built flexibility allowing them to adjust to new situations. Adaptability, therefore, combines with employability to support a profession's claim for market monopoly, although in most cases it contributes to the discrimination between practitioners with specific skills, i.e. technicians, and those with generic ones like design engineers (French, 1981).

Under the circumstances described so far, the use of relevance as a measure of professional training outcomes requires due consideration of what is meant by this term when it is used by the members of a profession (including trainers of professionals) and by their employers. It must be made clear in each case what constitutes relevant skills and why. The section below deals with these points.

## 5.2 The Concepts of 'Skill' and 'Competence'

'Civil engineers must now have a sound knowledge of economics and management. They must also learn to be humble and accept to collaborate with people with a lower level of qualification.' (103)

'In addition to civil engineering, it is also necessary to have skills in the management of financial resources and public administration. But too much specialization, even in public administration, would be damaging because such a tight training hinders adaptability.' (104)

'Besides cognitive skills (which account for 20% of the skills used on the job), there is a need for adaptability (80% of the knowledge required at work).' (121)

'It is important for engineers to be respectful, friendly and tough.' (123)

'To be competent means to be able to grasp problems rapidly and to find appropriate solutions to these problems. In addition to this, you need to be honest and have a cultured mind.' (105)

'Competence can be defined as the successful execution of tasks within the time limit required.' (106)

'A competent person is one who is appraised positively for his skills in the management of all aspects of jobs on the work site.' (127)

The question of what may be regarded as the components of professional skills leads to an analysis of the content of jobs and of training programmes. This is a complex undertaking which has been limited, for the present purpose, to the identification of the various functions performed by the Enstp graduates and to the classification of the particular tasks they are involved in according to whether they are technical or administrative. The results obtained are summarized in tables 5.1 and 5.2 next page. As reported in the preceding chapter, the skills required to fulfil the functions listed comprise 'taught skills', as acquired through formal training activities meant to develop expertise in selected subjects (e.g. basic engineering, economics, management, languages),

Table 5.1: Functions of the Enstp Graduates

Functions	I	%	It	%	TS	%	Enstp	%
Management	9	52.9	6	15.4	6	16.2	21	22.6
Design	7	41.2	10	25.6	9	24.3	26	28
Execution	7	41.2	17	43.6	17	45.9	36	38.7
Inspection	10	58.8	27	79.5	24	64.9	61	65.6
Supervision	3	17.6	17	43.6	10	27	28	30.1

Notes: The results in this table were obtained by combining "Very Important" and "Important", ranked 1 and 2 respectively in the responses.

Due to multiple choices rows and columns do not total 100 per cent.

Table 5.2 : Nature of the Tasks Performed

Tasks	%	I	IT	TS	Enstp
Technical	< 50	9	8	7	24
	> 50	7	29	28	64
Adminis- trative	< 50	7	26	26	59
	> 50	9	11	9	29
Total	100	16	37	35	88

<50: less than 50%

>50: 50% or more

Notes: The totals are the same for both rows.

and a combination of social skills and personal traits like initiative and risk-taking ability, self-confidence, sociability, humility, integrity, courage, and respectfulness. Most of these skills are included to definitions of competence, although the predominant element of this concept is seen as adaptability (cf. table 5.3).

In the final analysis, it appears that professionals in the engineering field are expected to have a mastery of their areas of specialization, be able to adjust to new situations, and demonstrate leadership capabilities. Such a profile is not specific to engineering alone, but it acquires a particular significance in this profession because it is seen as dictated by the characteristics of a very demanding field. Engineers perceive their working conditions as exceptionally tough, given the physical environment of work sites (e.g. rugged terrains, heavy rains, hot weather), the scientific and technical knowledge needed in the execution of tasks, and the diversity of their functions as technical experts, managers, and consultants to management. Besides, they feel constantly under pressure to equip themselves with new skills while in employment, as they must cope with rapid developments in science and technology and changes in their professional practice. In a word, engineering is conceived of as a profession for exceptionally gifted people, highly trained to put theory into practice and, as Goodlad puts it (1984:7) 'ready to meet any demand upon their mental and physical fitness.' Table 5.4 next page has details of a design engineer's qualities as perceived by the Enstp heads of department.

Table 5.3: Definitions of Competence

Definitions	I	%	IT	%	TS	%	Enstp	%
Adaptability	17	100	34	87.2	33	89.2	84	90.3
Initiative/ Risk-Taking ability	17	100	31	79.5	26	70.2	74	79.6
Quick & Effective Execution of tasks	15	88.2	29	74.4	29	78.3	73	78.5
Ability to apply knowledge	12	70.6	29	74.4	28	75.7	69	74.2
Practical Experience	11	64.7	27	69.2	26	70.2	64	68.9
Self- confidence	15	88.2	24	61.6	18	48.6	57	61.3
Team skills	8	47.1	18	46.1	20	54	46	49.5
Effective communication	8	47.1	23	58.9	12	32.4	43	46.2

Notes: The results in this table were obtained by combining "Very Important" and "Important", ranked 1 and 2 respectively in the responses.  
 Due to multiple choices, columns and rows do not total 100 per cent.

Table 5.4: Key Qualities of a Design Engineer

Area of Practice	Main Functions	Subsidiary Functions	Qualities
Engineering	Supervision	Communication	Openness to dialogue Easy communicativeness Simple language Attentiveness
		Leadership	Decision-making abilities Delegation skills Fairness
		Training	Teaching skills Patience Rigour Curiosity
	Management	Organization	Method Rigour Initiative
		Financial Management	Integrity Competence
	Production	Design	Fitness Realism Practicality Efficiency
		Inspection	Rigour Alertness Integrity
		Research	Method Ingenuity Rationality

Source: Kattar, 1986: 7

The difficulty in the discussion of skills in such a profession is the controversy over the balance between theory and practice, and between technical expertise and general education. This debate dates back to Greco-Roman times when Quintilian and Aristotle set the basis of professional education, the former concentrating on law and the latter on medicine. As Brubacher explains (in Henry, 1962:48 and 49):

'The advice which Quintilian offered may be subsumed under three headings [...]. In the first place, he urged a knowledge of civil law [...]. In the second place, [he] saw need for the orator to know more than the immediate demands of the law [and] recommended that he be well versed in the "custom and religion of the state in whose life he is to bear his part [...]. Finally, [he] discusses what kinds of cases the young orator should accept or assume; what fees he should charge, [and devotes considerable space to the question of style in public speaking].'

'Aristotle [distinguishes] three different grades of medical practitioners. The first grade were merely craftsmen. They practised their art purely empirically [...] guided by the rule of thumb of daily experience but had no deeper insights. The second grade were more scientific in approach to their patients. They were empirical too, but they directed their diagnosis and therapy by theoretical constructs [...]. The third and final grade were composed of those who so extended their interest in medicine as to include it as part of liberal studies themselves. Obviously the progress from grade to grade is marked by increase in intellectual and theoretical content.'

Quintilian's view is that professional practice requires a knowledge which combines technical and general skills. Aristotle addresses the issue of theory versus practice and finds the solution to this in the internal stratification of professions (medicine, in his case). The concerns of both ancient philosophers have remained central to policy making in training institutions throughout the centuries.

In France, for instance, the programmes of the Ecole des Ponts et Chaussées, as in the 1780s, comprise not only

scientific and technical subjects, but also others like writing composition, horseback riding, and swimming, intended for 'the overall development of a [cultured gentleman]' (Edmonson, 1987:37). Suggestions for improving these programmes in succeeding centuries sought to reinforce the scientific and technical contents of the courses and move away from practical considerations to instruction in sophisticated general science. Engineering education was even restructured so as to make admission to Ponts et Chaussées and similar schools conditional on two-years' intensive studies of such subjects as mathematics, physics, and chemistry, at the Ecole Polytechnique (created in 1795). In this process of reform, however, divisions emerged among the advocates of general skills and those of practical ones. Consequently, middle-level engineering courses were established (as in the case of the Ecole des Arts et Métiers, created in 1803) for a more vocationally-oriented training, tailored to the specific needs of industry.

In the U.S.A., more recently, Perrucci et al. (1966) report on disagreements between the American Society for Engineering Education and professional societies and industry about the degree of specialization that should be taught to engineering students. Their observations read as follows:

'Some industries seek engineering graduates who can immediately fit in with the production needs of the organization without costly, time-consuming, on-the-job training. Such industries support the maintenance of engineering specializations that are closely tied to the needs of industry .... These facts are further reinforced by the strong opposition from industry and professional societies to the proposal by the American Society for Engineering Education that the master's degree should be the first professional degree ....'

In Britain, Massey (1989:59 and 60) makes the following comments on employers' expectations from their technical

personnel in engineering:

'Time and again employers argued that whilst they sought an appreciation of the technical world, their primary concern was to recruit flexible people and a flexible outlook is something that they prize highly in an employee. It is this flexibility that allows people to be re-trained and to have their skills updated ... [However, they also] wanted even their most highly skilled engineers to have what one prosaically called, "dirt back under their fingernails."

All these quotations show that the issue of technical versus general skills still remains unsettled. The problem, it seems, originates for the most part from the fact that the traditional conception of engineers as 'men who [work] with "things" and can roll up [their] sleeves and get down on the floor and make something work' (Perrucci, 1971:130), has progressively been superseded by a new professional image identified with management rather than with production. Engineers have distanced themselves from technicians, claiming to be competent in matters which require knowledge of scientific theories and technical principles rather than mastery of specific skills for specific tasks. The paradox, however, is that despite these claims, there are situations where technicians and engineers perform the same functions.

Table 5.1 and 5.2 above, for instance, reveal that in the Côte d'Ivoire, the design engineers' primary functions are management and inspection, while those of engineering technicians and technician engineers are inspection and execution. Administrative tasks account for more than fifty per cent of what the majority of the design engineers do at work, whereas the majority of engineering technicians and technician engineers are more involved in technical tasks than administrative ones. Nevertheless, management tasks are also quoted as responsibilities for one third of technician

engineers and seven engineering technicians out of thirty; design functions are shared among all three groups in almost the same proportions (about half the respondents in each group), and the most important job for technicians, i.e. inspection, appears as the second most important one for design engineers. The question here is how to interpret the facts thus observed: Are engineers and technicians doing the same jobs because 'the wrong persons have been appointed to the wrong places', or because of overqualification and over/under-supply of graduates in the areas concerned? In other words, what can the mismatches between training and work be attributed to: the training system, employment sectors, or both?

An examination of other questions raised in the survey points to the existence in workplaces of a series of factors that could be seen as causing the most distortions between qualifications and jobs. The next two chapters address these issues in detail. As for the training system, opinions tend to describe it as intrinsically 'good' and producing the skills required for professional practice. The weaknesses identified in it both by the graduates and their employers pose the problem of balance in the curriculum between theory and practice and between technical expertise and general education, rather than that of the overall relationship between qualifications and employment. Besides, since more than half the graduates (48 out of 91) estimate the links between their training and their present jobs at fifty per cent or more (80 to 100 per cent for 29 of them, and 50 to 55 per cent for 19 others), and since 82.5 per cent of them (70 out of 85) are described by their employers as 'well qualified and efficient',

there seems to be enough ground to conclude that the skills acquired at the Enstp are effectively useful on the labour market.

By skills, most participants in the survey mean ability to carry out practical functions, but they tend to see this in terms of versatility instead of narrow expertise in the execution of particular tasks. They also consider some social skills and personal traits as essential elements of professional qualifications and competence. These views are justified on the basis of the multiplicity of the functions undertaken by members of the engineering profession in the Côte d'Ivoire. It is reported, for instance, that in addition to the main areas of practice listed in table 5.1 above, some Enstp graduates are involved in adult education when in charge of water supply projects in rural areas (113), and rubbish collection programmes when in employment in town councils (122). Technical skills are not always needed in such activities. Here follows a comment made in this respect by an interviewee from the local branch of an international company (129):

' ... The engineer working in my department has practically no technical functions requiring him to apply his knowledge of civil engineering .... [The only skill he uses is] his maturity.'

This demonstrates the complex nature of skill requirements in this profession and the necessity for an evaluation study of training outcomes to be sensitive to the subtleties of the issues relating to the training system and to professional practice. The points to consider are not only dualities like theory versus practice and general education versus technical skills, but also the very meaning of the profession for its

practitioners and its clients. For instance, it may be worth finding out what people expect from their jobs and what role is attributed to them at national level as professional experts. The discussion of such questions seems all the more necessary as education, whether professional or general, may be planned to achieve goals that are set for the wider national community of a country, rather than for the academic or industrial worlds alone. These issues will be dealt with next in section 5.3 below, but before turning to that, it may be useful to recall the points raised in these first two sections.

Thus far, the focus of the analysis has been on the values attached to the concepts of relevance, skill and competence. Given the market-orientation of the engineering profession and the practitioners' concern for social status, it has been observed that these concepts are used to express ideological positions. Relevance, in this context, can be seen as carrying its own antithesis: it is both 'relevance' and 'irrelevance' inasmuch as it refers simultaneously to tight links (employability) and loose ones (adaptability) between qualifications and jobs. On the other hand, skills are perceived as technical capacities combined with various individual characteristics suitable for leadership functions. Competence includes most of these skills, though predominantly associated with adaptability. All these findings will be considered later from the perspectives of the theoretical approaches adopted for the present study. For now, attention will focus on the role of education in development.

### 5.3 Education and National Development

'[The Ivorian Government is aware] that the training of sufficient numbers of top-flight managerial staff in technological, administrative, financial and scientific areas is a sine qua non of our economic liberation .... History has shown that a country without mineral wealth or extensive and naturally fertile land can sometimes develop in a genuine and occasionally startling way, if somewhat slowly - I am thinking of the Netherlands and more particularly of Japan. But there has never been a case of a country developing harmoniously and lastingly without high-quality managerial and other manpower.' (President Félix Houphouët-Boigny, 6th Congress of the P.D.C.I.-R.D.A., Abidjan, October 16, 1975).

To find out what role is attributed to professional practitioners, like those in the engineering field, and thereby try to learn more about the determinants of their skills and competence, one has to address the wider issue of the function of education in national development. The literature on this topic is far too vast to be reviewed in its entirety here, but a brief account of the main themes debated in it can be provided drawing upon a recent study by Hettne (1990).

#### 5.3.1 The concept of development

In its Eurocentric interpretation of the late 1950s and 1960s, development is equated with industrialization and modernization. The assumption behind these ideas is that development consists in accumulating stocks of capital and acquiring a number of cultural and industrial characteristics similar to those observed in Western European countries. This process is evolutionary and linear, as conceived in the neo-classical or functionalist economic tradition.

Industrialization, as an element of development, is

seen as a remedy to the failure of international trade, based on the theory of 'comparative advantages', to improve the economic conditions of underdeveloped countries (Hettne, 1990:52). It is assimilated to a process of growth requiring the satisfaction of the following preconditions, or 'proximate causes' (Lewis, 1955): 1) effort to economise, 2) increase of knowledge and its application, 3) increase of capital. Levels of economic growth can be measured in terms of 'capital per head', and the surplus derived from participation in the world economy serves as a resource for the funding of nation-building projects in three main areas: security (i.e. the defence of the territory), investment, and welfare. As Hettne puts it (1990:29), 'a development strategy is also a strategy for nation-building. The two cannot be separated.'

Modernization theories divide into two versions advocating, in one case, changes in attitudes or culture and social structure, and in the other case, changes in the political system. The first version, as expressed in Parsons (1951) and Rostow (1960), draws on Weber's distinction of 'tradition' versus 'modernity' in his 'ideal models', and Durkheim's 'mechanical' versus 'organic' solidarity thesis. Under the influence of these two classical sociological traditions, Parsons sets up the following pairs of 'pattern variables' to differentiate a 'traditional' society from a 'modern' one: particularism vs universalism, ascription vs achievement, and diffuseness vs specificity. The spirit of the 'ascription vs achievement' pair of variables is that in modern societies, selection into employment, for example, is based on 'the objective abilities of the applicant', i.e. on 'the

person's actual qualifications which can be confirmed objectively, for instance, by academic achievements', whereas traditional societies would rather consider such elements as family or social background. This definition of modernization is described as 'Westernization'.

Rostow considers development as a process in which 'traditional' societies evolve towards a state of 'maturity'. He distinguishes five stages in it: the traditional society, the pre-takeoff society, takeoff, the road to maturity, and the mass consumption society. As Hettne explains (1990:63), the second is the one during which 'the characteristics of the traditional society are removed.' As a consequence, 'agricultural productivity increases rapidly, a more effective infrastructure is created, [and society] develops a new mentality, as well as a new class - the entrepreneurs.' Industrialization and the spread of technology take place during the third stage. This model of modernization is classified as an 'endogenous' process, mainly concerned with capital formation, i.e. the realization of the potential inherent in developing societies.

The second version of modernization deals with political development. It posits 'the wider process of modernization', to use Hettne's words (1990:65), as 'marked by three criteria: structural differentiation, subsystem autonomy, and cultural secularization.' The advocates of this approach, mostly American political scientists, draw on their experiences of economics and sociology (à la Parsons). Under these influences, Apter for instance (1965, 1968, 1971 and

1973), sees political development or political modernization as the creation of the following 'political clusters': mobilization (the realization of potentiality), bureaucratic (the maintenance of control), theocratic (maintaining belief), and reconciliation (a system of bargaining) (Apter, 1973:25 and 26). The 'mobilization' subsystem constitutes the transition between 'traditional' and 'modern' political structures, whereas 'reconciliation' corresponds to the form taken by a 'modern pluralistic' political system like that of the U.S.A..

Given the Western bias of the theories thus developed and the criticisms raised against them, mostly by Marxist and neo-Marxist social scientists (e.g. theorists of dependency and self-reliance), the concepts of 'modernity' and 'modernization' have been reinterpreted as follows (Hettne, 1990:73):

1. rationalization, i.e. 'universal' modernization without Westernization. Modernization here means, in Nash's words (1984:6) 'the growth in capacity to apply tested knowledge to all branches of production' or, in Moore's sense (1977:33), 'the process of rationalization of social behaviour and social organization [instead of] the vagueness of "joining the modern world" and the ethnocentric connotations of "becoming just like us". By the same token, modernity is defined as 'the social, cultural, and psychological framework that facilitates the application of science to the processes of production.' (Nash, *ibid*).

2. Westernization, i.e. a historical process in which modernization takes place as a consequence of the dominance of Western civilization.

The role of education in this 'new' modernization movement and in all the other theories just discussed constitutes the focus of the next section.

### 5.3.2 Functions of education in development

Despite their divergences, development theorists share a common view that education, i.e. schooling, is a central element of all development projects in the Third World. 'Knowledge' is treated as a factor of economic growth because its application contributes to advances in industrial technology, and its acquisition produces 'modernizing' effects on individuals. As Inkeles and Smith explain (1974:139-141):

1. ' ... the evidence argues that the school in developing countries, for all its presumed defects, is surely one of the most powerful means of inculcating modern attitudes, values, and behaviour.'
2. Education is 'a prime factor in determining the level of a man's modernity.'
3. 'The school modernizes through a number of processes other than formal instruction in academic subjects. These are: reward and punishment, modelling, exemplification, and generalization. (emphasis in original).

The values attributed to education in this way have led people in developing countries to treat it almost as a panacea for all individual and national development problems.

As is clearly expressed in the Ivorian President's comments above, governments expect their education systems to supply the level and quantity of manpower required in all sectors of employment, including research institutions. They also trust them for the creation and consolidation of national unity (for example, through the teaching of civics), and for the development in their people of all personal characteristics necessary for an active role in modern life. Professor Joseph Ki-Zerbo, from Burkina Faso, describes this multitude of educational objectives in the following terms (in Fafunwa, 1967:121):

'Education lies at the heart of Africa's development. It is one of the main levers for speeding up her advances in all spheres: in the political sphere ...; in the social and human sphere ...; in the economic sphere ...; [and] in the international sphere.'

Faith in the 'powers' of education to achieve all these goals is reinforced by the idea that 'human progress is the fruit of scientific knowledge and know-how' as reported in a 1987 Unesco document (reported in Educafrica, No.13, June 1987:334). Today, more than ever, it is considered an imperative in Third World countries to increase the teaching of science and technology (starting from primary schools) as a way to limit or even suppress external dependency, and at the same time, keep pace with a 'world where science, technology and the economy have become the new divinities ...' (President Houphouët-Boigny, 1975). As President Borja, from Ecuador, puts it (in WCEFA, 1990:8):

'The root of all dependencies originates in technological dependence .... Thus we in developing countries have to create our own capacity to generate technologies adequate for our conditions of life, to select technologies and to adapt them to our economic and social infrastructures ....'

In this context, the 'products' of education systems constitute great assets. They are the new socio-professional and political groups making up the bulk of urban populations, those 'human agents or carriers' of knowledge (Freidson, 1986:9 and 10) commonly referred to as the intellectuals, the elites, the intelligentsia, the cadres, the professionals, the experts, the specialists, the technocrats, and the technicians. The respect and admiration they receive in their societies for their qualifications compel them to adopt patterns of behaviour worth studying when investigating issues like the ones under consideration in this thesis. In particular, they have specific views of their role as educated individuals and members of professions which often determine their attitudes towards their jobs and the social or material rewards they derive from them. The next chapter considers these issues in detail focusing on the case of civil engineers in the Côte d'Ivoire.

## CHAPTER SIX

### INDIVIDUAL CHARACTERISTICS AND INSTITUTIONAL OR POLITICAL FACTORS INFLUENCING JOB PERFORMANCE

The points this chapter wishes to raise relate to the Enstp graduates' attitudes and feelings towards their work, and to interpersonal relations in the engineering profession. The intention here is to underline those individual characteristics and behavioural factors which may be regarded as influencing job performance and professional development. Of particular interest in this respect are the graduates' commitment or lack of commitment to their individual functions or to the engineering profession, their satisfaction or dissatisfaction with the duties assigned to them, their interactions with one another as colleagues or as members of the same profession, and the institutional and political factors which affect these relations. The first two themes will be dealt with in section 6.1, and the last ones in 6.2.

#### 6.1 Attitudes, Feelings and Interests

Back in 1975, on the occasion of a meeting held at the Ministry of Public Works and Transport to discuss the reorganization of training at the Enstp, it was observed, among other things, that the younger generations of graduates in those days wanted to be appointed as 'directors' immediately on recruitment into employment, resented some tasks they saw as unrewarding and trivial (e.g. road maintenance), and were not committed to their jobs (Ministry of Public Works and Transport,

1975:4 and 5). These remarks made over a decade ago still apply to today's graduates, as appears in the following quotations from the interviews:

Commitment: 'A lot of people (among the Enstp graduates) are not committed enough to their functions (115). Some do not have the vocation (121).'

Attitudes to tasks: 'Some graduates feel disappointed for not being assigned to the tasks they were expecting.' (100)

Attitudes to workplace hierarchies: 'The Enstp graduates (the engineers in particular) are conceited. They are ready to say "as an engineer, mine is a leadership function" (124). They resent hierarchies, especially when their bosses have the same training level as themselves.' (107)

It cannot be stated, on the basis of the interviews carried out, what proportion of the graduates behave in these ways, but the seriousness of the allegations raised against them seems unquestionable when their own comments on their commitment to their jobs or to the engineering profession and their professional aspirations are examined.

#### 6.1.1 Commitment to jobs

The first point considered in the discussion of the issue of commitment is the graduates' expectations as workers. The question here is: What do they hope to achieve through the fulfilment of their duties, and how does this tie in with their interests as engineering practitioners? In other words, what lies behind their motivation or demotivation for the jobs they have been offered, and what does this have to do with their professional preoccupations?

With regard to the question of motivation, it appears from the questionnaire survey that the main reason why the majority of the graduates (65.5 per cent) felt 'happy and very much interested' when they were appointed to their present jobs, is what they describe as 'job security' in public services, i.e. working in an employment sector where they run almost no risk of ever being made redundant. As one of them puts it:

'To be a civil servant is to have a secure job. This is better because the civil engineering profession in the Côte d'Ivoire is faced with a lot of difficulties.' (27)

Reading between the lines, it seems that those who share this view would rather opt for employment outside the public sector if that alternative existed. In this sense their interest in the jobs offered to them derives more from the fact that they enable them to escape unemployment than from any other considerations (e.g. salary, social status). Their motivation for such jobs is therefore negative, i.e. it originates from fear of failure, rather than from anticipation of some positive outcomes. 'With the financial crisis of these days', one of them explains, 'it is better to accept what is available. Private enterprises have closed their doors.' (11).

These arguments find strong support in the comments made by the twenty-six graduates who describe themselves as feeling 'indifferent and not much interested' or as having 'no particular feelings', when they heard the news of their appointment to their present jobs. They think that they reacted this way because they felt compelled by the economic situation of the country, to accept these jobs (22, 52, 63, 82, 86), or because they did not expect to get any satisfaction from public services regarding salaries (31, 62, 65), use of knowledge (14, 57, 59, 74, 77),

promotion (46, 70), or various other aspects of their professional lives (4, 18, 61, 74, 78). These are clear indications that opinions about public services are rather poor and, in that case, it is no wonder why many of these graduates are 'not committed enough to their jobs', as quoted earlier on from an interviewee.

Another point raised in connection with this situation is the graduates' feelings at work. Half of them (50.5 per cent) say they feel 'completely at ease', and the other half (49.5 per cent) 'not completely at ease' or 'not at ease at all'. The first group comprises a slightly larger proportion of design engineers and engineering technicians (59 and 51.5 per cent of respondents in each group) than technicians engineers (46 per cent). There may be a case here of one group feeling more discontented with their jobs than the others, but there is not enough evidence to support this argument. What is certain, however, is that the technician engineers see themselves as 'losers' in the internal conflicts opposing them to design engineers (cf. 6.2 below), and this may well add to their disappointment. Whatever the situation, the other groups have their own worries, too, as will be discussed in the next section, and they share in one of the most commonly cited grievances, that is the lack of job satisfaction.

Of twelve elements identified in individual responses to the questionnaire survey as sources of job satisfaction, only 'Acquaintances made through professional activities' are regarded as such by all three groups in proportions reaching 82 per cent of the I, 64 per cent of the IT, and 51.5 per cent of the TS (cf.

table 6.1 below). 'Use of knowledge' and 'Acquisition of new knowledge' came next to this, although quoted respectively by only 13 and 23 per cent of the respondents. The elements less frequently cited, or not cited at all in some groups, include 'Performance of useful tasks', 'Responsibilities', 'Good results', 'Prestige of the profession', 'Personal interest in the profession', 'Salary', 'Opportunities for travelling', 'Being in employment', and 'In-service training'.

These results reinforce the observation just made above that Enstp graduates see no benefit of any kind in their jobs other than job security itself. They think they derive no rewards from them, whether intrinsic (e.g. good results, usefulness of tasks) or extrinsic (e.g. material benefits, social status). Under these circumstances, it must be asked what they are after when they get into employment. What do they wish to achieve through their work or through their membership of the engineering profession? Do they have realistic hopes concerning job prospects and career development in this profession, or are they over-optimistic about these? In short, what are their professional aspirations, and how sensible are these, given the socio-economic situation of the country?

#### 6.1.2 Professional aspirations

The results just discussed show that the graduates' major concern is with their working conditions. They are mainly preoccupied with promotion to positions of significant responsibility and good pay. To achieve this, they very much hope to get opportunities for mobility and further training. Mobility,

Table 6.1: Sources of Job Satisfaction

	I %	IT %	TS %	Enstp %
Use of knowledge	nil	7	22.5	13
Acquisition of new knowledge	45.5	18	19.5	23
Performance of useful tasks	9	7	6.5	7
Responsibilities	18	3.5	nil	4
Achievement of good results	nil	18	6.5	10
Prestige of the profession	nil	3.5	nil	1.5
Personal interest in the profession	9	3.5	nil	3
Salary	9	3.5	13	8.5
Opportunities for travelling	nil	3.5	6.5	4
Being in employment	nil	3.5	9.5	5.5
In-service training	nil	3.5	nil	1.5
Meeting and getting to know people	82	64	51.5	61.5
	n=11	n=28	n=31	n=70

for many of them, means moving to workplaces that are different from their present ones (e.g. from one Ministry, one department, or one region/city to another) while preferably changing positions at the same time. For others (30 per cent), it simply means leaving the engineering profession altogether for medicine, pharmacy, or public administration. In the latter case, there is little doubt that the individuals concerned 'do not have the vocation' as quoted above, or if they do, they are on the verge of losing it.

Further training is much favoured in the quest for better working conditions because of the opportunities it provides for the development of skills in areas like economics, management and computing, which are sought to be essential complements to engineering qualifications. Besides, for the IT and the TS, training remains the only way to directorship positions, as these are filled exclusively by design engineers. Lastly, when such training takes place abroad, i.e. in Europe or North America, it increases the trainees' personal prestige and their chances to get promoted, given the positive attitudes expressed in the country towards qualifications acquired in Western institutions. This explains why the majority of the design and technician engineers, whose qualifications give them a relatively easy access to American, Canadian, or French universities, wish to have their training abroad.

In the light of such findings, it can be argued that most graduates feel fit for managerial functions allowing them to earn substantial benefits and to be associated with, if not to play important roles in decision making. Their aspirations for such

positions and for the prestige and material rewards attached to them add to what they see in their workplaces as poor working conditions, to cause their dissatisfaction with their jobs. But, are these aspirations not unrealistic, especially if they are expected to be fulfilled in the short term (i.e. soon after graduation), as seems to be the case here? If so, why then do the graduates stick to them, and if not, what prevents them from turning into a reality?

The literature on vocational aspirations, as in Raynor (1978a and 1978b) and Heist (1962), describes them as based essentially on two determinants: extrinsic and intrinsic rewards, and ego-identity. Raynor (1978b:201-203 and 206-209) identifies the following as 'the most obvious' of extrinsic rewards: money, power, prestige, security, public acclaim, and approval of family and friends. For him, 'pursuit of career' involves the acquisition of both the requisite competence and 'the rewards that such competence commands'. In connection to this, he notes that career success is defined in many areas 'in terms of "promotion" or "advancements" to higher levels of opportunity for the display of competence, and the corresponding increase in extrinsic rewards that such increased competence demands.' He believes, therefore, that:

'the anticipation that eventual success in ... a contingent career path<sup>1</sup> involves movement to higher levels of knowledge, skill, or proficiency with its concomitant larger extrinsic rewards provides ... the greatest single source of motivational impetus for career striving.'

On the basis of this, he considers that 'ratings of status and/or prestige of a career should reflect the differential amounts of skill and extrinsic rewards generally perceived to be associated with different career paths.' (Raynor, 1978b:202). The purpose

of these observations is to stress the importance of extrinsic rewards in a person's motivation for a career and his subsequent decision to undergo training for the acquisition of the requisite skills. In Raynor's view, such rewards play a far greater role in this respect than the intrinsic ones which are aroused by anticipation of 'immediate success' rather than that of 'future outcomes'.

The rationale for Raynor's position derives from Lewin's (1938) definition of behaviour as 'a series of steps in a path to a goal' and his perception of 'the value of the "subgoals" [in this path] as totally derived from this instrumental relationship to the final goal of the path.' (Raynor, 1978a:71 and 76). Raynor agrees with Lewin that 'more immediately expected outcomes in a path [serve] merely as "means" of getting on to the final goal in the path [rather than] as "ends" in themselves.' The question in the present analysis is: What constitute the 'final goals' pursued by Enstp graduates and how do they relate to their present professional aspirations?

With regard to ego-identity, Raynor (1978b:206 and 207) defines it as 'an "image" or sense of self that provides an answer to the question "Who am I?"'. He sees the development of such an image as a psychological mechanism founded on culture and 'basic personality structure' (i.e. the dispositions established in early socialization). 'Cultural values', he writes, provide 'the individual with a source of "value of success/failure" (Raynor, 1978a:110), and achievement in a person's life 'can be meaningfully viewed as a process over time in which a whole series of interrelated activities and their

consequences combine to produce a judgment, either by the person or by others, concerning accomplishment in life' (Raynor 1978b:199). Under these circumstances, 'adult "role playing", for individuals pursuing a particular career path, may be indistinguishable from the career-related activity', so that 'the "career role" becomes part of [their] sense of self [and] success in the career means attainment of the various goals that define who [they are]' (Raynor, 1978b:206).

Heist (in Henry, 1962:211-234) not only defends the view that 'the profession to which one is finally assigned, whether by self-selection or admissions policy of an institution, is to a large degree a reflection of both the image of a profession and that of one's self', but he also provides a description of the characteristics of persons (students) preparing to enter professions like medicine, engineering, dentistry, and law. Despite some individual differences, he finds that, on average, engineering students (Heist, 1962:223)

- place the highest value upon the theoretical approach, indicating that they gain satisfaction from ordering and systematizing knowledge,
- are oriented to that which is useful and pragmatic,
- and show interest in power, competition, and in having some control over others.

Drawing a parallel between engineering and dentistry, he notes that for these two professions, the students' orientation 'is towards a future position and status to be attained', which means that their 'motivation is quite materialistic and utilitarian.'

Turning now to the situation under discussion here, it will

be argued that the answers to the questions raised about the Enstp graduates' professional aspirations may derive from such elements as just quoted from Raynor and Heist's works, namely, goals in career paths, and the interrelation between ego-identity or self-picture and career image. The cultural values worth bearing in mind in this analysis are those associated with 'success' in the Ivorian society and the engineering profession.

The point was made earlier in Chapter 5 that educated people in Africa, i.e. the 'products' of educational systems, form the new social classes (in comparison with traditional ones) through which 'modernization' takes place, together with industrialization and political development. The confidence placed in these people for their contribution to the successful implementation of national policies, combines with the prestige and respect given to formal knowledge, and therefore to academic credentials, to determine the ways in which they define themselves or are perceived by others as intellectuals and cadres. Besides, in the case of some higher educational institutions like the Enstp and the Ena (National School of Public Administration), the socialization of students into their future professions often leads them to believe that they are trained to become such kinds of persons (i.e. cadres). Their self-image and their perception of their future roles in society develop within this institutional culture or subculture.

Given these two socio-economic environments succinctly described, it is little wonder that most Enstp graduates aspire to positions of responsibility. Not only is this in a direct line with what they are taught to consider as their 'logical'

destination after training, they themselves are aware of what other people achieve with the same qualifications as theirs. They know, for instance, which members of their profession live in the most beautiful houses, earn the highest salaries and fringe benefits, are entitled to or own the largest cars, and most importantly, get access to decision making and political circles. In a word, they know 'who has got butter on his bread', as one technician engineer (132) would rather put it. This explains why:

- they dislike underemployment and such routine tasks as those involved in road maintenance, which offer practically no opportunities for the demonstration of competence,
- they have rather poor opinions about public services where the symbols of status and power are hard to obtain,
- and about one third of them would prefer to shift to medicine, pharmacy, or public administration, if they had the choice: medicine and pharmacy, to them, look more prestigious and rewarding than engineering, and public administrators in scale A1 like the engineers have more opportunities for upward mobility.

Morgan (in Atkinson and Feather, 1974:219) considers that 'the major factor affecting a person's desire for more income might be the number of other persons dependent upon him.' With respect to this point, the questionnaire survey reveals that 83.5 per cent of the graduates are still single: their 'meagre salaries will not even allow them to have girl friends', a technician engineers comments in an informal talk, with a sense of bitterness mixed with a sarcastic tone. Nonetheless, no firm conclusions can be drawn from this figure regarding the dependency ratio in the engineering sector. It may be more

useful, for this analysis, to recall the well-known extended nature of African families and its implications for the utilization of material wealth.

Under kinship obligations, it is the responsibility of well-off persons to assist the needy. A study by Rimmer (1984:46 and 71) estimates the dependency ratio for West African countries at 94, a number which increases together with incomes. To carry out their moral duties towards these ever growing groups of indigent relatives and friends, wage earners often get themselves involved in a series of what Rimmer (p.91) sees as an 'informal redistribution of income.' The expenses incurred in the process relate, in many cases, to school fees, medical care, food, and clothing. Generosity in these matters earns the persons concerned a lot of public acclaim, especially when they also manage to build their parents a house in their native villages or home towns.

Further studies are needed to establish clearly the effects of socio-cultural indicators on the Enstp graduates' self-perception and career-image. Nevertheless, it can be speculated, for the present purpose, that such factors as those just mentioned need to be taken into account when trying to find out what constitutes their final goals in their struggle for a 'room at the top', to use John Braine's terminology (1957). The difficulties undermining their chances to achieve these goals may be analyzed the same way, but interpersonal competition, regulations in workplaces, and politics also deserve much attention in this respect. Section 6.2 below examines these issues.

## 6.2 Interpersonal Relations

Interpersonal relations in workplaces and within the engineering profession on the whole, can be described as the second concern of the majority of younger generation graduates, besides the 'poor' material conditions and job prospects in which they work. They are stigmatized in both the questionnaire survey and the interviews as causing the most serious damages to the profession and its individual members. The issues at stake centre around positioning, resource allocation, and decision making procedures. Practices in the handling of such crucial elements of institutional management and professional life have led to what is widely referred to as a 'polluted atmosphere', and 'interpersonal conflicts'. Words or phrases like discrimination, despotism, superiority complex, selfishness, pride, and lack of group spirit, are repeatedly used in the responses to the survey to depict the situation (1, 15, 24, 61, 102-103, and 115-117). It is reported that work tends to be concentrated in some institutions and in 'a few hands', and that some groups (e.g. the IT, regional directors, Ivorian nationals) are not associated with management (Ministère des T.P.T., 1982:10-18). On analysis, the profession appears to be internally divided, due to structural factors on the one hand, and to self-interest.

### 6.2.1 Structural factors

Structural divisions result from specialization and workplace hierarchies. Specialization in this context refers to the three levels of qualification identified earlier as I, IT, and TS, i.e. the design engineers, the technician engineers, and

the engineering technicians. Aspects of the conflicting views lying behind this technical stratification were discussed in 5.2 above. What can be added here is that despite their distinctive characteristics regarding their knowledge base, and their apparent complementarity, the I and the IT find it difficult to co-operate at work. They compete over managerial functions and resources. The I are said to be so conceited that they look down upon the IT, refuse to involve them in decision making procedures, and deny them their right to share in material rewards where available. Conversely, the IT are found pretentious, claiming to have proved more competent at work than the I and, therefore, to deserve the same treatment as them with respect to promotion to positions of responsibility, access to resources, and authority in the discussion of professional matters. Feelings of distrust exacerbate these tensions between the two groups, as each side holds the other responsible for their inability to collaborate.

Workplace hierarchies deepen internal divisions even further. Besides the conflicts between the I and the IT over positions, other oppositions appear between top managers in central government departments, and between them and regional directors. The problems arising relate to the distribution of power and authority between institutions. Some departments or government agencies are accused of wielding too much power over the others and thereby undermining their operation. The Grands Travaux, for example, is openly criticized for adopting such behaviour (see 6.2.3 below). On the other hand, some 'central' directors are reported to withhold all powers of decision regarding the allocation of material and human resources, and

the management of new construction projects. Whatever the reality behind these allegations, antagonistic feelings have developed among managerial staff and split engineering institutions in the country. Even though much of the blame for this situation is laid on self-interest, as is clearly reflected in the language used to describe it, the bureaucratic regulations applied in these institutions, and the political constraints under which they function, are equally cited as causes of all practices of inclusion and exclusion which characterize relations within the profession.

#### 6.2.2 Bureaucratic and administrative practices

Administrative procedures leading to recruitment, posting, and promotion play a part in interpersonal and inter-institutional conflicts because they are not based on any explicit criteria. As reported earlier, the size of the budget allocated to the Ministries and academic credentials are the key elements considered for selection into public services. Competence, as measured in terms of examination results during training and performance on the job serve no particular purpose. Seniority, rather than expertise, constitutes the only determinant of career advancements. Appointment to positions of high responsibilities like directorship in central government or regional departments are more political than otherwise, and depend on connections within and outside the engineering profession. Even selection for in-service training requires recommendations most of the time. Under these circumstances, ample room is left to decision makers for partiality and favouritism, as a lot of the participants in the survey claim.

The other weaknesses in administrative practices lie in the top-down managerial style adopted by most senior members of staff in workplaces. As Ozaki et al. observe (1988:7), public servants in developing countries 'are totally deprived of any means of participation in the determination of their employment conditions.' Governments unilaterally make decisions, so that 'negotiations and effective consultation hardly ever take place.' In the Côte d'Ivoire, for instance, Benie (1989:11) explains that 'the State alone is responsible for determining the salaries of state officials and agents [...]. Consultation and negotiations are still very limited.' The directors responsible for the day-to-day running of institutions are no less inclined to dictate to their subordinates and refuse to associate them with decision-making. Hence, the graduates' complaint about despotism in their services, and the feelings expressed by the TS that their bosses (usually the I or IT) never listen to them nor help them solve their problems. (8,15).

### 6.2.3 Political constraints

Political constraints take different forms but attention here will focus on the instability of administrative structures due to changes in the government, the austerity measures taken to cope with the financial crisis prevailing in the country, and the 'overwhelming' power granted to the Grands Travaux for the management and control of new investment projects. Administrative structures in the engineer profession have regularly undergone significant reforms on the occasion of cabinet reshuffles. At one time, there are two Ministries for the sector: one for public works and transport, and the other for housing and town planning,

but at another time, these two Ministries are combined into one single body. In this process, senior officers in the services either remain in their positions, or hand over to new comers who may have been their subordinates (all depends on the in-coming Minister's staffing policies). As a consequence, relations between the "winners" and the "losers" become rather tense, as in the case between older and younger generations of engineers and technicians, due to feelings among the former that they have been 'cast aside' from senior positions to allow the latter to take over. Austerity measures adopted under World Bank/IMF Structural Adjustment Programmes (see Chapter 1) have resulted in the deterioration of working conditions in public services. Besides budget cuts and the cancellation of new investment projects, with the resultant shortage of equipment and reduction of workload and employment opportunities, the salaries of civil servants have been frozen. The gap between managerial staff, with relatively better means for surviving, and their subordinates has, therefore, widened, and competition for upward mobility and access to scarce resources has intensified. The problems facing the Grands Travaux originate, in part, from these rather harsh economic conditions.

The Grand Travaux (or Direction et Control des Grands Travaux, in full) is a parastatal established to handle new public investment projects costed at billions of CFA Francs. Initially, it was kept under the administrative control of the Ministry of Public Works and Transport, as its activities consisted in managing the construction of infrastructure like tarred roads, electric dams, airports, sewerage systems, houses and schools.<sup>2</sup> However, following a cabinet reshuffle in 1982,

which split the then Ministry of Public Works, Urban Planning, and Housing, into two (as indicated above), and due to political reasons, it was placed under the direct control of the president himself. Its activities then changed to include both the design and management of all investment projects, and negotiations with international financial institutions. It is even reported that it has also taken over small scale projects and some maintenance programmes. As a result, work in the Ministries dealing with such projects is said to have been reduced drastically, forcing their staff into underemployment.

The Grands Travaux is also attacked for discriminating between Ivorian nationals and expatriates in its wage policy and in the distribution of tasks and responsibilities. Placca (in Jeune Afrique Economie, No.106, 1988:68-76) reports after an interview with Cesareo, the Grand Travaux's director, that the 80 European engineers and economists recruited (against 93 Ivorian of the same qualifications)<sup>3</sup>, are paid fringe benefits totalling 40 per cent of their salaries. Allegedly, they are also assigned the most attractive jobs, whether technical (e.g. engineering design), or administrative (headship and directorship).

It must be explained, concerning wage policies, that these have always favoured non-Africans in all modern sector employment. As shown in a study by the National Office for Vocational Training (ONFP, 1984), quoted in Benie (1989:7), 'average monthly wages of non-Africans were [in 1984] seven times higher than those of Ivorians and 12 times higher than those of non-Ivorian Africans.' A more detailed analysis of data in the

same source reveals that:

'the average monthly salary of non-African managerial staff in 1984 was equal to 1.8 times that of Ivorians and 2.5 times that of non-Ivorian Africans. At the supervisory level, the wages of non-Africans in 1984 were twice as high as those of Ivorians and non-Ivorian Africans ...'.

In the case of the Grands Travaux, such discriminatory policies would probably cause less frustrations among Ivorian nationals if the very role of this 'super' government agency were not to ensure better financial management of projects. Given this 'mission', its critics wonder why expensive manpower should continue to be hired for jobs which local engineers can successfully perform. This constitutes the crux of the matter when both senior and junior members of the engineering profession claim that government authorities have no confidence in the Enstp graduates. The real issue here is that of professional power and prestige, mixed up (to some extent) with nationalist feelings.

#### 6.2.4 Claims for professional power and prestige

It is no contradiction to raise this problem of public confidence after writing in Chapter Five that academic credentials in Africa earn their holders a great deal of admiration and respect. The central point in this debate is the means to achieve social status for the whole civil engineering profession. In other words, the complaints of the members of the profession is not about a rejection of their individual expertise, though this may not be excluded completely, but about what they perceive as the authorities' reluctance or refusal to grant them, as a group, the power and authority they need to boost their social status and prestige. For instance, they wish one of them had been appointed to the directorship of such an

influential institution as the Grands Travaux, and more importantly, that some cabinet members (i.e. Ministers) were selected from among them.<sup>5</sup> Obviously, these are merely political considerations rather than matters relating to professional qualifications. The complaint about the authorities' lack of confidence in Ivorian nationals can therefore be seen as part of a strategy to obtain legitimation by the state through political functions.

Although such a struggle for professional power and prestige calls for unity, it also causes divisions among the Ivorians for reasons of leadership. The competing groups are formed on the basis of their members' former training schools; this way, distinctions are made between the Enstp graduates, by far the most numerous, and those of a technician school in Bamako (Mali) and of French higher education institutions, particularly the Ecole Nationale des Ponts et Chaussées. Each group, it is reported, claims to have a better qualification than the others, or at least to be equal to them but more efficient in some areas of their profession. Further comments will be made on this dispute in the next chapter in the context of Bourdieu's reproduction theory and Kuhn's analysis of paradigmatic confrontations.

Such are the 'realities' behind the facts observed in the field. A summary of the main points raised will be made in the next chapter, and then their interpretation within the theoretical framework adopted for the present study will be considered, before moving on to examine their implications for policy at the Enstp and in public services.

NOTES

1. By 'contingent path' is meant a situation in which immediate success guarantees the opportunity to strive for some number of future successes while immediate failure means future failure by guaranteeing loss of the opportunity to continue in that path.' (Raynor, 1978a:78).
2. Some of the most recent constructions of these kinds include the Autoroute du Nord (a motorway), the Higher National Schools of Agronomy (Ensa), Public Works (Enstp), and Technology (Inset), St. Paul's Cathedral in Abidjan, and the Catholic Basilica Our Lady of Peace in Yamoussoukro.
3. The other members of staff include 90 engineering technicians, 266 laboratory workers, and draftsmen, and 123 secretaries and other skilled workers. (Placca, 1988:72).
4. This is a term used by most participants in the survey to justify their complaints about the authorities' lack of confidence in local engineers.
5. This aspiration has now been fulfilled. On the occasion of a cabinet reshuffle in November 1990, the Director General of Transport and that of the Enstp were nominated, respectively, as Minister of Equipment, Transport and Tourism, and Minister of the Environment, Housing and Urban Planning. Both are former trainees of the Enstp and also graduates of the French Ecole Nationale des Ponts et Chaussées.

## CHAPTER SEVEN

### DISCUSSION

Thus far, the analysis has focused on what is seen as the 'contextual meaning' of the facts observed in the survey. By this is meant interpreting survey results with reference to the setting in which data were collected. The points made this way stand as follows (cf. Chapter 5 and 6):

1. Professional expertise can be viewed as training standards valued for purposes of unification within a profession, quality of the products of professional activities, and 'international credibility'. It is also seen in terms of employability and adaptability, i.e. as a tight relation between qualifications and work, with possibilities for adjustment to new situations.

Such an expertise comprises cognitive skills, acquired through training activities, but also personal characteristics and social skills relevant for leadership functions and for survival in tough working environments.

2. Training at the Enstp is evaluated by both the graduates and their employers as good, although weaknesses are found in management (administrative and financial) and languages. This evaluation is based on a positive appraisal of the graduates, described as well qualified and competent, and on the usefulness of qualification for the skill requirements of jobs.

3. However, the engineering profession as a whole, and its individual members, are faced with a number of difficulties caused by attitudes towards public employment, self-interest (good pay and social status), administrative structures (hierarchies) and practices (in recruitment, positioning, promotion, and resource allocation), and economical and political constraints (equipment, wage policies, power structure). These problems have resulted in the graduates' dissatisfaction with their jobs and/or loss of interest in the engineering profession and interpersonal as well as inter-institutional conflicts.

The aim of this chapter is to provide a theoretical interpretation of these findings using the conceptual framework adopted for the present purpose. It may be worth recalling at this stage that the combination theory in application here serves as a working tool meant to guide the arguments made in the analysis of data. It does not operate like a paradigm which requires confirmation through hypothesis testing. Reference to its components is intended to furnish a theoretical background likely to help illuminate the phenomena under investigation. The discussion in the following lines is, therefore, taken as essentially speculative; it does not seek to establish an empirical basis on which to prove or reject any theory. The issue of 'contradictions' between educational institutions and the 'outside' world will first be taken up for further comments on the conflicts existing in the Ivorian Civil Engineering profession. This will be followed by a passage on the use of job performance in the evaluation of training outcomes. Lastly, some concluding remarks will be made regarding the implications of

the present evaluation study for research on the relationship between education and the labour market.

### 7.1 Contradictions between Education and the World of Work

Professional education, for its orientation towards particular occupations, tends to be regarded as a process of initiation consisting in inculcating the prospective practitioners of such occupations with the requisite physical and mental dispositions. Professional training, it is believed, does not only equip the students with skills, it also teaches them how to behave as professionals; it socializes them into their future profession. The difficulty, though, is that professional culture, as perceived and taught in training institutions does not match completely with that which prevails in the world of work. The example of the Enstp under consideration here shows that some of the elements described by trainers as central characteristics of a professional worker may be in conflict with aspects of professional life. Illustrations of this appear in ideas relating to success and professional identity. These two themes will be examined in sections 7.1.1 and 7.1.2 respectively, under the titles of Institutional Cultures and Professionalism.

#### 7.1.1 Institutional Cultures

Attention focuses on perceptions of success because these are seen as central to career development and self-realisation. It is the contention of this dissertation that the pursuit of particular goals, whether individual or

institutional, may be treated as directed towards the achievement of some kind of success. Definitions of success, however, reflect cultural values and people's perception of themselves and their role in society, as quoted in the preceding chapter from Raynor and Heist. The purpose of the present section is to describe some of the contradictions between such definitions when taken from one cultural environment to another. The conflicts observed in the engineering profession in the Cote d'Ivoire are believed to find part of their explanation from these contradictions.

The dominant view of success at the Enstp is that it requires hard work. Engineering studies are treated as so difficult that continuous application is needed. Classes and laboratory work take over 35 hours a week (40 hours for first year courses), there are oral and written assignments in at least two disciplines every week, and admission to higher classes is subject to tough conditions. The students are aware of these facts even before entering the school, and some say their reason for undertaking such difficult studies is to 'demystify' them. They are often encouraged by the Director General to 'work hard until they feel tired, and harder still when exhausted' because such are the requirements of the engineering profession. This implies that achievements in working life are dependent upon the individual practitioners themselves, the same way as grades and success in examinations result from the students' intellectual capacities. Success, therefore, is interpreted in meritocratic terms.

As a consequence of this perception of engineering

studies and the engineering profession itself, the students at the Enstp are seen, or see themselves, as exceptionally bright, especially when they rank among the most successful in their classes. They are constantly urged to develop a 'fighting spirit' and learn to take initiatives, to ensure that they can successfully sustain the challenges of professional life when they graduate. Physical and mental fitness, they are told, constitute the key to 'a place in the sun' in the engineering profession. 'What is an engineer who cannot swim nor climb up a rope?', the question was asked once in a staff meeting when discussions focused on the role of gymnastics at the Enstp.

Life on campus is made the easiest possible to give the students maximum comfort in their training. In addition to the physical facilities for self-directed learning and recreational activities, the teachers are requested to remain available eight hours a day (including teaching hours) to help with any difficulty they may have in their practice exercises outside class. Most pedagogic and administrative matters (e.g. time-tables, assessment programmes, and sanctions) are discussed either with whole classes or with their representatives. There are no rigid barriers between them and members of staff. This friendly atmosphere and the pleasant environment of the school contrast enormously with situations in workplaces. First, recruitment and positioning after training takes no account of such individual values as intellectual background (e.g. examination results) and practical experience. Certificates are the only elements needed for those purposes. The jobs offered may be demanding but, as explained earlier on, they consist mainly of routine tasks. The equipment in most workplaces is in

short supply, due to the economic crisis: in one instance, for example, a conference room is used as an office outside meeting hours while other rooms are shared by two or three persons, although designed for one. Cars, trucks, bulldozers, and other facilities required on construction sites are in bad repair, salaries are fixed according to workers' categories, and there are no incentives for outstanding job performances. Although the idea of meritocracy still prevails in some places (e.g. private enterprises), it is believed that success in actual fact, depends on political factors rather than hard work and good results. The individuals who make it to the top are those who have connections. As one senior officer puts it (103):

"Political constraints and connections are the main determinants of promotions to higher responsibilities. You need to make yourself known."

Obviously, this stands in contradiction to practices at the Enstp, where rewards (e.g. good grades and admission to higher classes) are based on merit. It looks as though merit in working life is a matter of public relations, the ability to 'sell' oneself and remain 'visible' to decision-makers, not professional excellence, measured in terms of achievement on the job. The truth of the matter, Suleiman (1977:147) explains in an article on the former trainees of French grandes ecoles, is that 'the ambitious and successful seek above all an escape from technical work [...], for specialization and technical expertise [...] are important only insofar as they provide a justification for the elite's monopoly on important posts in the society.' The following quotation illustrates this point further:

"One member of the ponts et chaussées working in an executive position in Paris spoke with derision of those colleagues of his "who lived the good, quiet life of province."

He noted that,

"They are excellent technicians, they really know their métier, but they are really ratés (failures) also. Think of all the things someone in their position could have done, but, no, they preferred to be good road builders instead."

This remark could well have been made by Ivorian engineers, too, as success for them consists in moving up the ladder of hierarchies in their profession and away from technical to managerial functions. Some people may prefer to be technical experts and work on construction sites rather than managers, but in a world where politics is the major determinant of professional advancement, many have learnt to believe that the way to 'the summit' is through 'the management of men rather than the management of things', to quote Laswell (1950:134). The paradox, however, is that such a strategy leads to mobility from an area of competence to one of incompetence, as Peter and Hull demonstrate in their explanation of the 'Peter Principle' (1969). The Enstp graduates, faced with this reality, react negatively and wish to introduce 'their' meritocratic rules, learnt during training, into their workplaces, helplessly calling on decision-makers to assign responsibilities on the basis of proven competence. Their most favourite phrase used to convey this message is 'the right person in the right place' (in French, l'homme qu'il faut a la place qui'il faut). They have very clear ideas how this can operate, but before turning to these, it must be explained what contradictions are caused by professionalism between school-based and workplace institutional cultures.

### 7.1.2 Professionalism

The word professionalism is used here as in Freidson (1970, quoted in Jarvis, 1983:28) to refer to 'commitment to professional ideals and career ... expressed in attitudes, ideas and beliefs', i.e. to 'a particular occupation's view of correct knowledge and ethicality'. The intention of this section is to outline the conflicts between individual practitioners and the engineering profession as a corporate body, with reference to their common attitudes and beliefs. While the interpersonal or inter-group oppositions described in the preceding chapter result from struggles for access to resources and prestigious positions, those between individuals and the profession as a whole are attributable to competition over professionalism. In this connection, aspects of the institutional culture of the Enstp remain in application in workplaces.

The problems connected to professionalism can be traced back to the academic year 1979-1980 when the Enstp was transferred from Abidjan to its present location in Yamoussoukro. That was the beginning of a new training scheme, designed for three levels of qualifications, instead of two as was the case in Abidjan. The third level, that of the technician engineers, was intended to bridge the gap between the engineering technicians and the design engineers so as to fill vacancies in middle-level management. Conflicts started between the students when those in the school of design engineers sought to monopolize leadership roles in extra curricular activities, on the ground that the others would be their subordinates when they graduated and moved into employment. This attempt to apply

workplace social hierarchies to life on campus, allegedly, was supported by some members of staff while others encouraged the students in the school of technician engineers to reject it, as there was 'no difference between them and the design engineers in any respect' (105,110). Even the regulations of the Enstp were said to favour it. The situation degenerated into a real crisis, so much so that even after a settlement was found with the help of the former trainees' association and the Ministry of Public Works and Transport, divisions between the two levels of engineers remained deep throughout all the years that followed and eventually, the school of technician engineers was closed down.

As mentioned earlier in Chapter 6, oppositions between the I and IT still persist in workplaces. In addition to the explanations given, which focus on material interest, another way of interpreting the situation is in terms of a 'paradigmatic confrontation', to use Kuhn's expression (1970), and 'social reproduction' as seen by Bourdieu (1971). From the former perspective, it can be argued that the students in the school of design engineers, i.e. the I, reacted the way they did to the newly-created middle-level qualification to ensure that the norms of their profession were maintained and that the position at the top of its internal hierarchy remained unchallenged. The conflicts thus created centred around the knowledge base of the profession, i.e. the training standards that must be reached for qualification as an 'engineer'. The I claim superiority over the IT, and they see themselves as the elites of the engineering profession because of their mathematical background as holders of C and E-type baccalaureate certificates (as opposed to D for

the IT), the tough qualifying examination they have to take after their two-year preparatory courses, the length of their training (5 years against 4 for the IT), and their all-round skills which enable them to adapt easily to any job offered to them.

The technician engineers' concern is with their own identity. They know where they come in their profession's internal hierarchy, but they do not want to be treated as 'super technicians' or 'pseudo-engineers'. They see themselves as fully-fledged 'professionals', experts in their own right, capable of demonstrating professional excellence like the design engineers, and therefore, deserving recognition as members of the engineering élites. They think, as expressed in the editorial notes of one of their quarterly newsletters (Génie, 1987, Special issue), that 'there is [on the I's part] a misinterpretation of the concept of élite' when they 'refuse to acknowledge the IT's competence'.

This conflict may look futile when interpreted as a struggle for individual professionalism, i.e. a controversy over which of the I and the IT groups can be called engineers. In effect, it is symptomatic of a deeper identity crisis experienced by all members of the engineering profession, and as such, it is part and parcel of a collective struggle for professional status, leading to professional power and prestige. To gain public recognition through state legitimation the profession needs to make certain that its knowledge base remains unquestionable. In practice, this implies the maintenance of its established norms, especially as regards the training

standards of its élites. Given people's preoccupations with 'international standards', there is a tendency, in this process, to 'reproduce' what Becher (1989:21) calls 'disciplinary cultures', developed in prestigious Western institutions. The French Ecole Nationale des ponts et chaussées, for instance, serves as a reference to the Enstp and to its graduates both for the definition of training programmes and the structuring of the engineering profession. The traditional canons of the French civil engineering profession are often quoted in discussions over professionalism. Hence, the importance of mathematics in engineering studies, and the former trainees's calls for peer sponsorship in their quest for upward mobility.

The paradox in this situation is that 'occupational professionalism', to use Ritzer's expression (1973), operates against the profession's internal unification and yet, cohesion is needed in the collective effort to achieve professional prestige and power. Elitism leads to the classification of some engineering practitioners as 'non-professionals' (e.g. the IT) and therefore, to the marginalization of these individuals in the distribution of rewards. Given the bureaucratic hierarchies and power structure in workplaces, especially in public services, the élites themselves derive their personal prestige from their employing organizations rather than from their membership of the engineering profession. Similarly membership of the ruling political party is seen as a major determinant of individual achievement in the public and the semi-public sectors. As a result, the struggle for high positions becomes a 'political battle' in which the leaders seek support from the profession and, in the process, manage only to divide it up

further into coalitions. Individualism and inter-group competition take over collective efforts to raise the profession's status, and the associations set up to deal with its members' common problems hold no more interest for anyone.

These then are the consequences of concern for professionalism, whether individual or occupational. The hierarchical positions at the heart of the debate split the engineering labour market into 'segments' which carry different forms of advantages and disadvantages. How does such an environment affect the former trainees' job performance, and what lessons can be drawn from it for the evaluation of training outcomes? Attention will now focus on these questions.

## 7.2      Job Performance Evaluation: the Need for a Process-oriented Approach

### 7.2.1    Structure of the labour market for engineering practitioners

On the basis of the observations just made concerning the stratification of the engineering profession, three main 'segments' can be identified in the labour market for Enstp graduates: the first consists of 'well-paid' jobs, the second of 'status' jobs, and the third of 'routine' jobs. The well-paid jobs segment comprises employment in private enterprises and parastatals, as well as positions of high responsibility in public services. Those who enter this segment earn high salaries and fringe benefits, including, in some cases, productivity and responsibility bonuses. The financial crisis still prevailing

in the country has forced most enterprises to review their reward systems and cut down their expenses on additional payments, but their employees are still at an advantage compared with civil servants. Salary increases, for instance, occur every six months in some places (127), instead of every two years like in public services. As one interviewee in a parastatal comments on his own situation, 'Our company treats us fairly. We have no complaints about our salaries and career advancements' (125).

The main problem in this segment is that it is 'unprotected' and, therefore, a risky sector. By this is meant that it offers no job security, as the probabilities for managers to take redundancy measures to adapt to constraints on their businesses are higher than in the public sector. From 1980 to 1983, for example, the building and public works sector is reported to have reduced its volume of employment by half (Benie, 1989:4). Two Enstp engineers involved in the present evaluation study were completing the last term of their employment contracts with a company at the time of the fieldwork, and they had no hope to avoid dismissal, since the construction project for which they were hired was over. Some positions of high responsibility in public services are unstable, too, especially those closest to decision-making centres. As explained earlier, cabinet reshuffles often lead to new appointments to such positions, due to their political sensitivity. On the whole, however, the well-paid segment remains an attractive one, both because of its reward systems and the challenging jobs it offers. Besides, most private enterprises and parastatals give their employees a lot of opportunities for in-service training.<sup>2</sup>

The 'status' jobs segment is composed of top, senior, and middle management positions. It corresponds to hierarchies in the administrative structure of workplaces, and as such, its attractiveness derives from the symbols of prestige attached to it. Those who get access to it have titles, power and authority which earn them a lot of material and social benefits. In addition to their salaries and different forms of allowances paid to them, they are entitled to company cars (with or without a chauffeur, depending on ranks), servants (for top and some senior managers) and a number of other advantages which vary from one workplace to another. The financial crisis has resulted in the cancellation of some of these supplementary rewards, like in the well-paid segment but, as one interviewee put it, 'the management of budgets, at times, produces "profit margins" (115) that can compensate for the loss'.

The social benefits accruing from positions of responsibility include peer-esteem, popularity in one's region of origin, and connections in high places. Directors, deputy directors, and heads of departments get elected to leadership functions in professional associations and popular organizations, officially described as socio-economic development associations, but sometimes playing important roles in national or regional politics. These leadership posts in turn create other opportunities for further career advancement, professional excellence, and increased personal prestige. Contacts with other professional associations like the A.I.T.A.C.I. (the national union of engineers, technicians and architects), negotiations with government authorities, and participation in international or national professional

conferences and workshops are all parts of the activities undertaken by the holders of such posts.

The difficulties in this segment arise from the uneven distribution of power between institutions, and political constraints on decision-making processes. Budget cuts and delays in the supply of resources cause disturbances in the execution of programmes. Some middle managers and regional directors complain about what they see as a highly centralized administration with outdated and ineffective rules. Competition is also high, given the limited number of posts, and sponsorship is often needed from 'gatekeepers' like political party leaders or those on top of hierarchies. The design engineers get the highest positions in central government offices (e.g. directorship and headship in Minister's cabinet), in parastatals, and regional offices. They share middle management ones with the technician engineers and some older generation engineering technicians. The latter two groups are systematically blocked at this junior management level, due to their training qualifications.

The 'routine' jobs segment consists of positions held by the rank and file in public services and some parastatals. Their only advantage is job security, since all civil servants are granted tenure on recruitment. There is no competition for posts, and all the graduates with identical levels of qualification are treated the same way within categories set up by the Ministry of Public Services. As reported in Chapter 4, these are identified as A1 for design engineers, A2 for technician engineers, and B1 for engineering technicians.

Salaries increase automatically every other year, except in cases where agents have been sanctioned.

The working conditions in this segment are worse than in the other two. The jobs offered most regularly are seen as thankless tasks, reduced to the maintenance of existing infrastructure, and requiring low-level skills. The agents in this sector either carry no titles, or they are simply called 'technician', or 'engineer'.<sup>3</sup> They have little authority and power, or none at all, depending on their bosses' style of management. They earn no benefits (in cash or in kind) from exceptionally good results achieved through efforts and dedication. The design and technician engineers may be promoted out of this segment to positions of responsibility if they manage to 'sell' themselves well, as explained earlier on, but the chances for such opportunities to arise are rather slim, due to competition, inter-group conflicts, and the lack of precise criteria for selection. As for the engineering technicians, they are victims of what Larson refers to as 'trained incapacity' (1977:204), i.e. their overspecialization which blocks them at the bottom of their profession's internal hierarchy. There is no possibility for them to move to the other segments, unless they get further training and reach engineering-level qualifications (and yet, no provisions are made for in-service training courses leading to such a change, as will be shown later).

It must be noted that there is a tendency for most civil servants in the 'status' and 'routine' jobs segments to seek ways of opting out and taking up employment in the well-

paid segment. In fact, it is a long-established practice for new graduates to enter the public sector first and then apply to be seconded to a parastatal or a private company. This way, they feel secure because they can return to their initial jobs if they happen to be made redundant. Another tendency growing among younger generation graduates is to set up their own business, individually or in groups. At the time of fieldwork, initiatives of this kind had been taken by a design engineer, a technician engineer, and an engineering technician, in land surveying and construction engineering. This emergent sector could be described as the 'high-risk' segment, given the adverse conditions in which it evolves. One of the three graduates just cited (131) describes their difficulties as follows:

"First, there is the challenge of the recurrent expenses. Apart from bills (e.g. telephone and electricity bills), we have to buy an insurance, and pay taxes, the lawyer's fees, and the employees' wages. Next, comes the financing of projects: bank loans are hard to obtain and yet, contracts with our clients have to be executed before we get paid. Then, follows the threat of never winning a contract for a long period of time: this, I am afraid to say, is often due to the lack of support from our own fellow graduates of the Enstp who prefer to satisfy other people than us when negotiating government contracts. Finally, I must mention the frustrations of doing jobs for people and never being paid in time. In this respect, public services and town councils are the worst, but we can't do without them, because they are our biggest and most regular clients."

Despite these hardships,<sup>4</sup> self-employment has become a subject much discussed on campus at the Enstp and in workplaces. The handicap some graduates feel, is that civil engineering courses do not prepare for it yet.

These are the segments of the labour market for civil engineering practitioners. Some issues raised may need further consideration, but the central question worth examining at this

stage is how training skills are utilized and how to assess job performance so as to establish relations between the results achieved on the labour market and the quality of training.

#### 7.2.2 Measuring the value of training qualifications

The analysis made in the preceding chapters and the points discussed in the section above are intended to support the view held in this dissertation that job performance evaluation, aimed at supplying evidence for the measurement of the value of training qualifications, should concern itself with all the variables influencing the execution of tasks, rather than focusing exclusively on issues which hold interest only for the evaluator and/or his client(s). Attempts have been made so far to identify what, in the case of civil engineering in the Cote d'Ivoire, can be described as constituting these variables. The main findings in this respect consist of attitudes to work and to the engineering profession, determined by motivational factors like self-perception, career image, and extrinsic rewards, as well as socio-economic and political constraints imposed by individuals' concern for professionalism and status, bureaucratic regulations, interpersonal and interinstitutional conflicts, the financial crisis, and party politics. What remains to be examined in greater detail is the effects of these on the utilization of training skills from the perspective of the graduates themselves.

Discussions of the relationship between qualifications and jobs concentrate so much on productivity and other economic matters that the individuals who possess the skills and apply

them to their works tend to be treated as though they were mere producers of goods. Evaluating job performance in this context often consists in measuring the extent to which the employers' materialistic interests (i.e. productivity) are fulfilled, to the neglect of the values which the workers themselves may attach to their professional activities and their outcomes. This dissertation wishes to make the point that such a dehumanized product-oriented approach does not provide a sufficient basis for an overall appreciation of the worth of training qualifications, especially when these are defined in three-dimensional terms as savoir (knowledge), savoir-faire (know-how), and savoir-être (behaviour),<sup>5</sup> on the model of Bloom's taxonomy of educational objectives (1956). There needs to be an analysis of the process of skill utilization as well, with particular interest in the degrees to which the persons equipped with these skills are prepared to apply them to the maximum and demonstrate their effectiveness. In other words, it must be established if the individuals concerned are committed to their jobs and if they are willing to perform them to the best of their abilities.

The assumption behind this process-oriented model of evaluation is that workers have a discretionary power over the utilization of their skills, and their performance on the job depends, in a large part, on the ways in which they exercise this power. For instance, they may decide to use as much of their capacities as is necessary to obtain the minimum result that can earn them a benefit of some kind, or prevent them from being sanctioned by their superiors. More positively, they may choose to do their utmost to accomplish the goals attached to

their jobs, even with limited qualifications. It is all a question of personal effort and standards of achievement, which they constantly adapt to their motivation for a particular employment and its socio-economic and political environments. It is believed here that in circumstances where professional activities provide little or no personal satisfaction, they are unlikely to aim high and put much effort in the fulfilment of their duties. They may not even have any interest in proving to be competent.

The situation prevailing in public services in the Cote d'Ivoire can be quoted to illustrate the points just raised. The disgruntled Enstp graduates are reported to be lazy, uncommitted to their jobs, and making no effort to improve themselves (103,105,115), although 'well qualified and competent'. This means that they have the skills they need to perform their tasks, they are 'operational', as the Enstp authorities like to put it, but their behaviour fails to satisfy the requirements of professional practice. In Bloom's terms (1956), they demonstrated competence in the cognitive (i.e. knowledge) and the psycho-motor (i.e. know-how) domains of their qualifications, but not in the affective one. Those of them who are aware of this and want a change call for the establishment of a code of conduct for the profession. Whatever such a measure can help achieve, two fundamental equations arise here:

- 1) What are the 'standard' behavioural characteristics, i.e. those most commonly accepted as valid, to be assessed in a profession like the Ivorian civil engineering when the 'disciplinary cultures' imparted by the training school are

in contradiction with institutional cultures in workplaces, and where, like in France (as reported by Suleiman, 1977), being a 'good road builder' in a regional division of a public service or a private enterprise is a lesser success, if any at all than holding a managerial and administrative post in a central government office in the capital city?

- 2) How should an evaluator interpret weaknesses in the affective domain of training qualifications in situations like those observed in the Cote d'Ivoire and throughout Africa, where 'smooth relations with one's superior' and connections, give better chances of success than 'actual performance on the job, in terms of what the individuals and the organization are meant to accomplish' (Blunt et al., 1985:108)?

The matter at the heart of this questions is that the lack of 'correspondence' between the 'de jure rules of conduct', to use Becher's words (1989:27), i.e. the elements of the engineer's 'cultured habitus' (Bourdieu, 1971) as acquired at school, and those which existed de facto in workplaces, makes it difficult to establish relations between the graduates' actual behaviour at work and their knowledge of their profession's culture. Observable facts about their behaviour as practitioners do not necessarily demonstrate the quality of the skills they acquired at school in the affective domain of their training. As argued above, they may choose to adopt patterns of behaviour and thought that contribute to the realization of their personal goals or fit them in the world of work and, thereby, ignore aspects of the behavioural norms of their profession. Laziness, lack of commitment to one's job,

and other attitudinal dispositions may constitute elements of an individual's response to his environment without revealing his true personality. The findings about the Enstp graduates' behaviour can, therefore, be taken as indicating areas of difficulties in their performance on the job, which need to be born in mind when discussing the quality of their training qualifications. The school, the graduates themselves, and the employing institutions all share responsibility for the prevailing situation.

These observations reinforce the position held in this dissertation that the evaluation of training outcomes by means of data on ex-trainees' job performance requires a qualitative and process-oriented approach, allowing for all major factors affecting the execution of tasks to be taken into account. The combination theory adopted for the present offers a useful frame of reference within which such an evaluation study can be conducted. As applied here, it has helped uncover significant aspects of the 'reality' behind the information gathered in workplaces. Before examining the implications of these findings for the utilization of training skills in the engineering profession and for policy making and curriculum development at the Enstp, it may be worth summarizing their theoretical meaning as can be derived from the analysis and the discussion.

### 7.3 Summary of the Theoretical Meaning of the Findings

The results achieved from the theoretical interpretation of data stand as follows:

### Human capital theories

The human capital thesis is seen as the major motivational factor behind the Ivorian government's decision to make education the topmost priority area (la priorité des priorités) of public spending. As explained in Chapter 5, a lot of faith is put in educated people's ability to contribute to the industrialization, modernization, and political development of the country. In the particular case of engineering education, the macro-economic interpretation of the concept of human capital (as in Mincer, 1984:201) prevails; that is, much value is placed in engineers' central role in industrial production, as well as in technological innovation. Science and technology, it is believed, determine the future of nations and constitute a powerful weapon a developing country's struggles for economic and political independence.

At micro-economic level, salary differentials between educated people and between them and the 'illiterates' reinforce people's views of education as a source of investment. It is a common attitude in the country for parents and students to link levels of education to size of earning, so much so that whole families build their hopes for future material security on their children's successes at school<sup>6</sup>, and thereby lead them to value work in adult life for the financial rewards attached to it.

The human capital thesis also forms part of the ideological devices used by the engineering profession in its attempt to win monopoly over the market. Within the profession itself, the design engineers' claim for leadership roles are

based on what they perceive as their 'superior' knowledge and abilities, compared with the technician engineers and the engineering technicians.

#### The screening hypothesis

In the context of this dissertation, the screening hypothesis does not refute the human capital approach. In fact, it can be argued that the Ivorian educational system is highly selective, as described in Chapter 1, because of the skills taught in schools. It is assumed that such a tough filtering system constitutes an effective way of producing the highest possible quality of expert knowledge and qualification needed for the implementation of development policies. This is not to reject the allocation and legitimation functions of schooling, especially as recruitment into employment (e.g. in public services) and wage and promotion policies are based on school credentials taken at face value. However, it is believed here that situations like the technicians' 'trained incapacity' (i.e. their blocked mobility, due to their specialization), result from the perception of education in its dual functions of screening and human capital development. In addition to this, professional education plays a socializing function by teaching students the behavioural characteristics of a professional practitioner.

#### 'Segmentation' theories

The segmentation of the labour market for civil engineers in the Côte d'Ivoire originates from disparities

between employment sectors in terms of salary, social status, and the skill requirements of jobs. A distinction is made, therefore, between the 'well-paid' jobs segment, the 'status' jobs segment, and the 'routine' jobs segment, to illustrate these characteristics of the professional market, as viewed by Enstp graduates. Mobility within and between segments is possible, unless blocked by overspecialization, but it often takes the form of 'sponsored', rather than 'contest' mobility, to use Turner's terminology (1971).<sup>7</sup> Self-employment could emerge as a fourth segment, the 'high-risk' jobs, in the years ahead.

#### Social reproduction theories

Concern for professionalism, status, and international recognition, compels the Enstp and engineering practitioners to sustain and, therefore, to allow the reproduction of disciplinary cultures regarded as fundamental to the profession. The values inculcated this way include the prestige of mathematic studies, and the perception of an 'engineer' as 'the boss' in workplaces, and the professional expert whose all-round skills fit him in all jobs. Some of the elements of the culture thus acquired during training happen to be in contradiction to practices in working life. For instance, career development and success depend less on job performance and commitment to the profession than on connections and appointment to managerial and administrative functions. Occupational professionalism and collective mobility often undermine individual practitioners' progress and cause divisions inside the profession.

### The combination analysis

The analysis and discussion of the issues highlighted within the context of the theories applied are set in the historical and socio-economic and political environment of the Cote d'Ivoire. The observations made derive their meaning from elements of this environment, although some supporting evidence is consistently drawn from the international literature as necessary to broaden the debate. Views about the role of education in national development, public expectations from educated people, opinions about education and training standards, the managerial principles and styles adopted in workplaces, the bureaucratic structure of public services, the distribution of power between institutions, the effects of public or institutional cultures on individuals' perception of self-realization, adult role playing, and professional success, all constitute significant factors in the interpretation of the findings, owing to their influence on institutions and people within them. It is, therefore, thought that an evaluation study of training outcomes, as undertaken here, calls for a qualitative and a process-oriented approach, as distinct from a product-oriented one, centred exclusively on such economic considerations as productivity and salary differentials.

These are the main results obtained from the interpretation of data in reference to the theories chosen to form the conceptual framework of the present dissertation. An analysis of their implications for employment and training policies follows in the next chapter.

## NOTES

1. This is not an absolute classification, applicable to any study of the Ivorian labour market for civil engineers. The preoccupation in this dissertation is to highlight the ways in which Enstp graduates themselves perceive the situation, and therefore, the segments suggested here centre on the main issues raised in their discussions of career development in their profession.
2. The grands travaux, for instance, systematically involves all categories of its staff in an in-house training programme for upgrading or for the acquisition of new skills. The railway company (called S.I.C.F), the geographic institute (I.G.C.I.), and the local branch of the French consortium Bouygues, are but a few other examples of companies which offer similar courses to cater for ad hoc needs in specific areas.
3. Some workplaces have titles like controleur (supervisor), inspecteur (inspector), and chargé de documentation (librarian).
4. The fact just quoted are described in greater detail in a study conducted at the university of Abidjan by licence and maitrise students in 1988, and reported in the French magazine Marchés tropicaux (14 July 1989:2100-2104). Other studies raising the same issues include Budoc (1987) and Hernandez (1989). The major observation is that banks do not offer much assistance to small and medium size enterprises in Africa. Only one out of five Ivorian entrepreneurs gets a bank loan at the start of his business. The quality of projects and the qualifications of an entrepreneur are less effective means than connections in negotiations with bankers for loans. Besides transactions between entrepreneurs and their suppliers require immediate payment in cash (51 per cent of cases) or by cheque (33 per cent). Payment by instalments is accepted only in 16 per cent cases. A discussion of other aspects of the financial difficulties of African/Ivorian enterprises appears in Laleye (1986).
5. These terms have become catchwords at the Enstp since 1984 when intensive courses were organized to initiate teaching staff to teaching/learning strategies, and curriculum design and course planning techniques. They are frequently used by school authorities to explain that training programmes are directed towards technical as well as social skills.
6. A fairly comprehensive description of the economic functions of education in developing countries appears in Bock (1982), Sobel (1982), and Miller (1988).

7. Turner defines these expressions as follows (Turner, 1971:74):

"Contest mobility is like a sporting event in which many compete for a few recognized prizes ... The most satisfactory outcome is not necessarily a victory of the most able, but of the most deserving ... Sponsored mobility, in contrast, rejects the pattern of the contest and favours a controlled selection process. In this process the elite or their agents, deemed to be best qualified to judge merit, choose individuals for elite status who have the appropriate qualities. Individuals do not win or seize elite status; mobility is rather a process of sponsored induction into the elite."

## CHAPTER EIGHT

IMPLICATIONS OF THE FINDINGS FOR SKILL UTILIZATION  
IN WORKPLACES AND FOR THE ORGANIZATION OF TRAINING

This part of the dissertation focuses on the last of the three major questions raised in the introductory chapter, namely, given the findings about the Enstp graduates' performance on the job, what measures can be taken for a better match between training and employment? The discussion of this issue will be based on the graduates' own suggestion that the 'right person' should get access to the 'right place'. The concern here, therefore, is to determine the applicability of such an idea in the socio-economic context of the Côte d'Ivoire, and its implications for the organization of training at the Enstp.

8.1 The Right Person in the Right Place

The meaning of the graduates' claim just cited is that competence should be used as the major determinant of career advancement. It presupposes the adoption in workplaces of appropriate methods of job performance evaluation, based on clearly defined objective criteria, and aimed at measuring individuals' achievements against pre-established standards. It also calls for a 'contest mobility' type of promotion procedures, as quoted earlier on from Turner (1971). The question arising is whether such rational measures are practical in their strict sense, and can help increase the link between

qualifications and jobs. A brief account must be given here of the problems facing public administration and personnel management in the Côte d'Ivoire before attempting any answers.

#### 8.1.1 Public Administration and Personnel Management in the Côte d'Ivoire

Public administration and personnel management in the Côte d'Ivoire have long been criticized for a number of weaknesses described in government as well as private publications. Without going into details concerning these materials, suffice it to mention the five-year plans 1976 to 1980 and 1981 to 1985. The Ivorian president is quoted in these documents as commenting on the situation in the following terms (1976-1980 five-year plan : 55):

'The impression one gains from our civil service is that it is an increasingly diversified and complex piece of machinery that responds increasingly badly to the requirements of our development.'

The main weaknesses of this administration are then described as follows (1976-1980 five-year plan : 151, and 1981-1985 five-year plan : 747):

'Discrimination in the duties performed by government officials; lack of cohesion within the Administration with a resultant loss in efficiency; confusion as to the role of the Administration; inadequate supervision of public enterprises.'

The causes of these are found in what is seen as 'an increasing dualism between the traditional administration and an administration responsible for development programmes in particular sectors', as well as in the fact that such an administration 'totally caught up in its tasks of representation and the day-to-day management of the country ... neither plans

nor prepares for change. It is not equipped for the job ...'.

The situation is severely criticized and judged intolerable not only because of the growing dissatisfaction it causes among civil servants and workers in parastatals, but essentially also because of the crucial role of public administration in the country's development efforts. It serves as an institution responsible for the planning, the implementation, and the control of this development, it represents the state and the government at all levels, it carries out 70 per cent of investment projects (as of 1980, in combination with parastatals), and it provides 120.000 jobs (as of 1988) (1981-1985 five-year plan : 744, *Fraternité Hebdo*, 27 Oct., 1988:8).

The measures taken to solve the problems listed include the creation in 1968 of the CNRA (National Committee for Administrative Reform), replaced in 1977 by the SGRA (General Secretariat for Administrative Reform), and in 1977 of the MERSE (Ministry in charge of the Reform of Parastatals). The function of these government agencies is to initiate, implement, coordinate, and control all reform programmes. Their main tasks consist in redesigning the overall structure of public administration with the view of decentralizing it, setting up precise goals for the different institutions and departments, and updating the rules and regulations governing personnel management, especially those related to recruitment, promotion, salaries and other material rewards, performance evaluation, and sanctions. Ultimately, these measures are expected to make public administration more economical (in terms of public

spending and use of time), bring it into harmony with the private sector (particularly as regards salaries), and transform it from its 'heavy-handed, fussy, and meddlesome' character (President Houphouët-Boigny, quoted in the 1976-1981 five-year plan : 55) into a 'straightforward and human' administration.

Success in this administrative reform, it is believed, requires changes in attitudes and behaviour. Civil servants are urged to demonstrate rigour, competence, punctuality, and honesty in the fulfilment of their duties. To date, although the situation is said to have improved to some extent, the Minister of Public Services makes the following comments (in *Fraternité Hebdo*, 27 October 1988:6-7):

'One thing must be borne in mind: [the reform of public administration] is a long process. A lot of countries took about ten years to reach an agreement [between all parties concerned]. We started the job, we are very much advanced, since we have collected the views of every category of civil servants about the kinds of changes they desire. We have referred the matter to the Economic and Social Council for their comments. [But], as I am used to saying, our public service is an institution which is at most 28 years old. The pre-independence period must also be taken into account.

Therefore, if we want to set up a new statute based only on justice and equity or levels of qualifications, we run the risk of destroying the fragile institution that has been established. The statute evolved according to certain realities ... under political constraints .... Our priority is to bring personnel costs under control .... We cannot satisfy claims which tend to portray a category of civil servants as superior to another.'

This excerpt from the Minister's interview with the local newsmagazine cited illustrates the complexities involved in the reform project. The major obstacles to a rapid and fundamental change are political, but the professions and other categories of workers obstruct the process as well, as they try to defend their vested interests against those of competing

groups. Under these circumstances, the day seems to be still far away when the 'right person' will be appointed to the 'right place' and rewarded exclusively on the basis of competence. It is not even certain how much can be achieved through the application of such a policy, given that other complicating matters may arise. Views on this issue differ in the literature dealing with public administration and personnel management, as will be shown now in the second part of this debate.

#### 8.1.2 Advantages and Limitations of Scientific Management

The difficulty in the search for a solution to the problems facing public administration and personal management in a country like the Côte d'Ivoire originates from what could be described as a conceptual vacuum in administrative science and management as experienced in Africa. Most experts in these fields consider the Western models inherited from the former colonizing powers unsuitable to African culture and call for their substitution with African alternatives which have yet got to be defined. In the meantime, the Western models in question have undergone changes, due to advances in technology and new developments in political economy. African administrators and personnel managers are therefore left on the horns of a dilemma: trained in Western traditions (mainly French and British), and influenced by the American management by objectives (MBO) model, they find themselves constrained to carry out their functions on a different basis with no precise theoretical frame of reference, or stick to the canons of their disciplines and put themselves at odds with the cultural and political realities of their individual countries.

To resolve this 'management crisis', opinions in favour of an African model advocate a strategy which consists in adopting the fundamentals of existing models and adding to them the essential elements of African culture. Blunt and Popoola, for instance (1985:109 and 160), drawing on their experience of private enterprises and public services in Nigeria, as well as on a comprehensive review of publications on other African countries (e.g. Ghana, Kenya, Tanzania, and Zaire), suggest that 'goal-directed performance [be established] as the major criterion of an individual's worth to [his] organization', but they link the application of such an approach to a kind of 'African' conception of job design which 'goes hand-in-hand with improved performance and greater material returns to the employee'. By this they mean that emphasis should be laid on the creation of an organization climate conducive to higher degrees of job satisfaction and commitment to organizational goals, and consequently, to an increase in organization effectiveness. Central to this, they think, are what they refer to as 'behaviourial processes', i.e. values, attitudes and beliefs, and in this respect, they find it important to take account of African workers' 'over concern' for instrumental (financial) rewards, as is common in all poor countries.

Koffi et al. (1986), D'Iribarne (1986), and Ould Dadda (1988) share the idea that due consideration must be given to the cultural values that characterize African mentalities. However, they have a broader view of what elements in these can be treated as dominant, and worth bearing in mind when discussing public administration and personal management in

Africa. Their analysis of the situation can be summarized as follows (Koffi et al., 1986:44; D'Iribarne, 1986:23 and 24; Ould Dadda, 1988:110):

An African is always a member of a community, i.e. a pre-established group in which he seeks esteem and security. The values collectively shared in such a group comprise essentially: sense of solidarity and honour, sense of community and personalized relationships, and sense of dialogue.

Public administration and personnel management, they believe, should be based on this philosophy of community life, and workplaces should be organized according to its main characteristics. Concerns for group values and particularly for quality in interpersonal relations, marked by mutual trust among members of a working team, should match those for competence and efficiency. In D'Iribarne's words, 'an African management must find ways of linking competence to confidence' and for Koffi et al., this implies making provisions for the individual's affiliation needs, giving him responsibilities, developing his interest in the organization's achievements and problems, and above all, keeping management as transparent as possible.

These proposals address many of the issues raised by the Enstp graduates in their comments on the changes they wish to see in their working conditions. Apparently, therefore, the engineering profession in the Côte d'Ivoire could rid itself of a significant part of the problems facing it if its leaders in public services and parastatals were in a position to implement these recommendations. Interpersonal conflicts, suspicions, and the resulting frustrations may be alleviated while a fair and healthy competition climate develops to allow the 'right person to get access to the right place'. Unfortunately, however, the

chances for such an African management to take a definite shape and serve as a reference in workplaces seem very remote, due to some inherent features of administration and management like secrecy (which Weber (1968) describes as the basis of power in administration), the politicization of bureaucrats or the bureaucratization of politics (Huỳnh Cao Trí, 1988:55), and the overwhelming concern for measurable and short-term economic goals (as imposed under Structural Adjustment Programmes). Besides, what Hood (1990) refers to as 'megatrends' in the West have influence on reforms in Africa. They consist of the following (Hood, 1990:4):

- attempts to check the growth of government, i.e., a trend toward 'de-bureaucratization', as in the 1960s and 1970s.
- the internationalization of public administration (shift of focus away from the national unit towards transnational institutions)
- automation in public administration
- the privatization of public administration (e.g. creation of self-help groups, and para-government bodies)
- the rise of the new public management, characterized by a shift from policy to management, strong emphasis on cost-cutting, quantifiable methods of performance and investment appraisal, and measurable output targets, and greater use of private sector management techniques (e.g. advertising and corporate image building).

This list can be expanded to include the influence of the World Bank and the IMF on policy making in the context of structural

adjustment programmes.

Competition on the international market and pressure from aid donors and foreign investors may force African managers and public administrators to follow these megatrends and comply with the rules of the doctrine underlying them, i.e. in Hood's words. 'scientific management' in the form of 'Taylorism with computers'. In that case, given the focus of this model on economic and monetary matters, culture may not be high on the agenda. However, some answers may be found to the Enstp graduates' preoccupations, especially as regards individual autonomy, personal development based on competent job performance, and transparency in management. Emphasis on rewarding individuals on merit, and the use of 'quantifiable methods of performance appraisal', as just quoted, may increase interest in the fulfilment of tasks and job satisfaction. The major problem unlikely to be solved and which may even be exacerbated is 'blocked mobility' resulting from the internal hierarchy of the engineering profession. Positions requiring engineering-level qualifications will not be made accessible to engineering technicians and technician engineers until they upgrade themselves to such a level. The main issue to be addressed, therefore, is that of in-service training, and this is where the Enstp comes in, as will be discussed shortly in the second part of this chapter.

In the final analysis, 'scientific management' seems to be the most suitable model that can help fill the conceptual vacuum mentioned earlier on. It offers a clear frame of reference within which the fit between qualifications and jobs

can be measured objectively, and it allows good performance to be rewarded as appropriate. Nevertheless, used in its 'scientific' form with emphasis on the quantifiable and economic considerations, it may prove unsatisfactory in reconciling institutional effectiveness, i.e. the achievement of institutional goals, with individual workers' concerns for self-realization through the fulfilment of their duties. The 'right person' may appear to be the one who abdicates his values and beliefs to serve the interests of his employing organization by obeying rigid regulations which give precedence to corporate culture over popular or disciplinary ones, and legitimate social hierarchies in workplaces. Besides, reliance on objective measures for material rewards and promotion does not undermine the importance of connections in career development. Malversations of different kinds and favouritism cannot be eliminated exclusively by rational rules and computer-aided management. These are cultural and behavioural matters requiring solutions beyond rational thinking.

While waiting for broad issues to be settled nationally, there seems to be a consensus among the members of the engineering profession that measures can be taken at the level of the Ministry of Public Works and Transport, and the Ministry of Housing and Urban Planning, their largest employers, to enforce some objective rules in the management of human resources. For instance, with regard to promotion, some of them are in favour of a systematic procedure consisting of the following stages (103,116):

1. Probation period: first year of employment, as requested of all civil servants.

2. First position of responsibility: sub-regional deputy  
director
3. Second position " " : sub-regional director
4. Third position " " : regional deputy  
director
5. Fourth position " " : regional director
6. Fifth position " " : deputy director in  
central administration
7. Sixth position " " : central director or  
director general of  
a parastatal.

The topmost position for the engineering technicians corresponds to stage two, whereas the technician engineers can expect to move up to stage four, and the design engineers to stage seven. Obviously, the applicability of this career structure is dependent upon the overall organizational charts of the Ministries concerned.<sup>2</sup> That is the reason why a lot of anger was caused in the profession when the Ministry of Public Works and Transport was left to function from 1985 to 1989 without any such definite structure, due to political factors associated with the creation of the grands travaux. The other threat to the effectiveness of the proposals made is the lack of objective selection criteria<sup>3</sup> and interpersonal conflicts. Seniority, friendship, recommendations, and other ascriptive variables may remain the most significant determinants of promotion as long as decision-makers rely exclusively on their own preferences and political constraints.

## 8.2 The Enstp as a Centre of Specialization

The implications of the research findings for the organization of training will be examined at three levels: policy, curriculum development, and management and planning. The discussion of these elements will be carried out with reference to some socio-historical events seen as threats to civil engineering education in the Côte d'Ivoire, or as opportunities for taking action against these threats. Particular attention will focus on recent changes in public employment policies, the private and social demand for further training in engineering, the new developments in international cooperation, and the needs of the Enstp itself as an institution. The purpose of this broad-based analysis is to establish the ways in which training could be reorganized to meet the skill requirements of jobs while at the same time trying to adapt to the constraints of its socio-economic and political environment.

### 8.2.1. Threats to Civil Engineering Education in the Côte d'Ivoire

Mention has been made throughout the thesis of the financial crisis prevailing in the Côte d'Ivoire at the moment, like in many other African countries. This unfortunate downturn in a once flourishing economy constitutes the first major threat to the education and training of engineers both because of its negative effects on employment and of the consequences of the measures taken by the government to bring it under control. Concerning the first point, the Enstp graduates have so far escaped unemployment, due to their automatic recruitment into

public services on graduation. However, it is not certain how long such a policy will be kept on, and even if it were for some time, the practice of recruiting new civil servants according to the size of the budget allocated to Ministries for that purpose rather than to their manpower needs (cf. Chapter 4), requires the government to limit access to training. This explains the sharp drop in the student population from a peak of 1045 in 1979-1980 to just 430 in 1988-1989, as shown in Figure 1.4 in Chapter 1.

As the trend towards the privatization of some public and semi-public enterprises continues as part of the structural adjustment programmes under implementation, public employment will most probably need fewer and fewer newly-graduated engineering practitioners.<sup>5</sup> The private sector may then become a larger employer than usual, especially if interest in self-employment carries on and more and more graduates manage to settle down on their own. However, without any statistical data on these issues, one cannot figure out exactly what their effects will be on training needs, and the reality to reckon with for the moment remains the shrinking of the labour market.

With regard to the consequences of the austerity measures taken by the government, and imposed on institutions, to deal with the crisis, they can be described as 'functional' and 'socio-psychological', to use Crespo's words (1989:383). The functional consequences relate to the activities involved in the day-to-day running of the Enstp, and the socio-psychological ones to members of staff, the students, and the organizational climate in which they work. The former appear as follows in an

analysis made by the heads of departments and the directors of the schools constituting the Enstp (Kattar, 1986:37-41):

1. Library services: The library opens only during normal working hours, a period during which most students and teachers are in class. The purpose of such measures is to avoid payment of overtime and other expenses involved in longer library services. Subscription to some important journals has also been cancelled.
2. Computer centre: The computer centre opens exclusively during working hours too, to save on electricity.
3. Visits to worksites: Visits to worksites with students are often disturbed by insufficient supply of petrol (controlled by the Director General himself). The school buses often break down on the road, due to poor maintenance.
4. Laboratories: Laboratory work is regularly delayed because of failures in the equipment resulting from insufficient maintenance.
5. Photocopying and printing services: To reduce the consumption of xerox papers, access to photocopiers and the printing service is made conditional on prior permission from heads of departments and/or directors. The bureaucracy involved in such a procedure causes delays, and some teachers complain about failing to get their teaching materials when needed.
6. Telephone service: Restrictions on the use of telephones make it practically impossible for any member of staff, apart from directors and heads of departments, to call outside the school.

The socio-psychological consequences of such working conditions created by a policy of tight control of the utilization of resources can be felt in the atmosphere of general dissatisfaction among members of staff and the students. The heavy centralization of decision-making, lay-offs, salary reductions (in the case of administrative staff), and the depopulation of the school as a result of drastic cuts in enrolments, exacerbate the feelings of (material) insecurity and despair originating from the country's economic débâcle and its effects on all aspects of life. Most people have low morale at work.

The second threat to the training of civil engineers is the decline in the student population, as just mentioned. In addition to the measures taken by the government to limit enrolment on engineering courses because of the shrinking market for the profession and the financial crisis, interest in these courses has dropped considerably in recent years. The students from upper-secondary classes are more attracted to business, medical, and agricultural schools and teacher colleges than the Enstp. Access to higher education has become so selective and scholarships so difficult to obtain that those among them who manage to make it through the 'filter' do not want to enrol on a tough course and run the risk of being rejected later on in further filtering procedures. The Enstp, particularly, is feared for its high repetition and drop-out rates.

In 1988, for instance, out of 44 Ivorian students taking the second year examination of the school of design engineers, only 38.63 per cent, i.e. 17, succeeded, while

another 38.63 per cent were admitted to repeat, and the remaining 22.72 per cent (i.e. 10), discontinued. Following this, three of the successful ones and another three of the repeaters decided to leave for training in other schools (Enstp, Rapport d'Activité, 1987-1988:2). The results in the school of engineering technicians were much better, as only one out of forty-six second (and final)-year students was rejected, for reasons of discipline, and the other forty-five passed; but this can do little to mitigate the effects of failures in the other school on students' opinions about the Enstp. To make things worse, the engineering profession itself appears less and less attractive to young people, due to the practitioners' own disenchantment with their jobs, and the perception of subjects like computer science, electronic engineering, and pharmacy as more promising in terms of career prospects and financial returns.

When these threats are considered together with the problems facing the Enstp graduates in employment, it appears clearly that urgent action needs to be taken to help the school not only to cope with a limited budget, as is currently undertaken, but also to improve its image as an institution and to increase the competitiveness of the courses it offers. Such measures necessarily include those addressing the specific issues of the appropriateness of training qualifications for the skill requirements of jobs. The question here, though, is whether there exists any room for manoeuvre in the present socio-economic situation of the country, and if so, what opportunities can be capitalized on for the implementation of any plans set up. The latter part of this query will be examined

in section 8.2.2 next, and the former later in 8.2.3.

#### 8.2.2 Opportunities for Taking Action against Threats to Training

It is the contention of this dissertation that despite the deterioration of the environment in which the Enstp functions, opportunities can be found for taking measures to prevent it from slipping further into crisis. These are seen at two important levels: one is the demand for in-service training by engineering practitioners in the Côte d'Ivoire, and for the creation of 'centres of excellence' as substitutes to existing forms of higher education institutions in Africa, and the second consists of the strengths of the school in terms of physical and human resources, as well as connections inside and outside the country.

The demand for further training can be analyzed with reference to individual practitioners and to the members of the profession as a group in the Ivorian society. It has been reported earlier on (cf. Chapter Four, p.4.16) that 87.5 per cent of the participants in the questionnaire survey are eager to pursue their studies, and that most of them want to do so to acquire specific skills in their areas of specialization, although some wish to shift to other professions. Unquestionably, this is a situation which the Enstp cannot ignore any longer, especially as there is no other civil engineering school in the country, and as the individuals concerned are prepared to bear the cost of the training they are asking for.

The social demand ties in with the private one as expressed by the engineering technicians and the technician engineers. The main point here is to introduce more equity and social justice into the training system and to reduce the effects of 'trained incapacity' on career advancements. It is just not fair that such bright persons as recruited from among the most successful students of science and technology for training at the Enstp should be left blocked in dead-end jobs at less than twenty-five or thirty years of age for having specialized as technicians. This practice not only forces the young people in question into a kind of proletarianization, and causes a great deal of frustration among them, it also leads to a waste of 'brain power', to use Bienaymé's words (1989), and a loss of part of the country's potential for technological development.

At international level, given the inability of most African countries to meet the financial requirements of their educational systems, there is a renewed interest in intercountry collaboration (World Bank, 1988:79 and 80; Coombe, 1991). For higher education, most experts call for closer links between institutions (Fafunwa, 1987; Satti, 1987; Williams, 1987; and Araujo e Oliveira, 1987). It is suggested, for instance, that 'centres of specialization' should be created throughout the continent to 'overcome domestic balkanization and regional waste of scarce resources' (Araujo e Oliveira, 1987:519). This means that, depending on their strengths and weaknesses, some institutions should be turned into 'regional poles of attraction' (Orivel and Sergent, 1988:468) catering for the training needs of a group of countries in particular

disciplines. Compared with existing international or multicountry centres<sup>6</sup> which 'end up by not being accountable to any single country or authority' (Araujo e Oliveira, 1987:518), such national but internationally-oriented institutions are found easier to manage and more likely to attract foreign aid.

Since independence political forces generated by the historical ties between African countries and former colonizing powers, and by individual states' quest for sovereignty, national pride, and leadership roles in their interactions with their neighbours, have prevented the emergence of many effective centres of specialization. Even international meetings of tertiary education managers sponsored by organizations like Unesco (1981, 1982, 1983, 1985 and 1987) or the Association of African Universities (1973, 1980, 1989a, 1989b, 1990a, 1990b) have not succeeded in bringing about the changes advocated in long lists of recommendations. However, given the severe deterioration of the conditions in which most institutions function today<sup>7</sup>, the impossibility for individual countries to face the crisis alone while struggling to honour their commitments with banks and other creditors, the threat of substantial foreign aid being withdrawn from Africa in the years ahead because of new political constraints on the international financial market<sup>8</sup>, and the difficulties involved in external borrowing, the time seems very much ripe for an end to what Zolberg (1987) so aptly describes as 'internalist fallacy', meaning here excessive nationalism, and more aggressive policies of regional cooperation allowing better-off universities and colleges to develop into international centres of specialization. The Enstp stands in a favourable position to

make the most of such an opportunity if appropriate measures are taken to reorganize its functioning accordingly.

The particular strengths of the school in present circumstances derive from its transfer from Abidjan to new buildings in a quiet environment inland. Despite the consequences of the prevailing economic decline, it still possesses enough valuable resources to claim elite status in Francophone Sub-Saharan Africa. Architecturally visitors rate it among the most beautiful educational structures in the world (Jeune Afrique Economie, No.125, 1990:235). Its 1500 student intake capacity and the facilities provided for the academic and social needs of such a population (cf. Chapter 1 for details), combine with the quality of its human resources and its products to make it a potential centre of specialization. In addition to this, it has already trained students from 15 African countries, established links with other engineering schools throughout the continent (e.g. in Mali, Cameroon, Morocco, and Tunisia) and in France (11 grandes écoles), and run specific training programmes sponsored by USAID and UNDP as part of development projects in Guinea and the Côte d'Ivoire. This wealth of infrastructure and experience is rather uncommon in Francophone Africa, and there is little doubt, in the context of the present crisis, that many countries in the region would welcome any offer to increase their use of it. All that is needed is a policy of genuine regional cooperation and the adaptation of training to the needs thus created. The next section considers these points in detail.

### 8.2.3 Possible Ways of Adapting Training to its Socio-Economic and Political Environment

To meet the private and social demand for further training and the requirements of internationalization within the context of the present financial constraints, a number of changes need to be carried out in the training system operating at the Enstp. It is not the ambition of this dissertation given the limitations of data to consider the full range of corrective measures that can be taken to deal with specific pedagogical, administrative, and political questions, nor is it the author's competence to discuss issues connected to technical and scientific disciplines. The concern here is with broad policy, curriculum, and managerial matters, raised to inform decision-making and further research on the school. The proposals made are treated as points of interest emerging from the analysis of data and requiring close attention in debates over the possible ways of improving the training system; they are not suggested as definite solutions to the problems under investigation.

#### Policy

With respect to policy, the mission of the school stated in the 1979 presidential decree authorizing its transfer from Abigjan to Yamoussoukro (cf. Chapter 1), is found suitable for the preoccupations expressed in the present dissertation. However, it is felt that part of the problems facing the training system and the engineering profession originate from the fact that one important element of this mission statement, namely in-service training courses, has not been implemented as requested. Since 1979 when the new school was opened, no such courses have ever been organized for any of the former trainees

now in employment. The blame for this is laid on disagreements between decision-makers over course objectives or the procedures for the selection of candidates (100, 133), and the lack of funds. If this is the case, then two lines of action may be worth taking: one dealing with the functions of engineering education in the country's socio-economic development, and the other with the financing system of the school.

The functions of engineering education and training may require clarification so as to achieve consensus on training needs and convince decision-makers of the necessity for the Enstp to attach as much importance to in-service training as to initial training. Emphasis should be placed on the concept of skill, not merely in static terms as an attribute of an individual or a particular job, but in dynamic terms as a characteristic of both an individual and a job, which is subject to transformation because of advances in science and technology and changes in disciplinary or institutional cultures. Coupled with this is the perception of the relationship between training and employment in the broad context of human resource development, viewed as a policy to enable individuals not only to fit into jobs, but essentially also into the careers they choose for their whole working lives and in society. New technology and mobility create new demands in terms of competence and render the skills acquired in training rapidly obsolete. An institution like the Enstp which has exclusive responsibility for the education and training of an entire population of professionals, should therefore make it its duty to assist its graduates in their efforts to upgrade themselves and meet the challenges facing them at work. As Dennison

(1987:6) puts it concerning higher education in Canada:

'Post-secondary education will face two kinds of challenges if it is to play an effective role in accommodating the impact of the new technology. The first is the way in which young people must be prepared if they are to survive in the knowledge-driven workplace. The second is to provide the opportunities for those already established in the workplace to upgrade their skills and to replenish their intellectual armoury if they are to be able to adapt effectively to technological changes.'

Engineering colleges like the ENPC, the ENTPE, the ENTE, the ENSG, and the ESTP in France respond to such situations by setting up flexible in-service training programmes (ISTED, 1984; ENPC, Programme, undated). The suggestion here is that the Enstp should proceed the same way and adopt a more vigorous policy of in-service training than is currently undertaken. The implications for this for curriculum development will now be examined before turning to the financial issues raised earlier on.

### Curriculum

On the basis of survey results (cf. Chapter 4, pp. 122, 123, 130, and 131) and the observations made in the analysis, the discussion of curriculum matters may be centred on four points: course objectives, the content of training programmes, methodology, and in-service training.

Concerning course objectives, it may be useful to consider the possibility of teaching skills for self-employment. Although such skills have yet got to be defined in the context of the Ivorian labour market, this may not constitute a major issue if assistance is sought from the Department of Business Studies at the Higher School of Technology which is just a mile away from the Enstp. The realization of this objective would

serve the interests of the graduates who would contemplate trying their luck in the emerging 'high risk' segment of employment discussed earlier on.<sup>9</sup>

As regards the content of training programmes, the response to calls for a shift in the emphasis of some courses and for the introduction of new subjects into the curriculum requires a follow up study aimed at establishing the usefulness of individual disciplines for professional practice. This question cannot be dealt with in the present evaluation for lack of appropriate data and technical competence in civil engineering. Nevertheless, some comments will be made concerning social sciences and languages.

The content of the courses in social sciences and languages may need redefinition or expansion to take account of the weaknesses observed in these areas in workplaces. Actions taken this way may be the most beneficial if they are intended not only to equip the students with specific skills, but also to increase their awareness of the major issues arising in the disciplines or in scientific and technological development, and of some aspects of working life. In languages, for example, attention could focus on their linguistic and communicative competence (i.e. their knowledge of the rules and their ability to apply these rules) as well as on their understanding of events taking place around them in the Côte d'Ivoire and throughout the world, including changes in the cultural values of the Ivorian society. Such an approach could add an educational flavour to training and facilitate the transition from the institutional culture of the Enstp to that of the

outside world. From this perspective, the teaching of English could centre upon such themes as follows (in addition to the usual topics in general English and ESP):

1. Definition of science and technology (e.g. science vs humanities or science and humanities, intermediate technology, new direction in scientific and technological development).
2. Science, technology and society (e.g. environmental issues in the application of science and technology, construction engineering and road building in rural development, hydraulic works and water supply in rural areas, technological transfer and national culture).

The teaching of French could provide more opportunities for debates over a wider range of topics. Collaboration between French and English teachers, and between them and their technical colleagues and the students would most probably need to be intensified for the selection of these topics and their insertion in the language programmes of the different classes.

These suggestions require the use of a methodology which seeks to increase knowledge while improving behaviour, i.e. a learner-centred participatory approach. The teacher playing the role of an animateur or a facilitator concerns himself with the development of the students' communication skills as well as those 'human capacities' needed for coping with the challenges of adult life and for effective contribution to 'the sustenance of cultural traditions and identities' and

to 'the quality and ease of interpersonal and intergroup communication and action' (Chinapah et al., 1989:21). The inbuilt flexibility of the existing training programme favours the implementation of such a methodological practice.

Provisions for in-service training should comprise degree courses, designed for practising technicians and engineers who wish to undertake further studies to acquire a higher level of qualification (e.g. from TS to IT or from IT to I) or specialize in a particular area (e.g. maintenance of unsurfaced roads, refurbishment of buildings, air-conditioning and ventilation, the treatment and control of industrial waste). Non-degree courses should also be organized for different purposes in the context of the lifelong education and training of all members of the engineering profession. They could range from short courses to seminars, workshops, conferences, and public lectures, depending on demand. To increase the responsiveness of the training system to the requirements of both degree and non-degree courses, it may be necessary to shift to a modular curriculum consisting of compulsory units (or a common core) and optional modules (electives). This may help meet the needs of individual participants and the necessity to aim for prescribed training/professional standards. Changes should also be carried out in the financing system and the management of the Enstp.

### Management

In its present form as a non-profit making public institution or établissement public à caractère administratif,

the Enstp is totally dependent on the Ivorian treasury for its financing. This means that its authorities' main task regarding financial matters consists in spending the budget rather than creating new resources. Even saving on existing funds may be counterproductive because, as Drucker explains (1989:28), 'not to spend the entire budget will only convince the budget makers [...] that the budget for next fiscal period can safely be cut'. Moreover, any amount saved may have to be paid back to the treasury for the financing of other institutions (Côte d'Ivoire, Loi No.80-1070 du 13 Septembre 1980, Article 11, page 3). The belief in this dissertation is that such practices force the Enstp into a parasitic existence and prevent it from using its resources efficiently. It may be more rewarding, both for the government and the school, to shift to a system combining public funding and self-financing procedures, i.e. a method of partial 'cost privatization' whereby recurrent expenditures would be covered by government subsidies and capital expenditure, which are already severely contracted, by other resources mobilized by the school itself.

The ways in which additional funds could be raised include the organization of fee-paying courses (mainly in-service) and other profit-making activities directed towards individuals and institutions inside the country and abroad. For instance, as suggested in other studies (World Bank, 1988; Caillods, 1989), consultancy works and various projects could be undertaken for the benefit of private enterprises, parastatals and town halls. Experience in recent years (Enstp, Rapport d'Activité, 1987-1988) shows that map making, property surveying, engineering design, town planning, and sanitation are

a few examples of areas in which such initiatives could be taken. Besides this financial advantages, they may create opportunities for the teachers and the students to put theory into practice in real working situations outside laboratories, and this in turn may improve the quality of their professional qualifications and increase their interest in training activities. The school may get some publicity from the contacts established in the process and from the results achieved. Eventually, its credibility with the public in the Côte d'Ivoire and abroad may be enhanced, especially with engineering practitioners, the academic world, and aid donors.

This greater financial autonomy should go hand-in-hand with the decentralization of the management and administrative methods of the school, that is, less bureaucracy in its day-to-day running, more decision-making power to school authorities. Under its present organizational structure, the Enstp operates practically the same way as any department in the Ministry of Public Works and Transport, following a top-down model of management. As reported in Chapter 1, all major policy decisions relating to its functioning and to training are taken at governmental level. For instance, the recruitment of new staff and dismissals are subject to prior approval by the Ministry of Public Services (Enstp, Conseil des Professeurs, 1988:9). Since enrolments are controlled externally by the National Committee (the CNO) responsible for the selection of baccalaureate holders into higher education institutions, no planning strategies can be set up at school level to determine the yearly intake of new students. Besides the close links between training and public employment turns it into a kind of

in-house training system operating almost exclusively to serve the interests of the state, under conditions which prevent it from responding to private demand (e.g. quotas imposed on the different areas of specialization often limit the students' choices) and from efficiently tackling its internal problems.

The suggestion here is that much more autonomy should be left to the school authorities for the implementation of policies other than those relating to budget utilization and training outputs. They need to give due consideration to what Gross (1969, quoted in Hoyle, 1986:55) identifies as institutional goals, i.e. in addition to output goals, adaptation goals, management goals, motivation goals, and positional goals. Measures have to be taken to increase the school's responsiveness to its socio-economic and political environment, boost its members' morale despite the deterioration of their working conditions, improve their interpersonal relations, enforce a corporate philosophy that creates and sustains commitment to the school's mission, and establish firm contacts in the academic, business and political worlds.

The development of the Enstp as an institution requires less a reactive model of management, concerned with ad hoc policies of adjustment to change than a proactive one, seeking to make the most of all opportunities, not only to respond to immediate environmental constraints, but also to prepare and even shape the future. Such a management style places emphasis on people and their 'creative potential' (Morgan, 1989:33) rather than on the fulfilment of directives handed down by high-ranking officials in bureaucratic

hierarchies to solve macro-economic and socio-political problems like the debt crisis, the rising social demand for education, and graduate unemployment. The school authorities, members of staff (both administrative and teaching) and the students, all need encouragement to contribute their best to the overall performance of their institution and help it achieve an identity of its own, although placed under the tutelage of a Ministry.

These are the proposals this dissertation wishes to make to guide debates over the relationship between training at the Enstp and the world of work. They may prove a trifle difficult to implement, due to political factors and entrenched habits of various kinds, but the research findings and the hardships facing the Côte d'Ivoire, like many other African countries, point to the necessity for such measures to be considered seriously. The overall conclusion of this evaluation study follows below.

#### NOTES

1. The following works are among the most important ones quoted: Blunt (1982, 1983 and 1984); Gould (1980); Kiggundu et al. (1983); Lungu (1983); and Price (1975).
2. A conference organized in 1975 addressed these issues and made proposals as to the ways in which the Ministry of Public Works and Transport could be structured (Coulibaly, 1975:6-7). Apparently, the only benefit gained from that was a 'theoretical' distribution of labour among institutions and people in a heavily centralized decision-making administration.
3. A 1982 publication by the Ministry of Public Works and Transport on the utilization of Ivorian engineers indicated simply that 'regional directors must demonstrate high technical competence, and ability to adapt and make decisions' (MTPT, 1982:23). It declines responsibility for making suggestions as regards the exact criteria to be used

for the selection of such a person, arguing that decisions about these matters had to be taken by 'administrative authorities'.

4. Some of the ideas developed in this section and the succeeding ones served as a basis for a paper presented at the International Conference on the Planning and Management of Education and Human Resource Development in Small Systems, organized by the Centre for Multicultural Education, Institute of Education, University of London, 21 to 23 May, 1990.
5. No statistical data were found on future employment prospects in the public sector.
6. Examples of such centres in civil engineering exist in Burkina Faso, Togo and Benin.
7. Osundare (1983) and Tipple and Tipple (1983) quoted in World Bank (1988:74--75), explain how the University of Ibadan in Nigeria and the Ghanaian University of Science and Technology at Kumasi are deprived of the bare necessities in their laboratories, and how their teachers are forced to give lectures in overcrowded rooms. A recent study by Coombe (1991) vindicates these observations and reveals that the situation is characteristic of many other higher education institutions in Africa.
8. A summary of these political forces appears as follows in Fardoust (1990:10)
  - possibility of a severe shortage of financial capital.
  - rising demand for capital in Western Europe (Unification of Germany and Project 1992), Eastern Europe, and USSR.
  - decline in the private saving rate in Japan.
  - persistence of the U.S. current account deficit.
  - possibility of continued protectionism by the industrial countries.

To these, the consequences of the Gulf war may be added, as more funds may be diverted to the countries in the region for their reconstruction or their role in the solution of the conflict.

9. It is not assumed here that self-employment will be an option taken by large numbers of graduates, given the difficulties described earlier on in Chapter Seven (pp.193 and 203). What is suggested is that training policies directed towards the private sector should no longer be concerned with paid jobs alone, especially as it is estimated that over two hundred small and medium-size private enterprises currently operating in the civil engineering field in the Côte d'Ivoire are owned by 'non-professionals' and need to be professionally upgraded (Enstp, Cfc, 1987:1). The practical aspects of training programmes and solutions to the financial problems involved in the creation of private enterprises could be worked out in collaboration with the CAPEN, a government agency set up to assist local entrepreneurs.

## CONCLUSION

This dissertation has been concerned with the evaluation of the outcomes of the education and training of civil engineers in the Côte d'Ivoire, with reference to the Higher National School of Public Works (or Enstp). It has focused on three main questions: 1) To what extent can training skills be described as relevant for employment? 2) What factors influence the relationship between training and work? 3) What measures can be taken to achieve a better match between training qualifications and the skill requirements of jobs? The purpose of this last chapter is to recall the results achieved in the analysis of data relating to these three areas of investigation, and to indicate what contribution has been made to the theoretical debate over the relationship between education and the labour market.

### 1. Relevance of Training Skills for Employment

Overall, it has been found that training qualifications are suitable for work. The majority of Enstp graduates are seen as demonstrating professional competence. Their only weaknesses appear to be in social sciences and languages. They have a solid cognitive knowledge base but they need to improve on their behaviour as professionals (e.g. interpersonal skills, cultural awareness). The TS and the IT are mostly involved in technical rather than administrative tasks, and the I do the reverse, but there are instances where functions usually performed by one group (e.g. TS or I) are

assigned to another one. Like their employers, all three groups consider adaptability as the most important aspect of competence, and from this point of view, the concept of relevance in training is perceived more in terms of a loose correspondence between training skills and jobs than narrow specialization. Besides, relevance is defined with reference to training standards treated as basic requirements of a professional qualification in engineering. This is a practice interpreted in the literature (e.g. Larson, 1977) as a strategy to filter access to the profession and to create a 'cognitive commonality' on which to base claims for epistemological superiority, earn public confidence and achieve a monopoly over the professional market.

Relevance is also defined in terms of international comparability of training standards. Engineering education in the Côte d'Ivoire is designed on the French model, as can be found at the Ecole Nationale des Ponts et Chaussées, and for this reason, the cultural traditions of the French civil engineering profession are applied at the Enstp, including training standards. In addition to this, government officials expect Ivorian engineers to have the same qualifications as their French counterparts so as to avoid the policy of Ivorianization leading to the substitution of poor quality for highly qualified staff. In this sense, relevance tend to serve as a political slogan (Haydon, 1973) connected to nationalist feelings in what is seen as the struggle for independence.

A variation in this 'international' view of relevance ties in with the concept of modernization, perceived as

rationalization, that is 'the growth in capacity to apply tested knowledge to all branches of production' (Nash, 1984). A relevant education in this sense, has responsibility 'not only to provide persons with techniques but, more importantly, to provide techniques with critical, informed, and humane persons', i.e. an education which can 'help form a society in which its ideals of free inquiry and rationality ... become chief touchstones of relevance' (Scheffler, 1973:84).

In the light of these perceptions of the concept of relevance in (professional) education, and given the weaknesses observed in the former trainees' performance at work, it has been suggested that the teaching of social sciences and languages be geared to the students' needs in these disciplines, and also to the requirements of such aspects of working life as human relations and adaptability to the cultural environment of workplaces. A flexible teaching programme and collaboration between social science and language teachers and their technical colleges and the students may help achieve these objectives. As regards engineering courses, the major change advocated concerns skills for self-employment. It is thought that these should be included in the training system to take account of growing interest in and need for engineers to enter private practice. Besides, it has been recommended that follow-up studies be undertaken to determine the ways in which the focus of some subjects could be reviewed, and the possibility of introducing new ones into the curriculum, as requested by some participants in the survey.

## 2. Influences on the Relationship Between Training and Employment

The analysis of the factors influencing the relationship between training and employment has focused on individual characteristics, institutional variables and the economic and political situation of the Côte d'Ivoire. Individual characteristics include attitudes to task and work place social hierarchies, commitment to jobs and to the engineering profession, and professional aspirations. It has been shown that most Enstp graduates feel disappointed with their work due to unfulfilled expectations. They have poor opinions about public services, although they appreciate their life-time guarantee of employment. They think that they have been appointed to positions which offer no opportunities for efficient utilization of their skills and for self-improvement. They find their salaries low, their bosses too autocratic, and the general atmosphere in their workplaces frustrating. Some have lost interest in their present jobs, and others in the engineering profession altogether, because of what they see as lack of prospects in their career.

Institutional variables have been identified at three levels: the administrative structure of workplaces and bureaucratic rules, working conditions, and human relations. The social hierarchies created by positions in organizational charts have been found to be sources of division in the profession, especially as access to these positions depends more on connections than competence. The centralization of decision-making has led to inappropriate distribution of tasks and

resources, and to the overstaffing of public services in places like Tower Block D in Abidjan (even though there is no evidence of an overproduction of engineers, as stated in Chapter Four). The recruitment policies of some private enterprises or parastatals, the discriminatory wage policies adopted throughout the country, and the poor methods of evaluation used by personnel managers, have all contributed to the graduates' lack of motivation for their jobs. Contradictions between the institutional culture prevailing at the Enstp (e.g. perceptions of success in the engineering profession) and that which characterizes workplaces (e.g. sponsored mobility) exacerbate this situation further. As for human relations, they have caused a lot of interpersonal and intergroup conflicts, due to practices of inclusion and exclusion observed between the members of the profession according to their levels of qualification, the status of their training schools, and their age group. Competition for social prestige and material security also splits the engineering community.

The economic situation of the country has been quoted as the major cause of the difficulties facing the engineering profession. Since most investment projects have been cancelled and the budget allocated to Ministries reduced to adjust public spending to the financial crisis, the volume of activities in this sector has decreased, and the working conditions in public services and many engineering companies have deteriorated. Salaries have been frozen, fringe benefits scrapped, and provisions for in-service training discontinued. More rigid budget management procedures have been instituted, leading to an even greater centralization of decision-making and politization of bureaucratic functions.

To solve some of the problems thus described, it has been suggested that efforts should be made to develop ways of introducing the principles of 'scientific management' into workplaces, with emphasis on clear management rules and criteria for evaluation and career advancement. This is an echo of expert views expressed in the literature connected with personnel management and public administration in Africa (e.g. Blunt and Popoola, 1985; D'Iribarne, 1986; Ould Dadda, 1989). It is thought that improvements in the organizational climate of enterprises and public services would increase job satisfaction and lead to better job performance, particularly if some cultural values are taken into account. The former trainees' call for the right person to be appointed to the right place may not be completely met by this approach, but some answers could be found to their desire for greater autonomy in the fulfilment of their duties and for more transparency in management.

At school level, the proposals for improving the relationship between training and work centre around three issues: the training policy, the financing system, and management. With regard to the first point, emphasis has been placed on the need for in-service courses, given the necessity for former trainees to upgrade themselves continuously and the lack of other training facilities in the country. This is seen as a way of helping them adapt to changes in their profession and also as a measure against the engineering technicians and the technicians engineers' 'trained incapacity'. Both degree and non-degree courses have been advocated for these purposes.

The financing system of the Enstp has been described as unsuitable for its development as an institution and for the

fulfilment of its mission. Its exclusive dependence on public funding has prevented the school authorities from seeking alternative ways of creating resources to compensate for budget cuts. Besides, in-service training courses have not been organized as requested in the school's mission statement. Therefore, it has been suggested that a method of partial cost privatization be adopted whereby the usual budget would be used on recurrent expenses and extra resources will be generated for investment expenditures. Funds could be mobilized through the organization of profit-making activities inside and outside the school, and through foreign aid.

The bureaucratic rules governing the management and the administration of the school have also been found inappropriate for its development as an institution. Not only are decision-making procedures centralized, but the training system is so closely linked to public employment that its functions like an in-house training and remains closed to private demand. Under these circumstances, the management of the school has almost exclusively concerned itself with spending the budget and producing graduates for public service. The suggestion here is that more autonomy should be left to school authorities for the pursuit of other goals than those relating to financial resources and training output. In addition to this, they should concentrate attention on such institutional development goals as those connected with the school's adaptability to its socio-economic and political environment, improved personnel management, and corporate image building.

Central to all the proposals made is the idea that the

Enstp should be turned into a 'centre of specialization' operating to serve the interests of the Côte d'Ivoire and its neighbouring countries, and those of local as well as foreign members of the civil engineering profession. It should be allowed, within the limits of its capacities (as determined by its physical and human resources), to respond to any demand (social or private) for initial training or specialization. The present financial crisis which has crippled most African economies and changes in relations with Western countries and in the management of the international financial market (emergence of new priorities, the tightening up of lending policies), seem to have triggered off greater interest in regional integration in Africa, particularly with regard to higher education. The Enstp should take advantage of this opportunity to develop its external relations and extend its services throughout the continent, and especially in the Francophone zone.

### 3. Research into the Relationship Between Education and the World of Work

This evaluation study has been conducted within a conceptual framework referred to as combination theory, and used as a working tool rather than a paradigm. The analysis of data has been carried out from the perspectives of its individual components, namely human capital, labour market segmentation, screening and social reproduction theories. It has been argued:

- that education is still valued in the Côte d'Ivoire for what is seen as an investment in human capital (national leaders make it the topmost priority in

- their development and nation-building policies, parents and students consider it the most effective way of getting access to the comforts of modern life)
- that recruitment, wage and promotion policies (particularly in public services) confirm the screening hypothesis, the same way as the highly selective educational system adopted in the country
  - that the labour market for civil engineers in the Côte d'Ivoire is perceived by the former trainees as consisting of four segments, namely the well-paid jobs segment, the status jobs segment, the routine jobs segment, and the high-risk segment
  - and that concerns for professionalism, social prestige and international credibility lead to the reproduction, in the Ivorian engineering profession, of disciplinary cultures treated as indispensable for professional practice. Besides, it has been shown that contradictions exist between such cultural values acquired during training and those which characterize workplaces.

In addition to this theoretical interpretation of data, particular attention has also been paid to their contextual meaning, as determined by the setting in which this investigation has taken place. Norms and values attached to concepts like educational relevance, professional competence, and self-realization, have been explored in relation to the historical, socio-economic and political environment of the Côte d'Ivoire, and where relevant, with reference to research findings reported in the international literature. Changes in

this environment have been considered in the proposals made for the improvement of the relationship between the Enstp and the world of work.

The insight gained from this exercise in evaluation research is that the match between training qualifications and the skill requirements of jobs cannot be measured sufficiently well without an analysis of the ways in which these qualifications are utilized in workplaces. What needs to be established clearly is not only the quality of the former trainees' performance at work, but essentially also the extent to which observable facts relating to their job performance reflect their 'human capacities' as developed in them during training. Product-oriented quantitative approaches to evaluation, concerned mainly with end-results (eg. productivity) rather than the process of skill utilization, may not be sensitive enough to the effects of environmental constraints on these results. This justifies the epistemological stance adopted in the present dissertation which favours for the most part qualitative methods, and the focus of the analysis on such elements as has just been mentioned above.

Research into the relationship between education and the labour market has so far been dominated by confrontations between the advocates of human capital theories, and those of labour market segmentation theories, the screening hypothesis, and sociological approaches like reproduction and contestation theories. It has been argued here that these theories complement, rather than exclude one another, because they deal with different aspects of the problem. The combination theory

designed for the present purpose and built on their individual contributions to the debate may serve as an illustration of this point, and demonstrate the necessity to use them together, rather than as separate paradigms.

Given the scope of this evaluation study, the issue of quality in the training system has not been included in the analysis. As a consequence, such important questions as those relating to teaching and assessment methods, and to the balance in the curriculum between social sciences and technical and scientific subjects (i.e. general education and technical expertise) and between theory and practice have not been considered thoroughly. Attention should turn to these in future evaluation projects. It would also be most desirable that the results achieved here serve as a basis for a more extensive debate among the members of the engineering profession on the utilization of new Enstp graduates in workplaces, and as an argument for making evaluation research an integral part of the training system.

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# A P P E N D I C E S

A P P E N D I X A:

SURVEY INSTRUMENTS

## APPENDIX A1: THE QUESTIONNAIRE

### NOTE EXPLICATIVE

Ce questionnaire s'adresse aux diplomes de l'ENSTP sortis de 1982 a 1987. Il cherche a etablir avec eux quels criteres d'appréciation sont utilises dans le secteur professionnel pour mesurer l'efficacite de la formation dispensee dans cette ecole.

L'auteur entreprend cette enquete dans le cadre de la preparation d'une these de PhD en sciences de l'education, mais l'interet de l'etude pour les participants, reside dans le fait qu'elle leur offre l'occasion de faire connaitre leur opinion sur les forces et les faiblesses d'un systeme de formation dont ils dependent a plus d'un titre et de contribuer de la sorte a l'amelioration de ce systeme ainsi qu'a l'evolution de la profession du genie civil en Cote d'Ivoire.

Vous voudrez bien repondre aux questions en mettant une croix dans les cases correspondant a vos choix et en utilisant l'espace laisse apres chaque question pour vos commentaires.

Il est important que vous remplissiez tout le questionnaire, et surtout, que vous preniez soin de le retourner le plus tot que possible a Monsieur KRA KOFFI, Professeur a l'ENSTP, Departement SES, B.P. 1083, Yamoussoukro (tel. ENSTP: 64.03.05 ou Domicile: 64.08.39).

Veuillez noter egalement le caractere strictement confidentiel de l'enquete. Toutes vos reponses seront examinees dans la plus grande discretion et le rapport que produira l'auteur ne comportera aucune mention pouvant aider a l'identification de qui que ce soit.

Merci d'avance pour votre collaboraton.

L'auteur,

KRA KOFFI

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0 - GENERALITES

0.1 Identification

Nom : Prénoms :

Age :

Nationalité :

Situation de famille :

Adresse personnelle :

0.2 Formation à l'ENSTP

Ecole :

Date d'entrée : Date de sortie :

Spécialité :

Classement à l'examen de sortie :

0.3 Expérience professionnelle

Délai d'attente avant votre premier emploi après l'école :

Causes de ce délai :

- Formation complémentaire ( )  
(Précisez où, quand  
et diplômes obtenus)
- Demande d'emploi non satisfaite ( )
- Délai imposé par l'employeur ( )
- Autres causes (précisez) ( )

0.4 Emploi actuel

Nom de votre employeur :

Département technique :  
(Direction et / ou Sous-Direction)

Titre attaché à votre poste :

- Statut : - Fonctionnaire ( ) - Fonctionnaire en détachement ( )
- non fonctionnaire ( )
- autre (précisez) ( )

Date d'entrée en service :

Adresse professionnelle :

1 - QUALITE DE LA FORMATION A L'ENSTP

1.1 Que pensez-vous du système de formation à l'ENSTP maintenant que vous vous trouvez en situation d'emploi ?

1.2 Qu'en pensiez-vous au moment de votre sortie de l'école ?

1.3 Comment jugez-vous votre propre formation dans cette école par rapport à celle des autres diplômés sortis avant ou après vous ?  
(Mettez une croix dans les cases ci-dessous selon votre choix)

a) Diplômés sortis avant vous, promotion (s) :

	Formation de Qualité supérieure	Formation de même qualité	Formation de qualité inférieure
Connaissances théoriques			
Expérience pratique			

b) Diplômés sortis après vous, promotion (s) :

	Formation de qualité supérieure	Formation de même qualité	Formation de qualité inférieure
Connaissances théoriques			
Expérience pratique			

1.4 Que considérez-vous comme une "bonne" formation dans votre spécialité pour quelqu'un de votre niveau ?

2 - IMPACT DE LA FORMATION ENSTP

2.1 Comment êtes-vous parvenu (e) à votre poste actuel ?  
(vous pouvez cocher plus d'une case à la fois pour cette question)

a) sur recrutement direct

☐

- par le canal de l'OMOC I.

☐

- sur affectation de votre Ministère après  
recrutement par la Fonction Publique

☐

- des suites de contacts personnels avec les  
responsables de votre service ou de votre société

☐

- sur recommandation (dites par qui)

☐

- autres (précisez)

☐

b) par promotion interne

☐

- sur recommandation de vos chefs hiérarchiques

☐

- sur recommandation de personnes autres que  
vos chefs hiérarchiques (précisez)

☐

- à la suite de contacts personnels  
(précisez avec qui)

☐

- autres (précisez)

☐

2.2 Avez-vous eu des entretiens avec des responsables de  
votre service/société au moment de votre recrutement ?

Oui ☐

Nom ☐

Si oui: a) qui était votre interlocuteur ?  
(indiquez son titre ou sa fonction)

b) que cherchait-il à savoir sur vous ?

2.3 Combien d'autres demandeurs d'emploi, diplômés de l'ENSTP ou  
non, se trouvaient en concurrence avec vous pour votre poste  
actuel au moment de votre recrutement ?

2.4 A votre avis, qu'est-ce qui vous a permis d'être sélectionné (e)  
pour ce poste ? Quels atouts personnels aviez-vous ?

2.5 Comment avez-vous accueilli la nouvelle de votre affectation ou nomination à ce poste ?

- avec joie et beaucoup d'intérêt ☐
- avec indifférence et sans grand intérêt  
(expliquez pourquoi) ☐
- avec déception (expliquez pourquoi) ☐
- autres sentiments (précisez et commentez) ☐

2.6 En quoi consiste votre travail ? Dites quelles tâches précises vous sont confiées.

2.7 Dans quel ordre d'importance ces tâches peuvent-elles être décrites dans les termes suivants ,  
(mettez 1 devant le terme dominant, 2 devant le suivant, et ainsi de suite jusqu'au dernier. Notez 0 tous les termes qui n'ont aucun rapport avec votre travail)

- gestion ( )
- conception ( )
- exécution ( )
- contrôle ( )
- encadrement ( )
- autre (précisez) ( )

2.3 Dans quelle proportion considérez-vous vos tâches principales comme

- techniques ?                      pourcentage :
- administratives ?                pourcentage :

2.9 Au plan technique, quelles tâches réussissez-vous à accomplir

- a) avec aisance et succès ?
- b) avec succès mais difficilement ?
- c) avec succès mais en sollicitant de l'aide ?

2.10 Qu'en est-il du point de vue administratif ?

a) travail fait avec aisance et succès :

b) travail fait avec succès mais difficilement :

c) travail fait avec succès mais en sollicitant de l'aide :

2.11 Quel rapport existe-t-il entre votre emploi actuel et votre formation à l'ENSTP ?

- un très grand rapport (au moins 80 % de concordance)
- un rapport moyen (50 à 55 % de concordance)
- un rapport très limité (moins de 50 % de concordance)
- aucun rapport

2.12 Quels sujets étudiés à l'ENSTP vous permettant le mieux d'exécuter vos tâches quotidiennes avec succès ?

- matières techniques :

- sciences fondamentales :

- sciences économiques et sociales (y compris les langues) :

2.13 Avez-vous relevé des insuffisances dans votre formation à l'ENSTP en considérant les exigences de votre emploi actuel ?  
(remplissez les cases ci-dessous, page 6).

2.13 (suite)	Aucune insuffisance	Quelques insuffisances	Beaucoup d'insuffisances
Connaissances scientifiques et techniques		(précisez)	(précisez)
Expérience pratique			
Culture générale. Qualités humaines			

2.14 Que signifie "être compétent" pour un diplômé de votre spécialité et/ou de votre niveau ?  
(classez les éléments suivants par ordre d'importance en considérant le n° 1 comme le plus important)

- Connaître et savoir appliquer les règles théoriques
- Avoir beaucoup d'expérience pratique
- Être capable de s'adapter aux situations nouvelles
- Être capable d'exécuter les tâches avec rapidité
- Savoir s'exprimer
- Savoir travailler en groupe
- Avoir l'esprit d'initiative et le goût du risque
- Être sûr de soi
- Autres (précisez)

☐  
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2.15 Comment vos chefs hiérarchiques vous jugent - ils ?

- Agent très bien qualifié et très efficace
- Agent qualifié et efficace
- Agent qualifié mais pas efficace
- Agent insuffisamment qualifié et pas efficace
- Agent non qualifié

☐  
☐  
☐  
☐  
☐

2.16 Quelles notes d'appréciation (notes administratives, par exemple) avez-vous obtenues pendant vos deux premières années de travail après votre sortie de l'école ?

2.17 Sanctions encourues depuis votre entrée dans la vie active :

Sanction	Date	Causes

2.18 Gratifications et/ou titres honorifiques obtenus depuis votre entrée dans la vie active :  
(précisez-en la nature et la date)

2.19 a) Quelles parties de vos tâches actuelles connaissiez-vous bien à votre sortie de l'ENSTP ?

b) Quelles parties ignoriez-vous complètement à ce moment là ?

c) Qu'avez-vous fait pour pouvoir maîtriser les domaines que vous connaissiez mal ou que vous ignoriez totalement ?

- stage en Côte d'Ivoire (précisez-en le lieu et la date) ☐

- stage à l'étranger (dites où et quand) ☐

- apprentissage sur le terrain  
(décrivez brièvement ce que vous avez fait et les moyens utilisés) ☐

- séminaire (s)  
(dites combien, où et quand) ☐

- autres (précisez)

( )

2.20 Avec quels services ou sociétés et quelles personnes êtes-vous en relation constante à votre poste ?

	Service/Société	Personnes (titre ou fonction)
( à l'intérieur ! ( de votre pro- ! ( pre service !		
( à l'extérieur ! ( de votre ! ( service !		

2.21 Quels moyens de communication utilisez-vous dans le cadre de vos activités professionnelles ?

- moyens utilisés régulièrement :

- moyens utilisés occasionnellement :

2.22 Quels "documents" rédigez-vous souvent à votre poste ?  
(dites environ combien par trimestre)

compte rendu de réunion ( )  
rapport d'activité ( )  
lettres administratives ( )  
lettres commerciales ( )  
notes de services ( )  
autres (précisez) ( )

2.23 Quel usage de l'anglais faites-vous au travail ?

- Aucun usage

- Lecture et exploitation de documents techniques divers

- Traduction de textes divers

- Conversation (téléphonique ou face à face) ☐
- Rédaction de télex ☐
- Lettres administratives ☐
- Lettres commerciales ☐
- Autres (précisez) ☐

2.24 Souhaiteriez-vous recevoir un complément de formation dans les domaines suivants ?  
(si oui, dites qu'est-ce qui vous intéresserait).

- Langue française(ou techniques de l'expression) : Oui ☐  
sujet(s) d'intérêt: . . . . . Non ☐
- Langue anglaise Oui ☐  
sujet(s) d'intérêt: . . . . . Non ☐
- Technique de communication (exemple : conduite de réunion, gestion du temps, etc..) Oui ☐  
sujet(s) d'intérêt: . . . . . Non ☐

### 3. CONTRAINTES SUR LE RAPPORT FORMATION-EMPLOI

3.1 Vous sentez-vous à l'aise à votre poste ?

- Parfaitement ☐
- Pas tout à fait ☐
- Pas du tout ☐

3.2 Si l'occasion vous était donnée de changer, quel choix feriez-vous

- Le même poste dans un autre service ou une autre société ☐
- Un autre poste dans votre service ou société actuel(le) (Dites quel poste, par exemple) ☐
- Un autre poste dans un autre service ou une autre société ☐
- Une autre profession que celle du génie civil (précisez laquelle) ☐

3.3 Quelles satisfactions vous procure votre emploi actuel

- Sur le plan professionnel ?

- Sur le plan social ?

- sur d'autres plans (précisez et commentez) ?

3.4 Quels sont les avantages en nature dont vous bénéficiez en ce moment ?

- aucun avantage ☐
- logement de fonction ☐
- prime de logement ☐
- voiture de fonction avec chauffeur ☐
- voiture de fonction sans chauffeur ☐
- carburant ☐
- gens de maison (cuisinier, gardien, etc.) ☐
- rémunérations accessoires ☐
- autres (précisez) ☐

3.5 Quelles difficultés avez-vous rencontrées sur le plan professionnel au début de votre carrière ?

3.6 A quoi étaient dues ces difficultés ?

3.7 Que trouvez-vous de pénible maintenant dans vos occupations professionnelles de chaque jour ?

3.8 Existe-t-il dans votre service ou votre société et dans la profession du génie civil en Côte d'Ivoire des freins à votre épanouissement personnel

a) en tant qu'ingénieur, ingénieur des techniques, ou technicien supérieur ?

Oui ☐ Non ☐

Si oui, précisez :

Freins au niveau de votre  
service ou votre société

Freins au niveau de la profession même  
du génie civil en Côte d'Ivoire :

b) en tant qu'individu ? Oui ( ☐ ) Non ( ☐ )

Si oui, précisez .

Freins au niveau de votre  
service ou votre société

Freins au niveau de la profession même  
du génie civil en Côte d'Ivoire

3.9 Que faut-il selon vous, pour réussir une bonne carrière  
dans le génie civil en Côte d'Ivoire ?

3.10 Quelles sont vos préoccupations actuelles sur le  
plan professionnel ?

3.11 Envisagez-vous dans l'avenir de reprendre les études  
pour un complément de formation ?

Oui ( ☐ ) Non ( ☐ )

Si oui :

a) dans quel domaine de spécialisation ?

b) pour quel niveau de qualification ?- .....

c) pour quels avantages à l'issue de la formation ?

d) où souhaiteriez-vous recevoir cette formation ?

- en Côte d'Ivoire ( ☐ ) (précisez l'école)

- à l'étranger ( ☐ ) (précisez le pays et l'école)

e) quand souhaiteriez-vous commencer ?

- dès que vous en aurez les possibilités
- dans deux ou trois ans de préférence
- après au moins cinq années de travail  
(dites pourquoi)
- autre date (précisez et commentez)

3.12 Comment la crise économique actuelle affecte -t-elle votre travail ?

- moyens humains insuffisants
- moyens matériels suffisants mais mal entretenus
- moyens matériels insuffisants
- autres (précisez)

3.13 A quelle association d'anciens de l'ENSTP appartenez-vous ?

3.14 Quel rôle jouez-vous dans cette association ?  
(exemple : trésorier, membre actif, etc.)

3.15 Quels avantages tirez-vous de votre appartenance à cette association ?

3.16 Quels avantages esperiez-vous en tirer que vous n'avez pas encore obtenus ?

#### 4. VOIES ET MOYENS POUR ACCROITRE LE RAPPORT ENTRE FORMATION ET EMPLOI

4.1 Quelles sont, à votre avis, les nouvelles voies possibles de développement de votre spécialité en Côte d'Ivoire ?

4.2 Comment la formation à l'ENSTP peut-elle être adaptée à cette évolution de votre spécialité ?

a) contenu des cours scientifiques et techniques

b) contenu des cours de langue et de sciences sociales et économiques :

c) organisation des stages pratiques pendant la formation :

d) méthodes d'enseignement

e) suivi des anciens de l'école pendant leur vie active :

f) autres adaptations (précisez) :

4.3 Quelles améliorations doivent être entreprises dans les services et sociétés pour une meilleure utilisation des diplômés de l'ENSTP ?

a) conditions de recrutement :

b) affectation des postes de travail :

c) rémunération :

d) relations humaines dans les services

e) moyens matériels et financiers

f) moyens humains

g) formation

h) autres améliorations (précisez et commentez)

4.4 Comment pensez-vous qu'une enquête comme celle-ci puisse contribuer à l'accroissement des liens entre la formation à l'ENSTP et le secteur professionnel ?

4.5 Quelles sont vos observations sur la présente enquête ?

Merci encore pour votre collaboration !

## APPENDIX A2: THE INTREVIEW GUIDE

### 0.- GENERALITES

#### 01.- Salutations et Présentations

Saluer, se présenter et demander à l'interlocuteur :

Nom et Prénom :

Titre complet :

Fonction (En quoi consiste votre travail ?) :

Qualification (Domaine de spécialisation et diplôme)

Expérience professionnelle: Depuis combien de temps vous trouvez vous à votre poste actuel ?

#### 02.- Remerciements

Adressés à l'interlocuteur pour sa disponibilité et sa participation à l'enquête

#### 03.- Présentation du projet de recherche et des thèmes retenus pour l'interview

Lire le projet de recherche avec l'interlocuteur en insistant sur l'objet de l'enquête, les thèmes retenus, et le caractère confidentiel de l'enquête.

#### 04.- Organisation de l'interview

- Ordre de discussion des thèmes
- Durée de l'interview : 1 h 30 mn
- Support utilisé : bloc-notes

1.- QUALITE DE LA FORMATION A L'ENSTP

1.1.- Contacts avec l'ENSTP

a.- Types de contacts :

- enseignement (ex. vacataire, membre de jurys)
- formation personnelle (ex. conférence, séminaires)
- activités professionnelles (préciser)
- autres (ex. réunions des anciens, visites personnelles etc.)

b.- Fréquence de ces contacts et date du dernier contact  
(ou de la dernière visite)

1.2.- Connaissance sur la formation à l'ENSTP

- Que savez-vous de façon précise sur la formation à l'ENSTP?

(S'intéresser aux objectifs de la formation, aux méthodes d'enseignement, aux contenus des cours et aux conditions d'attribution des diplômes)

1.3.- Point de vue sur la qualité de la formation à l'ENSTP

- a.- Quelle est votre opinion sur la qualité de la formation à l'ENSTP d'après ce que vous en savez ? Dites si vous la trouvez

très bonne  
bonne

passable  
mauvaise

Justification :

c.- Avez-vous fait part de cette opinion aux responsables de l'ENSTP

Oui  
Non

Si oui, demander comment, i-e- oralement  
ou par écrit

en quelle occasion

A quel responsable

Quelle fut la réaction de ce responsable

Si non, demander pourquoi

d.- Vous est-il arrivé de discuter de la qualité de la formation à l'ENSTP avec d'autres personnes Oui  
que les responsables de cette école ? Non

Si oui, demander : titres de ces personnes :

services :

en quelles occasions :

qu'est-ce qui a été dit :

- e. - Quels faits concrets ont été évoqués à l'appui des observations des uns et des autres ?

## 2. - IMPACT DE LA FORMATION ENSTP

### 2.1. - Recrutement

- a. - Comment procédez-vous pour recruter les diplômés de l'ENSTP ?  
(Faire décrire les différentes étapes de ce recrutement)

- b. - Qu'est-ce qui pèse le plus dans votre décision de recruter tel ou tel diplômé qui sollicite un emploi chez vous ?

Les résultats scolaires  
Les recommandations  
des responsables de l'ENSTP

les relations personnelles  
avec le diplômé  
autres (préciser)

### 2.2. - Description des tâches confiées aux diplômés de l'ENSTP

- a. - Quelles fonctions exercent les diplômés de l'ENSTP que vous employez / que vous avez sous votre responsabilité ?  
(i.e- En quoi consiste leur travail ?)

Les ingénieurs : (nombre :            )

Les ingénieurs des techniques : (nombre :            )

Les techniciens supérieurs : (nombre :            )

5.-

b.- Quelles sont, selon vous, les exigences de ces fonctions en termes de :

- connaissances théoriques ?

- expérience pratique ?

- maîtrise des langues ?

- relations : - avec les chefs hiérarchiques ?

- avec les autres membres du personnel  
de votre service / société ?

### 2.3.- Compétence des diplômés de l'ENSTP

a.- Etes-vous satisfait de la performance des diplômés de l'ENSTP que vous employez ou dont vous êtes responsable ?

- très satisfait

pas totalement satisfait

- satisfait

pas du tout satisfait

Explication :

b.- Trouvez-vous un lien entre leur performance (bonne ou moins bonne) et leur formation initiale à l'ENSTP ?

Oui explication : (faire citer des faits concrets)

Non explication : causes probables des situations évoquées

c.- Combien parmi eux ont eu besoin d'un apprentissage particulier (stage ou formation sur le tas) au début de leur carrière chez vous ?

	INGENIEURS	ING. DES TECHNIQUES	TECHN. SUP.
Nombre de participants			
Durée de l'apprentissage			
Objectif de l'apprentissage			
Méthodes d'instruction (tâches organisées)			

d.- Combien de temps chacun des diplômés a-t-il mis pour s'adapter à ses nouvelles fonctions en entrant chez vous ?

Les ingénieurs :

Les ingénieurs des techniques :

Les techniciens supérieurs :

e.- Qu'avez-vous fait personnellement pour faciliter cette adaptation ?

f.- Quelles connaissances particulières (dans le génie civil ou dans d'autres domaines) pensez-vous que ces diplômés de l'ENSTP doivent encore chercher à acquérir ou à développer pour pouvoir mieux exécuter leurs tâches quotidiennes ?

Les Ingénieurs

les Ingénieurs des Techn.

les Techni. Sup.

g.- Et quelles qualités humaines pensez-vous qu'ils doivent aussi chercher à développer ?

2.4.- Le concept de compétence

a.- Comment définissez-vous le terme de compétence dans le génie civil ?

b.- Et quels sont, d'après vous, les traits caractéristiques les plus indispensables

d'un ingénieur ? (1)

(2)

(3)

d'un ingénieur des techniques ?

(1)

(2)

(3)

d'un technicien supérieur ?

(1)

(2)

(3) -

## 2.5.- Rapport formation-emploi

a.- Quel rapport (-i-e quel degré d'adéquation) pensez-vous qu'il peut y avoir entre formation et emploi dans le génie civil ivoirien ?

- un rapport étroit (ou un très grand rapport)
- un rapport solide mais non étroit (ou rapport moyen)
- un rapport très limité
- aucun rapport

explication :

b.- Croyez-vous qu'il existe un tel rapport entre la formation à l'ENSTP et les emplois disponibles chez vous ? Oui  
Non

Explication :

### 3.- CONSTRAINTES SUR LE RAPPORT FORMATION-EMPLOI

#### 3.1.- Comment réussir dans le génie civil en Côte d'Ivoire

- a.- Pensez-vous qu'en Côte d'Ivoire il suffit d'être compétent, selon votre définition de tout à l'heure pour avoir un poste de travail intéressant (jugé comme tel par les gens du métier) et des promotions régulières dans sa carrière ?      Oui  
Non
- b.- Sinon, Quelles autres aptitudes ou qualités humaines contribuent au succès dans le génie civil ivoirien ?

#### 3.2.- Effets de la crise économique

- a.- Comment la crise économique actuelle affecte-t-elle les activités professionnelles de votre personnel technique ?
- moyens humains insuffisants
  - moyens matériels insuffisants
  - moyens financiers (budget) insuffisants
  - rémunérations des agents bloquées au même taux
  - autres :
- b.- Quelles mesures particulières avez-vous adoptées dans votre société (ou service) pour faire face à cette crise ?

3.3.- Contraintes diverses

a.- le cadre du travail :

- Vos agents se sentent-ils à l'aise au travail ? Oui  
Non

Comment le savez-vous ?  
(qu'est-ce qui vous le fait dire ?)

- Quelles mesures d'encouragement utilisez-vous pour intéresser vos agents à leur travail ?

- Vous est-il arrivé de sanctionner certains d'entre eux ? Oui  
Non

Si oui ; demander

- Combien ont été sanctionnés ?
- Les raisons de la sanction (quelques exemples seulement)
- La nature de la sanction (ex. Avertissement, mauvaise notation)

b.- La profession du génie civil en Côte d'Ivoire :

- Décrivez-moi le marché de l'emploi dans la profession du génie civil en Côte d'Ivoire :

. tel qu'il se présente aujourd'hui :  
(possibilités d'embauche, développement des carrières, difficultés majeures des sociétés et services publics)

- tel qu'il pourrait évoluer dans le futur (dans les trois à cinq années à venir) :  
(considérer les créations d'emploi, taille du marché ivoirien, attrait de la profession sur les jeunes en formation ou en service, etc...)

#### 4.- VOIES ET MOYENS POUR ACCROITRE LE RAPPORT FORMATION-EMPLOI

Etant donné les observations que vous venez de faire, comment pensez-vous que l'on puisse adapter la formation à l'ENSTP aux besoins du secteur professionnel ?

##### 4.1.- Mesures à prendre au niveau de l'ENSTP

a.- Les programmes (parler du contenu des cours et de l'opportunité des matières enseignées)

b.- Les méthodes d'enseignement

c.- La politique de formation :

- quels types de personnels techniques faut-il former pour le génie civil ivoirien ?  
(Ingénieur+Ing.des Techniques+Techn.Supérieurs?)

- Quelle compétence ou qualification viser pour chaque type ?

Les ingénieurs : spécialisés ou généralistes ?

Les techniciens supérieurs :-niveau de recrutement ?

-durée de la formation ?

d.- Les enseignants : (qualification requise)

e.- Suivi des diplômés de l'école :

. quel objectif rechercher ?

. comment l'organiser ?

4.2.- Mesures à prendre au niveau du secteur professionnel

a.- Dans l'administration (i.e. les services publics) :

b.- Dans les sociétés semi-privées (EPN/EPIC...) :

c.- Dans les sociétés privées :

4.3.- Autres mesures

5.- CONCLUSION

5.1.- Nous arrivons maintenant à la fin de notre entretien.  
Avez-vous encore des commentaires à faire :

a.- sur les différentes formations qu'assure l'ENSTP ?

b.- sur la compétence des diplômés de cette école ?

c.- sur le génie civil en Côte d'Ivoire ?

5.2. Quelles remarques pouvez-vous faire sur l'ensemble de l'interview ?

Je vous remercie encore pour votre  
collaboration

A P P E N D I X B:

SELECTED DATA ON THE PARTICIPANTS  
IN THE QUESTIONNAIRE SURVEY

Table B.1: Respondents' Level of Qualification

Level of Qualification	Number	%
I	17	18
IT	39	42
TS	37	40
Total	93	100

Table B.2: Respondents' Specialization

Area of Specialization	I	IT	TS	Enstp	%
Construction	5	8	17	30	32.3
Hydraulics	4	14	5	23	24.7
Surveying		9	9	18	19.4
Road Building	5	6	2	13	14
Geology and Mining		2	1	3	3.2
Urban Planning			3	3	3.2
General	3			3	3.2
Total	17	39	37	93	100

Table B.3: Age-Groups

Age-Group	I	IT	TS	Enstp %
21-25	1	1	14	16 17.2
26-30	14	17	20	51 54.8
31-35	2	15	2	19 20.4
36-40		3		3 3.2
Over 40			1	1 1.1
No answer		3		3 3.2
Total	17	39	37	93 100

Table B.4: Respondents' Professional Experience

Experience	I	IT	TS	Enstp %
1 year	5		7	12 13
2 years	2	4	9	15 16
3 years	2	9	7	18 19.5
4 years	2	6	10	18 19.5
5 years	5	9	1	15 16
6 years	1	11	3	15 16
Total	17	39	37	93 100

Table B.5: Respondents' Distribution Between  
Employment Sectors

Sectors	I	IT	TS	Enstp %	
Public Sector	12	34	31	77	83
Parastatals	3	5	6	14	15
Private Sector	2			2	2
Total	17	39	37	93	100

A P P E N D I X C:

NOTES ON THE EXPLORATORY SURVEY  
AND THE INTERVIEWS

## APPENDIX C1: THE EXPLORATORY SURVEY

As part of the exploratory survey, a two-hour round table involving twelve members of the civil engineering profession (eleven Ivorians and one French) was organised on 3 October 1988. Three main questions were discussed on that occasion, namely: 1) What can be considered as 'appropriate skills' in the civil engineering profession? 2) What relationships should there be between training and employment? 3) How to assess training outcomes with reference to former trainees' performance on the job?

In the discussion of the first question much attention was focused on the term 'competence', seen as the major determinant of the ways in which people define the appropriateness of training skills. It was found that this term refers mainly to the ability to 'apply knowledge', 'adapt to new situations', 'find quick solutions to problems', and 'communicate effectively'.

With regard to the second question, a distinction was made between engineering technicians and design engineers. The former were expected to have 'a good mastery' of their crafts (in French, 'avoir une bonne maitrise de leur metier'), that is, to possess specific skills, whereas the latter were seen as needing 'generic' or 'all-round' skills allowing them to perform both technical and managerial functions. The idea here is that the relationships between training and employment should be 'tight' in the case of engineering technicians, and 'loose' in the case of design engineers.

The discussion of the third question did not lead to the identification of precise criteria for the evaluation of training outcomes. It was indicated that the strengths and weaknesses of a training system may be easy to establish in activities like engineering design, which are based on taught skills, but in execution, supervision, and inspection tasks, where practical experience is more needed than theoretical knowledge, it was

observed that an individual's performance may not necessarily have anything to do with the quality of his or her initial training. In any case, it was agreed that the value of training skills can only be fully appreciated where former trainees do their best to apply these skills efficiently.

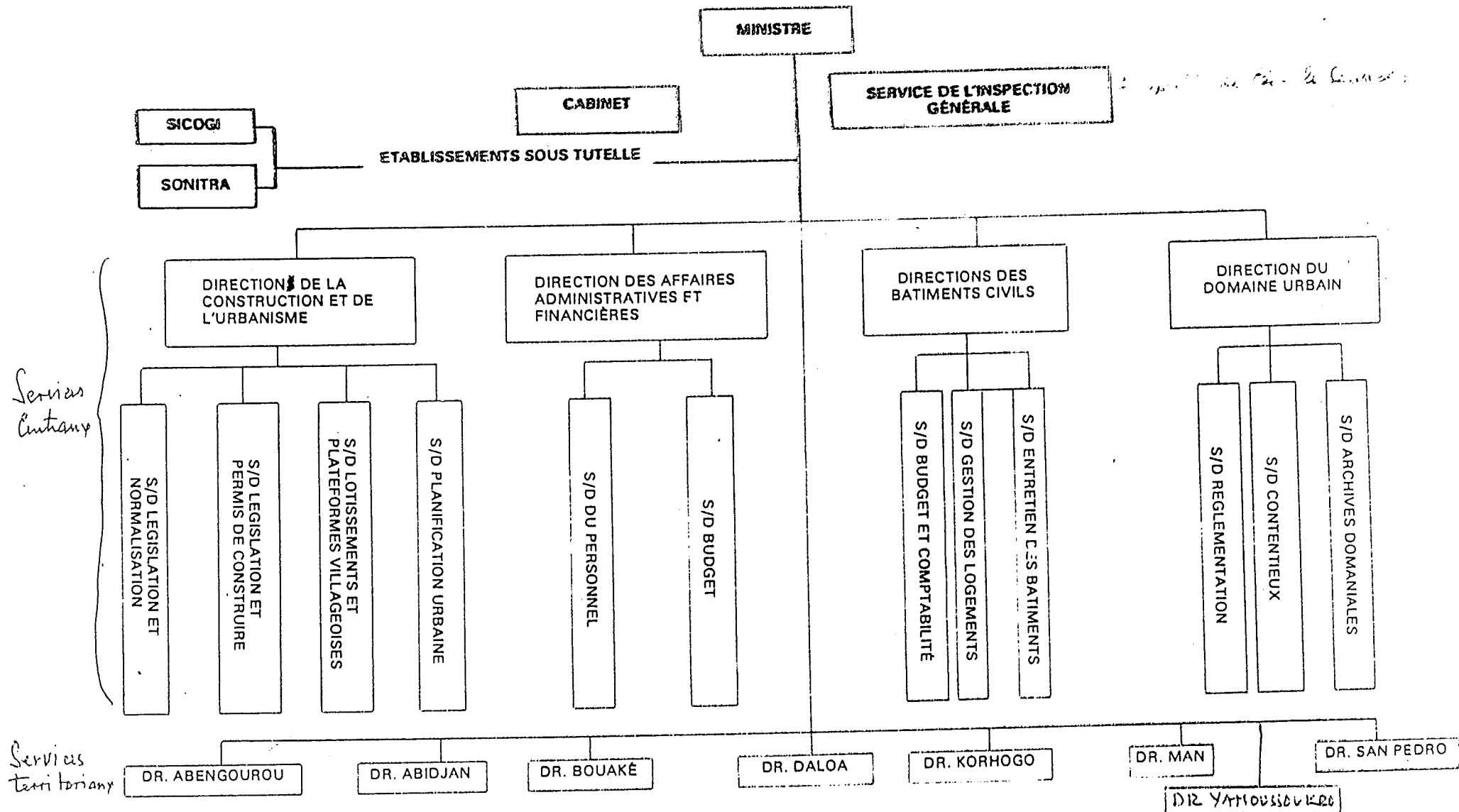
The other major activity undertaken during the exploratory phase of fieldwork consisted in pretesting the questionnaire with ten Enstp graduates. The analysis of the responses and the comments received from these graduates helped identify weaknesses in the first draft of the questionnaire, particularly with regard to the formulation of some questions found either ambiguous or too difficult to answer. Assistance was also sought from a colleague to polish the French used.

The insight gained both from the round table and the pretesting of the questionnaire later guided the organization of the fieldwork.

## APPENDIX C2: THE INTERVIEWS

All the interviews were conducted in the interviewees' offices on appointment, sometimes outside working hours in the evening. One director invited his deputy along and another mobilized all his heads of departments (seven in all) for the occasion. The discussions lasted one and a half to two hours. They focused on the items listed in the interview guide and, where appropriate, on some issues raised by the interviewees themselves. As no recordings were made (at the request of the interviewees), the atmosphere in which they took place was relaxed and friendly. The organizational chart next page illustrates the administrative hierarchies from which the interviewees were selected.

# ORGANIGRAMME DU MINISTRE DE LA CONSTRUCTION ET DE L'URBANISME



CABINET : Cité Administrative, Tour D, 26<sup>e</sup> étage  
INSPECTION : Cité Administrative, Tour D, 25<sup>e</sup> étage

D B C : Près du Palais de Justice  
D D U : Cité Administrative, Tour D, 1<sup>er</sup> et 2<sup>e</sup> étages

A P P E N D I X D:

RESULTS OF THE ENSTP SURVEY



**ECOLE NATIONALE SUPERIEURE  
DES TRAVAUX PUBLICS**



**YAMOUSSOUKRO**

**CENTRE DE FORMATION CONTINUE**

N°002/CFC/RA/AK/87

ETUDE SUR LES DIPLOMES

DE L'ENSTP

**1. INTRODUCTION**

Cette étude résulte de l'analyse des réponses à un questionnaire qui a été envoyé à 650 diplômés de l'ENSTP. Le dépouillement a porté sur les 103 réponses reçues à ce jour.

Nous avons joint deux tableaux récapitulatifs des affectations professionnelles et géographique des diplômés de l'ENSTP sortis avant 1986. Ces deux tableaux résultent d'une enquête effectuée en 1986 par le Centre de Formation Continue de l'école.

**2. PRESENTATION DE L'ETUDE**

Cette étude a pour but de répondre aux 4 questions suivantes :

- 2.1. Qui sont-ils ? (Nombre, répartitions professionnelle et géographique, âge, expérience professionnelle).
- 2.2. Que font-ils ? (Type de société, postes occupés, tâches, contraintes, moyens, avantages, facteurs de satisfaction, incidents, évolution dans le poste).
- 2.3. Que savent-ils, qu'en pensent-ils et qu'en font-ils ? (Durée d'apprentissage, adéquation formation - emploi, principaux savoir-faire utilisés).
- 2.4. Que souhaitent-ils apprendre et comment ? (Formations suivies, besoins en formation).

**3. RESULTATS DE L'ETUDE**

**3.1. Qui sont-ils**

**3.1.1. Nombre**

Sur les 1 457 diplômés, 1 301 sont ivoiriens et parmi eux 1 093 ont été réperés (326 I ; 377 II ; 390 IS).

...

### 3.1.2. Répartition par secteur professionnel

Ils travaillent principalement dans le secteur public (57 %), en partie dans le parapublic (28 %) et accessoirement dans le privé (5 %). Un petit nombre d'entre eux sont actuellement en formation (3 %). Les I se répartissent également entre le secteur public (45 %) et le parapublic (42 %).

### 3.1.3. Répartition géographique

La grande majorité (61 %) est en poste à Abidjan. Les autres se trouvent dans toute la Côte d'Ivoire avec une prédominance (11 %) pour la région Centre.

### 3.1.4. Age

La population de diplômés est une population jeune (92 % ont moins de 40 ans et 52 % ont de 30 à 35 ans).

### 3.1.5. Expérience professionnelle

Leur expérience est en conséquence inférieure ou égale à 10 ans (91 %)

## 3.2. Que font-ils ?

### 3.2.1. Type de société

Les sociétés qui les emploient sont principalement petites (53 % ont un effectif inférieur à 50) ou moyennes (31 % ont un effectif de 50 à 200 personnes).

### 3.2.2. Les postes qu'ils occupent

La majorité des I (75 %) occupent des postes d'encadrement (directeurs, sous-directeurs, chefs de service). Seulement 42 % des IT et 22 % des TS occupent ces postes.

### 3.2.3. Les tâches

Les I réalisent le plus souvent des tâches de gestion (27 %) et d'encadrement (16 %) et sont pratiquement les seuls à réaliser des tâches de conception (6 %).

Les IT réalisent surtout des tâches d'exécution (36 %) et de contrôle (22 %) de même que les TS (31 % et 23 %).

Bien que les tâches de conception soient peu réalisées elles sont le plus valorisées par les I avec les tâches de gestion.

Les IT donnent la plus grande importance au contrôle alors que ce sont les TS qui valorisent le plus l'encadrement.

#### 3.2.4. Contraintes

Pour l'ensemble de la population (I, II, et IS), la contrainte considérée comme la plus lourde, c'est les déplacements (64 %) ; les délais et la qualité viennent juste après (43 %) ; puis enfin, les horaires (41 %), le budget (37 %) et les directives (32 %).

Le budget est une contrainte très inégale : réelle pour les I (49 %) elle est faible pour II (33 %) et très faible pour les IS (11 %).

#### 3.2.5. Les moyens

Plus de la moitié pensent que les moyens humains sont suffisants (57 %). Par contre, les moyens matériels et financiers semblent manquer (28 et 16 %).

#### 3.2.6. Les avantages

Pour équilibrer la contrainte la plus forte, les déplacements, ce qui est considéré comme le premier avantage, c'est la voiture et le carburant (73 et 71 %) cela vient avant le logement (40 %).

#### 3.2.7. Les facteurs de satisfaction

Dans leur travail les facteurs de satisfaction sont dans l'ordre les relations (37 %), le travail lui même (25 %) et enfin l'épanouissement (21 %).

#### 3.2.8. Les incidents

Les incidents qui viennent perturber le bon déroulement du travail sont en majorité d'ordre relationnel (30 %) ou avec le personnel (21 %).

Les incidents techniques représentent 31 % de l'ensemble.

Les problèmes avec le personnel portent soit sur sa qualification, soit sur sa motivation (plus fréquent).

Les problèmes dus à la structure concernent le manque de moyens et l'entretien.

Les conséquences des incidents sont souvent des problèmes de fonctionnement (arrêt-retards) et quelquefois des problèmes de qualité.

Les remèdes mis en oeuvre sont la négociation d'abord puis les actions diverses.

#### 3.2.9. Evolution dans le poste

Dans l'ensemble 40 % entendent une évolution dans leur poste. Par contre pour ceux qui sont en poste dans l'administration ce pourcentage chute à 30 % alors qu'il est de 70 % pour ceux du privé et du parapublic.

### 3.3. Que savent -il, qu'en pensent-ils, qu'en font -ils ?

#### 3.3.1. Durée d'apprentissage dans le poste

D'une manière générale ils s'adaptent rapidement dans leur premier poste (89 % en moins d'un an) et dans leur poste actuel (70 % en moins de 6 mois).

Les II s'adaptent un peu plus vite au premier poste (93 % en moins d'un an contre 87 % des I et 85 % des IS) ainsi qu'au poste actuel (75 % en moins de 6 mois contre 65 % des I et 67 % des IS).

### 3.3.2. Adéquation formation emploi

Les I sont les seuls vraiment satisfaits de cette adéquation (65 % très bonne et 37 % à peu près bonne) par contre les II ne sont pleinement satisfaits qu'à 29 % et les IS à 35 %.

Les I et II valorisent surtout les projets et les stages et à un degré moindre les cours et les travaux pratiques.

Les IS valorisent surtout les cours, les projet et les travaux pratiques et à un degré moindre les stages.

### 3.3.3. Principaux savoir-faire utilisés

Ils sont essentiellement techniques (42 %) et précèdent nettement les qualités personnelles (21 %) les relations humaines (18 %) et les connaissances générales (16 %).

## 3.4. Que souhaitent-ils apprendre et comment ?

### 3.4.1. Formations complémentaires suivies

43 % des I ont suivi une formation complémentaire contre 22 % d'II et 22 % de IS. Ils ont tous été satisfaits à 75 %.

### 3.4.2. Besoins exprimés

Pratiquement tous les anciens élèves expriment des besoins en formation (97 %). Les I privilégient la demande dans le domaine de la gestion (45 %) puis dans les domaines techniques (26 %) et les relations humaines (24 %).

Les II et IS placent en premier le domaine technique (46 et 37 %), puis la gestion (32 et 33 %). Les relations humaines sont demandées par 22 % de IS et 12 % seulement d'II.

Dans l'ensemble ils préfèrent des séminaires ou de la formation continue.

Seuls les II veulent des formations longues (plus de 360 heures).

Pour les I, aucune durée n'est vraiment privilégiée.

Les IS refusent les formations de moins de 360 heures.

# ETUDE QUALITATIVE DES DIPLOMES DE L'ENSTP

Les pourcentages sont calculés par rapport au nombre de réponses de la colonne correspondante

	E.N.S.T.P		INGENIEURS		I.T		T.S	
	Nb	%	Nb	%	Nb	%	Nb	%
<hr/>								
QUEL EST LEUR AGE								
<hr/>								
Nombre de réponses	100		47		36		17	
+ 40 ans	8	8.0	1	2.1	2	5.6	5	29.4
de 35 à 40 ans	19	19.0	7	14.9	3	8.3	9	52.9
de 30 à 35 ans	52	52.0	29	61.7	20	55.6	3	17.6
de 25 à 30 ans	21	21.0	10	21.3	11	30.6	0	0.0
moins de 25 ans	0	0.0	0	0.0	0	0.0	0	0.0
<hr/>								
EXPERIENCE PROFESSIONNELLE								
<hr/>								
Nombre de réponses	102		48		36		18	
+ 10 ans	9	8.8	6	12.5	0	0.0	3	16.7
de 5 à 10 ans	46	45.1	24	50.0	12	33.3	10	55.6
de 2 à 5 ans	45	44.1	18	37.5	22	61.1	5	27.8
moins de 2 ans	2	2.0	0	0.0	2	5.6	0	0.0
<hr/>								
TAILLE DES SOCIETES QUI LES EMPLOIENT								
<hr/>								
Nombre de réponses	64		31		21		12	
+ de 500 employés	3	4.7	3	9.7	0	0.0	0	0.0
de 200 à 500	7	10.9	6	19.4	1	4.8	0	0.0
de 50 à 200	20	31.3	13	41.9	5	23.8	2	16.7
moins de 50	34	53.1	9	29.0	15	71.4	10	83.3
<hr/>								
LES POSTES QU'ILS OCCUPENT								
<hr/>								
Nombre de réponses	98		47		33		18	
Directeur	5	5.1	5	10.6	0	0.0	0	0.0
Sous-Directeur	5	5.1	5	10.6	0	0.0	0	0.0
Chef de Service	44	44.9	26	55.3	14	42.4	4	22.2
Ajt Chef de Service	14	14.3	7	14.9	5	15.2	2	11.1
Ingenieur	17	17.3	5	10.6	12	36.4	0	0.0
Technicien	11	11.2	0	0.0	0	0.0	11	61.1
Divers	3	3.1	0	0.0	2	6.1	1	5.6
<hr/>								
LES TACHES QU'ILS REALISENT LE PLUS								
<hr/>								
Nombre de réponses	238		135		72		31	
Gestion	51	21.4	36	26.7	12	16.7	3	9.7
Conception	9	3.8	8	5.9	1	1.4	0	0.0
Execution	51	21.4	15	11.1	26	36.1	10	32.3
Contrôle	44	18.5	21	15.6	16	22.2	7	22.6
Encadrement	35	14.7	22	16.3	7	9.7	6	19.4
Autres	43	18.1	28	20.7	10	13.9	5	16.1

Les pourcentages sont calculés par rapport au nombre de réponses de la colonne correspondante

	E.N.S.T.P		INGENIEURS		I. I		I. S	
	Nb	%	Nb	%	Nb	%	Nb	%
LES TACHES LES PLUS IMPORTANTES								
Nb de réponses N°1	102		50		33		19	
Gestion	23	22.5	14	28.0	8	24.2	1	5.3
Conception	22	21.6	14	28.0	5	15.2	3	15.8
Exécution	11	10.8	3	6.0	4	12.1	4	21.1
Contrôle	29	28.4	12	24.0	13	39.4	4	21.1
Encadrement	12	11.8	5	10.0	2	6.1	5	26.3
Autres	2	2.0	1	2.0	1	3.0	0	0.0
Nb de réponses N°2	92		46		30		16	
Gestion	15	16.3	12	26.1	3	10.0	0	0.0
Conception	15	16.3	11	23.9	3	10.0	1	6.3
Exécution	20	21.7	6	13.0	7	23.3	7	43.8
Contrôle	22	23.9	7	15.2	9	30.0	6	37.5
Encadrement	18	19.6	8	17.4	8	26.7	2	12.5
Autres	2	2.2	2	4.3	0	0.0	0	0.0
QUELLES SONT LES CONTRAINTES (Nb et % de oui)								
Nombre de réponses	103		49		36		18	
Horaires	43	41.7	24	49.0	11	30.6	8	44.4
Déplacements	66	64.1	30	61.2	25	69.4	11	61.1
Délais	45	43.7	22	44.9	13	36.1	10	55.6
Qualité	45	43.7	25	51.0	16	44.4	4	22.2
Budget	38	36.9	24	49.0	12	33.3	2	11.1
Directives	33	32.0	19	38.8	9	25.0	5	27.8
Autres	9	8.7	6	12.2	1	2.8	2	11.1
LES MOYENS SONT-ILS SUFFISANTS (Nb et % de oui)								
Nombre de réponses	97		46		33		18	
Moyens Humains	55	56.7	25	54.3	20	60.6	10	55.6
Moyens Matériels	27	27.8	16	34.8	8	24.2	3	16.7
Moyens Financiers	16	16.5	12	26.1	4	12.1	0	0.0
QUELS SONT LES AVANTAGES (Nb et % de oui)								
Nombre de réponses	97		46		35		16	
Logement	39	40.2	21	45.7	11	31.4	7	43.8
Voiture	71	73.2	38	82.6	22	62.9	11	68.8
Carburant	69	71.1	37	80.4	22	62.9	10	62.5
Personnel de maison	1	1.0	1	2.2	0	0.0	0	0.0
Rémunérations en +	8	8.2	6	13.0	0	0.0	2	12.5
Autres	6	6.2	2	4.3	4	11.4	0	0.0

Les pourcentages sont calculés par rapport au nombre de réponses de la colonne correspondante

	E.N.S.T.P		INGENIEURS		I.T		T.S	
	Nb	%	Nb	%	Nb	%	Nb	%
DUREE D'APPRENTISSAGE 1° EMPLOI								
Nombre de réponses	81		38		30		13	
moins de 3 mois	35	43.2	12	31.6	17	56.7	6	46.2
de 3 à 6 mois	8	9.9	5	13.2	2	6.7	1	7.7
de 6 à 12 mois	29	35.8	16	42.1	9	30.0	4	30.8
de 1 à 2 ans	8	9.9	4	10.5	2	6.7	2	15.4
+ de 2 ans	1	1.2	1	2.6	0	0.0	0	0.0
DUREE D'APPRENTISSAGE EMPLOI ACTUEL								
Nombre de réponses	55		25		24		6	
moins de 3 mois	31	56.4	12	48.0	15	62.5	4	66.7
de 3 à 6 mois	4	7.3	1	4.0	3	12.5	0	0.0
de 6 à 12 mois	12	21.8	5	20.0	5	20.8	2	33.3
de 1 à 2 ans	4	7.3	3	12.0	1	4.2	0	0.0
+ de 2 ans	1	1.8	1	4.0	0	0.0	0	0.0
ADEQUATION FORMATION-EMPLOI								
Nombre de réponses	97		46		34		17	
Tout à fait bonne	44	45.4	28	60.9	10	29.4	6	35.3
A peu près bonne	45	46.4	17	37.0	21	61.8	7	41.2
Pas du tout bonne	8	8.2	1	2.2	3	8.8	4	23.5
IMPACT DES COURS								
Nombre de réponses	96		47		35		14	
Très important	54	56.3	27	57.4	16	45.7	11	78.6
Assez important	40	41.7	20	42.6	18	51.4	2	14.3
Pas important	2	2.1	0	0.0	1	2.9	1	7.1
IMPACT DES TRAVAUX PRATIQUES								
Nombre de réponses	93		46		34		13	
Très important	30	32.3	9	19.6	12	35.3	9	69.2
Assez important	52	55.9	33	71.7	16	47.1	3	23.1
Pas important	11	11.8	4	8.7	6	17.6	1	7.7
IMPACT DES STAGES								
Nombre de réponses	97		47		35		15	
Très important	66	68.0	35	74.5	23	65.7	8	53.3
Assez important	25	25.8	9	19.1	10	28.6	6	40.0
Pas important	6	6.2	3	6.4	2	5.7	1	6.7

Les pourcentages sont calculés par rapport au nombre de réponses de la colonne correspondante

	E.N.S.T.P		INGENIEURS		I.T		T.S	
	Nb	%	Nb	%	Nb	%	Nb	%
IMPACT DES PROJETS								
Nombre de réponses	93		45		35		13	
Très important	59	63.4	28	62.2	21	60.0	10	76.9
Assez important	25	26.9	15	33.3	8	22.9	2	15.4
Pas important	9	9.7	2	4.4	6	17.1	1	7.7
FORMATIONS COMPLEMENTAIRES								
Nombre de réponses	100		46		36		18	
Ils en ont suivi	32	32.0	20	43.5	8	22.2	4	22.2
Ils sont satisfaits	24	75.0	15	75.0	6	75.0	3	75.0
BESOINS EN FORMATION								
Nombre de réponses	98		46		35		17	
Ils en veulent	95	96.9	44	95.7	35	100.0	16	94.1
FORMATION DANS QUEL DOMAINE								
Nombre de réponses	160		76		57		27	
Technique	56	35.0	20	26.3	26	45.6	10	37.0
Gestion	61	38.1	34	44.7	18	31.6	9	33.3
Relations Humaines	31	19.4	18	23.7	7	12.3	6	22.2
Autres	12	7.5	4	5.3	6	10.5	2	7.4
QUEL TYPE DE FORMATION								
Nombre de réponses	145		66		57		22	
Nb								
Ecole	25	17.2	8	12.1	13	22.8	4	18.2
Séminaire	50	34.5	35	53.0	12	21.1	3	13.6
Formation continue	54	37.2	15	22.7	27	47.4	12	54.5
Sur le tas	10	6.9	6	9.1	2	3.5	2	9.1
Autres	6	4.1	2	3.0	3	5.3	1	4.5
QUELLE DUREE DE FORMATION								
Nombre de réponses	53		25		22		6	
moins de 30 heures	2	3.8	2	8.0	0	0.0	0	0.0
de 30 à 120 heures	10	18.9	9	36.0	1	4.5	0	0.0
de 120 à 360 heures	10	18.9	6	24.0	2	9.1	2	33.3
de 360 à 900 heures	12	22.6	4	16.0	6	27.3	2	33.3
+ de 900 heures	18	34.0	3	12.0	13	59.1	2	33.3

# ETUDE QUALITATIVE DES DIPLOMES DE L'ENSTP TOUTES ECOLES CONFONDUES

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au nombre de réponses

## FACTEURS DE SATISFACTION

Nombre de réponses 150

				Nb	%
LE TRAVAIL (Nb et %)	38	25.3	Son utilité	13	8.7
			La qualité	8	5.3
			L'atteinte des objectifs	7	4.7
			Son intérêt	6	4.0
			Divers	4	2.7
L'EPANOUISSEMENT (Nb et %)	32	21.3	Etendre ses connaissances	11	7.3
			Réaliser	6	4.0
			Avoir des responsabilités	5	3.3
			Utiliser ses connaissances	4	2.7
			Divers	6	4.0
LES RELATIONS (Nb et %)	55	36.7	Les contacts	23	15.3
			Les relations	21	14.0
			Réaliser avec le personnel	8	5.3
			Faire des connaissances	3	2.0
AUTRES FACTEURS (Nb et %)	25	16.7	Conditions de travail	6	4.0
			Connaissance du pays	4	2.7
			Avantages	3	2.0
			Morale	2	1.3
			Service rendu	2	1.3
			Aucun	2	1.3
			Divers	6	4.0

## TYPES D'INCIDENTS

Nombre de réponses 63

TECHNIQUES (Nb et %)	20	31.7	Mauvaise exécution	10	15.9
			Mauvais résultats	10	15.9
RELATIONNELS (Nb et %)	19	30.2	Relations internes	13	20.6
			Relations externes	6	9.5
AVEC LE PERSONNEL (Nb et %)	13	20.6	Accidents de travail	5	7.9
			Carence du personnel	5	7.9
			Manifestations de personnel	3	4.8
FONCTIONNEL (Nb et %)	11	17.5	Moyens	5	7.9
			Pannes	5	7.9
			Organisation	1	1.6

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#### CAUSES DES INCIDENTS

Nombre de réponses			67		Nb	%
LE PERSONNEL (Nb et %)	24	35.8	Sa qualification	9	13.4	
			Sa motivation	15	22.4	
LA STRUCTURE (Nb et %)	19	28.4	Manque de moyens	10	14.9	
			Entretien	2	3.0	
			Pannes	2	3.0	
			Divers	5	7.5	
AUTRES CAUSES (Nb et %)	24	35.8	Relationnelles	7	10.4	
			Techniques	6	9.0	
			Conjoncturelles	5	7.5	
			Divers	6	9.0	

#### CONSEQUENCES DES INCIDENTS

Nombre de réponses		65			
FONCTIONNEMENT (Nb et %)	26	40.0	Arrêt du travail	11	16.9
			Retards	6	9.2
			Baisse des rendements	5	7.7
			Divers	4	6.2
PROBLEME DE QUALITE	11	16.9			
MAUVAISE IMAGE	8	12.3			
PERTES ECONOMIQUES	7	10.8			
RELATIONS	7	10.8			
DIVERS	6	9.2			

#### REMEDES CONTRE LES INCIDENTS

Nombre de réponses		63			
NEGOCIATION (Nb et %)	21	33.3	Concertation	7	11.1
			Réunion	5	7.9
			Divers	9	14.3
ACTIONS (Nb et %)	18	28.6	Interventions	11	17.5
			Reprises	5	7.9
			Assistance	2	3.2
AUTRES REMEDES (Nb et %)	24	38.1	Réorganisation	6	9.5
			Sanction	3	4.8
			Formation	2	3.2
			Aucun	4	6.3
			Divers	9	14.3

Les pourcentages sont tous calculés par rapport  
au nombre de réponses

#### PRINCIPAUX SAVOIR-FAIRE UTILISES

Nombre de réponses			189		Nb		%	
TECHNIQUES (Nb et %)	80	42.3	Techniques de base		14		7.4	
			Batiment		9		4.8	
			Routes		8		4.2	
			Topo		7		3.7	
			Béton		6		3.2	
			Devis		3		1.6	
			Projets		3		1.6	
			V.R.D		3		1.6	
			Diverses matières		27		14.3	
CONNAISSANCES GENERALES (Nb et %)	30	15.9	Gestion		12		6.3	
			Correspondance		6		3.2	
			Calcul		3		1.6	
			Droit		3		1.6	
			Divers		6		3.2	
RELATIONS HUMAINES (Nb et %)	34	18.0	Relations		19		10.1	
			Commander		6		3.2	
			Diriger		2		1.1	
			Rapport avec le personnel		2		1.1	
			Divers		5		2.6	
QUALITES PERSONNELLES (Nb et %)	39	20.6	Honnêteté		5		2.6	
			Organisation		4		2.1	
			Vivacité		4		2.1	
			Bon sens		3		1.6	
			Esprit critique		3		1.6	
			Rigueur		3		1.6	
			Initiative		3		1.6	
			Divers		14		7.4	
AUTRES (Nb et %)	6	3.2	Aucun		3		1.6	
			Divers		3		1.6	

#### EVOLUTION DANS LE POSTE

	Secteur Public		Hors Secteur Public		Ensemble	
	Nb	%	Nb	%	Nb	%
Ne repondent pas	28	36.8	5	19.2	33	32.4
Ne savent pas	14	18.4	3	11.5	17	16.7
Pense qu'il n'y a aucune évolution	11	14.5	0	0.0	11	10.8
Entreviennent une ou plusieurs évolutions	23	30.3	18	69.2	41	40.2