AN INVESTIGATION INTO ENGINEERING GRADUATE RECRUITMENT AND RETENTION

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ABSTRACT

This research has examined individual and employer perceptions, practices and needs within the early career development of engineering graduates.

Careful analysis of previous research identified several key areas which formed the main focus of the research. These comprised a series of influencing factors within the recruitment process; graduate/employer expectation mismatches; problems associated with graduates' transition into employment; the need to improve retention strategies; and the overall process of career management.

It soon became evident that the graduate's career within an organisation should be seen, and treated as a complete product. A pre-work questionnaire, recording the higher educational experiences, and prior expectations and needs of 243 U.K. engineering graduates highlighted the required organisational elements of this career product, and its effective communication to the target undergraduate population. The survey clearly showed career development, specific job characteristics, and the opportunity to use abilities to be influential factors in graduates' organisational choice.

A post entry interview programme followed up 36 of the original sample, 14 to 18 months into employment with their first employer after graduation. The programme highlighted

both an expectations mismatch, and inherent differences in graduates' higher educational and work environments. Further questioning uncovered a series of retention factors, as perceived by graduates, in their early career development.

Company interviews recorded current attraction and retention practices. Particular emphasis was placed on employers' awareness of graduate turnover, in conjunction with the costs, causes and solutions related to this phenomenon. A group discussion forum, involving a total of 56 employers, academics and careers advisors, was set up and used to record overall views on the graduate attraction and development process.

Finally, the concept of career management, comprising development phases, transition periods and a career direction was developed as a means of addressing many of the above issues. This concept must be developed as early as possible in individuals' careers, ideally within the higher educational process.

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CHAPTER ONE

INTRODUCTION

1.1 The research problem

The recruitment of graduates and their subsequent development to managerial status is one of the key activities in assuring the long term success of any organisation. Companies are facing an ever increasing rate of change through new technology, increasing competition and new product innovation. In order to be successful, companies must be aware that a graduate intake, if treated in the correct manner, will provide a constant stream of management potential able to cope with these changes.

Due to the current demographic situation, the UK workforce is undergoing a major change. While the supply of graduates has remained static in recent years (Pearson and Pike, 1988), demand for new talent has risen (AGCAS/AGR, 1989). As a result, employers will face increased competition for quality graduates well into the 1990's. Particular shortfalls have already been recorded within engineering disciplines. In view of these difficulties companies must invest in and improve the attraction, recruitment, retention and development of these graduates.

This programme looks specifically at the problem as it related to engineering graduates as these, as well as being

in the greatest demand, seemed to have the greatest difficulty in making the transition to management positions. This problem has been highlighted by the Engineering Council (1988).

Graduate recruitment is itself a wide and complex area, and has been tackled in various ways by researchers. Greatest emphasis has been placed on the macro level of recruitment (IMS, 1982-90; MORI, 1982-90; CNAA, 1986-88)) with a general lack of in depth attitudinal work matching individual and organisational needs. Building upon past and present work (eg. IVL, 1989; Brennan & McGeevor, 1986; Smith, 1987; Mabey 1983), the research programme recorded the pre work aspirations and needs, and early career development of engineering graduates, in parallel with the perceptions and practices of their employing organisations. Having recorded graduates' experiences within higher education, greatest focus was placed on the problems associated with their transition into employment and future retention.

The graduates' transition into employment (Arnold, 1989; Nicholson, 1984) forms a major hurdle in the early stages of career development. The primary problem was perceived to be the inherently different environments graduates experience in higher education and employment. It was also well established that a mismatch between graduate and employer expectations often occurred (Brennan & McGeevor, 1988; Mabey, 1983; Kotter, 1973; Ward & Athos, 1972). These factors were perceived to affect the individual's job

satisfaction and organisational commitment, influencing their intention to quit, and resulting in voluntary turnover. Indeed, a review of relevant literature showed a graduate separation rate of up to 50% from first employers within five years. This problem was particularly acute in the engineering sector with the difficulty of attracting and retaining high quality graduates highlighted by Finniston (1980).

No matter how sophisticated employer training and development methods are, it is graduate perceptions of these methods that effect their overall decision to remain with their employing organisation. There is also a mismatch in employer perceptions of retention factors (Institute of Manpower Studies, 1987), which are primarily internally, not externally based. Within retention research, while limited work has been undertaken on engineering graduate retention frequencies and factors (Department of Employment, 1988) and the mobility of engineers (Connor, 1988), in depth attitudinal research is lacking.

1.2 Aims and objectives of the research

The primary objective of the research was to improve the overall development of engineering graduates in their early careers. To achieve this, the programme aimed to identify the factors that influenced the early career development of engineers. The required end point of the research was to provide guidelines, that could be used by companies and

graduates, to improve the whole process. Within this were the following aims:

i. To record current employer awareness, and methods of attracting and retaining graduates, and their related problems.

ii. To assess engineering graduates' perceptions and needs prior to entering employment.

iii. To examine engineering graduates' transition into employment, focusing on the match between their expectations, and the differences between their work and educational environments.

iv. To determine key factors, positive or negative, important to the individual and the company in the process of graduate retention.

v. To determine general, together with specific, guidelines for graduate recruitment and development to best suit both individual and organisational needs.

1.3 Research hypotheses

The four working hypotheses of the research programme were that:

i. The success or failure of the transition from

undergraduate to employment is primarily influenced by mismatches in environment and expectations.

ii. Current methods of attraction, recruitment and development are not fully meeting both the needs of the individual and the company.

iii. Longer term retention and development is influenced by a wide range of factors within the control of the organisation.

iv. The development of the career product and career management concepts are means of addressing each of these problems.

1.4 Methods of research

A combination of quantitative and qualitative techniques was required to achieve the research aims and objectives, and support the above working hypotheses. The research was initiated and maintained by a comprehensive literature survey of relevant up-to-date material. Initial surveys, recording graduate and company views on recruitment and development, were then conducted to complement the continuing literature survey. The generation of individual and collaborating company networks also formed an effective platform on which to build the research framework.

The research programme was then clearly divided into two parts: the expectations, experiences and needs of engineering graduates and the perceptions, practices and needs of employing organisations. Each part ran in parallel.

Building upon the research base, a pre work questionnaire recorded graduates' expectations and needs one month before entering employment. A total sample of 243 engineering graduates responded to the survey. Follow-up interviews were conducted with 36 graduates, having entered six of the collaborating companies, between 14 and 18 months into their employment. The interview programme recorded graduates' transitional and early career experiences.

Company interviews (directed towards personnel and training managers) were conducted in two areas respectively: the attraction/recruitment of graduates (N=21), and the retention/development of engineering graduates (N=20). Each interview programme recorded employer perceptions, practices and needs, and consisted of a semi-structured set of questions. Greatest emphasis was placed on the later survey's results, with a report on employer practices of attracting and recruiting graduates (Hawkins and Jones, 1989) forming a separate document. Finally, a group discussion forum, consisting of employers of engineering graduates and careers advisers was set up to record overall views on engineering graduate attraction, recruitment, retention and development.

1.5 Benefits of the research

The research programme was intended to benefit companies who recruited or intended to recruit graduates; graduates entering and developing in industry; and higher education establishments.

Companies would have guidelines towards a strategy for planned graduate recruitment and retention; higher graduate retention rates and management potential for the future. Graduates would have a smoother transition into employment; much clearer career development opportunities and a closer matching of their needs. Educational establishments would have guidelines concerning possible curriculum developments.

1.6 Research conclusions

Many negative aspects (both to the individual and organisation) have been highlighted throughout the early stages of the engineering graduate's development process. Key problem areas were concerned with their experiences in higher education (see Chapter 5), transition into employment (see Chapter 8) and future retention (see Chapter 9). However, the development of career product (see Chapter 6) and career management (see Chapter 11) philosophies formed useful aids to this process.

CHAPTER TWO

METHODOLOGY

2.1 Introduction

This chapter discusses and defines the methods and instruments used to collect quantitative and qualitative data in order to prove the hypotheses outlined in the previous chapter. It first discusses the various methodologies available to the researcher and explains their choice. It then discusses the sample selection, planning and the finer administrative details of the chosen methods of research. Emphasis is placed on the need for rigorous planning before any method is administered.

2.2 Choice of methodology

The choice of research methodology is an area surrounded by great controversy, and the decision as to whether to undertake a large scale quantitative study or a smaller scale, more in depth, qualitative approach is one of continual debate. The former method can be used to test or verify specific hypotheses, whereas the latter is used to examine processes and situations. Each method has its own benefits and shortcomings.

2.2.1 Quantitative methods

Quantitative methods are normally employed to collect and analyse data, and are usually found in the form of a questionnaire. These techniques lend themselves towards the collection of large amounts of data spread over a large geographical area, and can be administered in a quick and cost-effective manner. The data is then analysed by a chosen standard statistical package in order that the respective hypotheses may be proved or disproved.

Despite the acknowledged benefits of quantitative techniques, they have several criticisms. One argument suggests that results do not reflect how people behave in their normal setting but rather how they mirror the artificially created world of the research design (Mabey, 1983)). Other criticisms attack the reliability and accuracy of the statistical methods administered.

2.2.2 Qualitative methods

The qualitative approach forms a suitable alternative to quantitative techniques, and as with its counterpart aims to contribute to the building and testing of scientific theory. However this is achieved by attempting to "tease out" information relating to a specific situation with the use of observation, personal interview and the collection of relevant documentation.

In a detailed examination of people and their actions in a normal environment, these "softer" methods avoid the errors and artificiality of statistical packages, and it is claimed that they capture the full richness and complexity of the real world.

This form of methodology is not free from criticism. There have been many complaints on the subjectivity and lack of objectivity, together with the hard task of retesting these techniques. Another criticism of this technique is its tendency to individualise information, making it hard for any generalisations to be drawn.

2.3 The methodological framework

Four possible methods of data collection relevant to this work, suggested by Moser and Kalton (1971), lie within the quantitative/qualitative framework. These consist of observation, data work (documentation), mail questionnaires and interviews. These give rise to the following methods of study: experiment, survey, case study and interview.

Although a controlled laboratory experiment can easily show the effect of a number of independent variables on their dependent counterparts, there are a number of shortcomings in this type of study. The first is its inability to consider unexpected variables, for example the difficulty of embracing all the relevant aspects of the future job and organisational climates. Secondly, variables such as

autonomy of choice are dependent on what Mabey (1983) calls the 'free market' and not on an artificially manipulated situation. Thirdly, subtle issues such as job choice, which rely on factors including alternative job offers, personal preference and external pressures cannot be modelled in a laboratory setting.

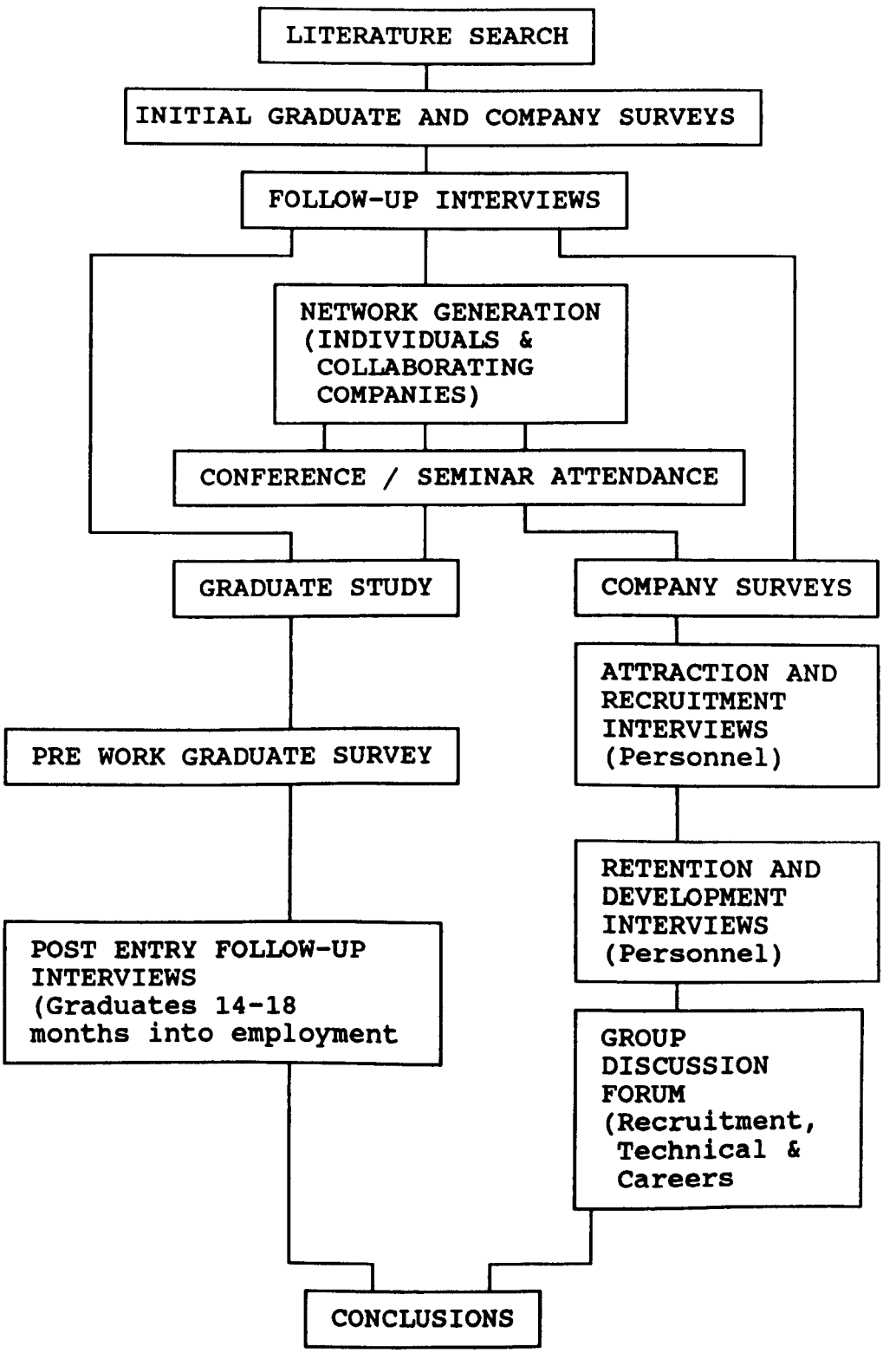
The choice of each method largely depends on the type of population, the size of the sample, the subject area and the results required, although cost implications were seriously considered. The three year study involved comprehensive attitude surveys of differing samples of employers and graduates, and as a result the respective advantages of each method arose at varying stages in the research. The main research tools used were thus :

Postal questionnaires
Semi-structured / open ended interviews
Group discussions
Network generation through conference and seminar attendance

Whilst in depth case studies were not used within the research methodology, various organisational links were forged, and it was through these links that a high proportion of interviews and questionnaires were administered.

The following flow diagram represents the methodological framework used throughout the research programme.

Figure 2.1 A flow diagram of the research methodology



Each stage within the research methodology is discussed in the following sections.

2.3.1 Literature search

The initial stages of the research consisted of a comprehensive literature review of relevant material. The University Library's Database of references in the area of Technical Management provided the starting point for the literature search. This area was covered in some detail, making good use of the inter library loan system and relevant available journals. On widening the literature review, it soon became evident from the demand for engineering graduates (Smith, 1987) and the problems associated with their early development (CNAA, 1986; Mabey 1983) that the initial research programme should focus on the early career development of engineering graduates. A wealth of pre-employment information on recruitment and expectations was thus gathered (Chapter 3). This provided the researcher with a sound base on which to build a methodological framework. The literature review formed a continuing interaction with the research design at each stage of the programme. As the research progressed into the post employment period, relevant studies were recorded in three main areas: the transition into employment; labour turnover and career development.

2.3.2 Initial graduate and company surveys

(a) Company and graduate questionnaires

In order to complement and extend the literature search, two initial mail questionnaire surveys were constructed to obtain respective views of graduate and organisation on the recruitment and development of engineering/technology graduates. Questionnaires were sent to a random sample of 150 medium and large companies using the Huddersfield Polytechnic database of addresses, and 300 final year undergraduates from a random sample of universities. A total of 62 companies and 113 undergraduates completed the surveys, with resulting response rates of 41% and 46% respectively.

(b) Company and graduate Interviews

In order to obtain a a more detailed view of the recruitment and retention field, a series of interviews were then conducted with 20 major graduate recruiters. These were complemented by several discussions with graduates already in employment.

2.3.3 Generating the research network

(a) Benefits of the network

It soon became apparent that the research programme could be considerably enhanced through the generation and maintenance of a network of key individuals actively working in the field. This approach is increasingly used within organisational settings, but rarely effectively used in postgraduate studies. The benefits of such a network in this research were numerous:

1. Provided the researcher with the ability to obtain up-to-date academic and employer views on the recruitment and development of graduates. This built on from the literature review which by its nature always remained slightly behind current thought.

2. Enhanced the research programme through experience and idea generation.

3. Survey development (ie. practical input into questionnaire, interview content and format).

4. It allowed for the development of collaborative research with other academic and commercial institutions.

5. Provided the base for feedback and practical

implementation of results.

(b) Methods of developing the network

Generation of the research network was a gradual process, initiated by telephone or written correspondence. The development of academic and commercial contacts rapidly increased through attendance of related conferences and seminars. This formed an innovative tool in the research methodology.

Appendix IV. records the processes undertaken in planning, attending, and utilising the conference environment. Cost implications played a major constraint on this technique. There were, however, several approaches used to avoid unnecessary monetary payments. A list of conferences attended and their related cost savings are also presented Appendix IV.

The wealth of information gathered from the above sources (literature review, initial questionnaires and interviews, and network generation) provided the research with an initial picture of the benefits and pitfalls in the recruitment and early development process. The next stage of the research programme was to decide in what form the main stream of the research should continue. It was decided that the most comprehensive way to undergo the graduate surveys was through liaison with several collaborating companies. These links were used to monitor and assess the perceptions,

practices and needs of engineering graduates, as well as the perceptions of recruitment and development managers.

(c) Collaborating company formation

Care was taken in the choice of companies, with fair representation of size and sector. Although there were constraints on the number and location of companies, the key limitation was that organisations were recruiting, or intending to recruit engineering graduates.

Table 2.2 Collaborating company profiles

Ref	Main Output	Est in Recr (1)	No Grads Recr (2)	Company Contact
1	Food & chemical processing	E	iv	Nat Rec Mgr
2	Computer manufacture	E	iii	G. Rec Mgr
3	Chemical processing	E	iii	Eng Rec Mgr
4	Automobile manufacture	C	iii	Rec/Dev Mgr
5	Telecommunications	C	vi	Tec Rec Mgr
6	Cable manufacture	E	ii	Uni Mgr
7	White goods manufacture	N	i	Pers Dir
8	Atomic energy	E	iv	Pers Mgr
9	Shipbuilding	E	iii	HRD Mgr
10	Specialist engineering	N	i	Tec Dir
11	Instrumental engineering	C	i	Pers Mgr

KEY

(1) Establishment in the recruitment process :

E = Established methods of recruiting and developing graduates.
C = Currently undergoing changes in methods.
N = New in the field

(2) Average number of graduates recruited per year :

i	= 1 - 10	iv	= 101 - 200
ii	= 11 - 50	v	= 201 - 400
iii	= 51 - 100	vi	= 401 +

Strong links were formed with key personnel within nine large and two medium sized companies. Table 2.2 represents the profiles of each case company. As shown, links were developed with differing levels and functions of personnel in each company. These ranged from recruitment and personnel managers, through development managers to technical and personnel directors.

Within each company, a pre work survey (see Section 2.3.4) was conducted on their engineering graduate intake. A proportion of the graduate sample were then followed up through interview programme (2.3.5) conducted within six of these companies. In parallel to these interviews, each company contact participated in the Retention/Development interview (see Chapter 7, Appendix III).

2.3.4 Pre work graduate questionnaire

The aim of this survey was to obtain graduates' perceptions and needs before entering their respective companies. The

survey took the form of a postal questionnaire, and was constructed using information gathered from each of the initial four stages. A detailed account of the stages involved in planning, designing administering and analysing the questionnaire can be found in Chapter 4.

2.3.5 Post entry graduate interviews

The need for a study of a longitudinal nature soon became apparent. While past researchers (eg. Mabey, 1983) have followed up pre work questionnaires with similar quantitative in house approaches, it was decided that more in depth information was required to obtain practical, as opposed to solely correlational results. For this reason a series of open ended interviews were carried out with a sub-sample of respondents to the pre work survey. The interview's primary objectives were to record graduates' experiences throughout their transition into employment, and gain their views on effective retention and development strategies. The interview strategy and format are presented in Chapter 7 and Appendix III respectively.

2.3.6 Company attraction/recruitment survey

Prior to gaining graduates' pre entry perceptions and needs, the research programme reviewed the current attitudes and practices of recruiters in the field of graduate attraction and recruitment. To achieve this, expert advice was sought from Stanley Armstrong Graduate Communications, a leading

communications company. A collaborative study resulted; the focus of which involved a series of 21 semi-structured interviews conducted with leading graduate recruiters. The key results of this survey are summarised in Section 6.2, and discussed in a separate document (Hawkins and Jones, 1989).

2.3.7 Company retention/development interviews

As the research developed, it was realised that the key to an organisation's success in this area was not in the recruitment of graduates, but in their retention and development. The primary objectives of this stage were therefore to record companies' current awareness of, and actions towards the process of graduate turnover. The interview strategy and its format are presented in Chapter 7 and Appendix III respectively.

2.3.7 Company and careers group discussion forum

To gain an overall view of engineering graduate recruitment and retention, the programme finally invited employers and careers advisers to a group discussion forum. The content, structure, and findings of this forum are recorded in Chapter 10.

In order to gain a collective statement of the problems and associated solutions to engineering graduate recruitment, retention and development, employers and careers advisers

were invited to a seminar discussion covering this area of interest. Having presented the latest findings of the research to the forum, the 56 participants were split into seven groups discussing the following topics: engineering sponsorship (1 group); attraction (two groups); higher educational, careers, employer links (one group); retention, transition into employment (one group); retention, early development (one group); retention, long term development (one group). A rapporteur was elected to provide notes from each discussion group, and summary results were presented in a review session at the end of the seminar.

A time plan of the research programme as a whole is presented in Figure 2.3.

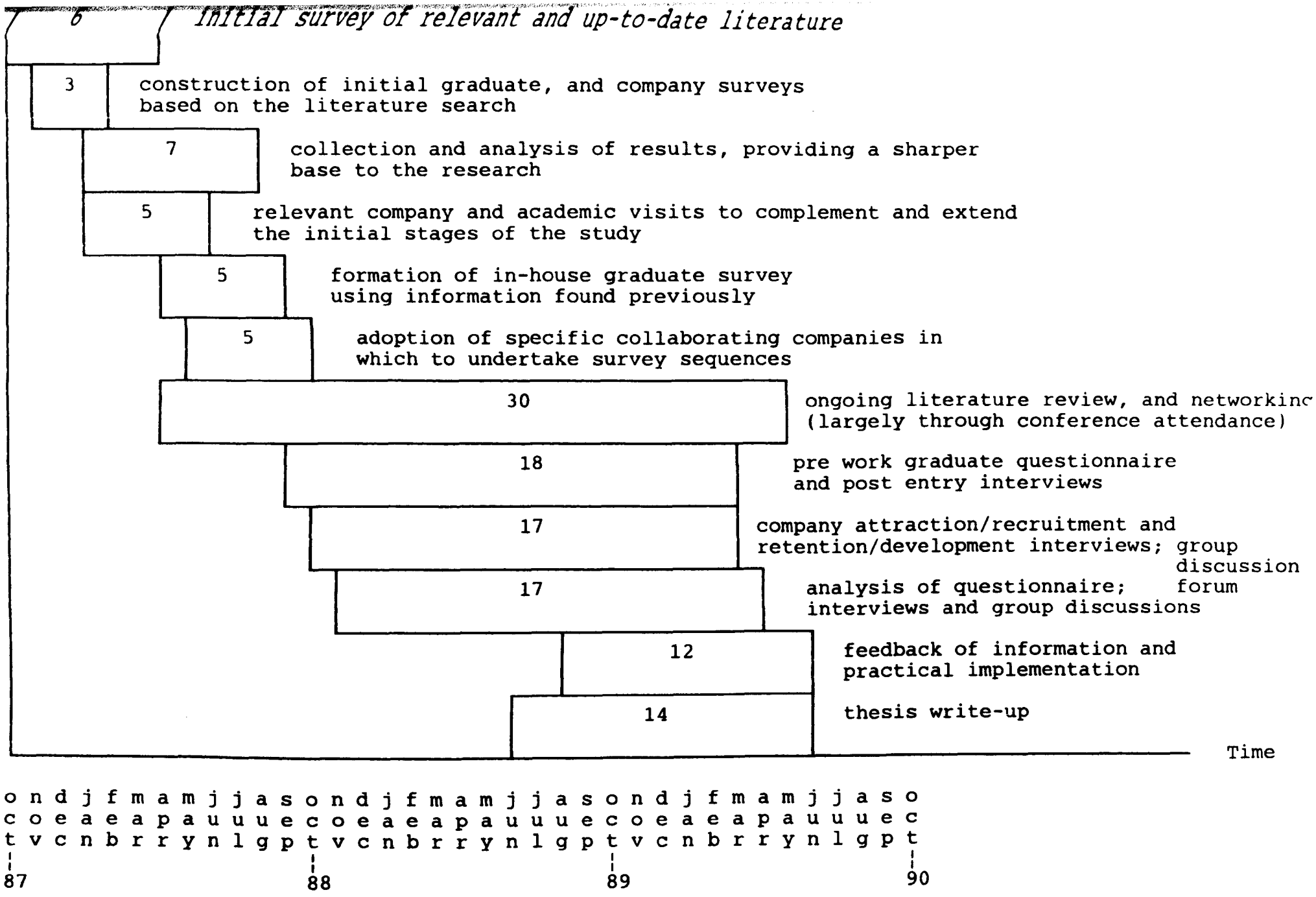


Figure 2.3 Time plan of the research programme

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

The following chapter records the recruitment environment in which the research study is based. The literature reviewed falls into two main categories. Firstly, the recruitment factors, including the attitudes and practices of employers and graduates during the recruitment process. Secondly, the expectations research, including pre and post organisational entry work. The review forms the starting point of the research programme.

3.2 Key recruitment influences

3.2.1 Graduate supply and demand

There have been many studies undertaken, on a macro level, in the area of graduate recruitment. A major contribution to this work has been provided by a series of Institute of Manpower Studies projects. Their recent survey (1989) helps to record the current situation. This report was commissioned and published by the Association of Graduate Recruiters (representing large employers of graduates) and the Association of Graduate Careers Advisory Services (representing Higher Education). Conducted within 318 large

organisations, the key findings of the survey were as follows:

1. Demand for graduates was predicted to grow by ten per cent in 1989 compared with 1988. However, one in ten graduate vacancies would remain unfilled with particularly severe shortfalls occurring in the public sector.

2. 55 per cent of companies failed to fill their 1988 vacancies, although several areas experienced less than a six per cent short fall. These were in the business and management services, oil and allied industries, accounting and other financial services.

The demand for graduate talent has not always been so great. Indeed Parsons's (1985) survey reported a deep depression in the graduate labour market in the mid 1970's, and recorded a slight increase, but still low demand for graduates in the early 1980's. However, these trends were seen by Parsons as a short term disturbance in the longer term pattern of rising demand for graduates.

Parson's survey was based on a 'patch-work' sample, drawn up from various sources of information, and covered companies jointly recruiting 9,000 graduates in 1984. The major fault in the methodology was felt to be the timing of the survey which reached recruiters in the middle of the 'milkround', a somewhat hectic period to spend time carefully answering the

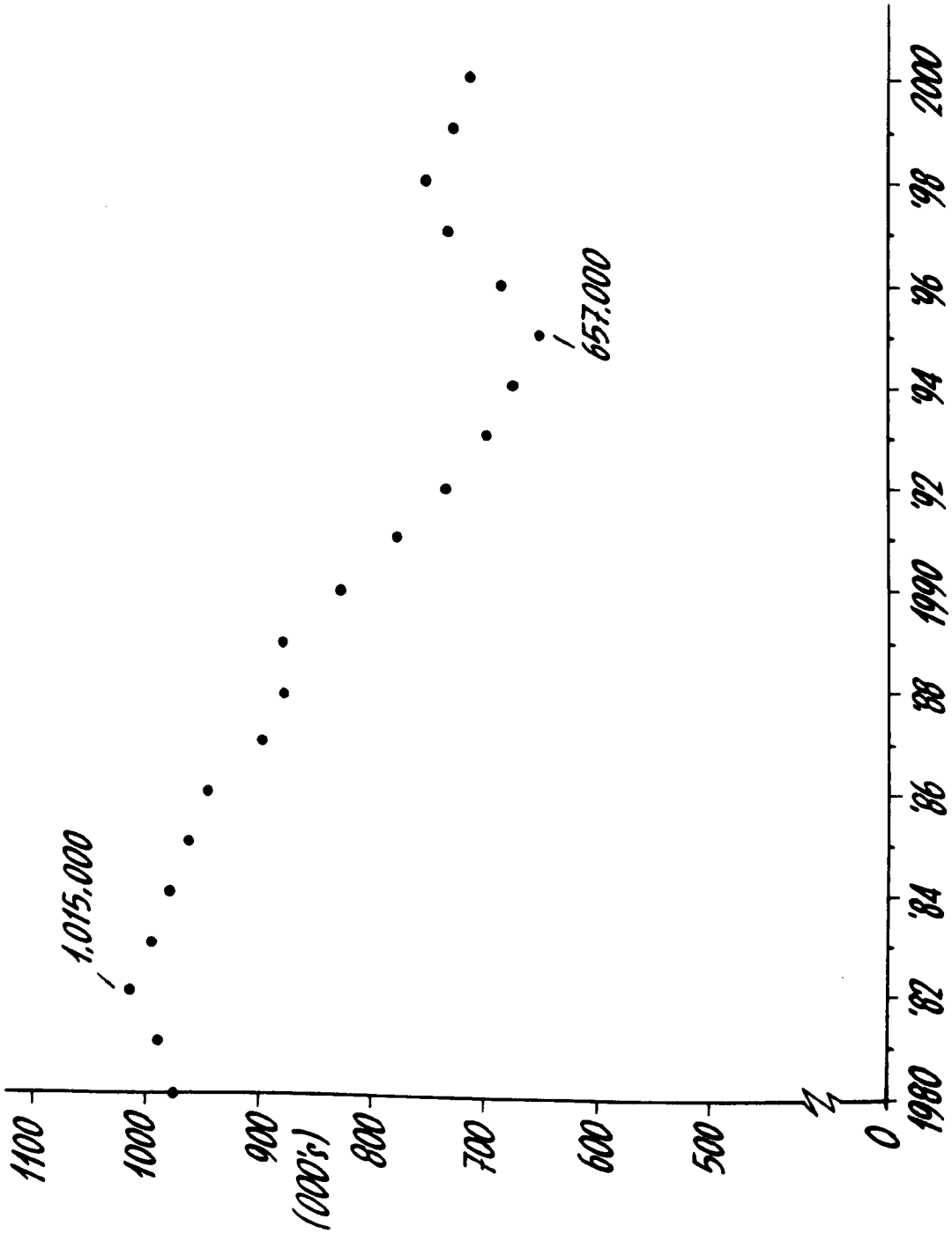
questionnaire. This is a common problem for researchers, and has been heightened by the changing role of the recruitment function, no longer a "one off" activity, but now an all year round process. As such, finding time to aid academic research is a much harder task for recruiters than in previous years.

Pearson and Pike (1988) looked ahead to graduate supply and demand in the 1990's. The purpose of this report was to document the changing supply of graduates from the higher education system. The report stressed how the supply of graduates would stop growing within the next six years due to the rapid downturn in the number of 18 year olds entering higher education. This report provided a comprehensive commentary on the graduate labour market in the form of statistical tables and graphical trends. A forecast for the supply can be seen in the demographic trends in Figure 3.1.

In practice, however, entry into higher education is dominated by children from middle class families where the drop in birth rate was not as dramatic, so this problem will not be so pronounced. As a result, the demand for places in higher education is not expected to dramatically fall.

With the rise in employer demand and fall in supply in recent years comes an expected drop in graduate unemployment (7.3% in 1986 compared to 12.2% in 1982). Another pertinent figure is the number of graduates actually available for work. This was recorded as only 68% (of the total number

Figure 3.1 Projections of the number of 18 year olds in the U.K. population - 1980-2000 (Source OPCS, IMS)



graduating) in 1986, although engineering/ technology graduates were slightly higher at 75%. With many graduates taking time out to 'travel the world' or continuing to embark upon postgraduate education, this forms another concern for employers. As a result they must maintain flexible policies towards this breed of applicant.

The PA survey (1989) predicts highest demand to be concentrated in the chemical, computer and electronics sectors. An increasing number of companies in specialist areas are now looking to retrain personnel from other disciplines to combat the shortage of skilled entrants. One fifth of the companies surveyed were also looking to tap alternative sources of labour. Several surveys (eg. Hawkins and Jones, 1989) have looked at alternative sources of graduates. Mature students, ethnic minorities, school leavers, HND's, women, the disabled, regeneration of older staff, and internal development of existing staff are all untapped areas from which companies can attract and develop new talent.

Current Vacancies (1989), published by the Central Services Unit provided another indicator of current demand. Latest figures state that there has been a 20 per cent increase in employers' advertising in the last 18 months. New entrants in the labour market in the 1990's have also been recorded in the Employment Gazette (1988), analysing the effects of the fall in birth rates in the early 1970's but more

importantly outlining some ways in which companies may adjust their recruitment strategies to combat this problem.

Clarke, Rees and Meadows (1988) from the Economics Branch of the Department of Employment present some initial findings from a national survey of the experiences of 1980 graduates and higher diplomates. The report provides descriptive statistics on 'where they are now', covering their occupations, the labour market status of the sample, the industrial sector and size of firm for whom they are working, and their salaries six months after graduation.

Graduates and the Labour Market in the 1980's (1988) is another useful pointer in a series of Department of Employment's Labour force survey reports.

3.2.2 Employer attitudes and practices

The Central Services Unit (1987) made an in depth study into the field of graduate recruitment, focusing on the methods used in, and employer's attitudes towards graduate recruitment. The sample was well distributed across different sectors (the largest group being engineering), with 1382 organisations responding to the questionnaire. A number of attitude statements were included in the questionnaire for respondents to rate on an agree-disagree scale. A large percentage of employers agreed with the following comments :

"The larger companies get the best graduates"
"We get too many unsuitable applications"
"The sorts of specialists I need are in short supply"

but many disagreed with (or possibly didn't want to admit to) the following :

"The turnover of graduates is too high"
"Procedures for recruiting graduates are too time consuming"

The engineering sector's main approach to graduate recruitment was via contact with academic departments as well as the careers service at Universities, Polytechnics and Colleges. The establishment of this type of personal contact within academia has been a growing trend in recent years with employers developing their recruitment practices to meet new needs.

Companies were also asked how many applications, interviews and offers they had processed and,

1. **On average**, organisations interviewed 30% of applicants
2. **On average**, organisations recruited 24% of those interviewed
3. **On average**, organisations recruited 9% of applicants

Note: These averages were calculated on the basis of differing organisations, ie. organisations have not been weighted by number of applications, so success rates cannot be multiplied for each stage.

Although figures for 1990 were not available, it was evident that company policies on the number of graduates interviewed and offered places varied considerably. During the research, at one end of the spectrum, a company within the processing industry decided to interview all their applicants. At the other extreme, figures of one in 25 were quoted. It is proposed, however, that the final number of graduates recruited should be largely dependent on the organisation's long term strategic needs as well as short term work demands. This was tested during the research programme (see Section 9.6.3).

Charles Barker (1988) examined the extent with which companies used outside help from consultancy groups in areas such as brochure production, video production, search and selection, and advertising. 57 direct responses were received from a telephone questionnaire. Results showed that although work was carried out in-house for parts of the recruitment process, 65 per cent of the responses claimed to used external help. In many cases however, a structured approach to the choice of an external agency was lacking.

3.2.3 Communication to the undergraduate population

Hawkins and Jones (1989) have recently completed a comprehensive study focusing on the effectiveness of communications media in the recruitment marketplace. The end product of this research was a list of general conclusions and recommendations, as well as a personalised package of

practical solutions for each individual company (Jones and Hawkins, 1989).

According to the recent PA. survey (1989), employers were aware of the need to sharpen up their image and pay more attention to their communications activity. One fifth of the respondents to the survey were allocating greater resources to this area. Stronger links with specific universities and closer liaison with careers offices were popular methods. In order to attract students before graduation, sponsorship (41 per cent of sample using this method) still remained the most popular medium, although 13 per cent of respondents were starting to form stronger links with schools. This figure has already risen sharply, and a recent comment by a major recruiter that:

"soon we'll be queuing up outside the primary school gates"

sums the problem up. Although a greater interest in the school leaver marketplace has resulted, few companies have a clear recruitment strategy for this age group. As a result, schools recruitment is often administered on an unstructured basis.

3.2.4 Recruitment costs

Pearson's work in (1986) stressed the need to ensure that graduate recruitment is not only successful but also cost effective. Success not only means filling vacancies but also assuring that retention rates are not too low and that

graduates achieve the long term career development goals set for them. The report contained some basic, but often overlooked, practical methods of budgeting, costing and monitoring graduate recruitment and retention.

Cost of recruitment is obviously a topic of great interest to all employers. Respondents to the CSU. survey (1987) costed their recruitment in different ways. Many did not cost such items as management time, often taking advertising as the only recruitment cost. Some tended to look solely at the costs incurred by their own departments. Others took a broader view and subsumed all related costs including brochures/recruitment literature, general advertising, presentations, visits to academic institutions, interviewing at job fairs and in some cases training costs. A few typical responses are given, each cost being the cost per graduate (excluding starting salary).

"£500-£750 - this is based on travelling and accommodation costs for milk round plus second interview costs, divided by the number who actually join"

"£1600 - includes costs for preselection, presentation and aptitude tests. It does not include interviewers' costs"

"£5000 - if every expense including time is taken into account"

On average the cost for the Engineering and Manufacturing Industries was £1000 and £1400 respectively compared to £760 in the Public Sector and £980 in Accounting and Banking.

This comprehensive survey also recorded more general attitudes of employers towards graduates. These included; too high expectations of salary and work content: the lack of practical, industrial experience; and the loss in confidence in much of the education system. It did not, however, offer any practical solutions to these problems.

3.2.5 Starting salary

Starting salary is a key factor to both individual and company, and as such has received much attention. According to the IMS. report (1989), average starting salaries increased 9.4 per cent in 1988 to £9,300. Large firms were predicting a further rise of 7.4 per cent in 1989, when average starting salaries would be close to £10,000. Evidence of increased competition for quality graduates was seen in an increase of 22 per cent to £12,650 in the starting salary paid to the top 10 per cent of graduates in non-industrial occupations. The report also recorded that 80 per cent of employers "paid a benefit of one sort or another" to attract new staff.

Starting salaries are a good measure of demand. Graphical results of the Income Data Services' (IDS) report on pay and progression for graduates (1988) show a clear bid by the

banking sector to attract new talent, with an average starting salary of over £10,000 in 1987 (£1,000 more than the nearest competitor). In their more recent survey of 52 major organisations (1989), the IDS Unit reports an average staring salary of £10,000. All companies responding to the research were once again concerned with the demographic downturn and most were developing strategies to combat the predicted shortages. Particular problems were encountered in recruiting engineering graduates.

PA. (1989) add to the wealth of information available in the salary market place. In their survey of graduate salaries and recruitment trends, they present a comparison of salaries between 'average' and 'above average' performers three years into service. As everyone likes to consider themselves as above average performers it is these figures that will be concentrated on. By far the highest salary obtained lay within the Oil and gas sector (£20-21,000). Banking and business services fell into the middle (£12-13,000), with Engineering (£11-12,000) and Construction (£10-11.000) at the bottom of the spectrum.

Hay Management Consultants (1989) have also provided a detailed account of graduate salaries in their annual remuneration and salaries documentation.

3.2.6 Undergraduate attitudes

Market and Opinion Research International Ltd. (MORI) (1987) present an annual survey based on the attitudes of final year undergraduates and their progress in career choice (initiated in 1982). This work is based on a short quantitative interview conducted on a national basis and provides information specific to individual companies as well as a general attitude update. The 1987 report showed that in recent years the graduate employment market has shifted in favour of the applicants and away from potential employers. The financial sector in particular has absorbed greater numbers (a 27% increase of intake between 1983 and 1986) and in the year of this report saw one firm, Peat Marwick and McLintock, taking on more than one thousand graduates.

The proportion of final year undergraduates that have decided on their career field by the end of the second term in their final year has reached an all time low for this survey in recent years. In London, where employment opportunities generally are favourable, only two in five finalists (40%) had applied for a job by Easter 1987, many awaiting the summer recruitment fairs.

A half of 1987 finalists (53%) expected to leave their first employer within four years, with self-confidence higher than normal. Nevertheless, many final year graduates had a crisis of confidence (or a general lack of vocational skills). Many

employers claimed that the degree subject was not important and placed more emphasis on personality. Attempts have been made to solve the skills/confidence gap by undertaking postgraduate business courses, of which an MBA qualification is becoming increasingly popular.

In their 1988 report, both the proportion of finalists who had decided upon their career field (59%) and the proportion who had applied by Easter were the lowest that MORI. had ever recorded. The report emphasised the lack interest in a career in teaching, and also showed evidence of a 'City Backlash'. The 1988 graduates seemed more likely to think of themselves as concerned with the environment than their 1987 counterparts, and were less likely to describe themselves as very ambitious or money motivated.

There are however a number of criticisms of the MORI. surveys. Firstly, the sample frame for the interviews does not provide a fair representation of institutions in the U.K. (ie. lack of polytechnics, no Irish input, and a geographical bias). Secondly, the unstructured way in which students are targeted on campus poses many questions on the survey's reliability and validity. Thirdly, while extensive attitudinal data has been recorded, this information can only be used on a surface level.

The Oxford and Cambridge industrial Society Report (1988) provided useful attitudinal information for employers, but results of this research cannot be regarded as

representative of undergraduates' attitudes in general. Nevertheless, interesting information on influencing media, career decisions and perceptions of interviews etc. can be gained from this sample.

Many companies have undertaken their own specific research into graduate recruitment and retention. Working parties of varying sizes and from differing departments have been set up to find new ways in which to attract and retain a higher percentage of graduates. In this respect the researcher has already aided several internal studies conducted by a group of senior engineers, engineering graduates, and a head teacher on secondment.

3.2.7 Careers support for graduates

Each of the above studies provides useful information to the company, but were not seen to help the individual's development needs. The MORI. report (1987) commented that, despite the changes taking place in the graduate recruitment market, one stable trend remains: the high degree of usage of the university careers services. Four in five finalists each year, between 1986-87, said they had used the services of their careers service. However, to what extent these services are utilised, and how useful are they are additional questions that must be addressed if an accurate record of careers service effectiveness is to be gained.

GRADSCOPE (1989) provides a useful aid to the individual's career choice. Useful support material based on the individual's early development has also been provided by a series of "Exploring Your Future" (1988) booklets written by the Association of Graduate Careers Advisory Services. The same body have also published a yearly booklet on "What do Graduates Do?" (1986-89). This short text is recommended reading for students entering higher education as it provides an interesting insight into the possible careers they might embark on in the future. Specifically based on the future careers available to engineering graduates, FACTS (1990) is the leading publication in the undergraduate careers field.

3.3 Expectations literature

3.3.1 Overview of expectations research

Many past studies have linked unmet expectations with organisational commitment at varying changes of the graduate's early career development. A recent example can be cited from the work of Mayer and Allen (1984) who recorded a positive correlation between unmet expectations and lack of organisational commitment in the first six months of employment after graduation. The bulk of this section will review the research covering the nature and effects of expectations on the behaviour and attitudes of students and new employees, concentrating on graduates.

The first question that must be addressed is how the expectations of the company and recruit are so typically mismatched? As stated earlier, there have already been a number of studies recording the views of graduates on various aspects of the recruitment process (IVL, 1989; MORI, 1982-89; CSU, 1987; CNAA, 1985-87; IMS, 1985-1989, amongst many others), and there is no doubt that the impressions conveyed by company representatives and literature can unwittingly or consciously lead to unrealistic employee expectations. The mutual "selling" by both parties at interview, often hiding their weaknesses and emphasising their strengths, will certainly lead to misconceptions arising. A correlation between the expectations of 378 students and the job descriptions given by companies was found by Ward and Athos (1972). This was attributed to the influence of recruiters on graduate perceptions. Other research has focused on employer, graduate and academic views on information required to provide the individual with a clear understanding of the job offer and organisation. However, the recruitment situation seems to be one of shared stereotypes (Mabey 1983), which in fact inhibit rather than promote realism.

Unanticipated aspects of the work are inevitable for the new employee entering an unfamiliar environment. The experience of "surprise" (Louis, 1980) will probably be greater for the new graduate, educationally equipped for the technical aspects of the job but not emotionally and psychologically prepared for the world at large. The creation of high

optimism for career prospects, (Schein 1978) is another fault of the educational system.

Kotter (1973) was able to define the areas of greatest mismatch by asking graduates and supervisors about 30 distinct items or mutual expectations. For example, the graduate would gladly give up technical related skills for opportunities to develop in meaningful and challenging work. The company, however, seemed to give everything that the graduate didn't want, and in addition to skills they expected loyalty and conformity. Kotter believes that a "psychological contract" should be drawn up between the new graduate entrant and the existing manager either at the recruitment stage or early on in the job. A problem with this is that the standard nature of recruitment and early training does not allow for such personal discussions to take place.

Several research studies can be used to identify specific aspects of graduates' experiences that fail to live up to their expectations (Newell, 1987; Arnold, 1985; Mabey, 1983). These include an experience of less challenge, responsibility and training than expected. However, as Arnold (1989) states, the main perceived offenders are the management of employing organisations:

"Graduates see inefficiency, confusion and personality clashes where they expected smooth running, clarity and rationality."

In order to interpret the effect of expectations, researchers have used assorted theoretical models. Each using a different group of dependent variables, although rate of turnover is frequently measured. Researchers to date have also chosen different points in time to assess expectations. Here the "timing" of research provides a useful means of ordering and assessing the remaining expectations theories.

3.3.2 Pre entry analysis

Ward and Athos (1972) were among the first to assess student perceptions prior to job entry. The study was based on a group of business school graduates at Harvard who had either accepted or just started a job in business. A 'Common Company Description' was used to compare student expectations to recruiter's descriptions of the company. The study used 200 organisational and job features reduced to 14 factors and provides data on the development of the student's perceptions.

Their study also looked into the amount of relevant company information divulged by recruiters at interview. In one instance when two recruiters from the same organisation were asked to describe it, only one third of their shared descriptions was relevant to the company, the other two thirds were spent on "stereotypes". Ward and Athos concluded, firstly that a recruiter's view is an unreal stereotype, and secondly that there is no way of assuring

that any insider's view is a representative reflection of organisational life. The shortfall of this work was that no post entry data had been collected and therefore a change in attitude could not be assessed.

Focusing mainly on attitudinal responses to recruitment issues, the MORI. survey (1988) also recorded undergraduates' expectations of future length of stay with their first employer. Although this provides useful information for employers, there is no post entry analysis to compare and contrast this data with. This problem remains apparent within all studies that solely analyse pre entry expectations.

The most comprehensive study on the aspirations and needs of engineering undergraduates has, however, been conducted by Industry Ventures Ltd. (IVL) (1989). Their survey of 1,854 final year undergraduates built upon the findings and design of Hawkins' pre work questionnaire (Chapter 5) and literature review (Chapter 3).

3.3.3 Post entry analysis

There have been many studies that question respondents after joining the organisation. Work on college graduates included that of Dunnette, Arvey and Banas (1973), and Kotter (1973). Each study was initiated to find out why people leave organisations and in each case expectations were a major factor in the turnover process.

It must be noted that differing studies record employee expectations at varying stages of their developmental process, and ask respondents to look back over varying time durations to their previous decisions. For example, Mobley et al. (1979) and Federico et al. (1976) studied the maturing expectations of respondents during tenure and not on organisational entry. Hill's large samples within Shell (1969) provide a wealth of information on graduate perceptions and motivation but rely on their past recollections of previous experiences. First, there is a difficulty in accurately recalling expectations from several years previously (Vroom and Deci, 1971; Vroom, 1966). Secondly, it was felt that respondents will tend to be self-confident when asked to recall their pre entry expectations at the same time as their evaluation of the present work situation.

3.3.4 Post entry, longitudinal analysis

The first of these studies entails a descriptive follow-up of 274 recruits of the American Telephone and Telegraph Company (Bray, Cambell and Grant 1974) which monitored job performance, promotions and attitudes over their first eight years with the company. As with the other research on college graduates (Dunnette, Arvey and Banas, 1973; Ward and Athos 1972; Hill, 1969) their prior expectations of work were unrealistically high.

Two questionnaires were sent out to 1,800 nurses by Katzell (1968) in order to explain the high turnover in nursing training. Both measured expectations, concerning satisfaction and stress factors. The surveys were administered after one week and eight months into the training, and the turnover of staff was assessed after one year. Positive correlations were found between staying and confirmation of expectations, whereas low, but negative correlations arose between leaving and experienced satisfactions. However, there was no report of either the size or direction of the mismatch between expectations and subsequent perceptions.

It is quite obvious from the initial research that the new employee has inflated expectations compared to organisational 'reality', whether this reality be the job experience of the employees themselves (Katzell 1968)); the recruiter's perception (Ward and Athos 1972), anticipated by the company managers (Kotter 1973, or by personnel data at another time (Mobley et al., 19791 Federico et al., 1976) or regular monitoring (Bray et al. 1974).

Brennan and McGeevor (1988) followed a cohort of CNAA graduates through their employment. The chief concern of this project was to examine the difference between degree courses by focusing on graduate experiences, and their aspirations and achievements on entering the labour market. In their 1987 report, employment and experiences were studied three years after graduation. A sample of 4016

graduates from 122 CNAA full-time and sandwich degrees was selected from 33 polytechnics and colleges. Using postal questionnaires, the graduates were contacted three times at yearly intervals. The first contact was one year after graduation. A response rate of 66% resulted in this first year and was followed by the less impressive rates of 45% and 36% in the following two years. This is a common concern for many researchers conducting longitudinal studies, where response rates are destined to decrease with time. Here, high response rates can only be successfully maintained when large amounts of time, money and resources (often in short supply within postgraduate research) are allocated to effectively follow-up the subjects under observation.

The report did not focus directly on expectations but stressed that although there were no major employment problems for graduates, the level and suitability of much of the work was well below satisfaction. It also stated that more vocationally orientated courses seemed to provide a smoother transition into employment, with a more effective use of graduates' previous skills and knowledge being made. It also suggested that thought and advice given towards careers issues at an earlier stage in the undergraduate educational process would further help the graduates' chances of obtaining a satisfying job at the appropriate level.

The one major fault in all of the studies is that respondents are questioned after joining the company and any

pre-entry expectations recorded will be influenced by their experiences within the organisation. Even a day into employment respondent views will be of an insider rather than an outsider, and their views will be influenced by the organisational culture. Another problem, is the blurred description past entrants yield when looking retrospectively at their expectations before entering the organisation. There is therefore a fundamental flaw in these approaches. The only method that can distinguish between prior expectations and the effects of organisational socialisation is that which elicits information before entering the company, as well as during or after the transition into employment. It is only by making this distinction that practical applications to company recruitment and induction training can be made.

A small proportion of research designs take this transitional stage into account, and these are discussed in the following section.

3.3.5 Pre to post entry, longitudinal analysis

Schneider et al. (1974), building on their previous work, realised that an assessment of employee expectations of organisational climate prior to entry was a good measure of future success and tenure, and carried out his thoughts on a sample of 914 insurance agents. An initial questionnaire was sent out with the formal contract and covered six areas of organisational climate. These were then compared with the

views of agency managers together with old employees, and a measure of 'fit' was obtained between the two respective views. One year later the agents' performance (in terms of sales) and tenure were noted.

Mabey (1983) investigated the early job satisfaction and commitment of graduate entrants in a longitudinal study of 135 sandwich and full-time graduates entering engineering jobs in 1981. This was done with the cooperation of 20 U.K. companies in the engineering sector. The survey was conducted using two questionnaires, the first of which was sent approximately one month before the new graduates entered the company. About six months later a second questionnaire was sent to all initial respondents. A great deal of previous expectations research was put into each questionnaire's content and timing. This enabled the graduates' prior expectations and needs (obtained from the pre-entry questionnaire) to be compared with job satisfaction and company commitment (gained from the post entry questionnaire).

Mabey concluded that a mismatch between what graduates and employers expect of each other continues to exist, this seems to be heightened by the mutual selling situation inherent in the graduate recruitment process. He suggested that :

"For employers, it pays to be realistic about the job and to build real responsibility, training opportunities and intellectual challenge into the graduate's job as early as possible.", and

"For graduates, it pays to temper optimistic with informed realism and patience."

He adds that although sandwich training can solve this problem by providing an opportunity for the development of realistic expectations, this advantage can be cancelled out if graduates are tied to one employer. Drawing upon his research experience (1983), Mabey states that :

"The ideal situation would seem to be where the undergraduate training includes industrial experience, but where both parties (graduate and company) have the freedom NOT to choose each other at graduation."

Mabey's sample has now been followed up 4/5 years later by Lydka (1990). This work lengthens the longitudinal study and also coincides with the work undertaken by Hollins (1990) on the psychometric profiles of the same sample. Within her work Lydka also looks at the areas of career development, motivation, job satisfaction and organisational commitment.

3.4 Influences on the research programme

While a review of past work in the recruitment, expectations and early career development fields is presented (see above sections, and chapters 8 and 9), it is worth noting how the research conducted varied from key studies in these areas.

The most influencial study in the initial stages of the programme was Mabey's (1983) research into the early career development of engineering graduates. The main focus of his work was to record graduates' pre and post work

expectations. This was achieved through the administration of two questionnaires: the first, two months prior to organisational entry and the second, six months into employment.

The main output of this research was the discovery of a positive correlation between realistic pre work expectations and future job satisfaction and company commitment.

The early stages of the author's work aimed to follow Mabey's research framework, and indeed a modified version of his questionnaire was administered to graduates prior to organisational entry. However, as the research progressed it became evident that reproduction of Mabey's work would only reproduce the same results. The decision was therefore made to "tease" out practical solutions to highlighted problem areas as opposed to recalibrating correlational figures. This had a number of effects on the research programme :

i. The quantitative information from the pre work questionnaire was followed up with a qualitative interview programme involving both employers and graduates.

ii. A decision was made not to focus on correlational and cross tabulational analyses. This allowed a greater proportion of time to be spent uncovering underlying problems, and defining possible solutions.

iii. The SPSSX package, was therefore used for frequency analysis. The large size of the data matrix meant that this form of analysis was still a worthwhile investment.

iv. Future work would involve interviews and group discussions as opposed to questionnaires.

iv. Alternative methods would be required to analyse the qualitative information gained.

Ongoing research by Lydka (1990) has followed Mabey's sample up with a third questionnaire administered five years into employment. It has not, however, focused on their early career development.

Many studies have concentrated on specific aspects of the graduate's transition into employment (see Chapter 8) and personnel turnover (see Chapter 9). While using similar techniques (ie. interviews and group discussions), few have offer practical solutions.

Overall it must be noted that this research builds on past studies by providing practical solutions to highlighted problems.

3.5 Key issues

1. The present employment situation is one of increased demand for, and almost static supply of graduates. The greatest demand for graduate talent has been recorded in engineering disciplines.

2. As a result of the overall situation, employers are adopting new approaches to graduate recruitment, seeking alternative sources of new talent, and improving their image in the undergraduate marketplace.

3. With an increasing awareness to recruit quality graduates, a number of academic and commercial studies have emerged.

4. These, however, have major limitations. Firstly many of the findings are on a broad level, lacking depth and rigour. Secondly, results are often recorded on a one-off basis, at a single point in time, and therefore do not reflect the changing nature of graduate and employer attitudes, needs and practices. Surveys have also displayed poor timing, and inadequate sample selection. Their two greatest shortcomings, however, are: lack of practical implications; and a general lack of integration with other research studies (ie. socialisation, turnover and career development).

5. The expectations mismatch remains inherent within the recruitment process. This is largely due to employers attempts to attract the best talent, often inflating applicants' expectations to unrealistic proportions

6. This expectations mismatch is a key determinant of individual job satisfaction and company commitment.

CHAPTER FOUR

QUESTIONNAIRE PLANNING AND DESIGN

4.1 Introduction

This chapter records the methods used in planning and designing the pre work questionnaire (see Appendix II). The pre work survey had two main objectives:

1. To obtain the expectations, attitudes and needs of graduate engineers prior to entering industry,

2. To form a base for a future interview programme on the development of these graduates,

4.2 Planning the questionnaire

In order to make full use of time, money and resources the survey was carefully planned prior to initiation. Using Moser and Kalton's (1971) framework, the planning stage involved the identification and choice of the sample population, effective methods of obtaining high response rates, and appropriate analysis of the information.

4.2.1 Identification and choice of sample population

Sampling errors (Jolliffe, 1986) cause major problems for researchers using qualitative techniques. Due to the nature

of the study, which followed the transition of a cohort of engineering graduates, a longitudinal design (ie. monitoring individuals through time) was necessary. This placed an increased emphasis on the need to form an accurate, unbiased sample. The initial factors influencing the sample selection were career discipline and geographical limits.

(a) Career discipline

To compare and contrast graduates' views (from a wide range of disciplines) would be an impossible task and for this reason the sample had to be narrowed. Having highlighted the engineering discipline as the prime area of concern, the basic criterion set was that only engineering graduates entering engineering related careers would be monitored.

(b) Geographical limits

The graduates and companies involved in the survey were limited to the United Kingdom. This provided a large sample population within relatively easy reach and with no major communication or language problems. It was also agreed that an International survey on a longitudinal basis, would introduce severe bias to the results, as well as considerably increasing the cost and duration of the survey. Preliminary research also indicated that many students in Europe took two degrees and undertook some form of National Service. This meant that graduate recruitment is aimed at over 25 year olds who have higher salary expectations and

differing training needs. Any fair comparison of British and European attitudes and practices was thus not feasible.

Three separate sample populations resulted: the first a selection of 1988 Liverpool University engineering graduates (N=40); secondly a sample of 1988 engineering graduates taken from a random sample of U.K. universities (N=70); and finally the 1988 engineering graduate intake of eleven collaborating companies (N=250). Each sample varied in size quite considerably and an explanation of this is as follows.

(i) Choice of Liverpool University graduates

Although this sample did not form the main focus of the study, it was a worthwhile exercise to undertake on two points: easy access to contact addresses via close links with the engineering faculty; and more importantly, a range of different companies and job profiles.

(ii) Choice of U.K. University graduates

A proportion of respondents from the initial questionnaire formed this sample. It could be said that only keen students, with no job problems, would be willing to take part in a second study and would thus bias the sample. However, when they initially agreed to continue with the study, very few had been given firm job offers.

Although these two samples give an extra dimension to the research they have two major pitfalls. Firstly, from the 1986 Universities' Statistical Record and Committee of Directors and Polytechnics (IMS, 1988) first destinations figures it could be seen that only just over 50% of the total degree output were available for home employment of which only 15.2% were entering industry. These figures can be seen in figure 4.1.

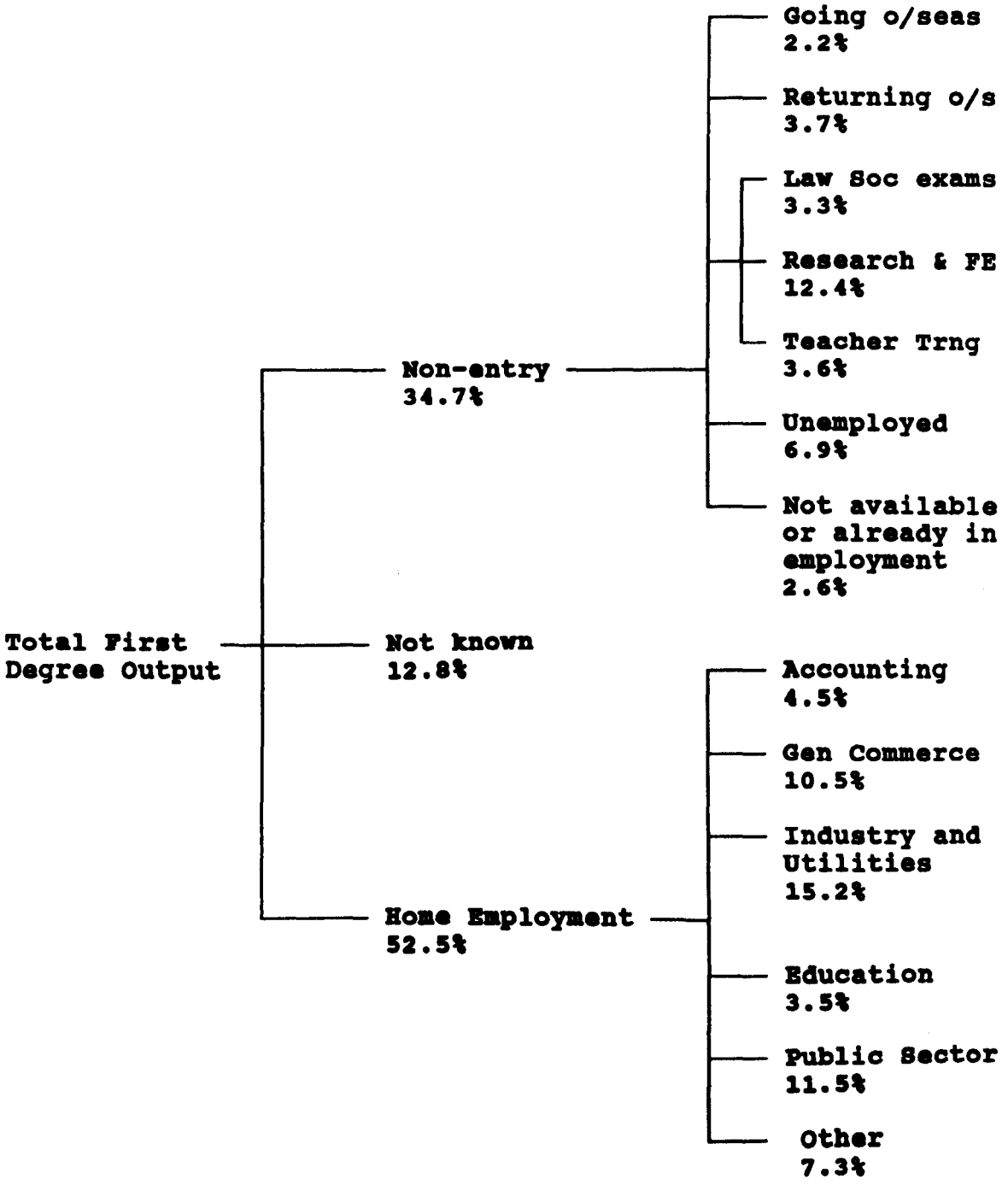
Secondly, the random distribution of subjects across the country would hinder follow-up interviews.

(iii) Choice of company based sample

In order to ensure a sample of graduates which could be easily accessed in future years, a number of collaborating companies were sought in which their engineering graduate intake could be monitored. Compared with Mabey's study (initiated in 1981), when many employers dramatically reduced, or even curtailed their recruitment of graduates, the demand for graduates (in 1988) was relatively high. Company interest in the research was therefore high, and many agreed to participate. Cynics may suggest that only companies having difficulties in attracting engineering graduates would be interested in taking an active role in the study. In some instances this may have been the case, but the majority of companies participating felt they had no major problems in attracting their quota of graduates.

Figure 4.1 First Destinations, 1986
(Universities and polytechnics)

Source USR/CDP/IMS



At the same time they were continually looking for new methods of improving their recruitment and development procedures. Each company profile can be found in Table 2.2.

(iv) **Sample overview**

The respective advantages and disadvantages of each subsample within the main sample frame are summarised in Fig 4.2.

Fig 4.2 Formation of sample framework - Advantages and disadvantages

Sample	Advantages	Disadvantages
Liverpool University Graduates N=40, n=19	Easy access via engineering faculty	High % not entering engineering Difficult to monitor Bias sample
Random Selection of University Graduates N=70 n=41	Reduces sample bias Increase sample size and content	High % not entering engineering Difficult to monitor
Case Company Graduates N=250, n=183	Further increases sample size Easy contact at each stage via company contact High % entering a career in engineering	A variety of companies needed to reduce bias Company contacts frequently change

(Total Sample N=360 n=243)

4.2.3 Improving the response rate

A major limitation with mailed surveys is their reliance on obtaining sufficient response rates. Non response can cause two major problems :

1. The sample size is decreased,

2. Non respondents may differ in attitude from respondents and thus bring bias into the results

For this reason, the area of non response was a key issue in the planning stage. Jolliffe (1986) suggests two reasons why non response occurs; refusal of the sample members to cooperate with the study or failure to contact the correct person in the first place. Refusal to answer the questionnaire is quite different from 'inability to complete' (which is discussed later). Refusal may occur for several reasons; poor timing of the survey; feelings of intrusion into respondents' privacy; daunting survey format; and possibly most important, lack of motivation. These problems had to be overcome early on in the programme. The solutions were as follows.

(a) Timing

The pre work questionnaire was sent to graduates before entering full time employment. If questionnaires were received and completed after graduates joined, replies would

be 'contaminated' by company climate and results biased. The optimum time was felt to be 1 month prior to entry; at a time when a formal contract had been drawn up, and the individual was starting to think about his future job in a clearer more focused manner. A greater accuracy of expectations and perceptions was thus recorded.

(b) Contacting the correct individuals

Liverpool and National student samples were either contacted via the initial survey or through heads of departments. In each case, final year engineers were successfully targeted. With the majority of collaborating company subsamples, initial contact was made via company representatives, although in two instances presentations were made by the researcher.

(c) Format

Clear descriptions of the general aims of the work, and more importantly the correct methods of response were provided at the top of each section such that responses would remain accurate, clear and uniform. To aid the ease of response, simple examples were also provided in each case.

Care was taken to provide a clear, attractive layout in order that respondents would be encouraged to complete the survey but also record reliable information. Length of the survey was an important factor in a successful response.

Reduction of the document to A5 size would produce the questions in a compact manner and visually pose a less daunting prospect for the respondent. This, however, would be at the expense of visual quality, and it was decided to maintain an A4 size booklet, but reducing the length by printing on each side of the paper. Response formats were varied throughout the questionnaire to maintain interest and avoid "unthinking", non independent answers.

(d) Official support

It was perceived that official support from a respected individual could increase the response rate. For this reason each participating company was asked to attach a covering letter explaining their support of the research.

(e) Anonymity and confidentiality

Care was taken in the covering letter to stress the confidentiality of the results. Although the questionnaires were distributed by each respective recruitment manager, each response was returned directly to the researcher and therefore individual comments were respected. Anonymity however could not be guaranteed as it was necessary to follow up a sample of the respondents at a later date.

(f) Return envelope

Scott (1961) suggested that a prepaid envelope would increase the rate of response and it was decided that this extra expense was worthwhile. Thus to encourage a response, a stamped addressed envelope was attached to each questionnaire.

(g) Follow-up of non response

Both Kanuk & Barenson (1975) and Scott (1961) found that a letter following up non respondents further increased the response rate. For this process to be productive, effective communication was required between each collaborating company and the researcher. In the majority of cases these links were strong, and non respondents were pinpointed and followed up by the company representative through word of mouth.

(i) Motivation

Having optimised time, length and all other response factors, if respondents do not feel the survey is of any value or worth, particularly to themselves, non response will occur. Care was thus taken to clearly state the practical objectives and implications of the research.

4.2.3 Design of the response format

Care was taken to keep the questionnaire to a closed response format with ranking and rating scales frequently being used. This type of format not only enabled the collection of a substantial amount of quantifiable data but also avoided the subjectivity involved when using a more unstructured approach.

Most of the scales were numeric in nature, anchored by descriptions. The format of each scale had to meet two criteria: firstly that it could be used as a standard in different cases; secondly that it could easily be related to by each respondent. For these reasons a five point scale was used most frequently. Although an odd scale is said to encourage indifferent respondents to make a noncommittal response, whereas even scales do not, there were many cases when a midpoint was useful. For example, in the question "How much do you know about the actual day-to-day running of your future job ?", which has a five point unipolar scale, the midpoint acted as a natural step in the progression from a great deal to very little. In bipolar scales however the use of a midpoint can lead to unforeseen problems. For example, in the question "To what extent do you agree with the following descriptive statements ?", the middle answer of 'don't know' is an important variable in itself and does not fit into a smooth scale. For this reason the 'don't know at this stage' response was placed several spaces to the

right of the main scale (which had been reduced to four points).

A number of dependent and independent variables were measured on a rating scale whereby respondents circled a number of ascending or descending alternatives depending on the given criterion. This form of rank order scaling, for instance type of degree (measured by grade) represents an ordinal level measurement. Some variables vary, however, like months spent in sponsored training and age. These become ratio-based measurements since they can be compared with a known zero point. Others are simply nominal because no assumptions are made concerning the values assigned to each piece of data - this would be the case in type of vacation employment. The importance of these different levels of measurement became apparent when methods of statistical analysis were chosen.

4.2.4 Piloting the questionnaire

Initial surveys (discussed in Section 2.3.2) were used to develop the content and direction of the pre work questionnaire. Having constructed the basic framework, the questionnaire was piloted amongst 15 engineering undergraduates within the Engineering Faculty at Liverpool University. Respondents were encouraged to write any comments and additional points on the questionnaire, and these were fed back into the design process.

4.2.5 Questionnaire analysis

Response data from the pre work questionnaire was fed into statistical package for the social sciences (SPSSX), for computerised analysis. Output was predominantly in the form of frequency analyses, with supporting material from cross tabulational analyses.

4.3 Questionnaire content

The main areas recorded within the questionnaire were: personal and educational factors; respondents' perceived selection qualities; their organisational choice factors, and expectations of future employment; their attitudes towards various methods of selection; and their future career aspirations. The following sections discuss their broader content, highlighting their academic grounding and relevance to the overall research programme.

4.3.1 Personal and educational factors

A number of personal details have been encompassed by researchers in their studies of graduates, each emphasising different factors. Biographical data including: age, sex, marital status, country of origin, geographical location of home and father's occupation were common variables found in recent studies (MORI, 1988; Dept of Employment, 1988; Mabey, 1983). These, and other studies have also looked at the nature of graduates' education and training including type

and class of degree, and often venturing as far back as type of secondary education (IVL, 1989). Work experience, sandwich training and prior contact with the company have also been studied (Breenan and McGeevor, 1988; Mabey, 1983).

It was decided to keep the biographical details simple, concentrating on age and gender. Individuals' home addresses where recorded for ease of follow-up. More emphasis was placed on respondents' recent years in education, with degree level and discipline, and aspects of industrial experience all recorded. The criterion for their choice was that these educational variables had proven effects on the graduates' prior expectations, ease of entry into employment and future job satisfaction (Arnold, 1989; Breenan & McGeevor, 1988; Mabey, 1983). For example sponsorship and industrial experience can provide a useful insight into the world of industry and commerce but can also be mundane and destructive if used in the wrong way.

It was hypothesised that there were many differences between higher educational and organisational environments. Learning, predominantly one teaching many in higher education, and group or project based in employment, was one of many inherent mismatches within the graduate's transition into employment (see Chapter 8). To compare these approaches to learning, graduates' educational experiences were recorded.

4.3.2 Perceived selection qualities

The aim of this section was to gain respondents' perceptions of the importance with which employers rated a series of qualities in selecting engineering graduates. In order to obtain a structured set of results, a predetermined list of qualities was presented.

Although this somewhat restricted the range of responses, opportunity was given for respondents to add to the list. From the initial graduate and company surveys an initial set of qualities were formed. Discussions with a network of technical managers in various engineering related companies were then undertaken in order to generate additional qualities needed for the job. A list of 15 items resulted and after a series of pilots this was increased to 18.

This list was also used to ascertain which qualities respondents developed through their experiences within higher education, which were lacking or not developed, and which they would have liked to have seen to a greater extent in their undergraduate education. This information both complemented and extended the Enterprise in Higher Education Initiative (1990)

4.3.3 Organisational choice factors

Emphasis was not only placed on the circumstances under which the decision was made, but also on the job choice

factors themselves. The circumstances under which the decision was made were reviewed by drawing upon the model of commitment developed by Salancik (1977). This model outlines four characteristics of behavioural acts that make the decision to join an organisation binding. These, as shown in Table 4.3, were perceived to determine the extent of future commitment (see Section 9.3.1).

Table 4.3 Characteristics of behavioural acts binding the employment decision

Revocability	- the extent to which the decision is reversible eg. sponsorship may be a 'gentlemen's agreement' which must be kept
Volition	- freedom of job choice; external demands for action; extrinsic bases for action; and the influence of other contributors to action
Explicitness	- the way in which the job/company is described
Publicity	- the manner in which the description is put across

O'Reilly and Caldwell (1980) found correlation between the first two areas and job satisfaction and company commitment

but not the latter. This stage in the research solely looked at volition.

(a) Freedom of job choice

This section followed the methodology of Mabey (1983) and O'Reilly and Caldwell (1980) who assessed freedom of job choice by recording the number of other job offers received. Additional information was recorded on the number of applications, first and second interviews each respondent had undertaken. Although this particular section gained greater quantity of information, it lacked accuracy. Mabey, and O'Reilly and Caldwell took into account the fact that not all job applications and offers would be seriously considered by the graduate and will therefore have an effect on their freedom of job choice. Better wording for this question would have been " How many suitable alternatives did you have when you accepted your job ?" A high number here would result in high freedom of job choice and a low number would constitute low choice. Results, although not presented in the following chapters, reflect the shift from a buyer's (company) to seller's (graduate) market.

(b) Extrinsic bases for action

In order to ascertain the hierarchy of factors considered by graduates in their job and organisational choice, respondents were asked to rate a series of predetermined

organisational choice factors. These factors were compiled from initial graduate surveys and literature reviews.

Mabey felt that respondents would be influenced by 'social desirability', ie. giving the answers expected of them rather than a genuine honest response, and would rarely, if ever, give an item low rating. In his eyes, therefore, this measure would fail to discriminate and have little correlational value. For this reason he asked respondents to rank ten items "in order of their importance to you", so forcing a hierarchy. Although this method has been undertaken on a larger scale (Hill 1969 asked graduates to rank order 27 job items) it was felt that respondents would have great difficulty in juggling the alternatives around and would be forced to make unwarranted and artificial responses. Another fault of Mabey's list of ten was that it did not cover all important job items such as autonomy at work. Taking these points into consideration, a list of 19 items was presented on a five point rating scale. Respondents were also encouraged to record additional factors perceived to be of importance. Results are presented in Section 6.2.1.

Secondly, respondents were asked, according to their original personal preference, where the job they accepted was rated among their total number of original applications. It was presumed that the higher the ranking, the greater the commitment to the company; and the lower the ranking the lower the commitment. Since the majority of respondents had

received offers from their "first choice employer", this factor was not discriminatory, and was therefore not analysed on a longitudinal basis. In the event of receiving more than one job offer respondents were asked which of the previous organisational choice factors were most important in choosing that particular company.

(c) External demands for action

External demands for action refers to outside influences beyond ones control such as the size of the graduate labour market. Since there was a decline in graduate intake into industry during Mabey's work, this may have been a real constraint. However, with the demand for graduates in the late 1980's rapidly increasing, and the supply remaining static, this factor was not considered an important constraint and was therefore not included.

(d) Contributors to action

Other contributors will play an important part in the decision process. Respondents were therefore asked "To what extent you were influenced by others (eg. families and friends etc.) in your choice of job ?". A linear five point scale ranging from "decision made completely free from the influence of others", resulting in high freedom of job choice, to "decision largely influenced by others", resulting in low freedom of choice was used in this instance.

Extending this information, respondents were asked who or where they received effective company information from. A list of ten "influencers" was constructed from initial graduate discussions. Respondents were asked to rank their importance in terms of the amount of useful information each offered. The list consisted of the careers service, company brochure, academic staff, interviews, company visits, family/friends, discussions with employees, company presentations, advertisements and vacation work. Results are presented in Table 6.5 (Chapter 6). The extent to which graduates' decisions were made free from the influence of others was also recorded on a five point scale.

While there remains a wealth of information available to the graduate on a broad company level it was hypothesised that very little specific job information was provided by employers. Respondents were thus asked how much they knew about the company they were joining but more importantly how much they knew about the day-to-day activities of their future job or training.

4.3.4 Expectations of future employment

Respondents' prior expectations were measured in two ways; their perceptions of the company, and more importantly their perceptions of the job in hand. A list of descriptive rather than evaluative statements was therefore constructed. A review of expectations literature (Chapter 3) uncovered much work in the general area but little that was directly

relevant to this research, either because it was structured for the wrong organisational climate or because it was in a specific field. An example can be seen in Katzell's (1968) work on nurses reaction to training school, measuring satisfactions (56 items) and stresses (83 items) related to their specific work environment.

Ward and Athos (1972), concentrated specifically on graduates, asking their sample of Master of Business Administration students 212 company characteristics to score prior to entry. These were followed up with a list of 150 items which were then short listed to 14 factors. A number of different items were therefore used to describe each factor, thus the reliability of the exercise was much higher.

Kotter (1973) and Dunette, Arvey and Banas (1973) formed statements covering both micro and macro aspects of the job and organisation, consisting of only 13 and 15 items respectively. Each was suitable for remeasurement although neither party did so (Kotter compared graduate with manager perceptions, and Dunette et al. only used it as a post entry instrument, slightly changing the wording between expectations and experience measures). Each of these measures relates to graduates entering full-time employment although they are not totally appropriate to the British culture. The work of Hill (1969) in Shell together with Parsons and Hutt (1981) on graduate leavers nevertheless helps to clarify the situation.

Taking into consideration this previous literature, Mabey (1983) drew up 20 statements in his study of engineering graduates: ten of these referred to actual features of the job and ten to the wider aspects of the organisation. It is his collection of relevant factors that formed the basis to this particular work.

In Mabey's view, this list covered all the important aspects salient to a graduate entering employment. Although this is not contested, it was felt (particularly in the pilot surveys) that several of the statements were not directly relevant and these were omitted. The pilot studies also uncovered other important items, and together with a rewording of Mabey's 'shell', 16 statements were drawn up. Respondents were then asked whether they agreed or disagreed with these statements on the basis of previous information known about the job and company they were joining. Answers were on a four point scale in order to eliminate an easy middle response. A separate 'don't know' response was also included. This was perceived to be more important than the main scale, and if used, should pose the questions: Should they know ? Why don't they know ? How can they be better informed ?

4.3.5 Methods of recruitment

The field of graduate recruitment has become more diverse and complex than ever before, with applicants having to face a series of new personality and psychometric tests. The

question is, however, how effective and reliable are they ? This was put to the test when graduates were asked to rank which methods of recruitment they felt gave them the best opportunity to most fairly represent themselves. Once again a predetermined list was provided in order to structure responses. The list consisted of seven of the most commonly used forms of selection. These were compiled from the researcher's own practical experience of assessment centre techniques, and discussions with recruitment managers. The list consisted of psychometric and personality profiling, the one-to-one technical interview, the one-to-one personnel interview, interview board (technical and personnel), group discussions, group exercises and individual exercises.

4.3.6 Future career aspirations

Having spent a great deal of time, money and resources in attracting and recruiting a graduate intake, and no doubt investing in their future development, companies require a "payback period" in which their investment is returned. If graduates only expect to remain with their first employer for a limited period (and this decision is made prior to entry), employers face major cost/resources implications.

The final section of the questionnaire therefore aimed to assess the respondents' future career plans. Firstly respondents were asked whether they saw their job as a 'stepping stone' to something else or a career in itself. It was also necessary to assess how long they intended to stay

with their fist employer. Finally, in order to gain a perception of their future career direction, respondents were asked what kind of job they hoped to pursue in the long term.

Results to each of these sections are presented in Chapter 6.

CHAPTER FIVE

THE HIGHER EDUCATIONAL PROCESS

5.1 Introduction

Higginson (1989) revealed that United Kingdom manufacturers are less productive than their West German competitors. He withdrew all the old excuses for poor performance, which ranged from out of date machinery, industrial relations problems through to too high tax, concluding that poorly educated workers and managers were the main source of the problem. Thus the supply, educational quality, and matching of engineering graduates are major factors in the long term success of an organisation. There is indeed a critical link between higher education and future industrial performance. This was highlighted by Gill (1989) quoting the Government's concern:

> "... that our competitors are producing, and plan in future to produce, more qualified scientists, engineers, technologists and technicians than the United Kingdom. A thriving economy needs these skills to develop the talents of entrepreneurs and to support their achievements: if the present trends continue, the result seems to be a further fall in our relative standard of living and in our ability to sustain our cultural heritage."

While there are many problems in the current engineering education system (Manpower 2000, 1989; Finniston, 1980), the following sections will focus on the role of higher education in developing engineers of the future. Drawing upon relevant results from the pre work graduate survey (see

Chapter 4), particular emphasis will be placed on the "developmental" aspects of this stage in the process. The chapter also highlights the key factors considered by employers (and perceived by graduates) to be important in the selection process, and assesses whether the current educational process meets these combined needs.

5.2 The supply of engineering graduates

In order to be successful in the future, and remain amongst the most advanced countries, the United Kingdom must compare itself against other advanced and successful countries. Table 5.1 shows the comparison of graduate engineers in the population.

Table 5.1 Approximate numbers of graduate engineers in the population

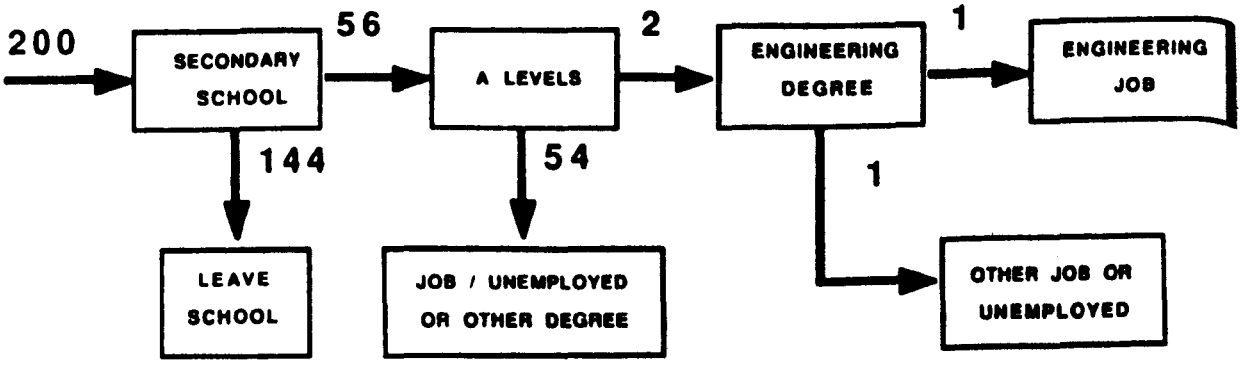
Country	Per 1000
Japan	20.2
Germany	11.5
U.S.A.	7.9
France	7.5
U.K.	6.1

These findings pose serious questions on the supply of students entering higher education, which in turn effects the output of graduate engineers. A recent report on graduate supply and demand, produced by Pearson and Pike (1988), predicts how the supply of graduates will stop growing within the next six years due to the rapid downturn in the number of 18 year olds entering higher education. A perceived supply problem therefore exists, and initiatives

are under way to widen access into higher education from groups such as mature students, those without "A" level qualifications (currently accounting for about 15% of university entrants) and ethnic minorities. An example of one such initiative lies within the Engineering Systems Course (initiated in 1988) at Liverpool University, where students with low, or the wrong mix of "A" level grades, are able to undergo a one year foundation course in order to reach the required standard in maths and science related subjects. This concept has now been developed on a Faculty level, and is predicted to almost double the future intake into the engineering departments.

The second problem to address is the "wastage" of engineers to non engineering related disciplines on graduation. Figure 5.2 shows the extent of this problem in relation to the wider concern of attracting students in general into engineering.

Figure 5.2 Number of students who will go on to become engineers



This energy diagram, presented by Farrar et al (1988), shows the input to the whole system (200 children entering secondary school), and records the final output (1 engineering graduate entering an engineering job). Breaking the progress of the initial 200 individuals down: 144 leave secondary school without any further education; and 56 go on to take 'A' Levels. Of these 56, 54 move on to take up something other than an engineering degree. From this stage, it is predicted that, on average, 50% (in this case one engineering graduate) take up an engineering job. A recent survey of 1,854 final year engineering undergraduates conducted by IVL (1989) recorded an even greater wastage rate, revealing that only 35% of the current output were committed to a career in engineering.

The key determinant of high wastage within both surveys was attributed to the general "image" of engineering throughout the educational process. With the initiative lying in the hands of employers to present a positive "vision" of engineering, a recent quotation from Pearson (1988) sums up the need for change :

"There is a feeling that with the declining number of graduates coming out of the Higher Educational system, we must contemplate the fact that Industry must sharpen and widen their recruitment activities and must increase their support at all levels of education"

The output of engineers in the U.K., compared to its competitors, is worrying enough (see Appendix I. for related figures); but it is the quality of this output that forms the greatest cause for concern.

5.3 The quality of the degree programme

Several studies (eg. National Advisory Body, 1986; Finniston, 1980) have researched the content and quality of degree programmes. Engineering undergraduate degree courses vary in their content, structure and mode of delivery. This is partly determined by their need to respond to accreditation by professional bodies and to market place demands. However, an overriding constraint on curriculum development is the need to suit academic requirements, and to produce individuals tailored for postgraduate research. The engineering degree has long concentrated upon the technology of engineering, the mathematics, mathematical modelling, the engineering theory, and the properties of materials. But where has it considered the properties of the most important ingredient, the individual undergraduate.

A move in this direction was proposed by the Council for National Academic Awards (CNAA) in collaboration with the Centre for Educational Development and Training (1986) within a substantial report on the early careers of graduates. This major three year project investigated, amongst other factors, graduates' experiences within higher education, and suggested the following points of interest :

- the integration of management and industrial studies into all degree courses;

- the need for a multi-skilled student through a multi-

disciplinary and work experience approach;

- and finally that work should be undergone into uncovering alternative modes of work experience and integrating the "workplace" within Higher Education.

5.3.1 Matching the degree programme to the needs of the individual

In order to try to define the degree of matching (or mismatching) between the provisions made by degree programmes and the needs of the individual, a cohort of 243 engineering graduates were "captured" just prior to entering their employing organisations. This sample formed the starting point of the graduate study (see Chapter 4). Individuals were asked to complete a questionnaire relating to their degree course. The items of interest to this section are shown in Table 5.3, with only the main factors included.

Table 5.3 Qualities developed in higher education

Question : What "qualities or factors" were actually developed by your experience in higher education ?

Quality/Factor	Rank
Analytical skills	1
Ability to learn	2
Verbal communication skills	3

The first two factors clearly reflect a basic aim of the university degree programmes. Their development, however,

does not require a mass of theory. As Little (1970) noted, students themselves expect universities to "develop habits of intellectual enquiry" rather than to pass on a great deal of information. The inclusion of verbal communication skills is largely due to an increased emphasis within universities and polytechnics on oral presentations as a means of assessment, or simply as an integral part of the work for developmental means.

Table 5.4 Qualities lacking, or not developed in higher education

Question : What qualities were either lacking or not developed by your experience in higher education ?

Quality/Factor	Rank
Business awareness	1
Industrial awareness	2
Management potential	3
Creativity	4

The general "lack" of industrial, business and management experience, as shown in Table 5.4, was evidently the greatest cause for concern amongst respondents. This resulted in a general lack of awareness as to how undergraduate degree programmes related to their future career. Nevertheless, almost all technology based degrees have opportunities for inputs in this area. The author predicts that these inputs will be increasingly employer led, ranging from taught courses, through vacation and project work, to business simulation exercises. The future picture is, therefore, not quite as bad as it first appears.

While management potential can be construed in many ways, it was not seen to be developed. The lack of opportunity for creativity within higher education reflects the "static", as opposed to "developmental" nature of many degree programmes.

Table 5.5 Qualities to be included to a greater extent in higher education

Question : Which qualities would you like to have seen included, to a greater extent, on your degree programme ?

Quality/Factor	Rank
Business awareness	1
Verbal communication skills	2
Management potential	3
Industrial experience	4
Creativity	5
Ability to work in a team	6

Reinforcing the previous figures, respondents called for increased personal and commercial skills development (see Table 5.5), and decreased levels of knowledge based learning. It must be stressed that all these factors can be fully integrated within the engineering degree if they are managed in the correct way.

It must be stressed that while these figures clearly demonstrate undergraduate attitudes, there were no signs that respondents were taking practical steps to solve these problems. This reinforces the key point recorded amongst the current undergraduate population: their general lack of personal development, which affects self-motivation.

5.3.2 Qualitative graduate attitudes towards the degree programme

Respondents were also encouraged to add further pertinent comments. The most frequently raised issue was the amount of theory engineering graduates have to digest. There were certain factions who thought there was too much theory and not enough practical work.

"At least the theory should be taught in the context of practical applications.", ".... the course is O.K. for someone going into research but most of us are going to wind up as managers."

On the other hand, there were students who felt that whatever practical or applied work they had undertaken, it was not likely to be relevant to their specific career.

"You don't know what's going to be useful until you actually start your job."

There were also desperate pleas, reinforcing the quantitative data above, to change the present undergraduate educational system. Typical responses included:

"Further emphasis must be placed on industrial experience, report writing and presentation skills, group work and more commercial awareness is needed." (Electrical Engineer, Brunel)

"Management skills should be developed earlier in educational system with strengths and interests identified and their development encouraged." (Mechanical Engineer UMIST)

"....the need to provide an increased awareness of what work involves."

There were also arguments to bring lectures nearer to the 'real world', involve more case studies, become more experience and practically based and to encourage more inter disciplinary work.

On a more positive note, when students had a strong element of project work on their course, particularly involving group work, it was highly thought of. The same was true of management education. On a qualitative basis, it was also evident that those who raised above average concerns on the level of management input in higher education were more likely to be seriously considering a career in accountancy.

There was a general perception that the engineering discipline was a tough one and that an engineering degree provided an ideal broad base in numerate education:

"... that's why engineers have a ready made advantage if they decide to go into accountancy.".

From an educational point, the above views may not be well founded. But if the course content steers undergraduates away from engineering, it is clearly a cause for concern.

In summary, graduates' needs are not being met, and when they are, individuals find it is difficult to relate their taught skills to the practical, workplace setting. From an educational point of view, the main problem is simply one of lack of time, with the demands of the technology subjects and related institutions, having to be met. Nevertheless,

there needs to be some form of "rationalisation" within engineering degree programmes.

5.4 Matching the needs of engineering graduates, and industry

In order to match individual and employer perceptions and needs, the research programme determined the factors taken into consideration by both parties (ie. the prospective employee and employer) in the employment decision. To achieve this, two initial surveys were carried out. Their format and results are described below.

The aims of the surveys were to obtain the graduates' and company's views, before the graduates entered their respective companies, on the following subjects :

- The qualities that companies used in selecting a graduate;

- The qualities that graduates perceived the company to be looking for when recruiting graduates.

These respective responses were compared, and then matched with the current knowledge and skills developed within the higher educational process.

Following testing by pilot groups, questionnaires were sent to the representative samples of graduate recruiters and engineering undergraduates :

The respondents were asked to rate, on a five point scale (from "5 = very important", through to "1 = not at all important"), the importance they felt employers placed on various factors. These ratings were totalled and compared as a percentage of the total possible score in order to obtain a percentage rating. The employers were asked to rate the same list of factors from their viewpoint. The terms were written in their simplest form to avoid any confusion amongst respondents.

5.4.1 Recruitment "qualities": company perspective

A sample of 61 graduate recruitment managers were asked how important the following qualities were in the selection of engineering and technology graduates. The replies they gave are listed in Table 5.6.

Motivation was undoubtedly the key selection factor. Unless graduates display energy, drive and enthusiasm for their job, employers will no doubt question their future work and company commitment. Effective communication skills were another key factor in the individual's successful development, and these must also be clearly displayed during interview if applicants are to achieve initial success in selection.

Table 5.6. The "qualities" companies use for recruitment.

Rank Order	Quality	% Rating
1	Motivation	91
2	Communication Skills	86
3	Personality	84
4	Flexibility	81
5	Degree Discipline	77
6	Degree Level	66
7	Business Awareness	61
8	Industrial Experience	58

It is clear that more emphasis is paid to graduates' "personal qualities" than to the level and content of "technical skills" related to their degree disciplines. While the type and level of degrees are important selection factors, they are regarded as base qualifications for the job. The individual's personal qualities often form the "differentiating factor" for selection. Business awareness appeared low on the list as employers seemed to take it for granted that very few engineering graduates have any sort of knowledge in this area. Industrial experience also appears surprisingly low down. This was explained by a number of managers including one personnel director who commented :

"Its all well and good if your graduates have had industrial experience within your own company, but more often than not they have not, and a great deal of time can be spent retraining them from their old company culture and techniques to the new"

Even so, industrial experience has many benefits to the company (attraction and training) and the individual (insight, experience and revenue). Problems only arise if this approach is used incorrectly.

5.4.2 Recruitment "qualities": graduate perception

The next step was to record any possible matching between the Companies' actual, and the Graduates' perceived views on the qualities used in the selection process.

To achieve this, a sample of 137 graduates were asked the importance they felt employers placed on the same list of factors. The results are shown in Table 5.7 below :

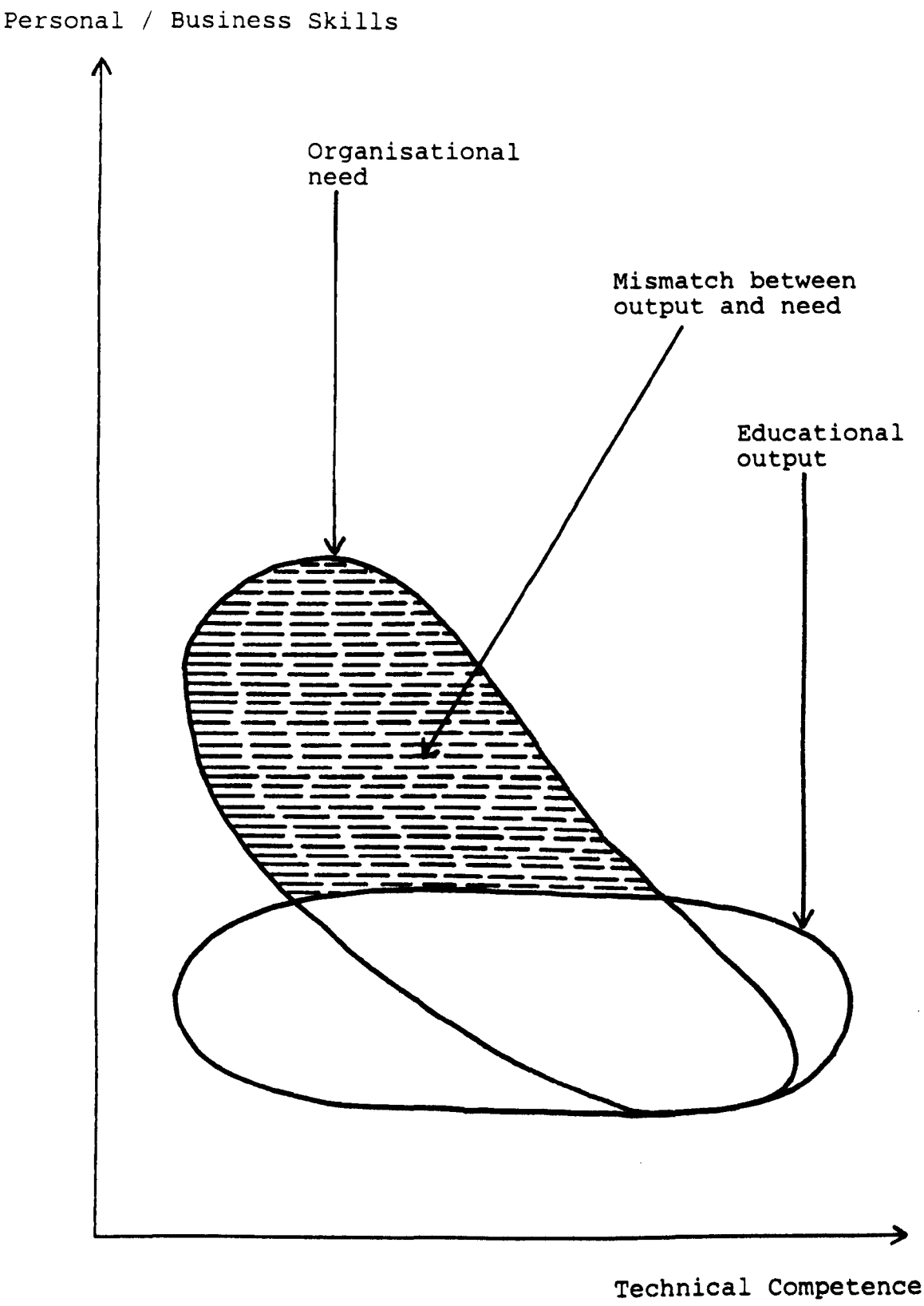
Table 5.7 : Graduates' perceptions of recruitment qualities

Rank Order	Quality	% Rating
1	Motivation	87
2	Communication Skills	83
3	Personality	80
4	Degree Discipline	78
5	Flexibility	71
6	Industrial Experience	70
7	Degree Level	69
8	Business Awareness	59

As can be seen, there were no significant differences between the two sets of results. What is of concern is the fact that these key qualities are not addressed directly,

for development, in most degree courses. Figure 5.8 represents this mismatch.

Figure 5.8 Matching educational output with organisational need



In later discussions with undergraduate students, (Manufacturing Management Programme 1989, 1990) technical aspects of the degree programme initially clouded their perceptions of selection qualities. It was not until group members spent time reflecting these issues that the personal and commercial qualities arose.

5.5 Key issues

5.5.1 The educational issues

Although engineering education is changing, constant development of undergraduate courses is required to keep pace with the changing nature of engineering and engineering management work. In this respect, greater emphasis should be paid towards "non engineering" disciplines such as business awareness, and personal and interpersonal skills development. This should run in parallel with an increased focus amongst academics on the input and wastage rates within engineering undergraduate education. Drawing on the above findings, the following learning points should be taken into consideration. Engineering degree programmes should :

- Point out, at interview stage, the need for multi-skilled as well as "hard core" engineers, emphasising the opportunities in areas such as industrial marketing;

- Provide integrated management learning;

- Enhance personal skills development;

- Maintain strong industrial links, and encourage their input throughout the syllabus;

5.5.2 The individual issues

To aid the development of the educational process, individuals should seek to create enterprising undergraduate forums, developing course material and creating stronger industrial links. Individuals must also realise their personal skills are the differentiating factors in the selection interview, and must focus on their development.

5.5.4 The organisational issues

Organisations can provide specific skills training within the undergraduate degree programme. The development of a "Learning Centre" within higher education is a recent innovation developed by the author in this area. This is discussed in Appendix VI..

5.5.5 The concept of career management

The concept of career management is one which must be developed within the undergraduate educational system and maintained by the employing organisation. The individual

should be encouraged to take responsibility for this process as early as possible, with academics and employers playing a supporting role.

It is widely accepted that early career planning in the undergraduate educational process will both ease individuals' transition into employment (Arnold, 1989) and further help their chances of obtaining a satisfying job in the appropriate company environment. Although the Careers Service provides expertise in this area, it's skills are poorly utilised by undergraduates (particularly engineers). This is partially due to the lack of self-development amongst (engineering) graduates, but is primarily seen to be caused by the lack of integration of careers education within the degree programme.

It is also perceived that the undergraduate educational system does not allow individuals to reflect on the following "developmental" factors :

i. A review of the practical implications of their degree programme, and the formation of industrial links.

ii. Possible group input into curriculum development.

iii. The key learning points gained from their educational experiences.

iv. Matching individual skills with future employment

opportunities and needs.

v. The relevance of the degree programme with respect to their longer term career aspirations.

It is therefore suggested that a structured periods within the undergraduate curriculum are allocated to :

i. A review and enhancement of all the developmental, and entrepreneurial skills acquired on the degree programme.

ii. The development of individual career plans.

CHAPTER SIX

PRE WORK QUESTIONNAIRE RESULTS

6.1 Introduction

This chapter records and discusses the results obtained from the pre work graduate questionnaire. The main focus of this chapter is to develop the concept of the "career product", and define its constituent elements, as perceived by graduate respondents, Having developed this product, the chapter will focus on graduates' perceptions on its effective communication to the undergraduate population. Particular emphasis will also be placed on graduates' pre work expectations (initially discussed in Chapter 3) and future career aspirations.

6.1.1 Survey response

360 questionnaires were distributed amongst the samples (see Chapter 4) between one and two months prior to entering their respective organisations. This enabled both a clear recognition of the recruitment process, and true expectations prior to entry to be recorded. 243 graduates responded to the survey, a response rate of 68%.

6.2 Development of the Career Product Model

6.2.1 Attraction/recruitment survey results

While the company attraction/recruitment survey forms a separate document to the thesis (Hawkins and Jones, 1989), its conclusions, as shown in Table 6.1 formed the initial step in the development of the career product model.

Table 6.1 Conclusions of attraction/recruitment survey

1.	The increasing demand for, and reduction in supply of quality graduates will result in a shift from a buyer's (company) to a seller's (graduate) market.
2.	There is an increasing awareness of the effects of the demographic downturn, resulting in future personnel shortages.
3.	This awareness has not led to long term, strategic planning of graduate recruitment.
4.	Company image is of increasing importance to graduates in their organisational choice.
5.	Graduates' careers within an organisation must be treated as a product and must be appropriately marketed.
6.	Although there are variety of recruitment media, companies do not seem to make a structured appraisal of the cost effectiveness of each method.
7.	Companies are becoming more aware of their retention problems, although few have accurate figures to back them up their concern. In most instances they are reactive, rather than proactive to their retention problems.

Th major finding of this survey was that the graduate's career within an organisation could be seen, and marketed as a "complete product". This product should be driven by the

changing attitudes and needs of the undergraduate marketplace and not by internal politics. Developing the "career product" concept, the research proceeded to ascertain the elements, perceived by graduates, that make up this product. These were termed organisational choice factors.

6.2.2 Organisational choice factors

Respondents were asked to rate a series of organisational choice factors. Results are presented in Table 6.2.

When comparing this list of key factors with Maslow's (1954) "Hierarchy of needs" as shown below:

1.	Physiological needs	(survival)
2.	Safety needs	(security, stability)
3.	"Belongingness" needs	(group recognition)
4.	Esteem needs	(prestige, respect)
5.	Need for self-actualization	(fulfilment of potential)

it was interesting to note that graduates' aspirations reflected the higher level (level 5) of hierarchical needs which are often more complex and more difficult to satisfy.

Table 6.2 Important factors in organisational choice

Rank	Factor	% of total possible rating
01	Career development	91
02	Challenging work	86
03	Nature of the work	83
04	Opp. to use abilities	82
05	Structured training	81
06	Good working environment	79
07	Professional Status	75
08	Early responsibility	73
09	Good starting salary	73
10	Opp. to manage others	72
11	Regular progress appraisal	71
12	Job security	66
13	Company image	65
14	Managed by a good mentor	64
15	Visible career path	63
16	Opp. for further education	61
17	Autonomy at work	59
18	Location	59
19	Travel opportunities	55

Indeed, from Table 6.2, the overriding factor in organisational choice was the opportunity for career development. This reflects the need for self-actualisation or the fulfilment of potential, and emphasises the need for companies to develop the wider concept of career management discussed in Chapter 11. Career management forms the driving force for the career product.

Emphasis was also placed on the type and environment of the graduate's future work. Overall, job factors were seen to be of far greater importance than company related information. The opportunities graduates have to use their abilities was also an important factor in organisational choice. This highlights the need for companies to match individual skills with organisational needs, and to thus fit 'round pegs into round holes'.

Companies offering new entrants a challenging career, with opportunities to use their abilities, and further their development with structured training will provide an appealing package to their engineering graduate intake. This package can be strengthened by offering graduates responsibility and the opportunity to manage others at an early stage.

Starting salary did not appear as a primary factor in organisational choice. The only constraint on this variable was that it fell within the national averages (1989 average being £10,000). Nevertheless, written comments indicated a widespread belief that starting salaries were lower for engineering entrants than for other functions in industry.

Location appeared low on the list, suggesting a willingness amongst graduates to move around the country to obtain employment. This was not surprising as the majority of the sample (93%) were single and with no family connections.

Company image was felt to be of average importance, but with an ever increasing image conscious market, this factor is expected to become of increasing importance in future years.

Students were more interested in an accurate profile of their role in the company than a simple "sales-pitch". As a result, the promotional features presented by most companies should only be communicated when each of the above factors have been clearly communicated.

Comparing these key decision factors to Herzberg's Dual Factor Theory (1959), as shown in Table 6.3, graduate aspirations can be seen in a different light:

The list of graduate aspirations clearly fits into Herzberg's category of "Motivators". However, what graduates commonly experience in employment (see Chapter 8) are the "Demotivators". It is these, together with other developmental factors that companies must consider in order to retain their graduate intake.

Table 6.3 Comparison with Herzberg's Dual Factor Theory

Motivators	Demotivators
Career development	Lack of career development
Challenging work	Routine, monotonous work
Good working environment	Staid surroundings
Early responsibility	Slow career progression
Good starting salary	Poor starting salary
Regular Progress Appraisal	Lack of recognition

6.2.3 Approaches towards organisational choice

It was also important to ascertain graduates' more general approaches to organisational choice. Selecting the right type of organisation was a complex task for most undergraduates. Four broad methods of job search were used:

1. **Job centred approach** - focusing on specific job and developmental factors, without targeting specific companies, sectors or regions.

2. **Company approach** - targeting specific companies, creating a short list from which to apply to.

3. **Sector approach** - focusing on a particular sector, such as the microelectronics industry.

4. **Geographical approach** - selecting favoured geographical regions and discover company sites within the a chosen area.

Although many respondents used a combination of the above, the job centred approach was most commonly used by graduate respondents.

Within the 1988-1989 engineering graduate marketplace, like most other sectors, the number of job applications made by individuals decreased. Indeed 50% of the sample made six or less applications, a sharp fall compared with previous years. From an employer's viewpoint, it is important to note that this overall reduction in applications does not lead to a drop in supply, but more a conscious, targeted approach by graduates towards job choice. This in turn leads to the reduction of countless unthought out and unrealistic applications. The overall employment market for graduate respondents was therefore one of increased buoyancy and focus.

6.2.4 Deciding factors

When receiving more than one job offer, respondents were asked to state the deciding factors. As seen in Table 6.4, although the original choice factors remain important, starting salary and the provision of a visible career path have gained in priority. Location also rises in importance.

Table 6.4 Deciding factors in organisational choice

Rank	Factors	Frequency of response
01	Career Development	69
02	Structured training	63
03	Challenging work	52
04	Nature of the work	50
05	Good starting salary	45
06	Visible career path	36
07	Location	33

Linked with starting salary, material benefits will also have a major effect at this stage. Follow-up interviews with graduates, however, unveiled personal contact (ie. being treated by employers as an 'individual' rather than a 'number') as also being a major influence in their final decision.

It is also felt that many other secondary factors, including mentoring and performance appraisal, will gain increased importance within the early years of the graduate's career. It is these, together with other developmental factors that companies must consider in order to effectively retain their graduate intake.

On a general note, real doubts were expressed about the career prospects for engineers in industry. Companies must seek to reassure students that opportunities open to them will be as good as those open to recruits in other functions.

6.3 Expectations

The expectations problem has already been discussed in detail (see Chapter 3). The following trends were evident :

- High expectations of future employment were indicated by most respondents.

- Graduates knew a great deal about the company they were joining, but alarmingly very little about the actual day-to-day running of their future job.

Each point has major implications for the graduate on organisational entry (see Chapter 8). Ideally individuals would enter an organisation with realistic expectations, and

a clear sense of what their first job entailed. However, by the very nature of most recruitment processes, respondents had undertaken, these realistic expectations were rarely nurtured.

Focusing on specific factors within the expectations framework, a large percentage of respondents knew nothing about :

- Their future work environment;
- Whether the job made full use of their abilities; and
- Whether the job offered early responsibility, with the opportunity to manage others.

Whilst it is important to record areas in which graduate expectations are unrealistic or incomplete, it is just as important to note whether these discrepancies are in areas of high priority for the graduate. On further analysis, each of these factors appeared at the top of the graduates' organisational choice list. It was thus evident that the key factors relating to organisational choice were the very factors graduates knew least about.

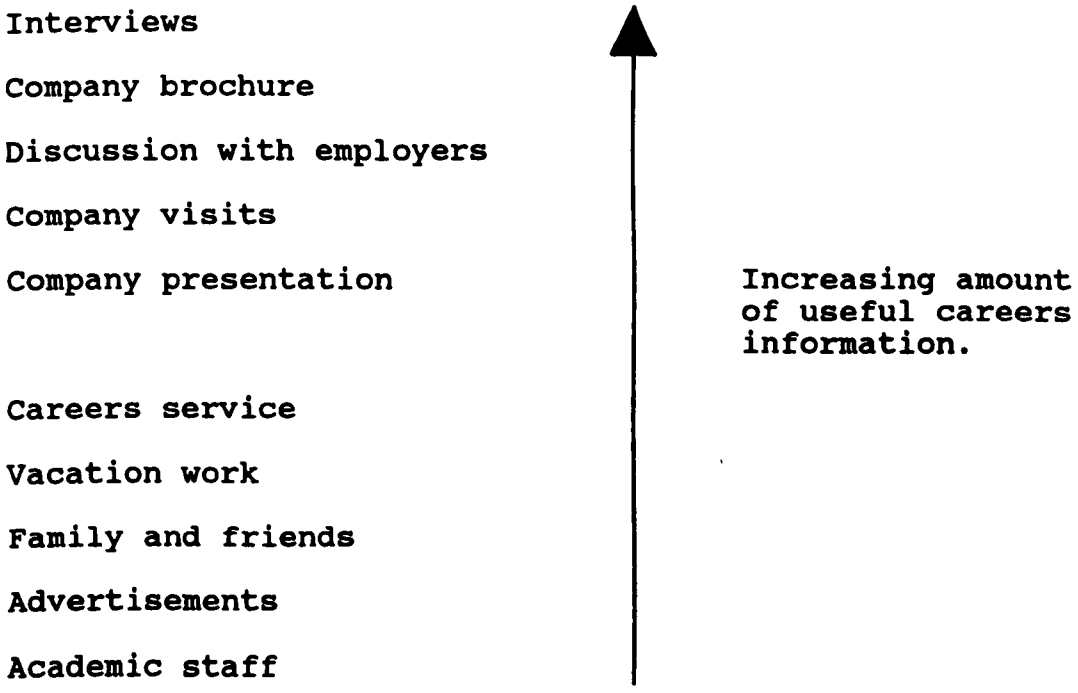
6.4 Communication to the undergraduate population

It is hypothesised that unless the internal aspects of the

career product are developed to their full, poor attraction and future retention of graduates will result.

Assuming that companies have fully developed their career product, they must then focus on communicating these facts to the undergraduate population. While recruiter perceptions and practices have been discussed (Hawkins and Jones, 1989), this stage in the research recorded the effectiveness, as perceived by graduates, of a number of communications mediums. Respondents rated these on the basis of useful information each provided. The results are shown in Fig 6.5.

Figure 6.5 Effectiveness of communications media in terms of perceived usefulness of information



It is apparent from Figure 6.5 that 'face-to-face' contact with company employers and employees, both through interviews and informal discussions, provides the most useful information to graduates. This method should be utilised throughout the year by employers through the use of campus managers (Hawkins and Jones, 1989). Initial contact with the organisation's representative was also found to be a key determinant in the graduate's overall perceptions. Emphasis must therefore be placed on the quality of all personnel representing the organisation.

The following sections will focus on three of the key communication media highlighted by graduate respondents, but which have the most room for development. These are the utilisation of existing employees through the ambassador principle, the effective usage of the company brochure, and communication through sponsorship.

6.4.1 The ambassador principle

An important communicating medium, often underutilised by employers, is the use of employees within the organisation. A network of young employees returning to their previous schools, colleges, polytechnics and universities to discuss their experiences is an ideal base for close academic/employer links to be developed. This mechanism, however, will only be truely effective if managed in the correct way. Firstly, clear debriefing sessions must be

administered prior to the young employee entering the school arena. These will allow definite objectives to be formulated, and consistent messages to be communicated. Secondly, structured communication channels must be developed between employer and employee. These will allow easy feedback of ideas and information, and facilitate swift employer response.

6.4.2 Company brochure

It is clear that the company brochure is one of the most effective advertising mediums through which to communicate the career product. The brochure not only provides job and company information but also acts as a 'hook' to attract young talent into the recruitment process.

Discussions with graduates, however, suggested that existing company brochures were:

- Expensive
- Glossy
- Positive
- Full of company information

  and
- Thrown away

Rarely did they highlight the key career product elements, and too often they sounded like public announcements.

It was also found that the majority of brochures were only thoroughly read just prior to the selection process. In other words, individuals would store the brochure away until a couple of days before the interview and then use it to gather any information required. In addition, if a student did not pursue an application with the company, the brochure would often be discarded. This has major implications on the usage of brochures. Firstly, employers must now look seriously at brochure length; secondly they must ascertain the optimum point in time for its launch.

A solution to this problem would be to publish a short summarised version of the main document, consisting only the essential information the student requires. This should also include follow-up items such as contact addresses and slips for further information. This would be followed, on request, by a more detailed brochure directed at the career paths, training and specific job opportunities available within the organisation.

Two major advantages of this approach are :

i. **Cost savings** - a high percentage of brochures are either never used, or thrown away, by students. The lower the investment in the initial brochure, the greater the cost savings. This reduction in investment must not, however, be at the expense of quality and attractiveness.

ii. **Attracting the right candidate** - the summary brochure will not only act as a promotional tool, but also act as a selection sift. Here, only those students with a genuine interest in the organisation will request further information in the form of a more detailed brochure. This also has major cost implications within recruitment and retention.

The brochure should not, however, be used as a stand alone item. It is often found side on in the careers office and will not be read unless individuals already have a keen interest in the organisation. A constant company presence, in the form of presentations, discussions and organised visits should be developed to act as a 'trigger' to spark off this initial interest in the student. Continuity in all communications media (brochure, presentations, videos etc.) was another factor that was perceived to be lacking. Companies spending excessive amounts on promoting contradictory career product messages can create a negative effect in the undergraduate marketplace.

6.4.3 Communication through sponsorship

The same career product concept can be developed within all sponsorship programmes. Care should be taken to provide an interesting, challenging sponsorship period, as badly prepared and managed programmes clearly have a negative

effect on graduate perceptions. The following graduate comments reflect this notion.

"I've been completely put off, job satisfaction is very poor. Managers don't care, they give no feedback and there is no reward for good or hard work."

"It's alright, but not enough to make me want to go back."

"I have had a good look around, and don't like what I see - graduates and managers who don't much care. The new Training Scheme will be an improvement. Maybe they are starting to sort themselves out from a position where there was no structure or direction."

"They haven't a clue. Two days before I was due they said they couldn't pay me; others didn't know I was coming. Just once it was excellent, but I've seen enough not to want to join them."

"did all they could but I'm not going back there.....Don't want Engineering"

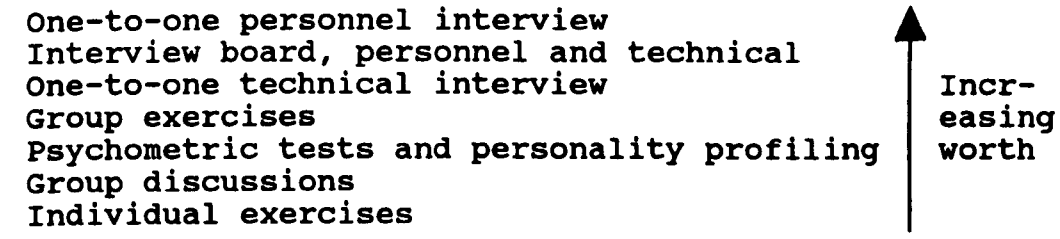
6.5 Perceptions of the recruitment process

There has been much publicity on the reliability and validity of various methods of recruitment, with many studies (eg. Herriot et al., 1985) questioning the use of traditional interview techniques. Within the past century the rapid emergence of new methods of selection such as psychometric testing and personality profiling has added to the complexity of the recruitment process. However these new methods have be found to be of far greater reliability and validity than interviews.

In order to gain an accurate view of the worth of each respective method, the decision was left to the graduate. Respondents were thus asked 'What methods of recruitment do

you feel gave you the best opportunity to fairly represent yourself?'. Interestingly, the overall response was as follows (see Figure 6.6):

Figure 6.6 Graduate rating of recruitment methods



It is highly apparent from Figure 6.6 that interviews are perceived to be the most effective method of selection. These findings, together with the results from Section 6.4 further strengthen the effectiveness of interviews both in selection and communication. The key to this success is the creation of a two way selection process.

No matter how sophisticated the psychometric or personality assessments are, if graduates do not perceive them to represent their abilities, their validity should be questioned. Once again feedback is an important factor in their success, and can form the starting point for discussion at interview. These tests do have their merits if used in the correct manner, and should therefore be used as an additional part of the decision making process.

The benefits of using each of the above methods of selection in a single programme are highly apparent. The development

of assessment centres have is a major step in this direction, and their success has been highlighted by many researchers (Herriot, 1989).

6.6 Future career aspirations

A decision to join a company is not a decision to stay. Respondents were therefore asked to record their views on the job they had accepted in the context of their wider career plans. The results are shown in Table 6.7

Table 6.7 Career plans of graduates

Ref.	Job viewed as:	Response	% of total response
01	a 'stepping stone' to something else	110	49
02	a career in itself	114	51

While half of the respondents saw their first engineering appointment as a career in itself, a similar proportional saw it as a stepping stone to something else.
Graduates' planned years of stay with their first employer formed an interesting point for discussion. Calculations from the results shown in Table 6.8 reveal that out of those graduates who have consciously thought about the duration of stay with their first employer, 37% were not planning to stay for more than 4 years. This correlates with the 49% who see their first job as a stepping stone to something else.

Table 6.8 Planned years stay with first employer

Ref.	Number of years planned to stay with their first employer	Response	% of total response
01	Less than 1 year	3	1.3
02	1 - 2	23	9.7
03	3 - 4	39	16.5
04	4 - 5	22	9.3
05	5 - 10	26	10.2
06	Over ten years	43	18.2
07	Do not know	62	34.7

In practice, this figure could be far greater with graduates, more optimistic on entry, soon becoming disillusioned with their job and career prospects.

These findings represent a major shift from past undergraduate attitudes. The idea of a "job for life" no longer exists, with graduate mobility increasing over the past few years. As a result, companies will face a far greater task of retaining their graduate intake.

In order to gain a perspective of the general career direction of engineering graduates, respondents were asked to give an indication of the type of job they would like to pursue in the long term. Response (see Table 6.9) showed greatest popularity for either a dual technical/managerial or a mainly managerial post. Relatively few graduates felt

they would remain in a mainly technical function, although it could be questioned as to whether there were opportunities for vertical career progression within this function. At the other extreme even fewer were planning to enter a commercial discipline.

Table 6.9 Future career direction

Ref.	Type of future job	Response	% of total response
01	Mainly technical	39	16.5
02	Mainly Managerial	87	36.7
03	Both equally	94	39.7
04	Commercial	7	3.0
05	None of the above	10	4.2

6.7 Key issues

Companies must fully develop the internal elements of their "career product" in order to attract and retain quality graduates. The key elements, as perceived by engineering graduates, were opportunities for career development, together with the challenging nature, and the content of the work. These aspirations reflect the need for companies to focus on career and job related factors as opposed to company specific information in attracting and retaining graduates.

Having developed the career product to its full potential, these facts must be clearly communicated to the undergraduate population. In this respect, the importance of

regular face-to-face contact with applicants through interviews and discussion was stressed.

Finally, with an uncharacteristically high proportion of graduates expecting to leave their first employer within four years or less, and many using their first appointment as a stepping stone. Graduate retention will therefore become a growing problem for organisations, and increased time, money and resources must be allocated to this area of concern.

CHAPTER SEVEN

INTERVIEWS: PLANNING, CONTENT AND ANALYSIS

7.1 Introduction

It soon became evident that interviews would form an important part of the research programme. Through face-to-face contact with graduates and managers, it was possible to gain in depth, up-to-date qualitative information, extending the quantitative data already gained. As defined by Moser and Kalten (1981) the survey interview formed :

"..... a conversation between interviewer and respondents with the purpose of eliciting certain information from the respondent."

This chapter will discuss the planning and content involved in the post entry graduate and the company retention/development interviews. Respective results of the interviews will be discussed in Chapters 8 and 9.

7.2 Choice of interview structure

Three basic interview techniques were available to the researcher, each holding differing levels of structural design:

(a) Open-ended interviews allow the interviewer to ask respondents for the facts of the matter as well as for the

respondents' opinions about events. Interviewers can then use respondent insights into certain occurrences as a base for future enquiry. The more evident this phenomenon is, the more the role of the interviewee becomes an informant as opposed to respondent. However, caution should be taken not to place too great an emphasis or dependance on the views of key informants, especially because of their interpersonal influence on the interviewer. A practical step to avoid this pitfall is to seek the views of numerous other individuals and to gather all relevant support material in the field.

(b) Focused interviews may have the same level of open endedness although the interviewer is more likely to be following a prescribed set of questions derived from previous research. This method is generally when interviewers require specific information on specific subjects without recording extra qualitative information. It is often used when researchers wish to record facts they feel they already know in order to reinforce their views. Nevertheless, care must be taken not to ask leading questions. The duration of this type of interview is normally less than its open-ended counterparts, generally lasting up to an hour.

(c) Structured interviews have a format much like formal surveys. They are thus constructed and analysed in a similar fashion.

Providing the flexibility to record a series of facts, opinions and insights, it was decided to embark on the open-ended technique stated above. Although each interview was semi-structured in nature, questions were used as a guide, allowing discussion to be directed at specific areas important to the respondent and the researcher.

7.3 Sample selection

The graduate and company samples were selected from the pre work survey and initial survey respectively. Their selection criteria are presented in the following sections.

7.3.1 Graduate sample

A subsample of 36 respondents to the pre work survey were selected on the following criteria:

1. Those respondents who conscientiously completed the survey, representing the norm, but also voicing additional, interesting information.

2. Those individuals who were either on the same company site, or in the same geographical region as other relevant respondents. In each case a series of interviews could be administered during each visit.

The sample included graduates from six collaborating companies. Each individual was approached through the company contact.

7,3,2 Company sample

A total of 20 companies were interviewed in the retention/development survey. Each company recruited engineering graduates and was either:

1. A market leader in the recruitment field, with well developed graduate programmes.

2. An organisation with known innovative practices in specific aspects of the recruitment and development process.

3. An organisation with no structured approach to graduate recruitment and retention.

The cross section of companies interviewed well matched the objectives of the research: to record good and bad practices as well as innovative developments in the field. Nevertheless, it was important to ensure that respondents were of sufficient status to provide an accurate account of their company's strategies and practices in graduate recruitment and development. Those responsible for managing the recruitment and development functions, as opposed to their subordinates, were therefore interviewed.

7.4 Factors considered in interview planning

7.4.1 Preparing for the interview

Establishing the correct "interview situation" is crucial to an interviewer's success (Gordon, 1975). Initial contact with the respondents through to the opening question of the interview need to be carefully planned. Any verbal or written correspondence the interviewer makes with the respondent during this period will set the tone of the interview and may affect the responses given. A structured approach to interview initiation resulted:

1. Initial contact was either made by telephone or face-to-face.

2. Having agreed to participate, an interview date was decided.

3. Support material on the research programme and a topic framework for the discussion at interview were then posted to the interviewee.

7.4.2 The interview environment

The environment in which interviews are administered was a particularly important factor to be considered by the researcher. It was evident from the early stages of the research that interviewing managers in their own office

enforced certain constraints on both the openness of comments and flow of discussion. The perceived reasons for this occurrence were that:

1. The manager's mind was constantly in tune with outstanding work tasks that had to be completed, and was therefore not fully concentrating on the interview in hand.

2. Frequent interruption from telephone calls and personal enquiries disrupted the continuity of the interview.

3. In the presence of colleagues, the manager was not as likely to air honest views and opinions.

4. An uncomfortable atmosphere developed when respondents sat behind their own desk.

However, a more neutral environment, such as a conference, provided a far more effective base for discussion. Steps were therefore taken to increase "neutral interviews" within the interview schedule.

7.4.3 Planning the opening question

Gordon (1975) commented that there are several unique and important functions of the opening question. It can be broad enough to encapsulate the whole research area, or specific enough to delve into one particular aspect. In both cases it

must be closely related to the interview introduction to aid continuity. The level and topic area of the opening question should build confidence in the respondent and put his mind at ease. Finally, the interviewer required detailed and flowing answers rather than yes-no responses. It was important that the respondents realised this.

7.4.4 Behavioural questions

Many problems exist when asking respondents to recollect their past behaviour. Firstly their memory is likely to be "better" for important events. Memory lapses usually result in respondents recollecting what they "usually" do or what they have done the "week before". The second problem is their comprehension of verbal statements. For example, how does one differentiate between the terms "ever used", "usually use" and "regularly use". There may also be a contradiction between honest and socially acceptable responses. Questions must therefore be carefully worded.

7.4.5 Motivating the respondent

There were many methods available to encourage and motivate the respondent. Having reduced any ego threats, the most commonly used technique in the research was to arouse the respondent's interest. This was first achieved by quoting figures supporting the importance of the research. Then, taking care not to "lead" any questions, contexts were supplied at various stages of the interview. For example:

"More and more companies realise the need to attract students as early as possible in their career development. As a result they are increasingly forming strategies in the school leaver marketplace. What steps is your organisation taking.....?"

In order to facilitate effective communication, confidentiality and anonymity were also stressed.

7.4.6 Overcoming errors

The interviews could only be seen as verbal reports (Yin, 1984). As such they were subject to the problems associated with poor recall, bias, and inaccurate articulation. This problem was alleviated with the introduction of supporting material in the form of past research; company literature; company practices; and interviewing other personnel.

7.4.7 Using the same language

A common problem amongst researchers is that they do not cater for the "lowest common denominator" in their interview language. Within the graduate and company surveys this was not felt to be a problem. However N.O.P (1989) suggest the following guidelines when dealing with the general public comprehension:

1. Marketing terms, such as "career product" may be unintelligible to the respondents.

2. Over sophisticated vocabulary, such as hypothetical and

percentage should be avoided.

3. Words can have different meanings to different respondents ie. satisfaction and development, and should be clearly explained.

7.4.8 Recording the Data

A common question related to the recording of interviews is whether or not to use a tape recorder. This method certainly provides a more accurate rendition than any other. However, there are a number of shortcomings of this technique outlined by Yin (1984):

1. An interviewee refuses permission or appears uncomfortable in its presence.

2. There is no specific plan for transcribing or systematically listening to the contents of the tapes.

3. The investigator is clumsy enough with mechanical devices that the tape recorder creates a distraction during the interview itself.

4. The investigator thinks that the tape recorded is a substitute for listening closely throughout the course of an interview.

The quality of recording was also felt to be affected by factors such as external noise. For these reasons, this technique was not used. Key points were therefore recorded in note form, and pertinent quotes were written in full.

7.5 Post entry graduate survey : Information sought

The objective of this stage in the research was to gain graduates' experiences of their transition into employment and early career development. A general topic guide (see Appendix III) was used throughout the interview programme. This provided the interview with a semi structure, also allowing discussion to develop in areas important to the interviewer and interviewee. The content of the graduate interviews were as follows.

7.5.1 Personal details

Having briefly introduced the interviewee to the research background, its overall aims and objectives, and its relevance to the interview in hand, a set of up-to-date personal details were obtained for reference purposes. Within this section the interviewee's work function was also recorded. On analysis, however, this variable was not discriminatory, as graduates from differing functions experienced the same problems in their transition into employment and early career development.

7.5.2 Expectations

As reviewed in Chapter 3, several studies have focused on correlational measures of matching pre and post entry expectations (eg. Schneider with insurance employees, 1975; Mabey with engineering graduates, 1983). In order not to reproduce Mabey's work, graduate interviewees were asked to provide 'descriptive' rather than quantitative responses. It was also noted that respondents may adjust their expectations to meet reality (Nicholson and Arnold, 1989; Bray et al., 1974). For this reason, graduates were only asked to state which of their prime expectations were not met on entry into the organisation.

Although many studies have linked unmet expectations with job satisfaction, commitment to the organisation, and voluntary turnover (Mabey, 1986, 1984; Hutt and Parsons, 1981; Lawler et al., 1975; Kotter, 1973), few have developed practical solutions to this phenomenon. In order to provide a set of practical solutions, interviewees were asked to discuss the wider issues surrounding their transition into employment.

7.5.3 Transition into employment

There were many potential variables to be considered during the transition process (Arnold, 1989). In order to focus on one aspect of the transition, it was hypothesised that there

were inherent differences between the individual's experiences in higher education and employment. Like other researchers (Brim and Ryff, 1980; Danish et al., 1980) the programme aimed to record the extent to which this transition produced positive and negative outcomes. Concentrating on the negative aspects of the transition, interviewees were asked to describe experiences in higher education and employment that were different, and caused problems for the individual. No framework was used to elicit these differences.

Although there have been many studies recording the transition process (for review see Arnold, 1989) few offer practical solutions to the problems individuals face. Thus respondents were asked to propose their own methodologies that would ease the graduate's transition into employment. Results are presented in Chapter 8.

7.5.4 Early career development

Continuing with the positive and negative factors affecting individuals' development, interviewees were asked to describe which events, or employer interactions enhanced and blocked their early careers in employment. They were also asked to state their own perceptions of possible improvements to the system. Graduate responses are combined with employer practices in Chapter 8.

7.6 Company retention/development interview: Information sought

The objective of this interview programme was to gain employers' awareness of, and practices towards graduate turnover. As with the graduate survey, a topic guide (see Appendix III) was used to direct the conversation through a semi-structured, but open-ended format. Using the Six "C" Model (see Chapter 9), the main information areas pertinent to graduate turnover were as follows.

7.6.1 The concept of graduate turnover

Whilst there was a need to comprehend the underlying concepts behind turnover, in order to achieve initial success in retention, companies must know why they are recruiting graduates in the first place (Hawkins and Jones, 1989). The establishment and communication of company policies towards graduate recruitment were thus sought.

7.6.2 Current awareness of graduate turnover

The majority of organisations perceive labour turnover to be highly influenced by external factors (Bevan, 1987). This section focused on general perceptions of the overall problem of graduate turnover, including their awareness of internal and external retention figures; lines of responsibility for recording turnover rates; and methods of communicating and acting upon retention findings.

7.6.3 Costs associated with turnover

The costs related to turnover have received relatively little attention from employers and researchers in the past, and those studies that had tackled the problem (Cawsey and Wedley, 1979; Jeswald, 1974) rarely produced practical applications. Both awareness, and calculation of the constituent costs related to graduate turnover were thus sought.

7.6.4 Causes of graduate turnover

Retention factors have been recorded within a variety of labour markets (eg. the regular army, Bevan, 1986; navy nurses, Dunn, 1972). This section recorded known determinants of the graduate turnover process, and aimed to distinguish between the perceived influence of internal verses external factors.

7.6.5 Cures for the turnover problem

While several authors have discussed practical steps to solve the turnover problem (eg. Meglino and Danisi, 1985), few have focused specifically on engineering graduate turnover. Employer solutions to this particular problem were thus discussed, and categorised into pre and post entry methodologies. It was hoped that areas of "excellence" within graduate retention could be gathered together to form a retention strategy that could be used by all employers.

7.6.6 Concerns and comments

Aspects felt to be inherent within the graduate turnover process, and their implications were also elicited.

A major theme throughout labour turnover is that much academic research can be translated to practical settings, but is rarely utilised by employers. For this reason, theoretical research and practical findings gained from the interview programme were integrated within each of the six "C's" of Graduate Turnover.

7.7 Analysis of interview data (company and graduate)

7.7.1 Analytical strategy formation

The analysis of quantitative information has received little attention compared to its qualitative counterparts. Nevertheless, there is a growing need amongst researchers to

form analytical strategies when dealing with such data. Each of the following strategies form different types of 'content analysis', drawing upon themes, patterns or more quantitative measures of analysis.

- placement of information into different arrays;
- formation of a matrix of categories and placing the evidnece within each category;
- creation of data displays - flow charts and other devices - for examining the data;
- tabulation of the frequency of different events;
- examination of the complexity of such tabulations and their relationships by calculating second order numbers such as means and variences;
- chronological ordering of information or using some other temporal scheme

When analysing the interview data, a decision was made to develop a systematic approach using the first two methods: placing information in arrays and forming a matrix of categories. Analysis of each of the interviews is described in the flow diagrams below.

7.7.2 The content analysis approach

(i) Graduate interviews

The formation of the model, used as the driving force behind content analysis, is defined below. This model was not formed prior to conducting the graduate interview programme.

Stage	Activity	Explanation
1.	Category generation	Interview data was read and reoccuring 'themes' were grouped together.
2.	Generation of a model for analysis - the Three "S" Transitional Model	Similar themes were placed under broad headings
3.	Model definition	Each category was defined such that additional information could be easily placed within the analytical framework.
4.	Model utilisation	The model formed the framework for data analysis.
5.	Data placement	Interview responses, in the form of themes, phrases, figures etc. were allocated to each of the three categories.
6.	Presentation of results	Results were presented in each of the three categories, both in written and tabular form (see chapter 8).

(ii) Company interviews

A model for analysis was developed prior to conducting the interview programme. The model was used both to structure each interview and to provide a framework for the content analysis.

Stage	Activity	Explanation
1.	Literature review	Review data on graduate turnover was read, and general themes collected by coding and grouping information into similar areas.
2.	Generation of a model for analysis - the Six C Model of Graduate Turnover	Developing these groups uncovered six pertinant categories in graduate turnover that represented current knowledge in the field. These categories formed the basis of the interview structure.
3.	Model definition	Each category was defined such that additional information could be easily placed within the analytical framework. One category catered for additional and unexpected responses.
4.	Model utilisation	The model formed the framework for both interview administration, data collection and analysis.
5.	Data placement	Interview responses, in the form of themes, phrases, figures etc. were allocated to each of the six categories.

6.	Data re-distribution	Re-occuring themes within each category were further broken down into subsections. For example, perceived causes of turnover were subdivided into separate sections within the "causes" category.
7.	Presentation of results	Results were presented in each of the six categories, and their accompanying subsections (see Chapter 9).

CHAPTER EIGHT

THE TRANSITION INTO EMPLOYMENT

8.1 Introduction

The individual's move into employment can be a cause of great concern for both the employer and new employee involved. As a result, numerous studies have concentrated on this initial transition (eg. Arnold, 1989; Nicholson, 1984). In particular, research has focused on the respective transitions of graduates into employment (Nicholson and Arnold, 1989a, 1989b; Newell, 1987; Arnold 1986; Keenan and Newton, 1985, 1982; Mabey, 1983; Schein, 1964). Nevertheless, academic knowledge accrued in this area has rarely been translated into practical solutions within the workplace setting.

Throughout this process, there are many social and developmental factors that influence its success, and it is these factors, together with their practical implications, that this stage in the research aimed to investigate.

8.2 Post entry graduate interview programme

To achieve this aim, the research focused on a series of interviews with a sample of thirty six graduates followed up from the pre work survey (Chapter 4). The sample included an even spread of electrical, mechanical and general engineers

within a variety of engineering related work functions in six of the collaborating companies. Each respondent had been in employment for a period between fourteen and eighteen months. The sample structure is presented in Table 8.1.

Table 8.1 Graduate interview sample structure

Main Collaborating Company Output	Est in Rec (1)	No. Grads Rec (2)	No. & functional base of sample	Emply-ment Duration (Months)
Atomic energy	E	iv	5 5 Management Trainees (3 control & 2 electrical)	17
Shipbuilding	E	iii	10 4 Electrical Trainees 2 Systems Trainees 2 Production Trainees 2 Weapons Engineering	14 16
Instrumental engineering	C	i	4 2 Instrumental Trainees 2 Mechanical Trainees	14 16
Food chemical & processing	E	iv	8 8 Engineering Management Trainees	15
Computer manufacture	E	iv	5 3 Production Trainees 2 Support	18
Telecoms	C	iv	4 2 Mechanical Trainees 2 Systems Trainees	18

Key : (1) Establishment in the recruitment process

E = Established methods of recruiting and developing graduates.
C = Currently undergoing change in methods.

(2) Average number of graduates recruited per year

i = 0 - 10	v = 101 - 200
ii = 11 - 50	v = 202 - 400
iii = 51 - 100	vi = 400+

Note No interviewee had left their first employer (after graduation).

8.3 Development of a model for analysis

It was evident from the interview responses that the Initial Transition involved a series of inherent mismatches between the individuals' experiences within the educational environment and the reality of their company's work place environment. Responses, however, were widespread, and in order to interpret the qualitative data recorded, a model was developed using Content Analysis. The differences between the higher educational and employment environments were thus categorised into the groupings shown in Figure 8.2.

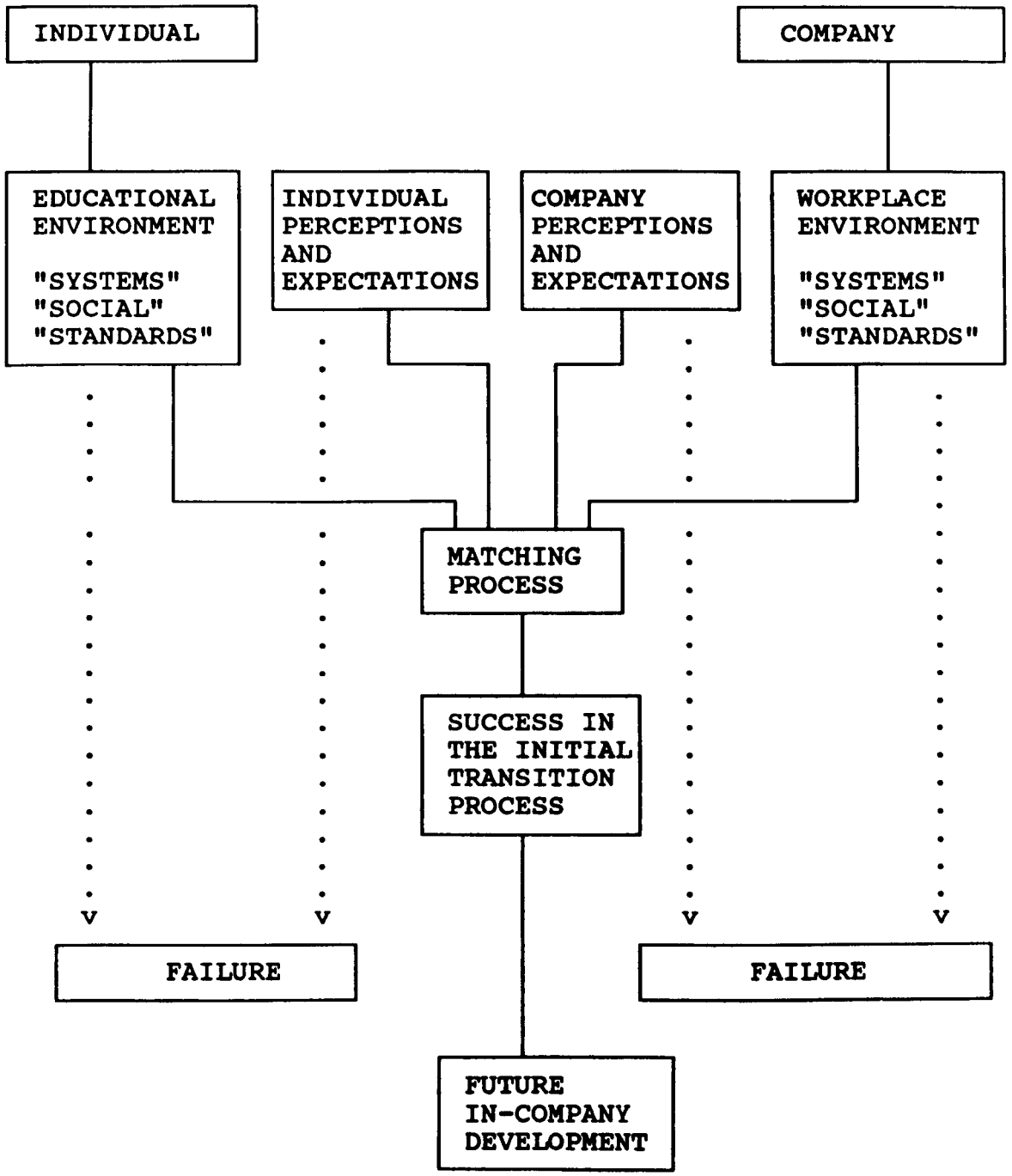
Figure 8.2 The 3 "S" Transitional Model

"DIFFERENCES IN SYSTEMS"	- Defined as methods of dealing with Information and enhancing learning techniques.
"DIFFERENCES SOCIAL INTERACTIONS"	- Defined as interpersonal communications and relationships.
"DIFFERENCES IN STANDARDS"	- Defined as the norms within which an individual or group of individuals operates.

These groupings are presented in the upper section of Figure

8.3, and are recorded and discussed below. For success in the Initial Transition, both parties (the graduate and the company) have to modify their respective environments and expectations to meet a mutual need.

Figure 8.3 The Graduate's Initial Transition into Employment



The following sections record the differences in environments terms of the 3 S's) that the graduate sample faced in their transition into employment.

8.4. Difference in systems

8.4.1 Results

Table 8.4 represents a summary of graduate responses grouped in the systems section. These points are discussed in more detail in the following sections.

8.4.2 Discussion

(a) Feedback

Feedback, in the form of performance appraisals and personal progress reviews, as well as enhancing the exchange of new thoughts and ideas, is an important aspect in any individual's development. However, there are three problem areas within the management of feedback that can occur in the initial transitio process:

1. **Within the recruitment process** - The growth of psychometric and personality tests within the recruitment process has led to much controversy amongst graduating students, with their worth and relevance highly debated (see Section 6.5). Without clear feedback from employers on why these tests are used;

Table 8.4 Summary Table: Differences in systems

FULL TIME EDUCATION ENVIRONMENT	POSSIBLE SOLUTION OR "BRIDGE"	WORK ENVIRONMENT
FEEDBACK		
Regular feedback Marks - Exams Pass/fail Tutorials Personal assessment Defined targets	Feedback required after short period (3 months) Must be maintained regularly in first year Frequency then decreased but kept at regular intervals in later years Mentoring Frequent chats Co-couselling Feedback required during recruitment process	Annual appraisal If you do not air your views, you are perceived to be content wit your development Undefined targets
GATHERING INFORMATION AND RECORDING OUTPUT		
Basic information from tutors, timetables and booklets Passive approach Instructions Essays produced Homework	Types of methods clearly explained Interpersonal skills training Presentation skills training Report writing training Task definition	Basic information must be asked for Active approach Variety of format eg. reports/ presentations Results orientate

Table 8.4 Cont.

FULL TIME EDUCATION ENVIRONMENT	POSSIBLE SOLUTION OR "BRIDGE"	WORK ENVIRONMENT
LEARNING STYLES AND APPROACH TO WORK		
One teaching many Individual learning Projects are knowledge and attainment based Rigid approach to learning	Teambuilding exercises Involvement Learning styles training	Team approach Teamwork amongst mixed ability Emphasis on proactivety and initiative/ problem solving Flexible, multi-faceted approach to learning
RESPONSIBILITY FOR DEVELOPMENT		
Institutionally led.	The Learning Company	Self-directed

where they fit into the recruitment process; and a "description" of how well the student has faired or profiled on these tests, there will always be much scepticism over their use. These perceptions closely relate to the work of Fletcher (1989) and Herriot (1989).

2. **In-house Performance Appraisals** - Leaving an environment grounded with regular feedback in the form of exams, tests and continual assessment, and entering

a culture offering only one annual appraisal is a major transition for new graduate entrants. Although employers provide numerous projects, programmes and schemes throughout the year, a structured individual performance review on a regular basis is often lacking. Feedback is particularly important within the early stages of career development as new entrants, keen to prove themselves, need clear benchmarks on which to assess their progress. Companies should thus seek to provide regular feedback on a formal or informal basis within the first year of employment, gradually decreasing the frequency of formal sessions in ensuing years.

3. **Personal Development** - Well developed mentoring systems could be found within a number of leading organisations. Nevertheless there were numerous reports from respondents on the lack of counselling available within many less developed companies where graduates were left to sink or swim.

A point to be noted is that whilst there are adequate provisions made in the U.K. for "social counselling", there is little ongoing "career counselling" available throughout an individual's career. This will be developed in Chapter 11.

Often socialisation tactics are administered by newcomers on each other (Van Maanen and Schein, 1979; Schein, 1971a). A useful and cost effective approach to counselling is therefore through the use of co-counselling (or peer group counselling). This is a technique whereby each new graduate recruit is paired with a peer on entry. They are then trained in the basic techniques of counselling, and will put these skills into practice at pre-prescribed co-counselling periods each month. These sessions provide a valuable base on which graduates can counsel their partners, allowing problems and concerns to be viewed, listened to, and possible solutions adopted.

(b) Gathering information and recording output

Basic information in higher education is forse fed to undergraduates via timetables, booklets and tutor input (passive approach). The picture within employment is somewhat different, with results, views and general information having to be personally asked for (active approach). Graduates entering this new environment must first be aware of the norms within which basic information is collected. Particular attention must be paid to industrial relations problems that may arise if information is sought in the wrong way. More importantly is the need for interpersonal skills training which forms a central role in the success of any graduate's development.

Report writing and presentations form an integral part of an individual's recording of results within any organisation. Successful usage of these feedback mechanisms requires a variety of written and verbal presentation skills often severely lacking within the graduate population. As there are generally little moves within higher education to develop these skills, employers must once again take the initiative.

(c) Learning styles

The most frequently used method of learning in higher education still remains the traditional lecture (one teaching many). This is particularly evident within technical disciplines. Emphasis is therefore placed on individual learning, with a major lack of group interaction. The world of work, however, relies on the contrary, with teamwork and the exchange of ideas frequently encouraged. As a result, graduates must be taught the principles and benefits of successful teams. This knowledge can be acquired through a variety of practical team building exercises. The most popular, constructive and memorable method of training amongst graduate recruits was perceived to be through the use of outward bounds training.

Having understood the power associated with teamwork, graduates must develop the appropriate learning styles needed to successfully fit into their respective teams. In order to achieve this, they must first ascertain their

current styles of learning. They must then manage their own learning change by developing the new skills required. The Leaning Styles Questionnaire developed by Honey and Mumford (1986a, 1986b) is a useful tool to aid this process.
At present it is in the hands of employers to develop these skills. Nevertheless, with the introduction of the new Training Agency initiative, Enterprise in Higher Education, (Liverpool initiative, 1990), academic institutions will hopefully begin to take the lead.

(d) Responsibility for development

Within higher education, individuals have little or no say in the content and planning of their development. As a result, the majority of graduates entering employment perceive the employer to be responsible for their development. However, this is not always the case. In a new learning era we see a shift away from organisationally led training towards individually led, self-directed learning and development. The concept of the Learning Company (Pedler et a., 1988, 1989), with an emphasis on learning from experience (Thorpe, 1988) is rapidly expanding in many forward thinking organisations.

8.5 Differences in social interactions

8.5.1 Results

Table 8.5 represents the summary of graduate responses grouped within the social interactions section.

Table 8.5 Summary Table: Differences in social interactions

FULL TIME EDUCATION ENVIRONMENT	POSSIBLE SOLUTION OR "BRIDGE"	WORK ENVIRONMENT
SOCIAL BEHAVIOUR AND COMMUNICATION LINKS		
The Group	Peer groups	The individual, separated from peers
Informal	Develop inter-personal skills	Formal
Face-to-face		Use forms/reports
Regular contact	Create clear communication channels	Isolation
	Mentoring	
	Internal Graduate Industrial Societies	
INTERPERSONAL RELATIONSHIPS		
Equality / non competitive		Hierarchy/ competitive
Informal	Explanation	No choice of peers
Choice involved	Communication skills training	Imposed relationships
People are similar/alike		Heterogeneous group
Intellectual Peers		Personnel mix senior/peer/ subordinate)
Simple structure		Complex multi-faceted structure
CHANGE IN STATUS		
HIGH (Top of the pile)	Awareness (where they fit in and how they will develop)	LOW (Bottom of the pile)
	Senior mgt input	

8.5.2 Discussion

(a) Social behaviour and communication links

Feeling part of a group. or intake is an important anchor in anyone's career. Within higher education, closely knit groups are formed between undergraduates on both an academic and social basis. This is not the case within employment, with individuals often separated from their peers, and in many cases the sole graduate within a department. This can in turn lead to isolation and de-motivation. Work links are on a formal basis via the use of forms and reports. Clear communication links on an informal basis between graduate peer groups are, however, severely lacking within most organisations.

The formation of **Internal Graduate Industrial Societies (IGIS)** are ideal mediums through which graduates can communicate with their peers in differing functions, sites or even countries. These IGIS's can take on any format, although the following guidelines are taken from the more forward thinking organisations:

1. **Seminars and conferences** covering a wide variety of business activities common to all graduates can be arranged on a regular basis. These sessions will allow for a ready exchange of ideas, problems and experiences among the graduate population.

2. A small proportion of money and resources may be allocated to an in-house **publication/newsletter**, informing graduates of business and social affairs, and highlighting individual achievements etc.. This forms another effective medium through which graduates can exchange thoughts and ideas.

3. **New technology**, in the form of computer networks provides a useful, but often underutilised means of internal communication.

4. The development of **social networks** is another important factor in the graduate's successful socialisation into an organisation. This can be aided by the efforts and experiences of existing graduates who can provide ready sources of information on the local environment (often quite alien to the new entrant); hints on methods of coping with work related problems; and general support and encouragement.

Overall, the generation of Internal Graduate Industrial Societies is a cost effective method of improving communication links within the graduate population, as well as offering the new entrant a welcome career anchor.

(b) Interpersonal relationships

The change in interpersonal relationships was regarded as an important factor, and in turn can be seen as a predictor of the organisational demands made on the individual (Wells and Stryker, 1988). Having left their intellectual peers, within the simple academic structure, graduates enter a far more complex, multifaceted and competitive culture. Here they find heterogeneous groups; imposed relationships with no choice of peers; and have to mix with seniors and subordinates. Methods of communicating with their peers have been discussed earlier, but it must be stressed that communication skills training is vital for graduates to effectively interact with all levels of personnel within the organisation.

(c) Change in status

Moving from the perceived top level of one establishment (final year of degree course) to almost the bottom of the next (graduate entrant into organisation) was another cause of concern for many unprepared graduates. As emphasised by Glaser and Strause (1971), this movement through "status passages" is a natural process in transitions of this kind; and individuals should be aware that there are many others facing the same situation (Morris et al, 1976).

Nevertheless, prior expectations of high levels of early responsibility, training and development are often met with

the reality of low level job satisfaction and lack of rapid career progression. Underutilisation and underdevelopment were thus common complaints amongst graduate entrants. These misconceptions often run in parallel with a lack of awareness as to where and how they "fitted" into the organisations' short and long term objectives. It is therefore the duty of senior management, in the form of short presentations, to endeavour to emphasise their organisation's investment and strategic interest in the new intake as early as possible in the development process.

8.6 Difference in standards

8.6.1 Results

Table 8.6 represents a summary of graduate responses grouped within the standards section.

8.6.2 Discussion

(a) Time constraints

A major culture shock exists when transferring from highly flexible working hours in higher education (with morning off's forming part of the curriculum) to the extremely inflexible routine in employment. Here, an individual's time is far more accountable than in academia, and deadlines are far tighter. I order to make effective use of their now limited time, graduat must acquire the new skills of time management, and through self-development begin to set their own short and long term targets.

Table 8.6 Summary Table: Difference in standards

FULL TIME EDUCATION ENVIRONMENT	POSSIBLE SOLUTION OR "BRIDGE"	WORK ENVIRONMENT
TIME CONSTRAINTS		
Time not accountable Relatively flexible working hours Lengthy holidays	Time management training Target setting	All time is accountable Tighter deadlines Routine Need to prioritise Short holidays
IMAGE / PERSONAL PRESENTATION		
Choice of dress Own standards	Past graduates and line manager involved in recruitment Clear definition of standards	Suits Company standards

(b) Image and personal presentation

The simple task of wearing a suit can be a major shock to the system, and is a discipline that graduates must rapidly adjust to. Fitting into the company "culture" is the second hurdle graduates face. It is important that the individual has an insight into the standard of presentation, and conduct of the organisation's employees. A mismatch between company and individual standards can easily be avoided

through informal input from line managers and recent graduate entrants on the recruitment process. This will allow each party to meet their future colleagues and gain more realistic impressions of each other.

8.7 Post entry expectations

8.7.1 Unmet expectations

Table 8.7 represents the prime areas in which graduate expectations were not met. In each case the organisational reality is presented.

Table 8.7 Unmet expectations: Organisational reality

Expectation/Need (prior to entry)	Organisational Reality
Early responsibility	Lack of early responsibility
Challenging work	Routine work
Opportunity for career development	Lack of career development
Opportunity to use abilities	Underutilisation of skills

Each of the prime mismatches were in areas of high priority to graduates in their organisational choice (see Section 6.2.1). These realities also closely relate to Herzberg's category of "Demotivators". These results have serious implications for graduate retention, and each area will be discussed in detail throughout the following chapters.

Before solutions can be discussed, the main perceived causes of the expectations mismatch must be recorded.

8.7.2 Causes of unmet expectations

It is a well known fact that graduate expectations of future employment are often unrealistically high (see Chapter 3). Three main causes of this phenomenon were highlighted by respondents.

1. **The Employer** - During the mutual selling of both individual and company, and in an attempt to attract quality entrants, employers inflated graduate expectations of future employment to unrealistic proportions. Often company specific information was emphasised at the expense of detailed information on the actual day-to-day activities of the graduate's initial post in employment.

2. **The Graduate** - Lack of knowledge on what the actual job entailed, and whether it matched their own skills and interests was evident amongst a high proportion of graduate interviewees. This was due to the fact that no formal time was allocated within the higher education timetable for individual career counselling.

3. **Academia** - Within the educational process, undergraduates' expectations of their worth in employment were highly inflated by academics. At the

same time, these academics continued to focus students' attention on too high a level of theoretical and academic skills, whereas increased emphasis is needed on personal and interpersonal skills development to enhance their future careers.

8.7.3 The relationship between school leaver and graduate entry

The current demographic downturn, reputed to greatly affect graduate output in the U.K. is in fact effecting school leaver output to a far greater extent (see Chapter 3). In an attempt to widen the graduate talent pool, and hence combat the demographic problem, employers are now beginning to place greater strategic emphasis on the school leaver marketplace. A brief comparison of the early experiences of school leavers and graduates is thus called for.

In general, research covering the two groups of entrant have taken different paths. Studies with school leavers have concentrated on students' adjustment to their new working environment whereas research with graduates has focused on the utilisation of their talents.

It is perceived that individuals tackle, and cope with the transition in different ways. Studies by Taylor (1985), Jones (1986), Arnold (1989a) and Honess (1989) all suggest that variables such as self-efficiency, self-worth and career decidedness (add more) have a direct effect on the

impact of the transition process. Work by Kobasa et al. (1983) differentiates between individuals' personalities when dealing with the transition, classing some as 'hardy' in their approach compared with others.

Several major studies have been conducted amongst school leavers entering employment. These have been reviewed by Clarke (1980), West and Newton (1983), and Arnold (1989). The majority of work in this area has focused on students' experiences several months prior to and post organisational entry. There was little evidence, however, that school leavers had inflated expectations of work. In fact expectations were often of a low level; and initial perceptions of working life were favourable. Nevertheless, once the novelty had worn off, complacency and dissatisfaction set in.

8.8 Planning for the initial transition process (ITP)

Several researchers have attempted to identify the tactics employed to facilitate the transition process (Nicholson, 1987; Van Maanan and Schein, 1979). However, many of the pitfalls individuals may face can be easily anticipated (Arnold, 1989). This anticipatory behaviour in turn allows them to plan ahead and explore future possibilities (Stumpf, Colarelli and Hartman, 1983; Grotevant and Cooper, 1988). Arnold (1989), in his review of relevant literature, found empirical support for the notion that "planning for the transition can have a beneficial effect over the transition

itself". This was echoed by Arnold (1989) who in a review of past work concluded that interactions in higher education (or even in schools) designed to enhance the student's career decision process through knowledge of self (self-concept crystallisation, Taylor 1985) and world of work could indeed have payoffs over the transition.

Having agreed that some academic research findings can be used to aid the individual's transition, the ensuing problem is one of communicating these results to individuals inside the institutional environment. The careers service provides a useful medium through which to communicate this information, although two problems arise. Firstly, careers advisers are already overburdened with placing graduates, and have little time actually preparing individuals for their transition into employment. Secondly, this service is greatly underutilised by both graduates and organisations alike.

There is also little input from academics and employers to aid the individual in this planning stage. It is thus proposed that a structured period, dedicated to career planning, is embedded within the higher education curriculum. Here, the individuals should soon become responsible for their own development, with academics and employers merely providing a supporting role. An example of such a support could be in the form of a Career Management Handbook which guides individuals through the planning and management of their career development.

From the individual's perspective, the realisation of the need to adjust to a culture, with contrasting norms and values is often an unsettling time. For the employer, the smoother the individual's transition into employment, the sooner their skills can be fully utilised and developed. If the transition is not successfully managed by both parties, individual dissatisfaction can soon lead to process failure.

8.9 Key issues

1. There are many mismatches within the graduate's initial transition into employment.

2. These are primarily due to the opposing nature of the higher educational and work place environments (see Tables 8.4, 8.5, 8.6).

3. As a result individuals and companies must modify their existing environments to meet a mutual need.

4. This adaption can be in the form of transitional bridges provided by the company (pre work training, internal graduate industrial societies etc.); by the individual (self-development) or through a mutual collaboration (realistic discussions at interview).

5. The problems occurring throughout the transition process are often exacerbated by expectations mismatches. These may be caused by employers during the

recruitment process, academics throughout higher education, and even by graduate applicants themselves

6. On entry into employment, the greatest areas of expectations mismatch occurred within the nature of the graduate's work; the career development opportunities available; skills utilisation, and the amount of individual responsibility.

7. Many of the above problems would be eased by individual career planning embedded within the higher education curriculum.

CHAPTER NINE

GRADUATE TURNOVER

9.1 Introduction

A key factor to emerge from the demographic data gathered in this research is that 70% of those who will be in employment in the year 2000 are already in the current workforce. Companies must therefore place increased emphasis on retaining and developing their existing talent. Employee turnover, and on a future managerial level: graduate turnover, are thus key factors in the long term success of any organisation.

Since the second world war, over two thousand studies have focused on the general area of turnover research (Bevan, 1990). The several thorough reviews of recent research have highlighted the increasing interest in this area (Bluedorn, 1982; Mowday, Porter and Steers, 1982; Mobley, 1982; Bevan, 1987). Models of the turnover process have become increasingly complex, with at least one study incorporating over 40 organisational, individual and social variables. Turnover has also been defined, analysed and approached in varying ways. A good working definition, used in this research, has been provided by Macy and Mirvis (1983) as "a permanent movement beyond the boundary of an organisation". This distinguishes turnover from interdepartmental promotion or movement, and temporary layoffs.

Many studies have also attempted to classify turnover into discrete pockets. Lefkowitz's (1971) review of progress in clinical psychology provided the research with some guidelines. Here he classified turnover as four types of termination:

i. **Involuntary Unavoidable** - layoffs due to uncontrollable external factors such as the economic environment.

ii. **Involuntary Avoidable** - dismissal for cases that are potentially avoidable such as poor performance, inadequate training or conflict between manager and subordinate.

iii. **Voluntary Unavoidable** - resignation due to family problems, illness, marriage, pregnancy etc.

iv. **Voluntary Avoidable** - resignations as a result of potentially avoidable situations such as anxiety stemming from poor guidance or lack of opportunities, poor training, job dissatisfaction or pure frustration etc.

The research looks exclusively at Voluntary Avoidable terminations. Barring times of marked economic recession, this represents the most frequently occurring of the four categories and as such is of prime importance to both individuals and employers alike.

This stage in the programme did not attempt to rigorously correlate a series of variables with graduate turnover. Its main aims were to record current employer awareness and practices towards graduate turnover; pinpoint key problem areas within this process; assess their implications; transpose existing academic knowledge into practical settings; and suggest possible solutions to these problems. The overall objective was to utilise and develop past and present knowledge in this area.

To achieve these aims and objectives, a series of semi-structured, but open ended Company retention/development interviews were conducted (see Appendix III). The results of this survey were combined with the findings from post enrty graduate interviews.

9.2 Company retention/development interviews

9.2.1 Sample selection

Interviews were conducted amongst a sample of twenty employers. The survey's primary objective was to record the views and practices of leading recruiters, highlighting the most proactive set of practices. However, the views of less structured and developed companies were also sought. As a result, twelve companies interviewed were established graduate recruiters; five were in the process of changing their current methods; and three were new to the recruitment and development scene. Companies interviewed in the retention/development survey are profiled in Table 9.2.1.

Table 9.2.1 Interview sample: company profiles

Co	Main Output	Est in Rec (1)	No. Grads Rec (2)	Position of Inter-viewee
1	Food + chem processing	E	iv	Nat Rec Mgr
2	Computer manufacture	E	iv	Grad Rec Mgr
3	Chemical processing	E	iii	Eng Rec Mgr
4	Automobile manufacture	C	iii	Recr/Dev Mgr
5	Service	N	ii	Tech Rec Mgr
6	Telecommunications	C	vi	Mgt/Dev Mgr
7	Automotive manufacture	C	iii	Trng Dir
8	Glass processing	E	ii	Rec/Trng Mgr
9	Cable manufacture	E	ii	Uni Lia Mgr
10	White goods manufacture	N	i	Pers Dir
11	Atomic energy	E	iv	Pers Mgr
12	Atomic energy	E	iv	Policy Mgr
13	Multi process	E	iii	Grad Rec Mgr
14	Oil	E	iv	Grad Dev Mgr
15	Specialist engineering	N	i	Tech Dir
16	Instrumental engineering	C	i	Pers Mgr
17	Oil	E	iv	Rec Mgr
18	Automobile manufacture	E	iii	Manuf Mgr
19	Shipbuilding	E	iii	HRD Mgr
20	Telecoms servicing	C	ii	Trng Mgr

KEY

1) Establishment in the recruitment process

E = Established methods of recruiting and developing graduates.
C = Currently undergoing changes in approach.
N = New in the field.

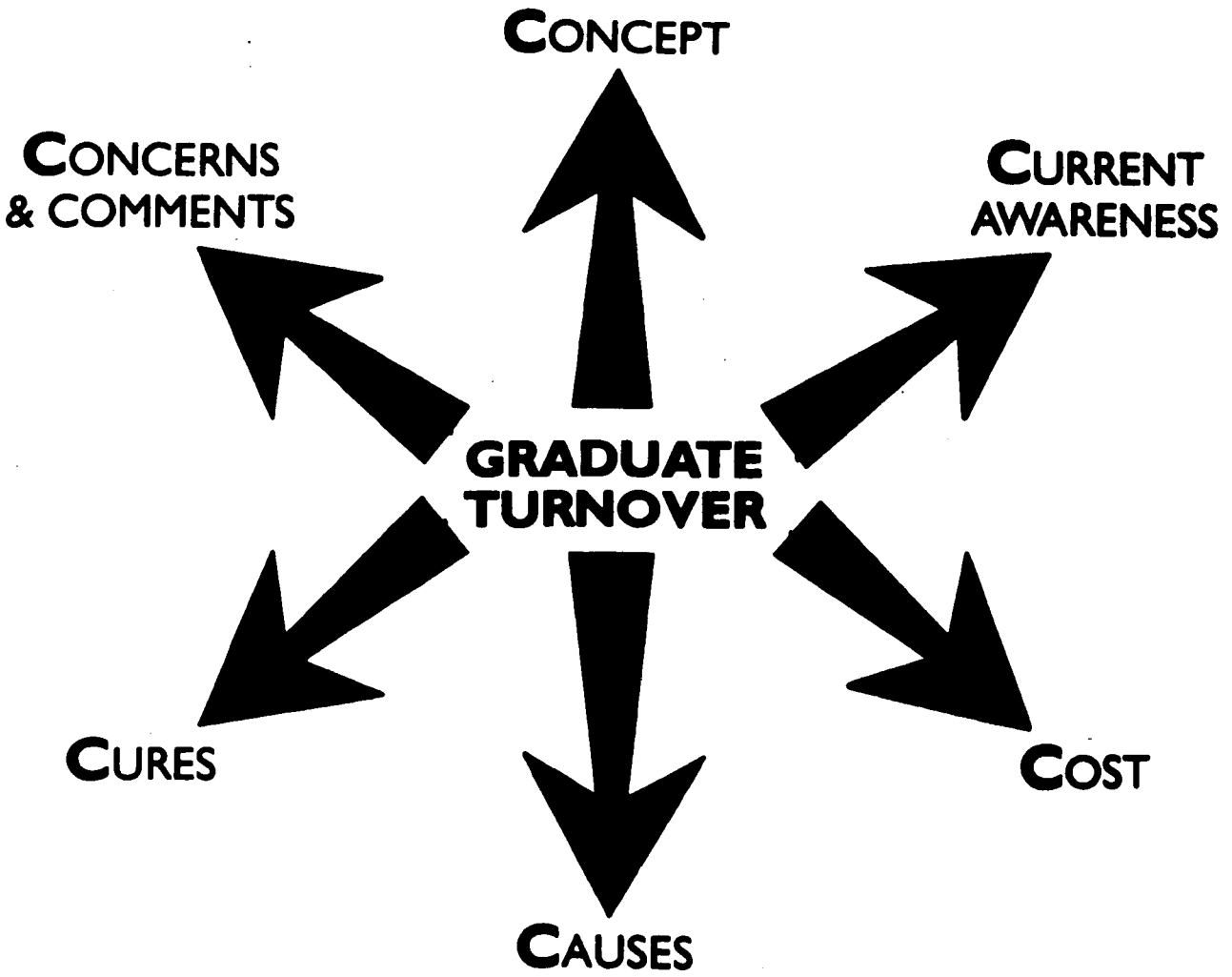
2) Average number of graduates recruited per year

i	= 0 - 10	iv	= 101 - 200
ii	= 11 - 50	v	= 201 - 400
iii	= 51 - 100	vi	= 400 +

9.2.2 Development of a survey model

To bring consistency to the research, a model of graduate turnover was developed. Drawing upon past and current research, the framework presented was the "Six C Model of Graduate Turnover" (Figure 9.2.2). Each "C" within the model is an important factor that should be addressed by both academics and employers when tackling the overall turnover problem. This model formed the basis of the company retention/development interviews (discussed in Chapter 7, topic guide in Appendix II).

Figure 9.2.2 The Six "C" Model of Graduate Turnover (Hawkins, 1989)



Each "C" within the model in discussed in the following sections.

9.3 The concepts surrounding turnover

In order to begin to comprehend the turnover process, employers must understand its key influencing factor: the concept of organisational commitment.

9.3.1 The concept of organisational commitment

Organisational commitment has often been shown to be a useful construct for predicting turnover, with research consistently finding a negative relationship between these two variables (Mobley, Griffeth, Hand & Meglino 1979). A large body of empirical and theoretical literature has been devoted to an exploration of the determinants of organisational commitment. Three distinct sets of variables have emerged (Reichers 1986):

i. **Psychological variables** ie. met expectations, job satisfaction and identification with organisational goals and values (Bateman & Strasser 1984; Schneider, Hall & Nygren 1974).

ii. **Behavioural variables** that cause individuals to make the attribution that they are committed, for example the irrevocability and volitionality of job choice (O'Reiiy & Caldwell 1980; Salencik 1977).

iii. **Structural variables** associated with long term organisational membership such as non portable benefits (Farrell & Rusbult, 1987; Rusbult & Farrell, 1983).

The complexity and diversity of available literature can lead to confusion over the definition of organisational commitment. Continuity has been restored with the definition proposed by Mowday Steers and Porter (1979) and represented by their Organisational Commitment Questionnaire (OCQ). In the OCQ, commitment is defined as:

i. A belief in, and acceptance of organisational goals and values.

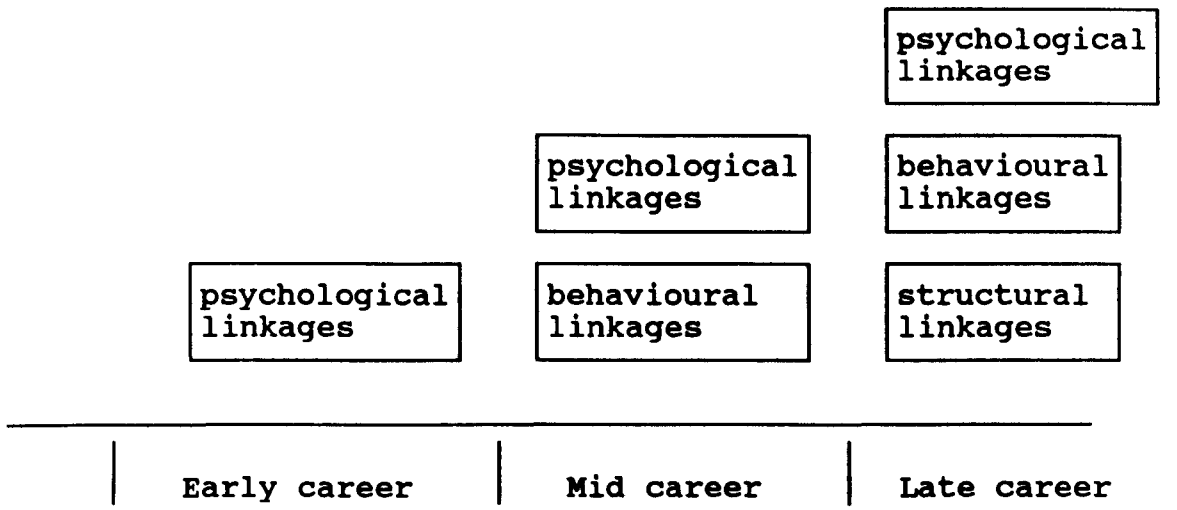
ii. A willingness to exert effort to organisational goal accomplishment.

iii. A strong drive to maintain organisational membership.

Mowday et al (1982) then went on to discuss the concept that commitment develops with time. Integrating these concepts with the views of Reichers (1986), the developmental approach to organisational commitment is mapped out as follows:

It is suggested that in early career stages, psychological attachments to the organisation (or constituencies of the organisation) may be the primary antecedents of continued commitment. Over time, individuals may start to develop

Figure 9.3.1 Developmental Approach to Organisational Commitment



commitment to themselves. In later career stages, not only do psychological and behavioural linkages bear their effect but also structural variables such as investments, security and lack of opportunity elsewhere may combine to cement the individual's attachment to the organisation. This model has major implications in the successful retention of graduates and is referenced in future sections.

9.3.2 Organisational commitment in the graduate entrant

Without the full development of different facets of organisational commitment, new graduates have greater psychological freedom to leave the organisation. They differ

from their tenured counterparts in perceptions toward commitment. First, early commitment may be less stable than commitment based on investment and established psychological bonds (Reichers, 1986). The new graduate is likely to receive unreliable information about the organisation prior to entry (Chapter 3). Individuals are also likely to have incomplete information about the organisation's goals and values as well as membership requirements (Wanous 1982). They may therefore go through a period of "reality shock" (Hall 1976). The practical solutions to these pitfalls are discussed in Chapter 8 and Section 9.7 respectively.

Secondly, as stated above, the commitment process takes time. New members may not have adequate time to learn the goals of the organisation or to go through the socialisation process (Schein, 1968) and be accepted as a member of the organisation. Nor have they made the structural investments needed to cement the commitment process. These circumstances are reflected in the findings of Dunnette, Arvey and Banas (1973), revealing that turnover is higher among new employees than among more tenured employees. "Raw" graduate entrants therefore form a high risk area.

In general little empirical research has been conducted on the commitment of newly appointed members. Whilst there are several arguments (Werbel & Gould, 1984; Gould & Penley, 1982) it could be stated (Porter et al, 1976) that management trainees with low levels of organisational commitment are more likely to leave the organisation during

the training programme than management trainees with higher organisational commitment. This suggests that early commitment ultimately facilitates the formation of a more mature organisational attachment.

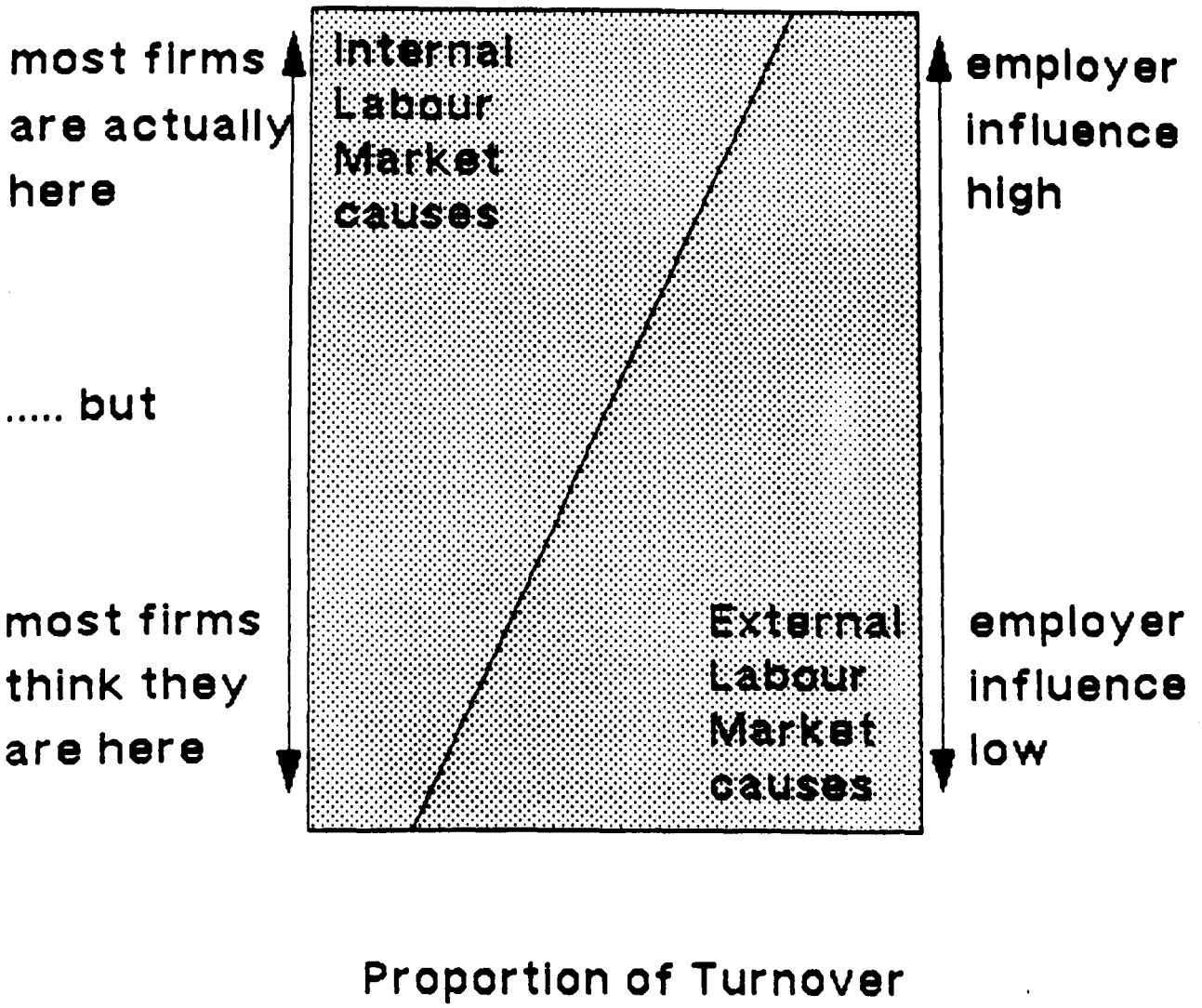
9.4 Current awareness amongst employers

9.4.1 Introduction

It was evident from company interviews that several informal discussions amongst managers concerning the determinants of labour turnover had taken place. However, the "blame" for turnover tended to be hidden, passed on, or attributed to external factors. Indeed, employer perceptions closely matched those recorded in previous surveys (eg. Bevan, 1987). Figure 9.4.1 indicates the nature of the problem.

Most organisations perceived themselves to be placed at the lower end of the box, blaming a high proportion of turnover on buoyant external markets. Indeed external factors relating to the nature of the employing group (for example the marketability, and high mobility, of systems analysts) or pressure from the local or regional labour market (evident in London and the S.E.) can be said to have some effect on the turnover process. However, in most cases internal factors are more important than organisations are

Figure 9.4.1 Factors influencing labour turnover: perceptions and reality



prepared to admit. As stated by Bevan (1988):

"The real effect of a buoyant labour market...is not to cause turnover: it just makes the process easier. The key is to isolate what causes individuals to look for a new job in the first place."

On analysis (see Section 9.6), retention determinants were largely internally based.

9.4.2 Results

The interviews went on to record companies' further awareness of graduate turnover, and their action towards this process. The key findings of this stage in the interview programme are presented in Table 9.4.2.

Figure 9.4.3 shows how simple calculations of monthly turnover figures can be used to highlight critical incidents. In this instance the critical turnover periods appear approximately at 1,2 and 4 years. These can be attributed to the expectations mismatch (leave after year 1); the transition from training programme to a position of technical or managerial responsibility (leave after year 2); and the attainment of chartered status (leave after year 3) respectively.

Table 9.4.2 Company awareness and actions towards graduate turnover

1. Too great an emphasis was placed on attracting and recruiting graduates as opposed to retaining and developing new and existing personnel.

2. Although annual turnover figures were quoted by the majority of companies, quarterly or monthly retention figures were not readily available.

3. This obscured any accurate recording of critical incidents associated with graduate turnover.

4. Whereas most employers could quote national average turnover figures (for example 50% after four years; Parsons, 1982), they had little or no knowledge of how their functional turnover compared with the national averages in specific sectors and disciplines.

5. Although exit interviews were often conducted with graduate leavers, few employers carried out any detailed analysis of these findings over time.

6. Apart from two leading companies (10% of sample), detailed cost implications of turnover were not calculated. The majority of companies only recorded partial turnover costs.

7. In a number of cases, employers were unsure whether the recruitment or training manager should be responsible for recording turnover figures.

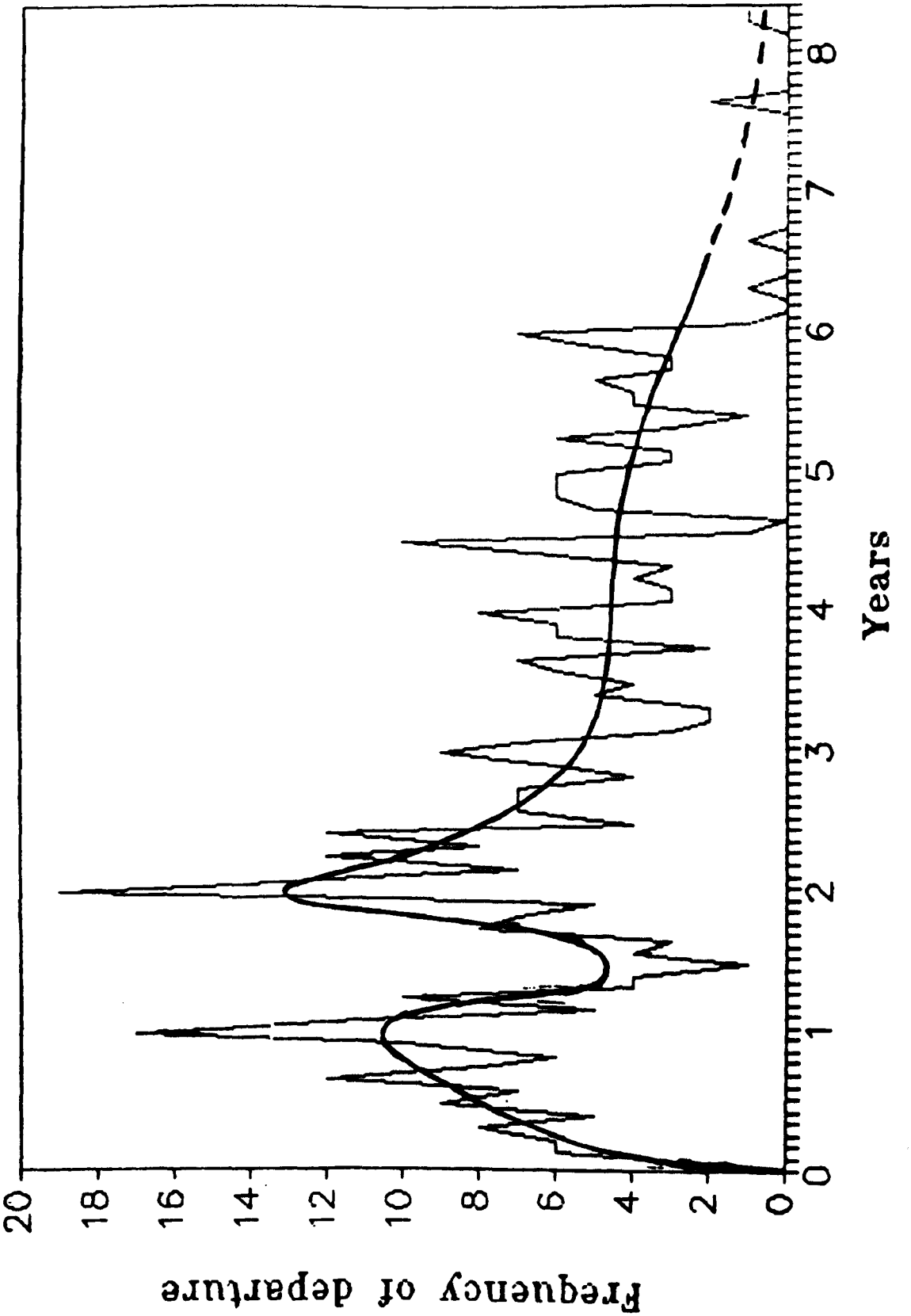
8. Even when causes and costs of turnover were known, there were no structured tools or media to communicate these findings to all personnel involved in the recruitment and development process.

9. As a result, few line managers were able to accurately quote their company's retention figures.

10. Although companies were starting to look more seriously at their retention problems, there was a distinct lack of knowledge of the academic work already carried out in this area.

Figure 9.4.3 Engineering graduate turnover rates

(Department of Employment sample 1980-88)



9.5 Cost of turnover

Although an increased number of academic studies have focused on the cost implications of turnover (Dalton et al, 1981; Hall, 1981; Macy & Mirvis, 1983; Jeswald, 1974; Cawsey & Wadley, 1979) few have reached very practical conclusions. Nevertheless, more recent work (Bevan, 1987) has suggested the need for senior management to increase their awareness of the magnitude of turnover costs in order that practical steps may be taken to understand, predict and control this process.

The costs incurred by labour turnover are clearly demonstrated by Mercer (1988). He divides these into three distinct groups: separation, replacement and training. A fourth cost, that of recruiting the individual in the first instance, is added to the model, The content of the four "standard" costs of turnover are shown below:

1. **Initial recruitment costs** - those costs incurred in attracting and selecting each individual, including management time, travel expenses etc.. Often the total recruitment cost incurred throughout the year can be divided by the total number recruited to obtain the unit recruitment cost for each individual within a particular grouping.

2. **Training costs** - including off-the-job training, hands-on guidance, up-to-scratch pay, and other training material.

3. **Separation costs** - the expenses incurred when a person leaves an organisation. These include human resource, employee and administrative time.

4. **Replacement costs** - similar makeup to recruitment costs, although a higher starting salary is often required to attract individuals with similar experience and qualifications to the leaver, or investment is needed to bring the new entrant "up-to-scratch".

An addition of the four costs will obtain the standard unit cost of personnel turnover. This calculation represents the "visible" costs incurred by the organisation. There are, however, several more complex factors that must be considered when reviewing turnover costs. These are :

5. **Lost production** - individual performance loses (especially when performing at an optimum level), and group loses (possible lack of interaction) may be incurred when an individual leaves an organisation.

6. **Organisational disruption** - structural changes to special projects, working groups and social networks may also result.

7. **Loss of skills and experience** - the costs incurred during the time delay losing and replacing staff.

Several studies, including Zodeck and Cascio (1984) have recently focused on these less visible implications of reduced turnover, supporting the utility formula provided by Schmidt, Hunter and Pearlman (1982). However, use of the utility formula assumes that reduction in turnover will result in a corresponding increase in performance. This is not felt to be the case, as stated by Jackofsky (1984) in a review of relevant work. Within the 18 studies reviewed, it was found that there was no relation between reduction in turnover and performance in five; a negative relation in eight; and a positive relation in only five.

9.5.1 Results

In the majority of cases a structured, representative approach to costing graduate turnover was not in evidence during the interview programme. The following figures, shown in Table 9.5.1, represent the range of turnover cost calculations.

Assuming that reduced turnover and performance are unrelated, the simplest method of calculating the cost benefits of any reduction strategy is by recording the number of personnel "saved" and multiplying by the standard unit turnover cost per employee (stated above). An example of estimated graduate turnover costs can be see below.

Table 9.5.1 Employer calculations of unit graduate turnover costs

Cost	Calculation Method
£13,000	Cost incurred when initially recruiting a graduate.
£22,000	Cost of recruiting and replacing a graduate.
£25,000	Cost of recruiting and replacing a graduate after two years (not including training costs).
£45,000	Total cost of recruiting, training and developing graduates within their first two years of employment (including management time but not replacement costs).
£250,000	Total sum invested in developing an individual from graduate entrant to a position of senior management (approximately at the age of 45).

Company X : Established in graduate recruitment and development calculated its unit cost for graduate turnover (after 2 years) to be £25,000. The average number of graduates recruited per year was 150, and the average turnover rate after 2 years has been calculated to be 20%. The number of graduates lost in 2 years is therefore 30. Multiplying the unit cost of turnover by the total number of leavers, and assuming that this is a yearly occurrence: the total cost of graduate turnover per year is £0.75M.

This simple calculation clearly reinforces the need for senior management to take practical steps to understand, predict and control graduate (and other employee) turnover.

9.6 Causes of turnover

9.6.1 Introduction

Arguments by Dalton, Todor and Krackhardt (1982) have highlighted the need to distinguish between turnover "frequency" (ie. the number of separations) and turnover "functionality" (ie. the nature of the separations). It is with this reasoning that the research focused on the main determinants of the turnover process.

Comparison of the respective attitudes of "leavers" and "stayers" has added further to the body of knowledge recognising that turnover is moderately correlated with such variables as job satisfaction, age, and intentions to leave (Mobley 1982,; Steers & Mowday 1981; Youngblood, Mobley and Meglino 1983).

Although the results are consistent, their practical implications are questioned by the author in line with the McEnvoy and Cascio (1985) argument. Their shortcomings are as follows:

i. Generally the correlations are so modest that only a small proportion of turnover variance has been accounted for by these attitudinal variables.

ii. Because the studies are correlational, they have failed to establish cause-and-effect relationships (Clegg 1983).

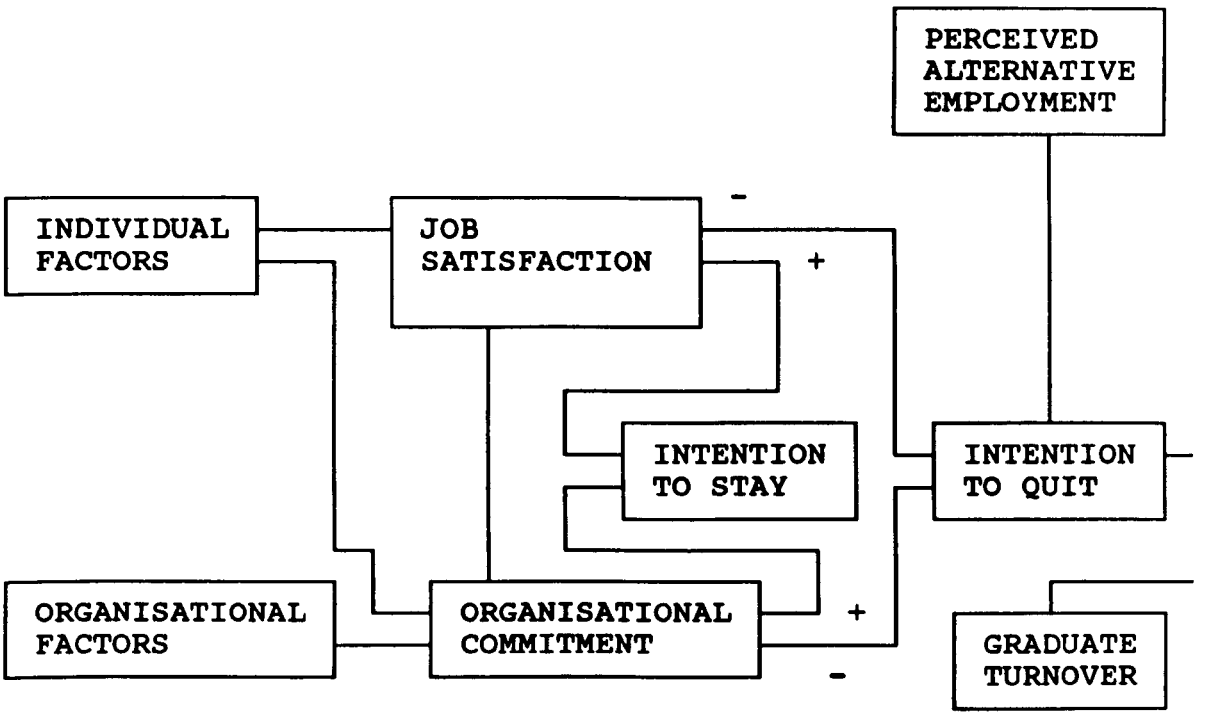
iii. Even if correlational studies advise managers to increase satisfaction or reduce the "willingness to leave" in order to reduce turnover, little guidance is offered to practically implement these changes in the form of attitudes and behavioural intentions. The same is true with salary restructuring, a major task for employers.

Most of the recent research has focused on the modest correlational problem stated above, with more comprehensive studies on turnover antecedents developed to account for a slightly higher proportion of the variance in turnover (Salancik, Staw and Pondy 1980; Mowday, Koberg and McArthur 1984; Rusbult & Farrell 1983). Research (Rusbult & Farrell 1983) has also included relatively unstudied variables such as "investment", level of unemployment in the economy, and absenteeism. In most cases, however, correlates are still small and it is apparent that more theoretical work is needed in this area.

In this instance, the research does not attempt to quantify and correlate existing theories. It does, however, aim to overcome and develop the shortcomings of past work, by qualifying the prime causes of graduate turnover and suggesting practical solutions to this costly problem.

In order to clearly understand the thought processes behind voluntary turnover, a developed version of Mobley et al's (1979) path analysis is presented.

Figure 9.6.1 Turnover: the decision making process



It is hypothesised with graduate entrants that "individual" factors (primarily confirmed expectations and experiences in higher education, but also organisational level, tenure, age and salary) and "organisational" factors (ease of transition into employment, perceived responsibility, utilisation, rate of development, supervisory behaviour, and company support systems) have a bearing on the graduate's job satisfaction and/or company commitment. A positive matching of individual and/or organisational factors will lead to the individual's intention to remain with the organisation. However, negative feelings can often arise,effecting overall organisational commitment and resulting in the individual's intention to

quit. This intention may also be enhanced by perceived alternative sources of employment. In most cases, as stated by March and Simon (1958), the decision to leave an employer is conditioned by the perceived desirability of leaving, and the perceived ease of movement.

It is also worth noting the relationship between job satisfaction and company commitment. Here Porter et al's (1974) argument stands fast: that satisfaction is associated with aspects of the work environment and thus will develop at a faster rate than commitment, which requires an individual to make a more global assessment of his or her relationship with the organisation.

This model reinforces the concept that graduate turnover is not a one off decision solely effected by external markets. In the majority of cases, it is internal organisational and individual factors that set the decision making process into motion. The existence of external markets, in the form of perceived alternative employment, merely acts to speed the process up.

Nevertheless, as stated previously, reasons for termination of employment are both numerous and complex. The spread of reasons for leaving can best be described in the Department of Employment's retention figures (Table 9.6.2) for a sample of engineers leaving their first employer between 1980 and 1988.

Table 9.6.2 Reasons for Leaving (DE Sample, 1988)

Reason	Frequency
Better job	163
To broaden experience	102
Job unsatisfactory	64
Redundancy	49
Personal	15
Combination of above	11
Return to study	8
Other	1

Having discussed the mismatches and bridges associated with the transition process (Chapter 8), and taken a wider view of the current employer awareness of graduate turnover (section 9.4), the next step in the interview programme was to elicit the additional causes of the turnover process.

9.6.2 Results

Drawing upon graduate attitudes to the post work interviews (see Chapter 7), and employer responses to the retention/development interview, the main determinants of the graduate turnover process are presented in Table 9.6.3 below.

Table 9.6.3 Main causes of graduate turnover

(a)	Poor matching of individual and organisational needs
(b)	Talent underutilisation and lack of early responsibility
(c)	Continuity of personnel
(d)	Line management interactions
(e)	Lack of involvement
(f)	Inflexible training and lack of individual career development
(g)	Lack of self-development
(h)	Multiple commitments
(i)	Expectations mismatch
(j)	External labour market

9.6.3 Discussion

(a) Poor matching of individual and organisational needs

Many retention problems were perceived to be alleviated during the recruitment process by realistically matching the needs of the organisation and the individual graduate.

Table 9.3.1 reveals companies' respective requirements for a graduates intake. Responses varied widely, with an expected combination of perceived short and long term needs influencing recruitment decisions. In order to achieve objectivity, the main factors are ranked in order of their frequency of response.

Table 9.6.4 The organisational need for graduates

Rank	Reason
1.	To provide future management talent
2.	To provide technical expertise
3.	To meet short term needs

While there was a general awareness that the recruitment of graduates was a factor in the future success of an organisation, when asked if this issue was addressed at a strategic level, the following questions were raised.

A recruitment strategy or a calculation ? The majority of companies (12 cases, 60%), calculated recruitment figures using a combination of the past years figures and current departmental needs.

Statements of objectives: Structured or Unstructured ? 5 companies (25%) had formed structured statements of short and long term recruitment objectives. The remaining companies used far less structured approaches.

Recruitment strategy or business objective ? Only 1 company (5%) linked their graduate recruitment strategy with their corporate business objectives.

There therefore, tended to be differences between employers' perceptions of the need for graduates and their practical methods of calculating target recruitment figures. In essence companies were using short term trends and demands to meet long term needs.

Having agreed on annual recruitment figures, interviewees were asked whether these facts were communicated to all individuals involved in the recruitment process. While on a qualitative basis, few companies were seen to provide

effective communication channels; and the messages translated were rarely structured or consistent.

Having recorded the strategies underlying the initial recruitment of graduates, it is worth taking an academic view of the key factor influencing graduate turnover: organisational commitment.

(b) Talent underutilisation and lack of early responsibility

The shortcomings of underutilisation and underdevelopment were highly evident in the research, with lack of early responsibility a common concern amongst graduate interviewees. A key point to be enforced here is that only employees who are free to make mistakes are free to learn.

Jenkins (1988) points out that companies themselves are the prime cause of high turnover rates.

"If you look at the 100 largest (U.S.) cooperations, the turnover rate at the division or subdivision level is about 25% per year. The primary reason for high turnover rates is that companies are doing a poor job of developing their managers and executives.... Furthermore, companies have had a tendency to misuse talented people and not have the proper perspective with less talented ones."

Individuals must be made to feel that they are important. Peters and Waterman (1982) assert:

"There was hardly a more pervasive theme in the excellent companies than respect for the individual ... These companies give people control over their destinies.."

(c) Continuity of personnel

Whilst there remains a lack of continuity between many of the graduate's experiences in higher education and employment (see Chapter 8), there is one major factor that has not yet bean discussed: that of personnel continuity in the recruitment and development process.

Graduates will tend to relate to prominent (organisational) individuals during their recruitment process, viewing actions by agents of the organisation as actions of the organisation itself (Levinson, 1965). These agents are usually recruitment officers or managers. In many cases, a linkage is developed between both parties during the process, with graduate applicants in particular viewing the company through the actions and thoughts of these key individuals.

Due to the changing nature of the recruitment process (now an all year round activity), once the recruiter has successfully filled his quota for the current year, his remaining time and energy is directed to the next intake. Together with the fixed structure within most recruitment functions, the end result is that recruiters have little or no opportunity to follow up a group of entrants through to their early careers. As a result, individuals having accepted a job offer, and expecting to be greeted by a familiar face on entry, are often confronted by a totally alien training or line manager. This problem was also seen

in reverse, with line managers, having no say in the selection process, often forced to take on and develop graduates poorly matched to their own needs. It is therefore essential that individuals responsible for the development of graduates are involved as early as possible in the selection process.

Having highlighted the lack of personnel continuity throughout the graduate's early career development, a second problem arises: that of continuity in the recruitment function. In many companies the graduate recruiter's position is seen as a short-term step in an individual's career development. As such, the time employees spend in this function is minimal. Indeed the "half life" of a graduate recruiter is predicted to be no longer than one year. In fact, well over half the companies collaborating in the research had undergone a change in their key recruitment personnel within the three year programme. In one particular company, the position changed hands three times. In practical terms, recruiters have just begun to work efficiently; clearly understand the needs of the undergraduate marketplace; and create personal links with academic institutions, when they move onto the next step in their career progression. If support systems are not available, the valuable accumulation of knowledge, personal contacts and market sensitivity will gradually diminish. It was clearly evident from interviews that companies forming the leading edge of the recruitment scene either employed long-standing "champions" in the recruitment function or

boasted established support systems for their staff.

These support systems may take on many forms but should include: structured systems of creating campus links; introductory mechanisms for new recruiters; company policies towards graduate recruitment and development; ongoing undergraduate reviews of company specific and national attitudinal data, and employment trends etc., as well as the provision of traditional skills training such as effective interview techniques.

(d) Line management interactions

Several studies have linked employee turnover with supervisor interactions (Graen & Ginsberg, 1979; Sheridan, Vredenburgh & Abelson, 1984) with such leader behaviours as attention, sensitivity and reward easing the process (Krackhardt, McKenna, Porter & Steers, 1981).

In several companies, unstable line managers were perceived to see the new graduate as a threat. This kind of supervisor would either block the individual's upward development or seek to force him or her to leave the department, or even the organisation, through intimidation or humiliation. In either case there was a major "blockage" that must be dealt with. It should be noted that this phenomena was only apparent in those companies that did not hold an established "graduate culture" within their development processes.

(e) Lack of involvement

Involvement is perceived to be a major factor in the development of psychological attachment (see Section 9.3.1). Expanding this concept, there were three main areas in which graduates experienced a lack of involvement:

* The company
* Their peer group
* Their own learning goals

Involving graduates in the company means communicating with them continuously. Part of the communication is through regular constructive feedback. The majority, however, is through positive reinforcement developed in actual team involvement. If these factors are not forthcoming, the individual will seek to join another department or even another organisation at the expense of their current employer. Involvement in the company also means relating individual goals with the company's corporate objectives. This matching process must be initiated as early as possible in the individual's career development, ideally prior to organisational entry.

Involvement with peer groups is a key factor in the successful socialisation and further development of graduates. The formation of Internal Graduate Industrial Societies is an effective aid to this process, and this technique is discussed in Section 9.5.2..

To become committed to an organisation, most people need to feel involved in decisions that effect them, especially when it concerns their own learning goals. Companies that deny this involvement, fail to develop the human resources in which they have invested so much. In addition there is the risk of alienating the individual, stripping him of any purpose, motivation and interest in his work. As a result the quality and quantity of his work may degenerate, and at an extreme physical health and self-esteem may suffer.

(f) Inflexible training and lack of individual career development

In the majority of cases the graduate intake was seen, and developed by companies, as a group of stereotypes, with little or no attention paid to the individual experiences and needs. This was born out in blocks of inflexible (technical) training the majority of employers offered within the first two years of employment.

(g) Lack of self-development

Whilst graduates showed great concern for the lack of individual career development and inflexible training provided; companies expressed the need for self-development amongst all personnel. This quality, however, was seen to be distinctly lacking amongst most new graduate recruits. Once again a mismatch in perceptions results (Chapter 3). This can only be cured by changing both the organisation's and individual's methods of learning.

(h) Multiple Commitments

In 1982, Mowday Porter and Steers indicated that the influence of multiple commitments and the potential for conflict that multiple commitments may generate is a very important but often overlooked area of enquiry. The fact that organisations frequently pursue multiple competing goals and values was further emphasised by Reichers (1985) in her multiple constituencies approach to organisational commitment. This further emphasises the need for organisations to project their goals and values in a clear and structured manner as early as possible in the graduate's development process.

The term 'constituency' (Pennings & Goodman, 1979) represents organisationally relevant groups such as senior managers, co-workers, individual departments, unions and customers. An employee will be committed to any, if not all of the constituencies, each with potentially conflicting goals and values. When two or more commitments clash, to the extent that the individual has to pursue the goals of one constituency at the expense of another, his overall commitment and energy towards the organisation will be reduced. This was highly evident amongst graduate interviewees who had undertaken the commonly known "cook's tour" approach to initial training, often spending short periods of time in contrasting departments.

Maddi (1980) focused on the idea that conflicts may be intrapersonal or interpersonal. He defined conflict as either intrapsychic (within a person) or psychosocial (between people, or a person and a group). An example of intrapsychic conflict exists when a person wishes not to have spots but at the same time does not like washing and is addicted to sweets. This conflict was evident amongst graduate entrants, portraying high expectations of rapid career progression, but at the same time having little or no grass roots experience of the industry in which they were developing. Psychosocial conflict, however, focuses on the relationship between two people, two groups, or a person and a group. This phenomenon may occur when an individual seeks to advance his goals at the expense of the group's goals. This was again seen within the graduate population through the introduction of high flier schemes. Here individuals were seen by others to use departments and work groups as part of their own development, but show little signs of enhancing the group's long term productivity, efficiency or status.

Reichers (1986) employed a multiple framework to examine the correlates of organisational commitment among 124 mental health professionals. Results of this study indicate that the perceived conflict between individual and managerial goal orientations is also significantly associated with organisational commitment.

(i) Expectations Mismatch

The long standing expectations problem has been discussed in great depth within Chapter 3, and recorded in Chapter 8. There are, however, several cures to this problem, and these will be developed in the following section.

(j) External labour market

The effects of the external labour market have been discussed in section 9.4.1. Although employers are all too quick to cast blame on this outside pressure, they often fail to see the positive effects that can be gained from this external marketplace (see "first jobbers").

9.7 Cures to (means of alleviating) the turnover problem

9.7.1 Introduction

In the past (and in several cases at present), many companies interviewed believed that the only way of combating turnover problems is through recruiting more staff. It is only now that the more forward thinking companies are looking internally to the very cause of the problem.

Even so, as stated by Hollenbeck et al (1986) and evident in the research, companies rarely look further than the simple calculation of turnover frequencies. Organisations should not devote time and resources on programmes to improve employee attitudes based solely on the shortsighted expectation that merely decreasing turnover frequency results in beneficial consequences. They should look in greater depth at the problem. Indeed the performance related costs and benefits amongst stayers, leavers and replacements are likely to far outweigh the administration and recruitment costs associated with replacing lost staff.

McEvoy & Cascio (1985) focused on strategies for reducing turnover. The study investigated the effectiveness of the realistic job preview (RJP) and job enrichment as turnover reduction strategies. A thorough literature search located 20 experiments (N=6,492) dealing with attempts to reduce turnover. Meta-analysis techniques were then conducted on these organisational studies. Their review condemned the lack of practical reduction techniques and called for more field experiments of particular turnover strategies, such as job enrichment and supervisory training, and their associated cost benefits. As a result, the respective interview programmes elicited a series of retention strategies.

9.7.2 Results

Several practical solutions to the transitional problem have already been discussed in Chapter 8 and highlighted in the previous section. The remaining strategies for turnover reduction gathered from the interview programmes, and developed from recent research, are presented in Table 9.7.1.

Table 9.7.1 Retention Strategies

Pre entry retention strategies
(a) Improving the recruitment process
(b) Realistic job previews
(c) Realistic recruitment previews
(d) Sponsorship
(e) Use of biographical data
(f) Selection of first jobbers
In house retention and development strategies
(g) The concept of After Marketing
(h) Line management development
(i) Creating a learning environment encouraging self-development
(j) Individual career planning and development
(k) Co-counselling
(l) Continuing education and training
(m) Improve work related activities
(n) Employee investment programmes
(o) Employer supported child care
(p) Exit interviews
(q) Attitude surveys
(r) Pay

9.7.3 Discussion

Pre entry retention strategies

(a) Improving the recruitment process

The simplest way of lessening the impact of the turnover problem is by avoiding it in the first place. The most direct, cost effective method of reducing turnover is by employing valid and reliable "selection tests that pinpoint which applicants fit the model of the long term effective employee" (Mercer 1988). In this area we see the rapid expansion of personality and psychometric tests together with the development of the more reliable assessment centre approach to selection (Herriot, 1988)

(b) Realistic job previews

The realistic job preview (RJP) is an increasingly used method of tempering unrealistically high graduate expectations (eg. Dean and Wanous, 1984). The expectations mismatch cannot be more highly emphasised.It is this principle that underlies the proven effectiveness of the RJP methodology.

An RJP gives potential employees a clear picture of the job content and working environment prior to their entry into an organisation. It is then up to the applicant to decide whether the job seems appealing before he or she accepts it.

An RJP provides the individual with three main work ingredients:

1. The tasks that the individual would perform.

2. The behaviour required to "fit into" the organisation's norms.

3. Present and future company policies and practices.

The RJP can take on many forms; all of which are hoped to enhance realistic expectations (Colarreli, 1984). Their content may include one or a combination of the following elements: written material, presentations, direct input from recent entrants, involvement of other effected parties eg. spouses, etc. Another general principle of this technique is to encourage applicants not to jump at a chance too quickly, allowing a "cooling-off-period" to thoroughly consider the respective advantages and disadvantages of accepting the job offer.

A great deal of research supports the effectiveness of RJP's (eg. Wanous, 1975). The productivity of those employees selected with an RJP has been shown to be comparable with those who are selected without one. However, greater job satisfaction and lower turnover has been experienced with those selected on RJP's. As a result RJP's can prove useful not only in reducing turnover but also in improving staff morale.

By its very nature (providing realistic barriers to the development of positive expectations), fewer graduates experiencing an RJP apply to, and accept job offers than those who have not undergone the process. For those who finally accept RJP offers, however, the expectations mismatch will be far less evident, psychological attachment far greater, and resulting organisational commitment far stronger (Chapter 3).

(c) Realistic recruitment preview

This concept widens the methodologies related to the realistic job preview into the recruitment process as a whole. These are discussed in detail by Fletcher (1989).

(d) Sponsorship

As discussed previously, sponsorship is a useful method both to attract new talent and provide individuals with a "preview" of their future working environment. However, this approach had two major shortcomings when managed incorrectly. Firstly, if the sponsorship package lacked any structure and direction, graduates were soon "turned off" the organisation, and resulting news of bad practice soon travelled fast amongst the undergraduate population (see Chapters 6 and 10). Secondly the "gentleman's agreement", honoured during the post sponsorship period, often constraind the graduate's organisational choice and may lead to longer term dissatisfaction and lack of graduate

commitment to the sponsoring company (Mabey, 1983).

(e) Use of biographical data

Possibly the most uniformly useful predictor of employee tenure in the past has been the use of biographical or personal history data. This method has been found to be a valid predictor of employee withdrawal or turnover (Cascio, 1976); job seeking behaviours (Keenan and Scott, 1985); managerial effectiveness (Laurent, 1970); career paths (Klimoski, 1973) and career success (Childs $ Klimoski, 1986). Relevant literature on biographical inventory shows validity coefficients that reflect both statistical and practical significance.

This technique has also produced strong statistical relationships between both age and length of service, and turnover on regular occasions (Bartholomew & Forbes, 1978; Forbes & McGill, 1985), with younger employees, or those with shorter service more likely to be high turnover "risks". Educational level or number of years spent in the educational system have also been shown to closely relate to eventual turnover behaviour (La Rocco, Pugh & Gunderson, 1977) with higher attainment often indicating higher turnover "risk". For these reasons, the graduate entrant forms one of the highest turnover "risks".

(f) Selection of "first jobbers"

Many problems relating to the graduate's initial transition into employment and early career development have been discussed. These, together with the overriding "grass is greener" syndrome apparent amongst a high proportion of new graduating entrants, places a high amount of risk on recruiting "raw" graduates. Nevertheless companies are still focusing greatest attention on this breed of entrant, even though the competition and complexity of the graduate marketplace has rapidly increased.

Taking the above points into consideration, the ideal alternative to the raw graduate is the "first jobber", ie. the graduate making his or her first career move. Although initial recruitment costs of these individuals would be slightly higher, many of the risk factors such as unrealistic expectations and education/employment mismatches will not be in evidence. Resulting retention rates would thus be higher. This pool of talent within the external labour market remains a relatively untapped source of supply and should be increasingly targetted, and utilised by employers in the future.

In house retention and development strategies

(g) After Marketing

If one thinks of the initial company marketing (evident in the attraction and recruitment process) as a means of "bringing the graduate's expectations to the boil", the early stages of career development must "keep these expectations boiling". The concept of "After Marketing" (Jones and Hawkins, 1989) has thus been developed. This process is a key factor in the successful early retention of graduate entrants, and involves a combination of the following strategies as well as the previous in-company bridges to the transitional problem.

(h) Line management development

One consistent finding borne out in the research was that turnover is related to tenure. The longer employees remain with an organisation, the greater their own investment in that organisation, and the less likely they are to leave. Thus in organisations with high personnel turnover, the problem often stems from the inability to retain new recruits. It is therefore evident that newcomers require more social care than their veteran counterparts.

The role of the supervisor is key to the graduate entrants' early development for the following reasons:

i. Supervisors 'socialise the new recruits into their new working environment.

ii. They control the degree of structure, diversity, ambiguity and conflict in the work itself.

iii. They provide formal and informal feedback on graduates' job performance.

iv. They often facilitate training, and aid the development of career plans.

v. They control rewards and even the job security that entrants may enjoy.

It should be noted that the supervisor's role is not solely devoted to the entrants' early job experiences (Katz 1978) but also to develop individual career plans. All in all the three success factors for line managers are: careful selection, awareness training and mentoring skills.

(i) Create a learning environment encouraging self-development

The Learning Company (Pedler et al., 1988, 1989) was a concept that several companies were beginning to adopt. Encouraging both early self-development and learning from experience (Thorpe, 1988), these companies were found to be the most forward thinking.

(j) Individual career planning and development

Individual career planning and development is a concept that must be practised from day one in the graduate's developmental process. It can take on many forms and should gradually move from company to individually led. The issue of career planning has been addressed by the Engineering Council (1989) in the form of a "Career Manager" handbook, but this is only introduced at the Chartered Engineering level, far too late in the individual's development. The Institution of Electrical Engineers (1989) have also produced a "Professional Development Record" (PDR), which concentrates to a greater extent on technical as opposed to personal skills development.

(k) Co-counselling

As discussed in Section 8.4 this technique provides a useful aid to the individual's career development, as well as installing responsibility and commitment between individuals. This feeling of self-worth, together with a smoother career progression will play an important supporting role in enhancing retention rates.

(l) Continuing education and training

There are many different methods of developing graduate talent, ranging from on-the-job training to externally taught MBA programmes. A relatively new initiate, predicted

to rapidly expand in the future is the Integrated Graduate Development Scheme.

(m) Improve work related activities

This may occur in the form of job enlargement, but more effectively through job enrichment.

(n) Employee investment programmes

As stated in Section 9.3.1, the installation of structural variables such as investment schemes, pensions and profit sharing will further the individual's perceived commitment to the organisation, and thus deter high turnover rates.

(o) Employer supported child care

With the increased proportion of females in positions of responsibility, and new pressures on young families, there is a growing need for family support. Employer supported child care addresses this problem, and has already been introduced in several companies.

(p) Exit Interviews

Although some studies support the administration of exit interviews (Field, 1979; Smith & Karr, 1953), the surroundings under which an exit interviews is conducted must effect the reliability of information gathered

(Garretson & Teel, 1982). Even when accurate, quantifiable information was recorded by companies, little ongoing analysis of attitudinal trends was undertaken. An external body may provide the ideal solution to both problems. Creating a "neutral" environment in which a free exchange of "reasons for leaving" can be encouraged; and providing the company ongoing analysis and feedback on internal and multi-company turnover data, this body would be a highly useful asset.

(q) Attitude surveys

Recording current attitudes amongst graduates, at varying stages in their development, is a useful form of "preventative maintainable". The most common form of collecting data of this kind is through the use of attitude surveys (see Bevan, 1987 pp20-21) This "barometer" method not only acts as a turnover reduction agent, but can also be used to promote the value organisations place on their employees, a key motivational factor (Peters and Waterman, 1982).

(r) Pay

The extrinsic reward of pay effects different occupational or gender divisions in different ways (Arthur, 1981; Cooke, 1980). On the whole it is valued more highly by employees whose jobs offer relatively few opportunities for personal growth, independence, self-expression and other intrinsic

rewards (Bevan, 1987).

Such compensation could reduce the chances of turnover (ie. leaving an organisation to earn higher pay elsewhere). Nevertheless, as Bevan (1987) states:

"There will always be the 'offer that cannot be refused'. This will attract even the most satisfied employee if the figure is right."

This was particularly evident with more marketable graduates such as IT specialists.

This turnover reduction agent is merely the "icing on the cake". It is the intrinsic factors, in the graduate's case the "complete developmental package" provided by the employer that will successfully retain individuals.

9.8 Concerns and Comments

Having discussed a range of turnover reduction strategies, it should first be noted that high retention rates are not always healthy. Many authors (Abelson & Baysinger, 1984; Dalton, Krackhardt & Porter, 1981; Dalton & Todor, 1979, 1982; Mobley, 1982; Porter & Steers, 1973) have suggested that traditional methods of treating turnover have overstressed the negative consequences. Dalton and Todor (1979) for example argue the benefits of losing poor performers and stress the importance of distinguishing between functional turnover (ie. among low performers) and dysfunctional turnover (ie. among high performers). Taking

performance aside, employee turnover is considered a necessary process in the introduction of new ideas and innovations.

Secondly, is turnover a natural occurrence anyway ? There was indeed a clear evidence that graduates were planning to use their first job/employer as a stepping stone in their career (see Section 6.6), with 37% of respondents anticipating to stay with their first employer for 4 years or less. This natural process can be enforced by the "grass is greener" syndrome, where graduates perceive better employment prospects elsewhere. This phenomenon acts as a "negative behavioural commitment" (see section 9.3.2). In either instance, an unavoidable percentage of graduate turnover will be present. It is the magnitude of this "natural wastage" that is the key factor.

While authors (eg. Dalton and Todor, 1979) have stressed the benefits of losing poor performers, companies are also warned in their attempts to retain and develop high flyers. There are several lessons to be learnt from the mistakes of companies interviewed.

1. If high flyer schemes are developed (placing graduates on MBA's or IGDS's), companies must be able to cope with individuals' inflated expectations by providing them with enhanced career progression. If this progression cannot be offered when personnel return from these schemes, increased turnover will result, and major investments lost.

2. These high flyer schemes may also demotivate those individuals who are not selected, but feel are of the appropriate quality.

3. High flyers are said to spend so little time in each appointment that they never gain a clear understanding of the day-to-day running of the business.

4. High flyers cannot be selected on organisational entry. A 1-2 year "probation" period is required before reliable assessments can be made.

9.8.1 The effects of turnover

It should be noted that turnover can have a self-generating effect within particular groups of individuals. Such an effect can be inferred from Mowday et al's (1982) discussion of the prime effects of turnover on those who remain, and has been confirmed by Krackhardt and Porter (1986). Word soon spreads when a graduate leaves an organisation. This either exposes internal problems or highlights external opportunities, and can result in other "borderline" individuals questioning their own decision to remain with the employing organisation. The well known "snow ball effect" can soon be generated to the detriment of the employing organisation.

On a more positive note, higher retention rates can be self-generating to a point. In these instances, a higher

proportion of personnel time, normally devoted to administrative and recruitment tasks associated with replacing leavers, would be free to induct and develop new and existing staff.

9.9 Key issues

1. Increased time, money and resources are needed to be aware of, and improve graduate retention rates. Companies must match the development needs of the individual with their own strategic needs.

2. Graduate recruitment and retention must be tackled at at strategic level.

3. All messages must be clearly communicated to every level of personnel involved in the recruitment and development process.

4. There was little awareness amongst employers of the graduate turnover process and its cost implications. When costings were avaiable, a total sum of £45K after a two year period was a typical sum.

5. The majority of retention determinants lay within the control of the employing organisation.

6. The main determinants of graduate turnover were poor matching of individual and organisational needs; talent underutilisation and lack of early responsibility; continuity of personnel; line management interactions; lack of involvement; lack of structured training and individual career development; lack of self development; multiple commitments; expectations mismatches, and finally the external labour market.

7. Greater emphasis must be paid towards graduates' changing expectations and needs in their early career development.

8. Several cures can be used by companies to ease graduate turnover rates. These consist pre entry, and in house strategies, and involve improving the recruitment process; realistic job and recruitment previews; sponsorship; use of biographical data; selection of first jobbers; the concept of after marketing; line management development; creation of a learning environment encouraging self development; individual career planning; co-counselling; investment and support programmes; exit interviews; attitude surveys, and pay.

9, Academic studies often provide useful aids to the turnover process but were rarely used by employers.

CHAPTER TEN

GROUP DISCUSSION FORUM

10.1 Introduction

In order to gain a collective statement of the problems, and associated solutions to engineering graduate recruitment, retention and development, employers and careers advisers were invited to a discussion forum covering this area of interest. This chapter summarises the overall findings, which are discussed in greater detail in Appendix IV.

10.2 Planning and structure of the forum

Individuals, concerned with engineering graduate recruitment and development, were invited to the discussion forum via the Association of Graduate Careers Advisory Service and the Association of Graduate Recruiters. A forum of 56 participants resulted, with individuals representing employers, the careers service and academia in attendance. Having presented the latest findings of the research to the forum, the 56 participants were divided into seven groups discussing the following topics:

i. Sponsorship (1 Group)
ii. Attraction (2 Groups)
iii. H.E. / Careers / Employer Links (2 Groups)
iv. Retention - transition to employment (2 Groups)
- early development
- longer term development

Each group consisted of at least one careers advisor and academic/non industrialist.

Drawing upon past and current research, each group was presented with a set of research questions (see Appendix IV). Having discussed these points for a period of 45 minutes, a representative reported each group's findings to the forum.

10.3 Results

Several key points emerged from the group discussions. These are summarised in Tables 10.1, 10.2, 10.3 and 10.4 as follows :

Table 10.1 Summary: Engineering graduate sponsorship

SPONSORSHIP
Improve the quality of all personnel, projects and individual participants involved in the sponsorship programme. The Ambassador principle. Regular feedback / Debriefing sessions. Bad news travels fast syndrome. Critical sponsorship duration.

Table 10.2 Summary: The attraction of engineering graduates

ATTRACTION
The initial barrier - The Image of Engineering: A problem that must be tackled collectively by employers. The graduate product - Aggressive marketing. Face-to-face contact - Selecting the Right Person. Increase the provision of site visits.

Table 10.3 Summary: Higher education, careers and employer links

H.E./CAREERS/EMPLOYER LINKS
Underutilisation of the careers service. Closer links with academic departments. Increased industrial input into curriculum development. Encouragement of student input.

Table 10.4 Summary: Engineering graduate retention

RETENTION
Companies must : Avoid unrealistic expectations - Utilise recent graduates. - Realistic Job Previews. Manage the culture shock - Coping with the negative attitudes of the workforce. Provide regular feedback. Encourage self-development. Carefully select line managers and mentors. Provide clear communication channels for new entrants. Invest in the individual. Cross-functional career development. Inform, and encourage the graduates of all career development opportunities available.

10.4 Key issues

Many of the above points reinforced the findings from previous chapters, although two main issues arose. Firstly, companies must act collectively to combat the initial image barrier associated with attracting students into engineering. Secondly, it was evident that the challenge of the 1990's would not solely be one of attraction and recruitment, but more importantly one of retention and development.

CHAPTER ELEVEN

CAREER MANAGEMENT

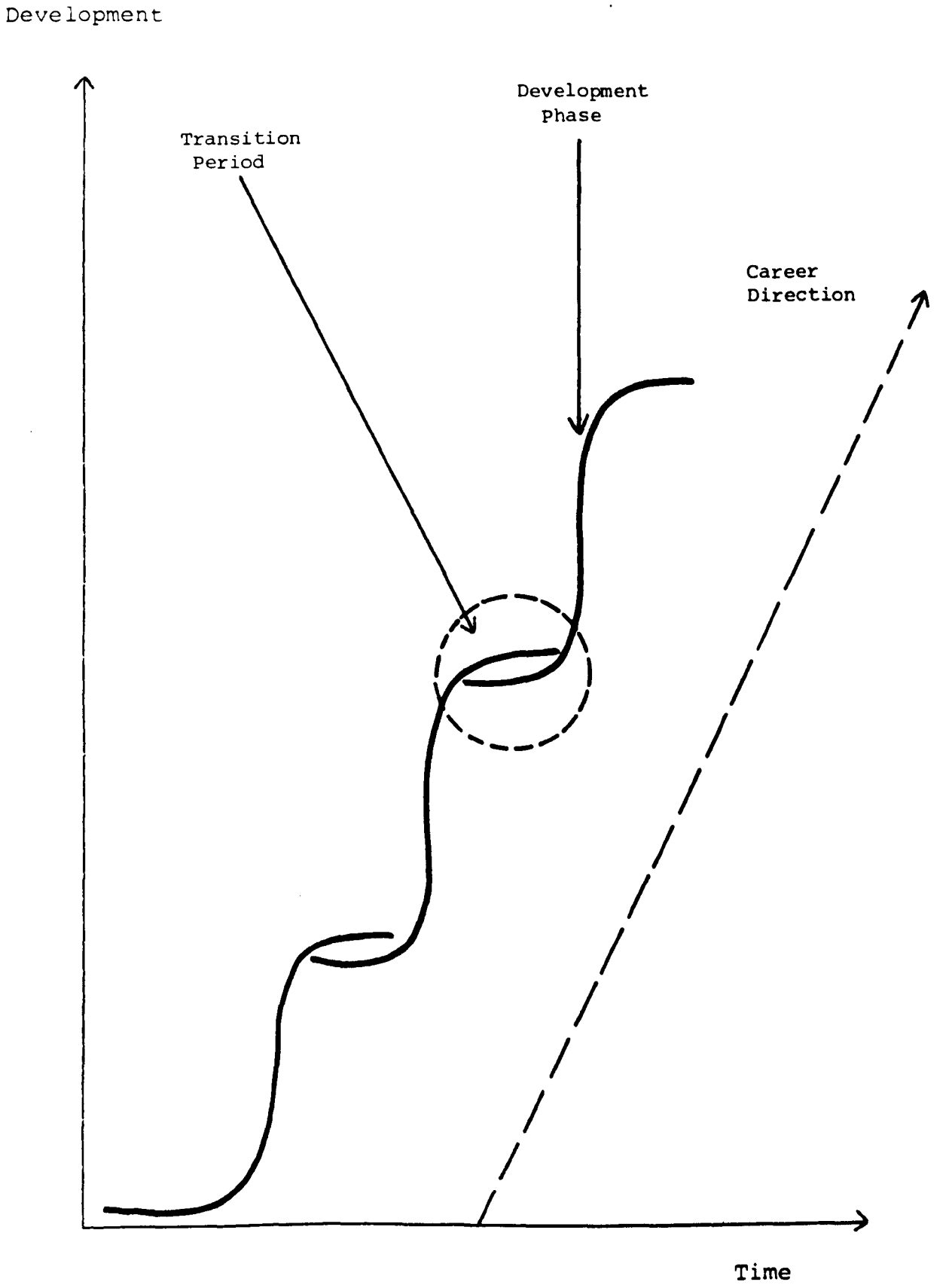
11.1 Introduction

The field of career development has been well researched in academic settings (Margerison, 1990; Sofer, 1970; Schein, 1971b, 1968; Super, 1957). The resulting principles, however, are rarely practiced by individuals and organisations. In order to raise awareness amongst both parties, the concept of career management has been developed. The following chapter presents this concept in more detail; discusses its practical implications within each stage of the individual's career development; and looks more closely at career development methods and their content.

11.2 Development of the career management model

A general finding from the research was that the individual's developmental process can be made more efficient and effective by establishing, as early as possible, the concept of career management. As shown in Figure 11.1, career management consists of a series of "developmental phases" in the form of "S" curves, linked by a number of "transition periods". These will follow, or indeed change, "career direction". As the individual develops, the responsibility for career management will also

Figure 11.1 The career management model



change, and this will in turn affect the level and content of careers counselling provided. Each of these areas will be discussed in more detail below.

11.2.1 The developmental phase

The graduate's individual career development can be closely related to the process of new product innovation. As such their development can be seen as a series of "S" curves. The nature of these curves is represented in Figure 11.2.

Within the initial stages of a new product's development, large sums of time, money and resources are invested in its research and design. This early stage in the process (A) provides a sound base on which to build, but does not add value to the product's development.

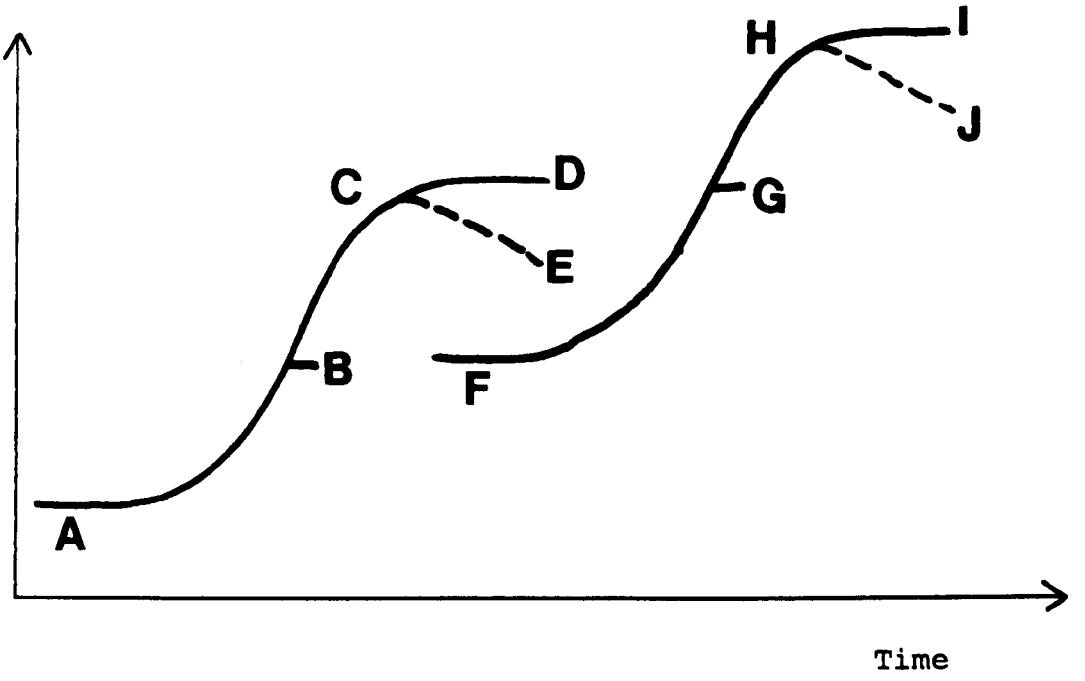
A similar starting point can be seen within the graduate's early job development (A'). Here, graduates spend time building their learning foundations, familiarising themselves with the new environment, and developing a sense of "fit" within the organisation, department or new surroundings. This period in time (for each "S" curve) has little direct effect on the individual's rate of development but is a key building block in their future career success.

Continuing along the new product curve; increased time, money and resources add to its rapid increase in value. A maximum rate of development is reached at a certain "point of inflection" (B).

Figure 11.2 Career management as a developmental process

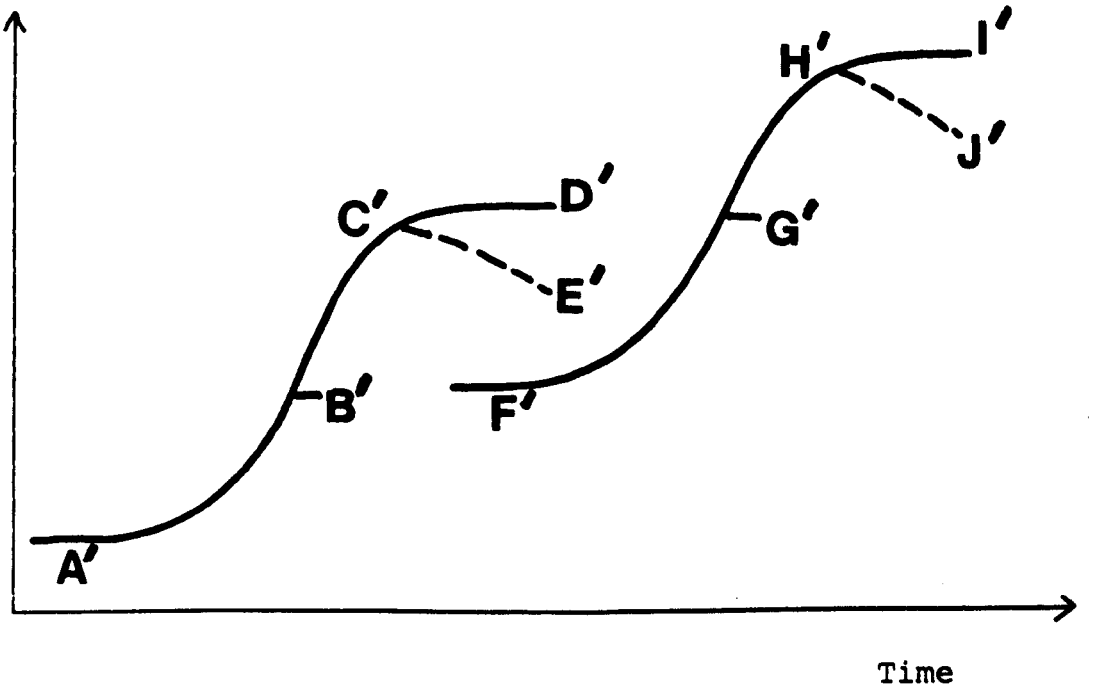
New Product Innovation

Product Development (Added Value)



Career Management

Individual Development



A corresponding phenomenon can occur within the graduate's "S" Curve. The progression can be either:

i. A natural development of knowledge and skills, evolving from general work familiarisation and increased confidence in the job.

or

ii. An injection of "life", in the form of work related incidents, such as immediate production problems or short-term personnel difficulties, that must be solved at short notice.

In either instance (or more likely a combination of the two) a rapid development of job knowledge and related performance results. This growth progresses through a point of learning inflection (B') at which the rate of development is at its greatest.

From the product's point of inflection (B), rate of development begins to decrease with time. This process continues until the development reaches an "optimum point" (C). From this point onwards, one of two outcomes may arise:

i. A **"static state"** (D), where the product continues to remain marketable, even though it is not developed any further. An ideal example of this constant state can be found with the modern record, that has not changed in design during the past twenty years but still maintains its popularity.

or,

ii. **Rapid failure** (E), where the product reaches the end of its life cycle. The old safety razor is currently undergoing this stage in its developmental process.

At this point in time (whether i. or ii. are evident), the positive nature of the development process can be partially maintained through "product stretch". This can be achieved by either adding additional extras to the original product, as seen with the new extra fluoride in toothpaste; or by marketing the product in a different way (ie. more aggressively or extensively), for example the new powerful colouring on Radion washing powder products and advertisements.

However, product stretch is not always a long term solution to the problem. A more strategic approach is thus called for through the development of new products. For success in this process, these new innovations must be initiated prior to the optimum point, preferably at the point of inflection (B). These new products may require totally new processes, materials and markets but will often follow a similar developmental process (F, G, H, I, J). The development of the modern compact disc player (as opposed to the more traditional record player) is a recent example of such a new product innovation.

An optimum point is also reached by individuals at varying periods within their career progression. At this point, the job ceases to provide the individual with any variety, motivation and challenge. At best the individual will reach a static state in his or her development, ie. a fifty year old line manager who is content to remain in his current position for the rest of his career. If, however, new challenges are not offered, dissatisfaction can in some cases lead to the individual's intention to quit the organisation, which in turn results in voluntary turnover. As with new product development, these challenges must be planned and developed as early as the point of inflection (B'). These challenges can be in many forms, but their developmental processes all follow similar "S" shapes (F', G', H', I', J').

To recap, the nature of each development phase changes with time. Initially, it is concerned with understanding and establishment within the job. Later, it changes to expansion of the job role. Finally, it changes to preparation for the next level of responsibility, when the process starts all over again.

Having primarily focused on the development phase of the career management model, several other elements must be addressed. These include the transition period; career direction; and the responsibility for career management.

11.2.2 The transition period

Individuals will undergo a number of transitions within their career development. These may be educational (primary to secondary school); naturally progressive (school or higher education to employment); vertically progressive (promotion); horizontal or functional (move from one department to another); geographical (from one region to another) or in the form of a career change (from one organisation to another). In each case the transition will form a critical incident in the individual's development, and may be seen as an opportunity or a threat. Within career management, emphasis must be placed on planning and managing these transitions.

The tradition of "serving life" with a single employer, and making steady progression up the organisational ladder is no longer accepted by the younger generation of managers (see section 6.6). As stated by Margerison and Smith (1988):

"The essence of modern management is to find a role where you can best use your talents and develop so that you can take on more challenging work. It is no use waiting for dead man's shoes."

There is nothing worse than job dissatisfaction, underutilisation or a general feeling of lack of contribution. If one does not fit into a job or organisation then he should "stand not upon the order of (his) going"

(Macbeth Act 3, Sc 4). It is important to note that these shortcomings may not have to be resolved by departure from the employing body, but could be cured by internal movement within the organisation (functional transition). However, if these moves are not internally available, or the the immediate manager is unwilling to discuss them, then it is time to move elsewhere.

Having made the decision to quit, alternative sources of employment may not necessarily be available. Nevertheless preparations can start to be made.

11.2.3 Career direction

Within the developmental process, individuals should develop a sense of career direction. As Margerison states: it is important to recognise the positive choices available. These, as shown in Figure 11.3, reflect different skills and abilities.

Figure 11.3 The Margerison Matrix

Willingness to manage others		
High	Supervisors	Executives
Low	Specialists	Advisors

The roles are defined as:

Specialist - An individual who concentrates in a narrow area and has no managerial responsibility for others. A bench scientist or a researcher are good examples of this role.

Adviser - Expertise on a wide scale, across many departments is achieved. There are no major management responsibilities for others, but this individual will be expected to guide others in their decisions based on their acquired knowledge.

Supervisor - This role involves managing others but only in a particular area where the individual has experience.

Executive - Management responsibilities across a narrow or wide spectrum. It is a complex but challenging environment in which there are many ambiguities.

The key point to be gained from this basic framework is the need for individuals to match their interests and skills with the direction of their careers.

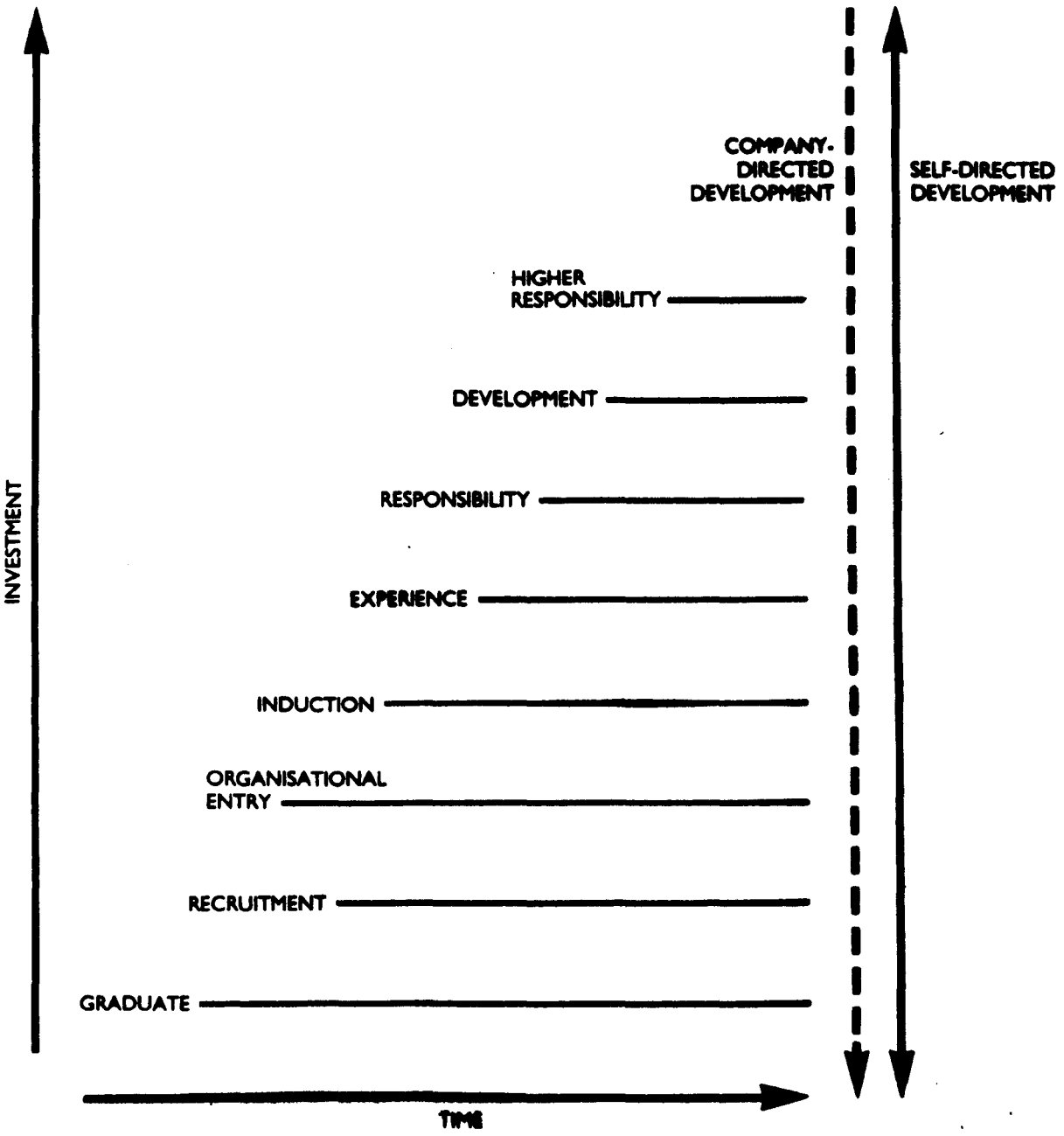
11.2.4 The responsibility for career management

The nature of career management changes from a broad based, global one, to a quite specific, individualised one, as the process develops. This runs in parallel with, but in opposing directions to the engineer's normal move from specialist to generalist as he moves up the organisational ladder. As this process proceeds, the responsibility for career management should gradually change from organisationally to self directed. This progression is presented in Figure 11.4.

Although senior engineers and personnel managers must carry a great deal of responsibility for the development of young engineers, the individual bears the ultimate responsibility. Jewkes et al. (1986) argue that " Engineering Managers should be held responsible for the career development of their subordinates...but...Engineers should engage in serious and well designed career development and planning activities....each engineer should be encouraged to maintain responsibility for managing their career".

Johnston (1989) views this development as "the initial step is to qualify" to "preparation for the next and succeeding tasks". He also defines a wide range of development areas "in an attempt to help engineers and scientists to move rapidly along the learning curve early in their careers so that they are ready for wider responsibilities".

Figure 11.4 The Hawkins Hierarchy of Holding



Many successful executives have mastered their own fate.

"Men at some time are masters of their fates: The fault dear Brutus is not in our stars, But in ourselves." (Julius Caesar Act 1, Sc 2)

Many managers, like new graduates, fall into the trap of relying on the organisation to provide all the opportunities for their career progression and personal development. Nevertheless, the new learning culture (Pedler et al., 1988, 1989) developing within leading organisations, emphasises the need for individuals to take responsibility for the planning of their next career step, or appropriate development course to pursue. As Margerison (1989) states:

"The stars may play a role in this process, but good luck represents the coincidence of organisational opportunity with individual readiness. It is the individual's task to be ready."

A high achieving manager should share at least 60:40 of the responsibility for personal development with the employer. Those who are most likely to succeed in their careers will identify positions that interest them, and form a personal strategy to reach their targets. These individuals will acquire the skills and knowledge required for their development through appropriate learning material and personal contacts such as mentors. They will create both internal and external networks, maintaining an overview of in-house career development openings as well as external market opportunities.

11.3 Careers support throughout the stages of career growth

Individuals can be said to develop through various stages of career growth. Each stage will incorporate a series of "S" curves, which will in turn have an effect of the content and timing of careers advice provided. Super's (1957) framework, as shown in Table 11.5, provides a useful point of reference.

Figure 11.5 The stages of career growth

Age Range	Stage
0 - 14	**Growth** - identification with key figures in family and school: development of interests.
15 - 24	**Exploration** - self examination and role experimentation.
25 - 44	**Establishment** - major effort to establish permanence.
45 - 64	**Maintenance** - holding on to a chosen vocation.
65+	**Decline** - new roles developed in a decelerating environment.

While the early development of school children is an important topic in its own right, it is not of prime importance in management and career development. Several modifications to Super's model are therefore necessary. Developing the ideas of Chadwick and Hogg (nd.), Figure 11.6 presents the revised stages of career growth. While the following model defines age bands, flexibility must be allowed for the differing rates of individuals' development.

Table 11.5 The revised stages of career growth

Stage 1	**Exploration (15 - 25 years of age)** Numerous career options; more frequent changes of employer; attainment of professional qualifications; lower domestic constraints.
Stage 2	**Establishment (25 - 45 years of age)** Fewer career options; development of specialist or general knowledge; time to decide on definite career direction; maximum domestic constraints.
Stage 3	**Maintenance & Regeneration (45 - 65 years of age)** Less opportunity for change; role adjustment and development; regeneration; greater domestic freedom.
Stage 4.	**Contraction (55 - 70 years of age)** Change in objectives; preparation for new role in life or regeneration.

11.3.1 Exploration

The graduate exploration stage can be divided into two periods: pre and post employment. The pre-employment period offers the individual a wide range of external career choices. Here, support systems offered by the Association of Graduate Careers Advisory Service are structured, comprehensive and readily available. On entry into a large expanding organisation, during the post employment period, while this choice becomes more internally focused, its variety remains wide. Indeed many companies are able to provide a wide range of job, functional, hierarchical and geographical career moves for their employees. However, there are rarely any structured, accessible and independent careers support systems available.

There is thus a growing need for sound, comprehensive careers advice and counselling throughout an individual's early in-company development. It is unlikely that any line manager would have the skills to offer this service. As a result organisations should endeavour to form Independent (internal or external) Careers Advice Centres. It is also important that employers are both aware of, and tackle the mismatches inherent within the initial transition process (Chapter 8). The proposed advice centre would be an ideal media through which to prepare and guide individuals through this early stage in their career development.

11.3.2 Establishment

The most frequently acknowledged "critical point" in an individual's development is his transition from the Exploration to Establishment Stage (Chadwick and Hogg, nd.). It is at this stage that careers counselling becomes most crucial, but should be less frequent.

The above transition often involves a move from specialist to generalist activity. The individual's development curve may undergo a new injection of life marked by a major breakthrough. This will often create new demands on the individual's skills and abilities, at the expense of previously acquired technical expertise.

More often than not, however, this stage is marked by some form of crisis, whether large or small. For future success,

the individual must come to terms with the current situation, his past and present performance, his abilities and his non work related (domestic) circumstances. He must then attempt to form, or reinforce, realistic career and life goals.

In either instance, expert advice is needed on one, if not all of the following areas:

i. The opportunity to reflect on, and refine career goals.

ii. Review past development, skills and interests and link into individual career goals.

iii. Assessment of the remaining skills required to satisfy short term work requirements (eg. the move into management), and meet long term career goals.

An event incorporating assessment, feedback, careers advice and action is thus called for. The assessment centre approach (Herriot, 1988) together with expert career exercises and discussions provide the means to this end; and the updating of individual career plans, incorporating education/training strategies, forms the output.

11.3.3 Maintenance and regeneration

At this stage managers will have reached varying levels in their career development. Some individuals will still be responding to new challenges and responsibilities, others will have reached a "static state". Nevertheless there is a common thread between both sets of individuals; the need to come to terms with new employees. Here their role will change to that of a mentor. The career counselling input at this stage decreases, as individuals gain their own coaching and mentoring skills with which to aid younger entrants.

Regeneration is a key process in this stage of career development, and is apparent in two forms: technical and personal. Technical regeneration results from the need to discard outdated disciplines and change to new ones. This is often a radical change for individuals, accompanied by the "threat" of redundant skills meaning redundant jobs. The Integrated Graduate Development Scheme (IGDS) is increasingly used as a training media to meet this end.

On a more positive note, personal regeneration can lead to the expansion of individual responsibilities such as representing the company externally, chairing committees, trips abroad and even work related secondments. Each technique within personal regeneration attempts to enrich what maybe a dull and boring job.

11.3.4 Contraction

There are two areas that must be addressed during this stage. Firstly, individuals must prepare themselves for their final career transition: that of retirement. This can be just as difficult to manage as previous moves, and due care and attention must be placed on its related problems. Secondly, these individuals have much to offer in terms of counselling and past technical skills, established networks, and valuable experience. As such they still have a contribution to make to the organisation's successful development.

11.4 Career management methods and content

Having discussed the concept of career management and its implications within careers counselling, the following sections will discuss various methods (and their content) of career management available. Finally the chapter focuses on the specific transition of engineering undergraduate to engineering manager, and records the demands made on individuals in their future progression.

11.5.1 On the job development methods

It is evident from the pre work survey (see section 6.2) that graduate engineers place great emphasis on career planning and progression in their choice of employer. This includes the method, and content of planning careers, which

most companies use to some degree. Engineers are particularly well placed in this respect, through their involvement in project management. Thamhain (1984) argues that this gives the opportunity for "incremental assignments for a fixed time period. This gives both management and the individual time to evaluate...job performance as well as likes and dislikes for the new assignment". Projects provide an ideal means for individuals to gain insight into their future working environment. Thornberry (1987) reinforces this view, and goes on to describe the system of "Job Previewing..by shadowing, 'apprenticing' or simulation".

Target and Eckblad (1988) have described the idea of "Career Investigation", as a process that "sets out to realign the career and succession expectations of the individual and the company". The critical importance of initial expectation matching has already been defined in earlier chapters, but it must be remembered that this process continues throughout the individual's development, and is particularly evident within each transitional stage.

11.5.2 Development content

In terms of the general content of the individual's career management programme, Jewkes et al. (1986), Johnston (1989) and Sarchet (1987) all give details which can be grouped as Technical, Business and Personal Development. Wexley and Baldwin (1986) review recent literature using a three part framework of Education, Training and experience (on the

job). A "three by three" matrix results, as shown in Figure 11.7. This forms a convenient base from which to start defining development programmes, and is being increasingly used by organisations

Figure 11.7 The "three by three" learning matrix (Hawkins and Barclay)

	Education	Training	Experience
Technical			
Business			
Personal			

It is this mult-disciplinary education, training and experience that is a key factor in the individual's successful career development. This was highlighted in the Institute of Cost and Management Accountants' (ICMA) (1986) input to the Finniston Report concluding that "Career development, job satisfaction, status and salary of an engineer all depend on the ability of the individual to perform within an inter-disciplinary management environment".

The business orientation is highly important to the Engineering Department. Hanss (1984) and Geistauts and Eschenbach (1987) demonstrated that it is needed at all

levels up to corporate strategy activities. It can be reasonably postulated that the career progression of any engineer will be influenced by the ability to present the engineering considerations within a business framework.

It is relatively easy to assess the initial level of an engineer's technical skills and knowledge by using formal qualifications. The need for the maintenance of technical capability and avoidance of technical obsolescence is well described by Jewkes et al. (1986). Many methods are employed to facilitate the maintenance of engineering expertise, such as short courses, secondments, projects etc..

One recent innovation encapsulating the career management concept is attracting much interest. This is essentially internally based, and is termed the "Learning Company". Pedler et al. (1988, 1989) describe this philosophy as "an organisation which facilitates the learning of all of its members and continuously transforms itself". This forms an essential part of career planning.

11.4.3 The transition from undergraduate to engineering management

Career management consists of a series of "development phases". These are linked by "transition periods". A typical career development process, from undergraduate through to the first engineering management appointment, would be as follows :

* **Development Phase 1.** : The undergraduate degree course.

* **Transition Period 1.** : The move into full time employment.

* **Development Phase 2.** : Establishment in the organisation.

* **Transition Period 2.** : The first managerial appointment.

Once in employment, the potential career development routes open to an engineer are :

* transition to the managerial aspects of the discipline;

* remaining as a dedicated "bench" engineer;

* moving totally away from the primary discipline.

Sarchet's (1987) review of 20 years of BS. & MS. Engineering Management programmes at Missouri-Rolla, states that they were developed on the premise "that most engineers would reach management positions during their career". This transition to a management position is especially difficult for an engineer. Past work has defined and quantified the degree of these problems. Amongst authors who have investigated this transition, Moser (1987) comments "The first time (engineering) manager must recognise that his career is changing". In other words generalist managerial skills may begin to replace specialist knowledge.

Once established within the company, a graduates' most challenging experience is probably that of their first promotion. In the initial company survey, employers were asked what importance they placed on certain qualities in promoting an employee to a technical management level. The following priorities were given, as shown in Table 11.8, below :

Table 11.8 Qualities considered for managerial promotion

Quality	% Rating
People management	95
Communication skills	90
Track record	89
Interpersonal skills	87
Technical awareness	85
Project leadership	84
Personality	83
Profit/efficiency	80
Innovative skills	77
Training undergone	68

It is evident that while a sound technical base is required, the overriding factors in management promotion are the development of personal and inter-personal skills.

11.4.4 The managerial demands

When embarking on an engineering career, a process that starts as early as 12 or 13 years old for most, management

is probably a vague term that is ill defined and even more poorly understood. The basic fact is, however, that like it or not, the management function is one of the main, and in some cases the only, route for an engineer to progress in terms of status and the more tangible rewards of money.

The concept of the "dual ladder" (financial reward for engineering excellence) is one that is well known but rarely practiced. Barclay (1986a, 1986b) surveyed technical managers within several hundred organisations, and found little evidence of its use. Even in large multinational companies, very few Engineers benefited from this concept. Barclay (1986a, 1986b) went on to investigate the activities and problems technical mangers, and found that by far the worse problem that was recorded was the management of people. The results are shown below in the Table 11.9 below.

Table 11.9 Main activities and problems technical managers

Item	% Response
*** Activities :**	
People Management	93
Projects	84
Interpersonal	83
Innovation	75
*** Problems :**	
People management	34
Projects	10
Industrial relations	10

It is clearly evident that non engineering activities play a large part in the role of the Engineering Manager, as would be expected. It is also clear that these non engineering activities are the source of considerable problems.

11.6 Key issues

Career management encapsulates a wide range of activities that must be addressed in partnership by the individual and the organisation. Awareness of, and planning for the series of developmental "S" curves and their related transitions are key factors in the individual's successful career development. The three by three matrix (see Section 11.5.2) provides a useful framework on which to initiate this developmental process.

While several bodies have attempted to develop career management tools for engineers (Engineering Council (1989); Institute of Electrical Engineers (1989)), the ongoing provision of independent careers guidance is severely lacking.

CHAPTER TWELVE

CONCLUSIONS AND FURTHER RESEARCH

12.1 Conclusions

Rising demand for, and almost static supply of graduates has led to a shift from a buyer's (company) to a seller's (graduate) market. Employers are now adjusting their methods of attracting and retaining graduate talent.

Focusing on the engineering graduate population, the research initially concentrated on the development phase associated with the higher educational process. It concluded that whilst the key recruitment factors (as perceived by employers) were non technical, essentially personal based qualities, these were not fully developed within the undergraduate degree programme. A need for the establishment of career management (Section 5.5.5) was also highlighted.

Recording graduates' expectations and needs prior to entering employment, career development and challenging work were seen to be key issues in organisational choice. These prime decision factors reflected Maslow's need for self-actualisation (Section 6.2.1), and the full set of choice factors closely matched Herzburg's "motivators" (Section 6.2.1).

Focusing on the graduate's transition into employment (Chapters 7 and 8), two key underlying mismatches occurred: mismatches in graduate expectations, and differences in educational and employment environments.

Graduate expectations, prior to entering employment, were for early responsibility, challenging work, opportunities for career development, and use of their abilities. Organisational reality, however, comprised lack of early responsibility, routine work, lack of career development, and underutilisation of skills. These mismatches were primarily due to the lack of communication of facts concerning organisational realities, and poor "utilisation" of graduate on entry.

Inherent Systems, Social and Standards differences (The Three "S" Model, discussed in Sections 8.4.3, 8.5.2, and 8.6.2) were evident within the graduate's experiences in higher education and employment. These negative aspects of the transition were perceived to contribute to future voluntary turnover.

Graduates no longer intend to remain loyal to their first employing organisation (Section 7.6). Subsequently, graduate turnover is predicted to be a major problem in the 1990's. The Six "C" Model of Graduate Turnover proved to be a useful analytical tool to obtain awareness amongst industrialists, and enable exploration of the turnover problem. Factors influencing graduate turnover rates (Section 9.6) were found to be largely within the control of the organisation, and

combined graduate/employer retention strategies were formed (Section 9.7).

In general, employers did not appear to be aware of how to effectively use past research evidence to improve their attraction and recruitment techniques. This research is a pioneer in the integration of recruitment, transitional, turnover and development studies, and their linkage with practical settings. The three "S" (Section 8.3) and six "C" (Section 9.2.2) models, together with an "active" research programme proved effective tools in achieving this end.

The graduate development process, incorporating attraction, recruitment and retention, is a complex process for individuals and organisations to manage. Both the career product and career management philosophies (Chapters 6 and 11) form practical means through which employers and employees can enhance this process, and thus improve attraction and retention rates.

A graduate's career within an organisation can be seen and treated as a product, although the human aspect remains paramount. Organisations must therefore look at the graduate's career in its totality, and market it as an entity.

The process that develops this product is career management, which is analogous to new product development (Section 11.2), consisting of a series of developmental phases, transitional periods, and directional aspects which may

change over time. Responsibility for career management also changes over time, initially driven by the organisation and ultimately led by the individual. Nevertheless, the career management concept needs to be established as early as possible in the individual's career. The 3 X 3 matrix of education, training and experience, and technical, business and personal development (Section 11.5.2) forms a sound starting point for the development of the career management structure.

Overall, the three "S" and six "C" models, together with the career management and career product philosophies, formed effective tools with which to analyse and enhance the complex process of graduate recruitment and retention.

12.2 Research review

In retrospect, for future researchers, it is worth noting that :

i. There are a number of alternative research methodologies that may be employed in this field.

ii. There are a number of pitfalls related to the general area of postgraduate study which must be addressed early in the research process.

12.2.1 Alternative research methodologies

While there are numerous techniques available for the collection and analysis of quantitative and qualitative data (eg. focus groups, psychometric and personality testing, individual observation etc.), future researchers in this area may consider two alternative approaches. These are Diary studies and Reportory grids respectively.

(a) Diary studies

Diary studies form a useful alternative strategy in research design. This method of data collection enables the researcher to record information at points closest to which incidents occur. They also allow sets of different perceptions on the same situation to be gained, and provide a platform for further indepth questionning of respondents.

Nevertheless, for success in this technique :

i. Respondents must be motivated to maintain an up-to-date and honest record of their development. Ongoing encouragement from the researcher, or collaborating body, is therefore necessary.

ii. Structure and focus, in the form of listings, "bullet points", questions etc. must be provided to direct the respondent.

iii. Respondents must be able to express themselves clearly in writing.

iv. Researchers must be aware that respondents' views may be biased by other factors.

v. Confidentiality must be stressed, and maintained at all times.

vi. Appropriate methods of analysing the response data must be readily available.

(b) Repertory grids

Based on the personal construct theory, this technique can be effectively used to uncover individuals' underlying perceptions, and constraints behind their decisions and actions.

The repertory grid forms a framework for recording individuals' perceptions, and provides a useful tool for focusing thought and communicating facts. It is particularly appropriate for individuals who cannot suitably express themselves verbally. It also views behaviour and decisions from a different perspective, thus enabling triangulation of research. The grid is used to aid both the researcher and the respondent by teasing out underlying thoughts, and in some cases enhancingcreative thinking.

The repertory grid consists of :

Elements - which form the respondent's objects of thought such as individuals, situations, objects or abstract ideas;

Constructs - which form the elements' descriptive qualities, and

Linking mechanisms - which connect data and trends recorded

A starting point for further reading in this area is provided by Easterby-Smith (1980).

12.2.2 Problems associated with postgraduate study

An pilot questionnaire survey was conducted by the author on a sample of 30 Liverpool University Postgraduate Students in February 1990. Responses clearly illustrated the growing concern among postgraduates for swift changes to be made to the general management of the PhD process. The following results summarise current postgraduate attitudes and needs.

Question : What are the key problems that you have encountered during your postgraduate degree ?

Response : (Problem Areas : Overall level of priority)

1. Motivation
2. Change of environment / structure
3. Lack of research training
4. Lack of direction
5. Supervisor
6. Isolation
7. Lack of social interaction
8. Adapting to changes in working and thinking styles
9. Effective utilisation of time and resources
10. Perception of low status within department / university

The current situation in Liverpool University (similar to other educational institutions) is :

i. fewer than 20% of postgraduate students submit their research within three years;

ii. there is no training support available for postgraduates;

iii. a higher proportion of postgraduates than undergraduates seek student counselling.

Drawing upon results from the above survey, plus findings from studies of Open University and London Business School postgraduates, it is proposed that a Postgraduate Induction Programme (PIP) is provided for all new research students. This programme would induct, support, develop and motivate postgraduate students within the early stages of their research programme. The following guidelines for success in the PhD process should be included :

- forming realistic expectations
- managing the transition into postgraduate study;
- establish research framework ; aims and objectives
  methodologies
  time plan
- highlight the pitfalls of postgraduate research
- self-development, motivation, self-help groups
- networking, cross-fertilisation and mentoring
- managing the supervisor
- effective utilisation of resources and support systems:
  - internal and external courses
  - bibliography of supporting literature
  - computing
- time management
- report writing
- formulation of Personal Action Plan

Nevertheless, there are many points that must be considered before an individual embarks on postgraduate research study. Phillips and Pugh (1988) provide useful guidance in this area.

12.3 Further research

It is proposed that future research is undertaken to investigate the career progression of engineering graduates (engineers) in their first six years after graduation. This would extend and enhance the current research programme, and build on past work into the early careers of engineers (IVL, 1990; Connor, 1988; Brennan & McGeever, 1988; Smith, 1987; and Mabey, 1983).

The initial six years has been chosen since it is a period of high turnover, attributed to the initial expectations mismatch; the transition to line responsibility; and the achievement of chartered status. A key element would focus on how career progression, utilisation and retention varies amongst engineers and organisations. The work should be a collaborative programme between industry and higher education, addressing the following issues:

1. How do companies effectively and efficiently utilise (and retain) engineers in their early career?
2. How do companies measure the contribution of their engineers?

3. How do companies specify their future engineering needs and develop their engineers to meet this specification?
4. How do engineers view the process in 3., above?
5. Do different mixes of work experience and degree course produce different career progressions and retention rates?
6. How can the whole development process be improved to meet both the individual's and the company's needs?

The end point of this programme would be to provide methodologies that: allow companies to improve their utilisation of engineers;
match the company's and engineer's needs; improve engineer's retention rates; and improve the contribution that engineers make to company (and the UK's.) wealth creation.
To achieve this, the following objectives would be required:

1. Define the way in which companies specify their future engineering requirements.
2. Definition of the "mechanisms" companies use to translate organisational objectives into engineering "specifications" in the short and long term.
3. Evaluate, from both the company's and the engineer's viewpoint, the currently used career progression strategies, methods and their content.
4. Evaluate current, and develop new, career management methods.
5. Analyse the different career progressions for our four types of engineers.

The methodologies should include detailed case studies (companies and individuals), questionnaire surveys, structured interviews, cohort studies and company statistics. As well as the more traditional outputs, career management "work books" and career workshops, for companies and individuals, should be developed as an aid to the whole process of career planning and progression.

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APPENDIX I

GRAPHICAL DATA AND TRENDS

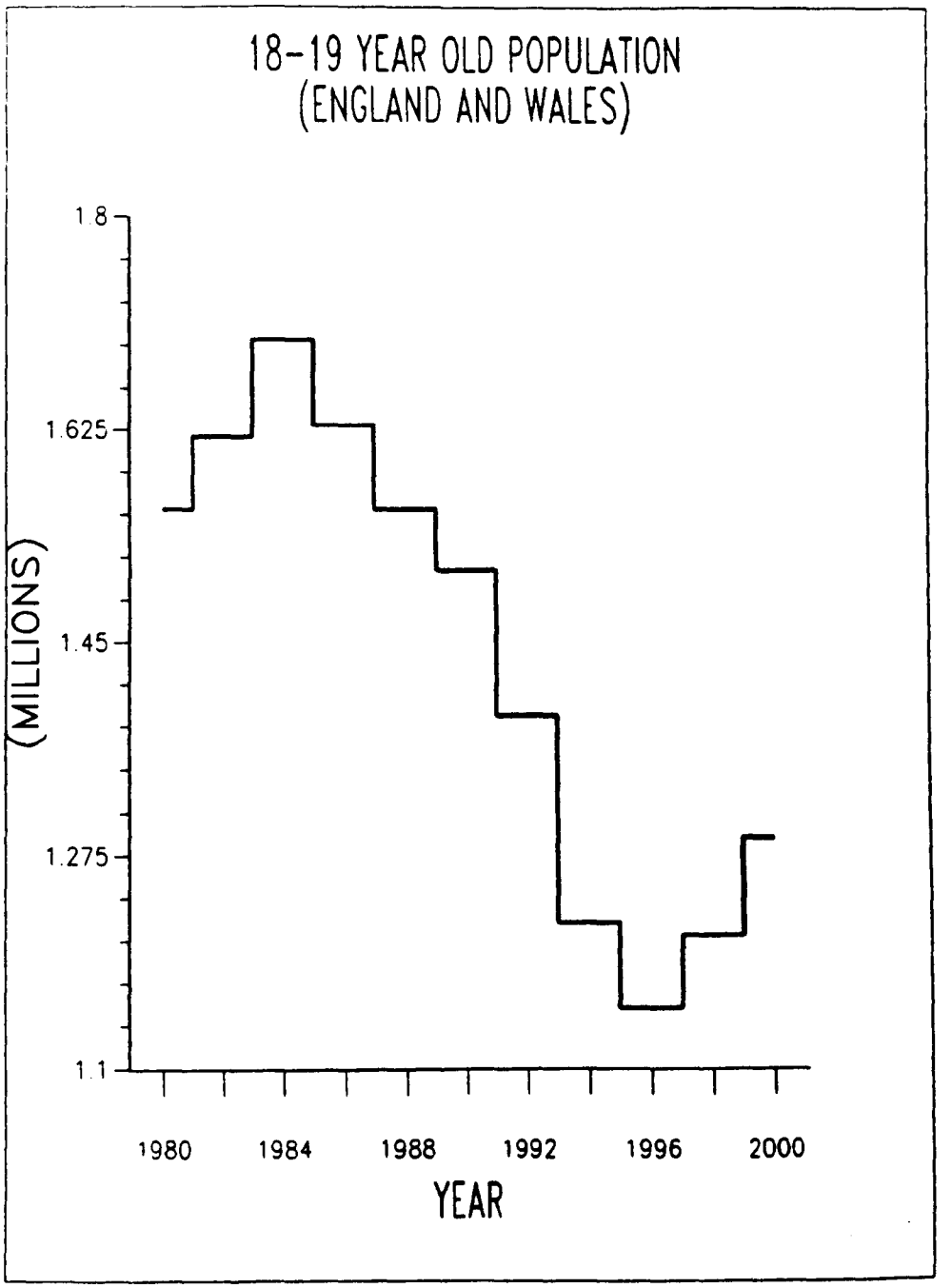

Figure 8

Figure 1: 18 - 19 Year Old Population 1980 - 2000

(Source: Manpower 2000)

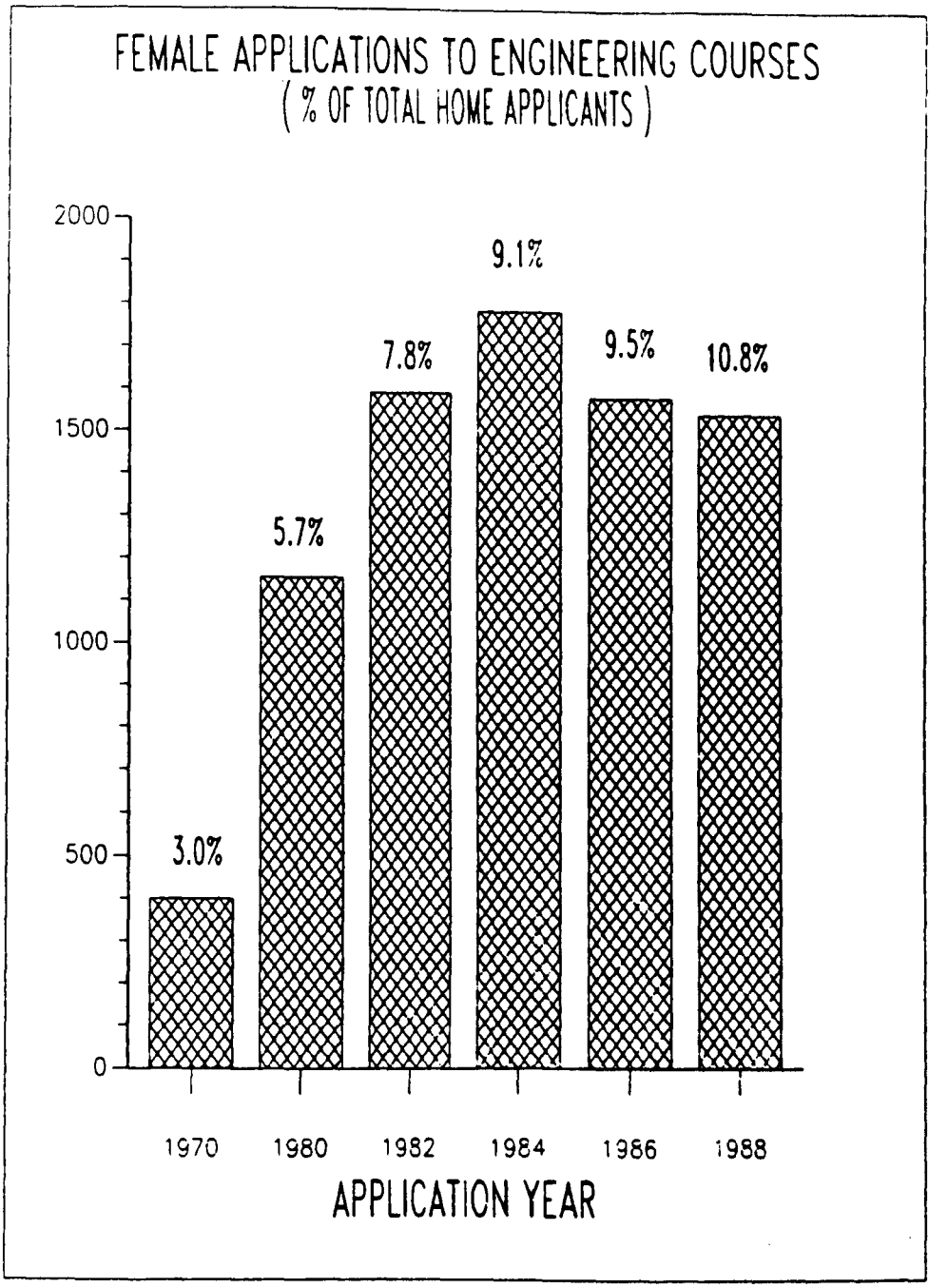

Figure 9

Figure 2: Female Applications to Engineering Courses (% of Total Home Applicants)

(Source: UCCA)

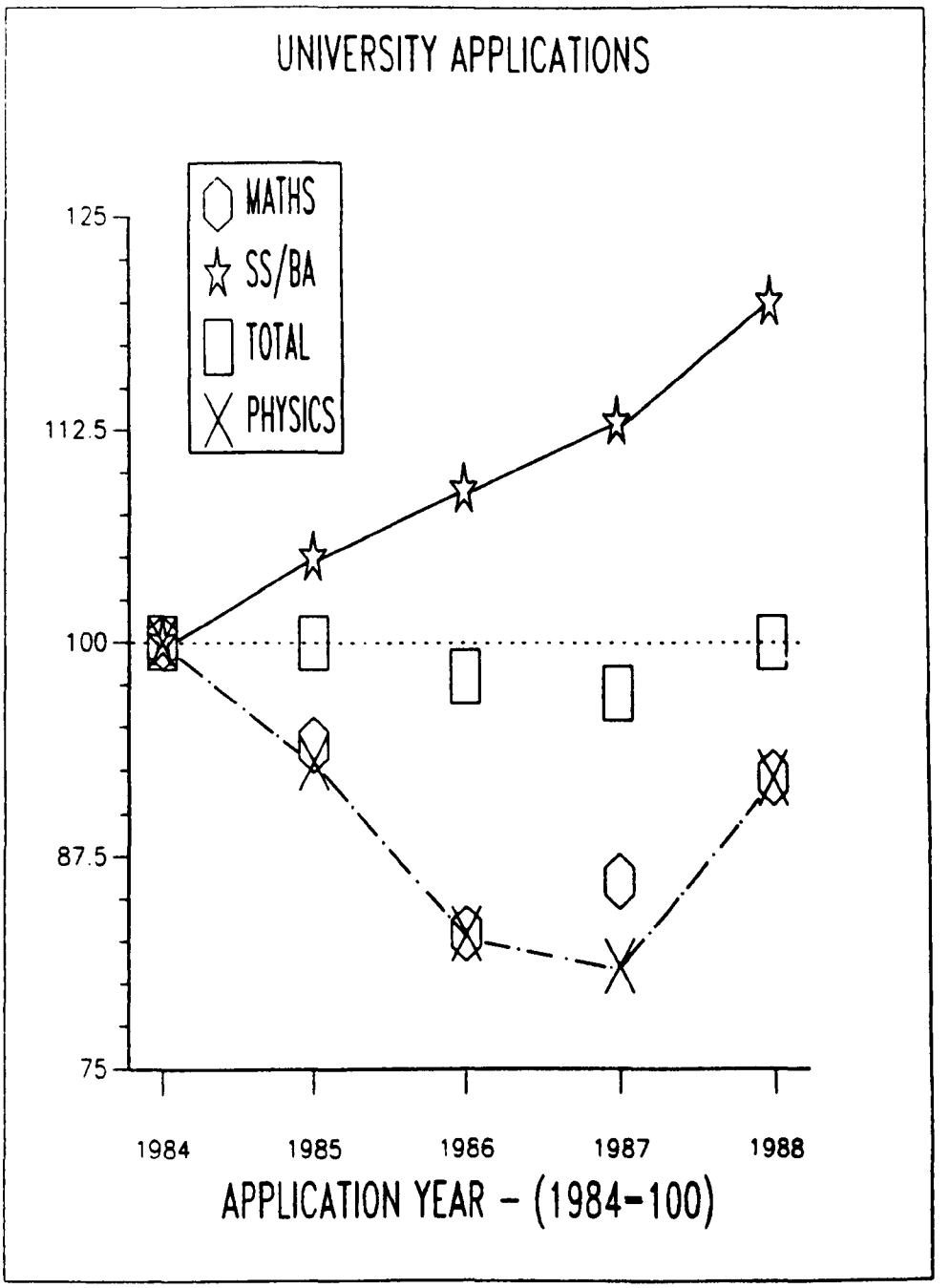

Figure 10

Figure 3: University Applications

(Source: UCCA)

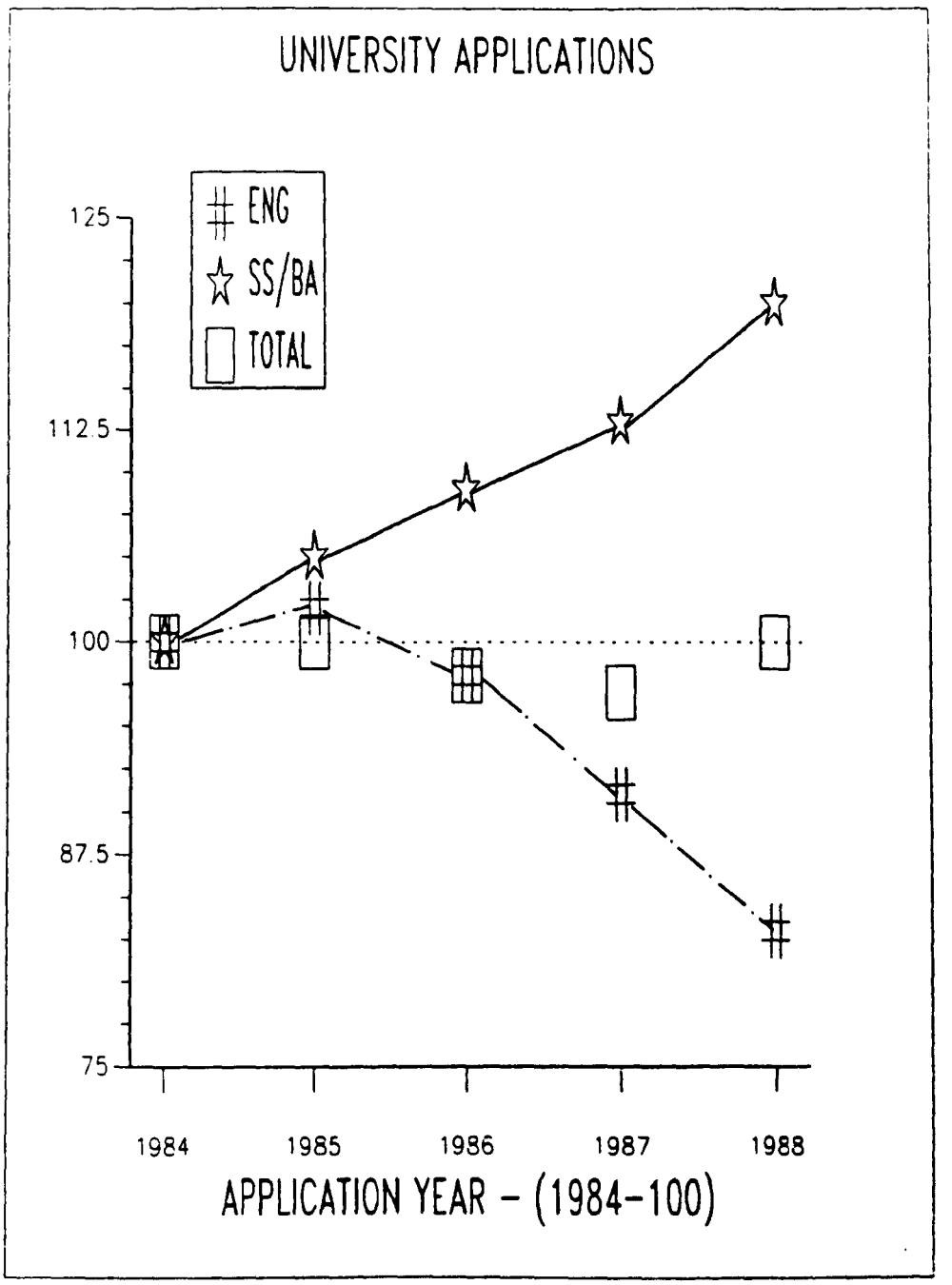

Figure 11

Figure 4: University Application Engineering & Social Science/ Business Studies (1984 - 1988)

(Source: UCCA)

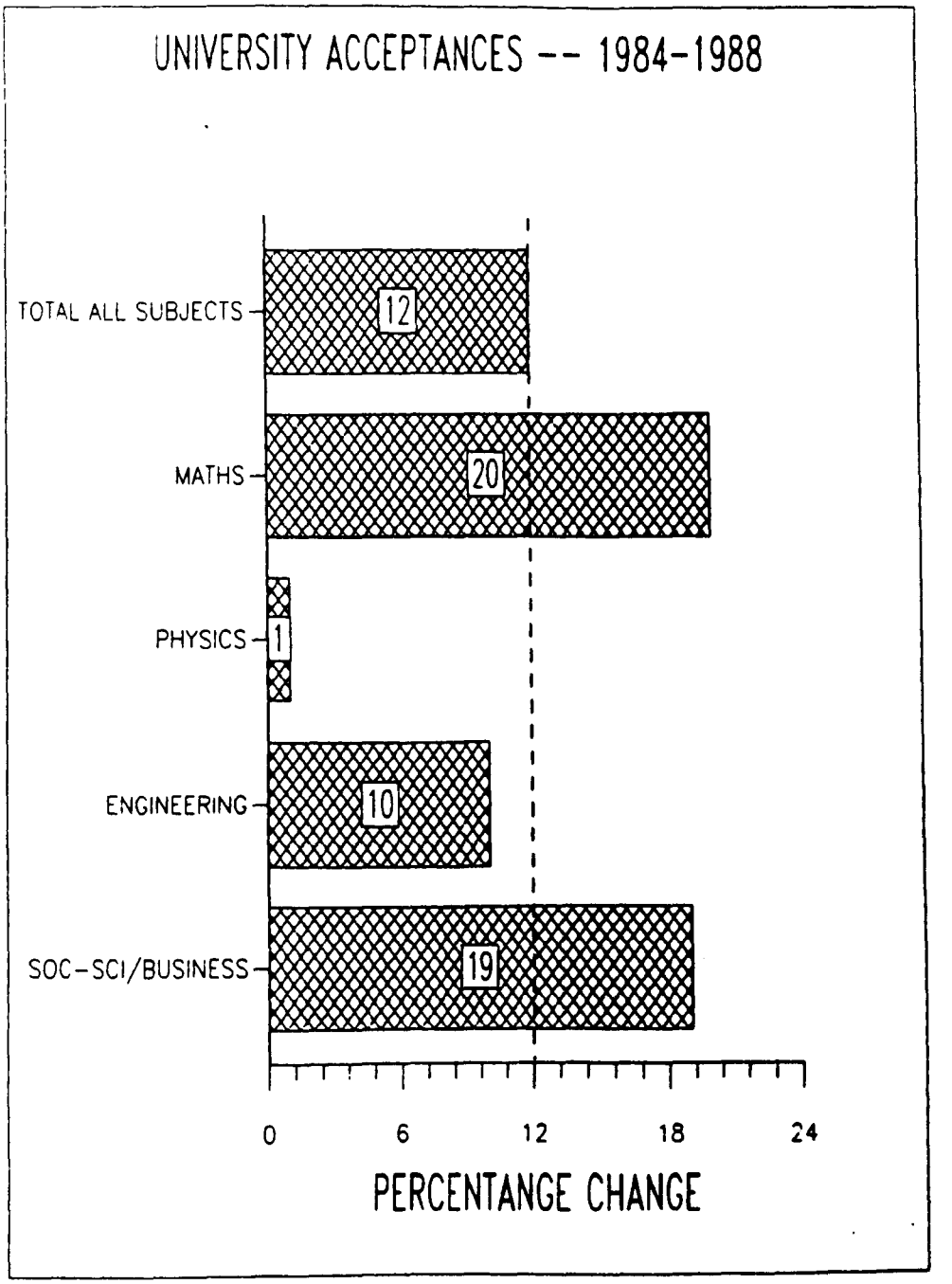

Figure 12

Figure 5: University Acceptances (1984 - 1988)

(Source: UCCA)

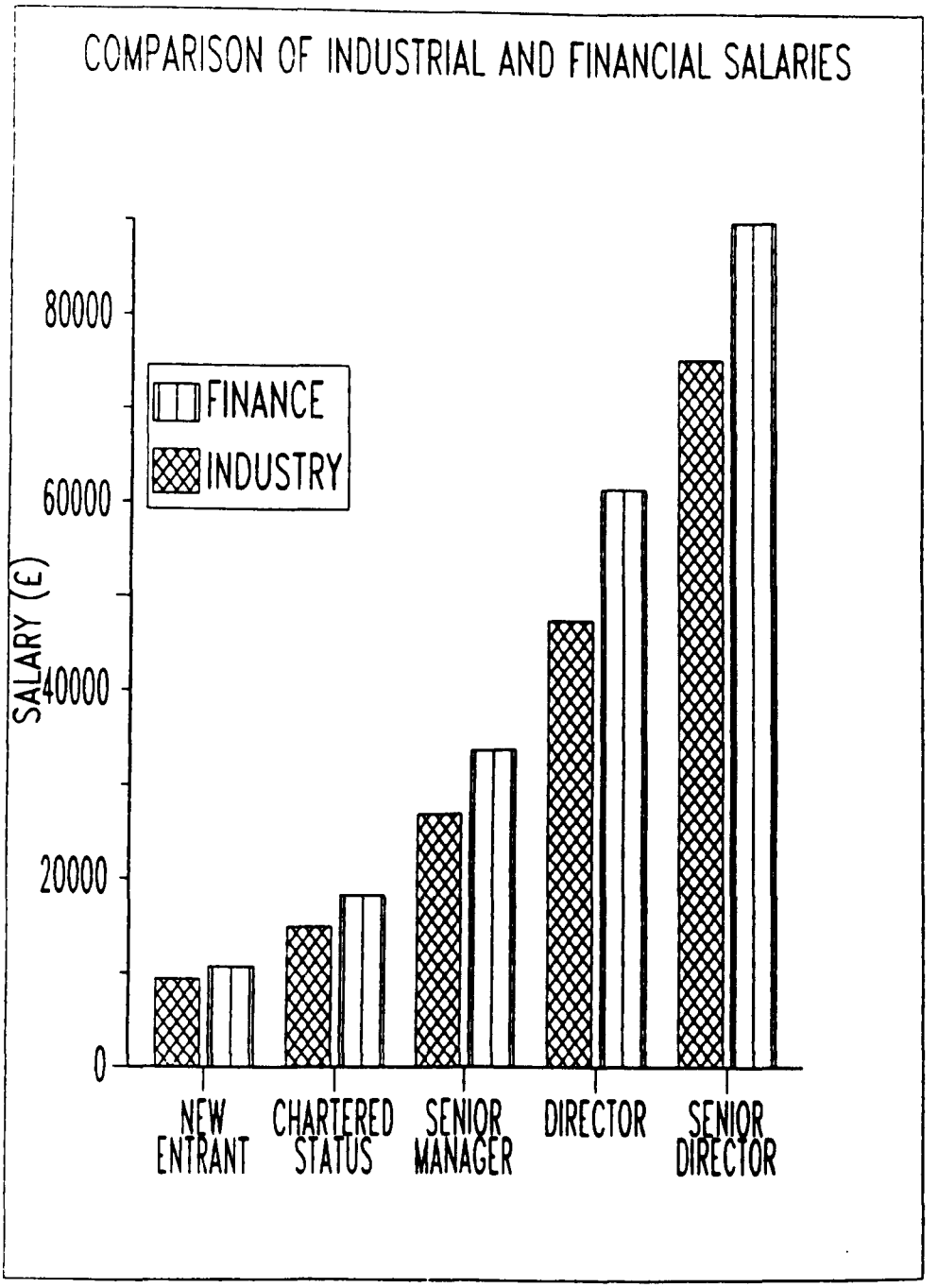

Figure 18

Figure 6: Comparison of Industrial and Financial Salaries

(Source: The Independent, 10 January 1989)

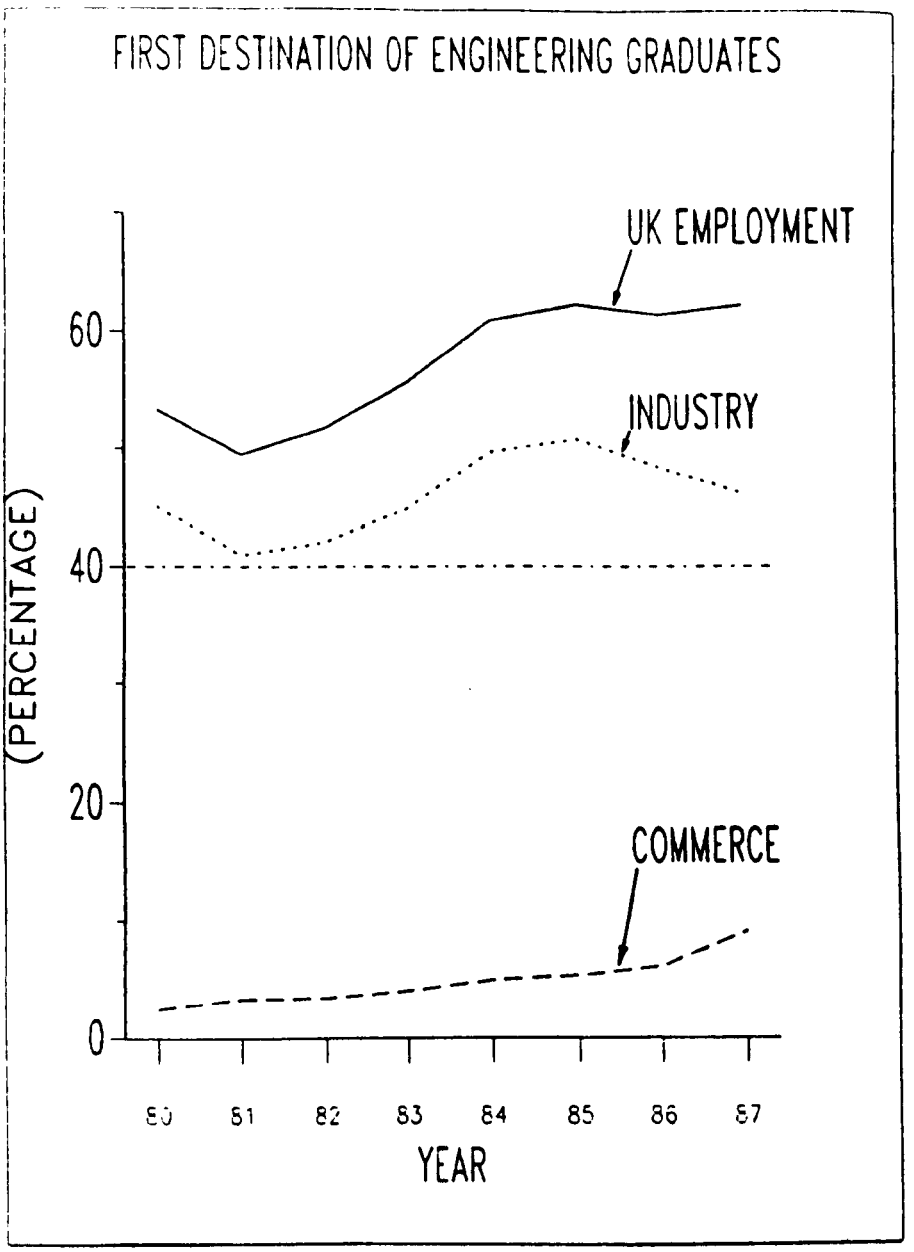

Figure 16

Figure 7: First Destination of Engineering Graduates

(Source: Manpower 2000)

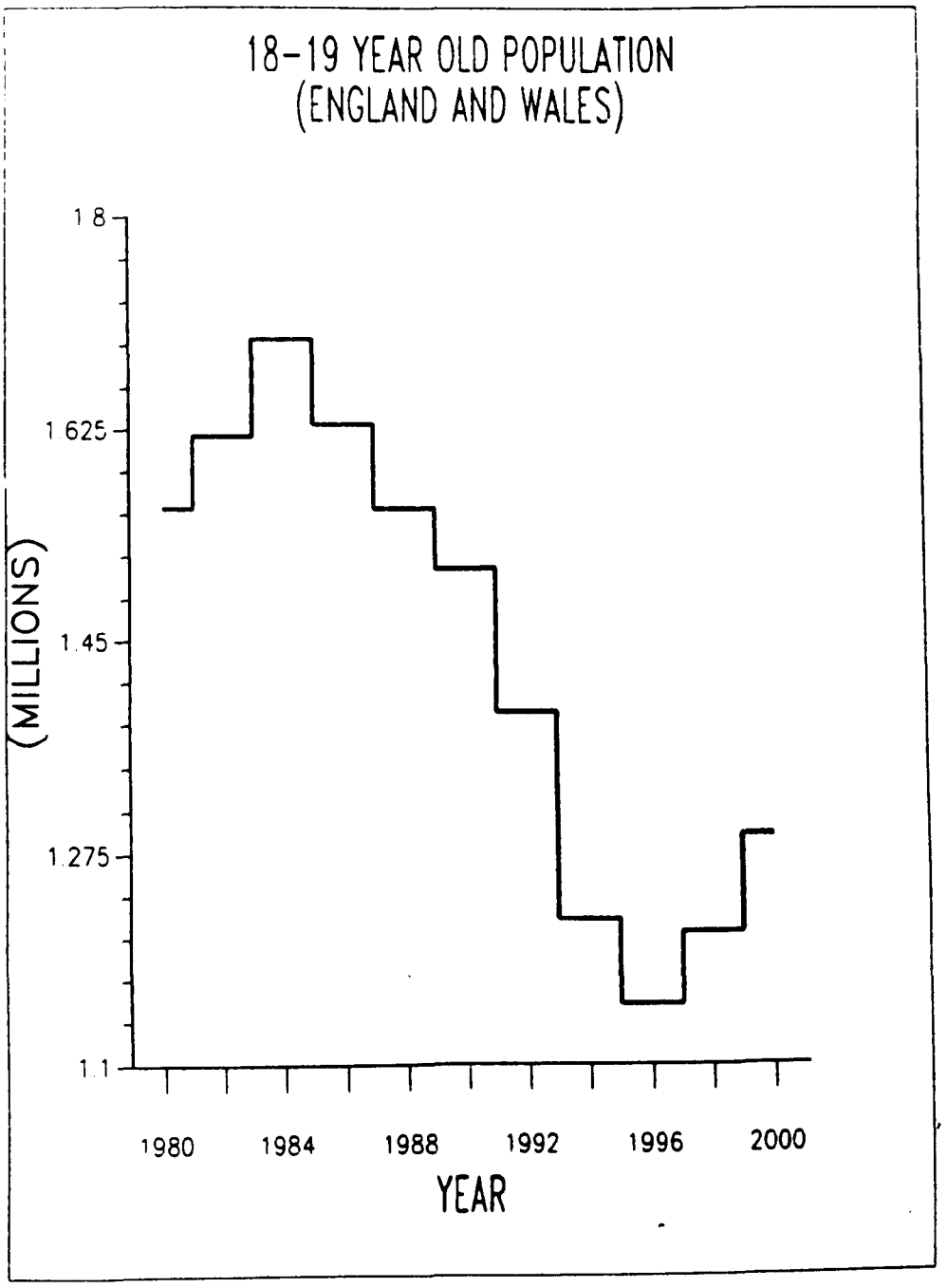

Figure 8

Figure 1: 18 - 19 Year Old Population 1980 - 2000

(Source: Manpower 2000)

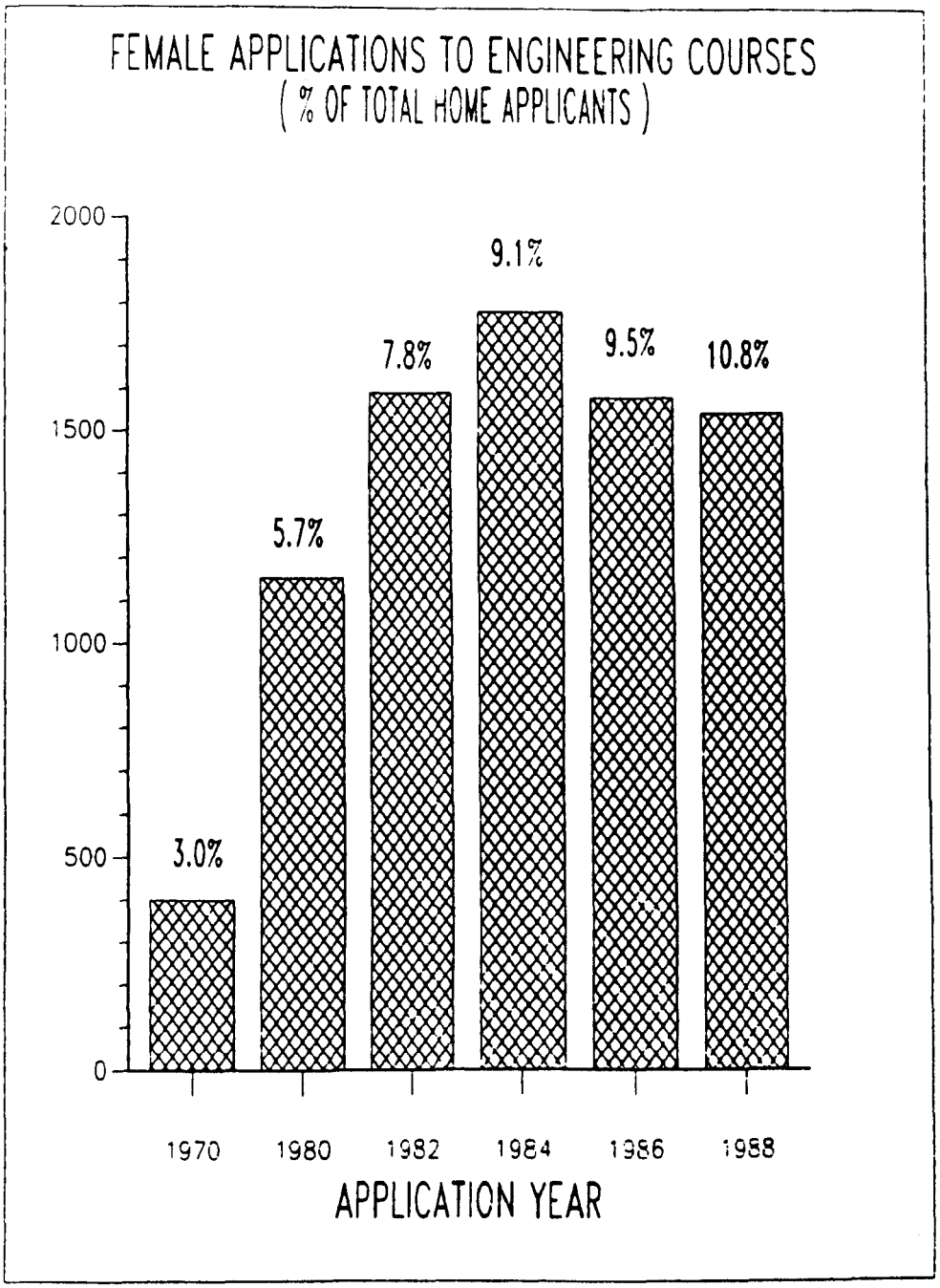

Figure 9

Figure 2: Female Applications to Engineering Courses
(% of Total Home Applicants)

(Source: UCCA)

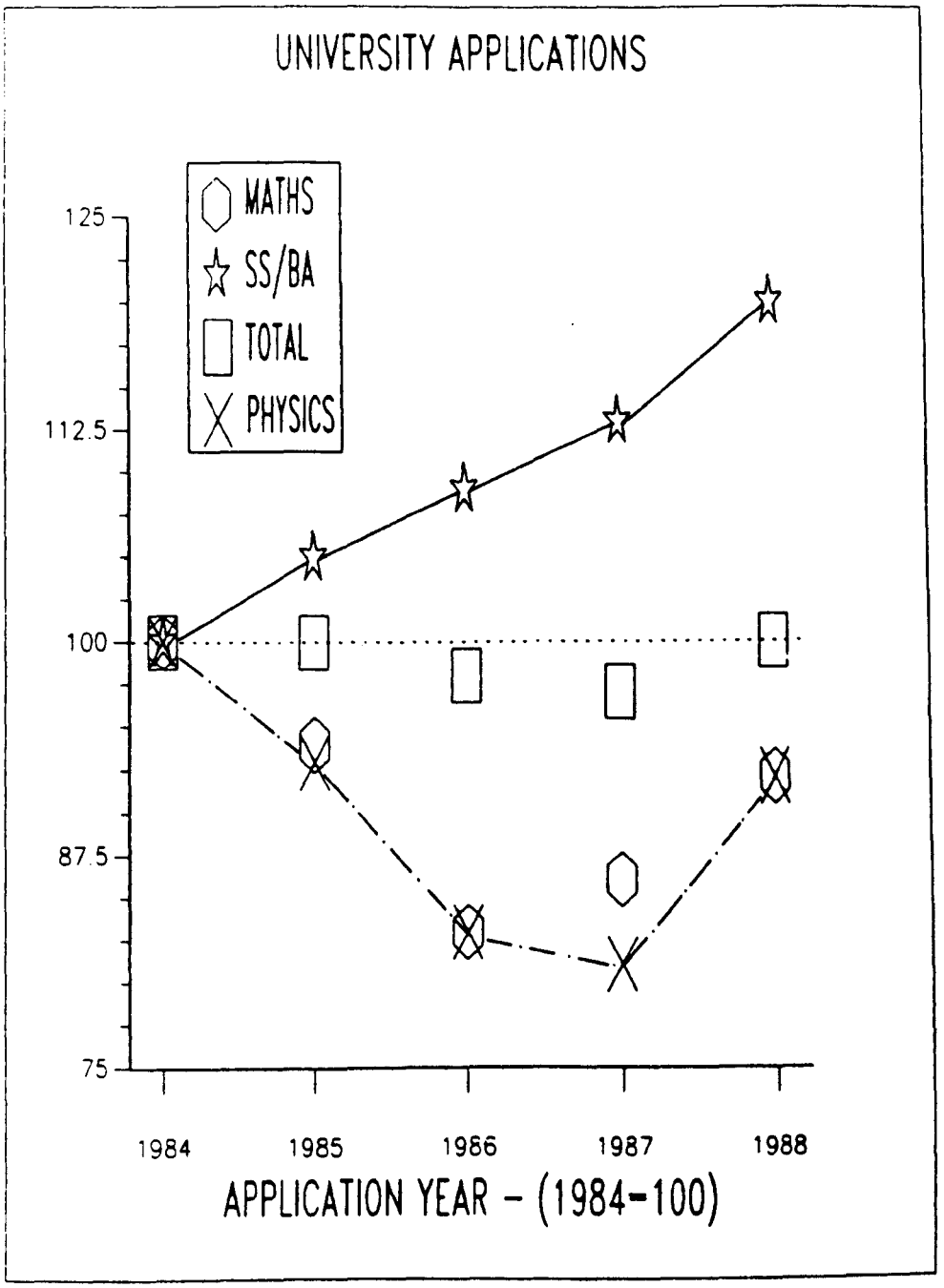

Figure 10

Figure 3: University Applications

(Source: UCCA)

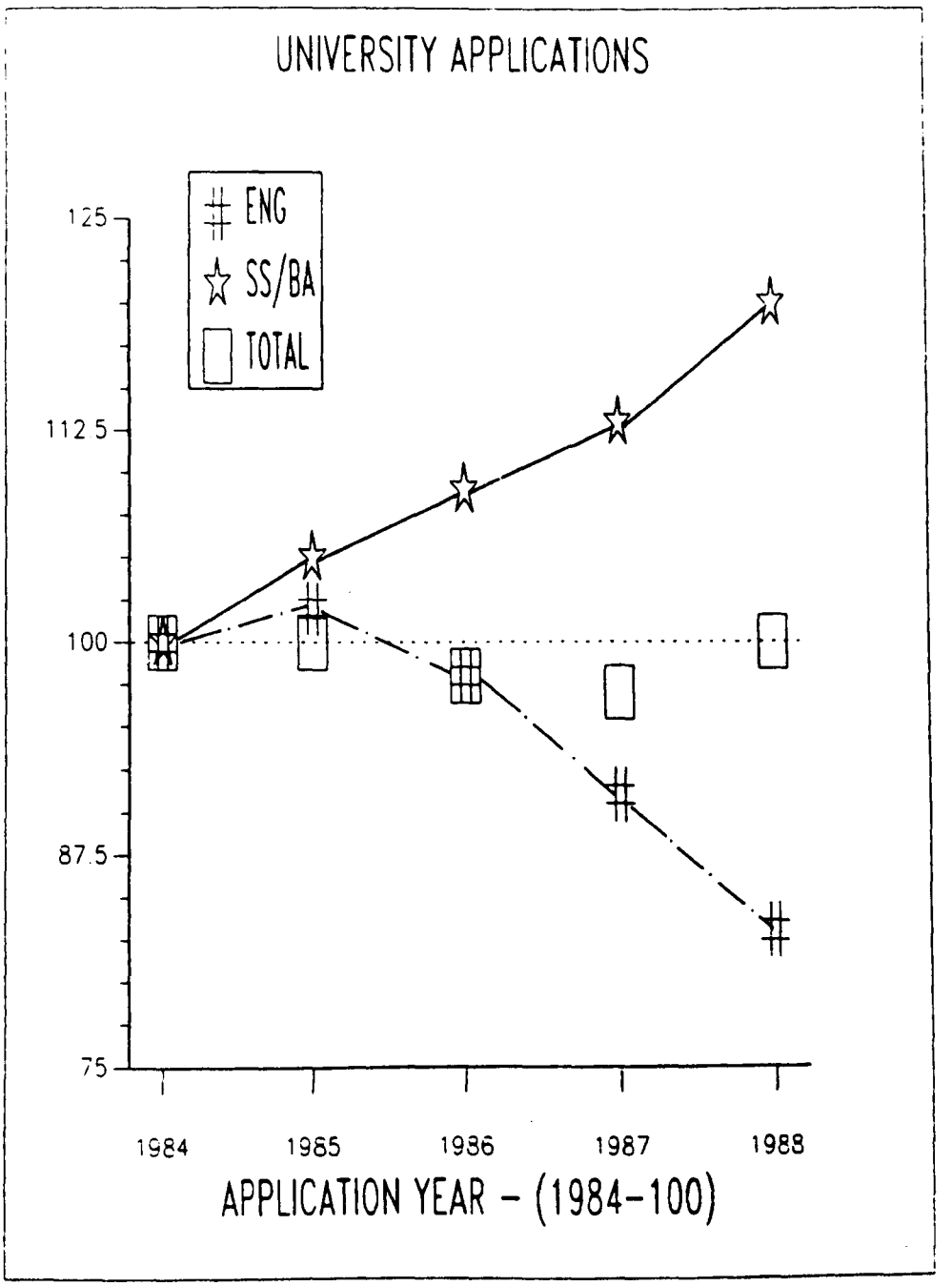

Figure 11

Figure 4: University Application Engineering & Social Science/ Business Studies (1984 - 1988)

(Source: UCCA)

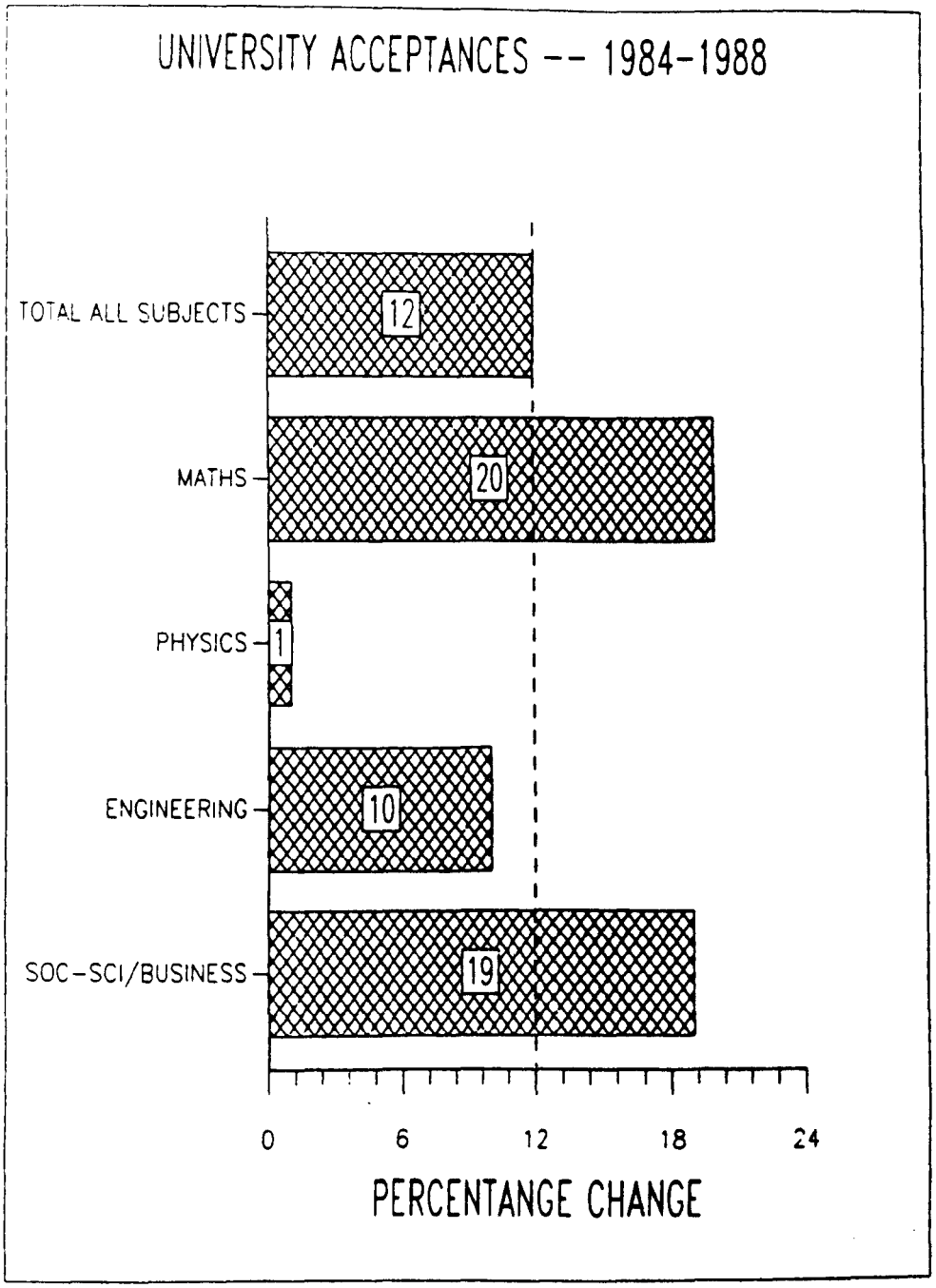

Figure 12

Figure 5: University Acceptances (1984 - 1988)

(Source: UCCA)

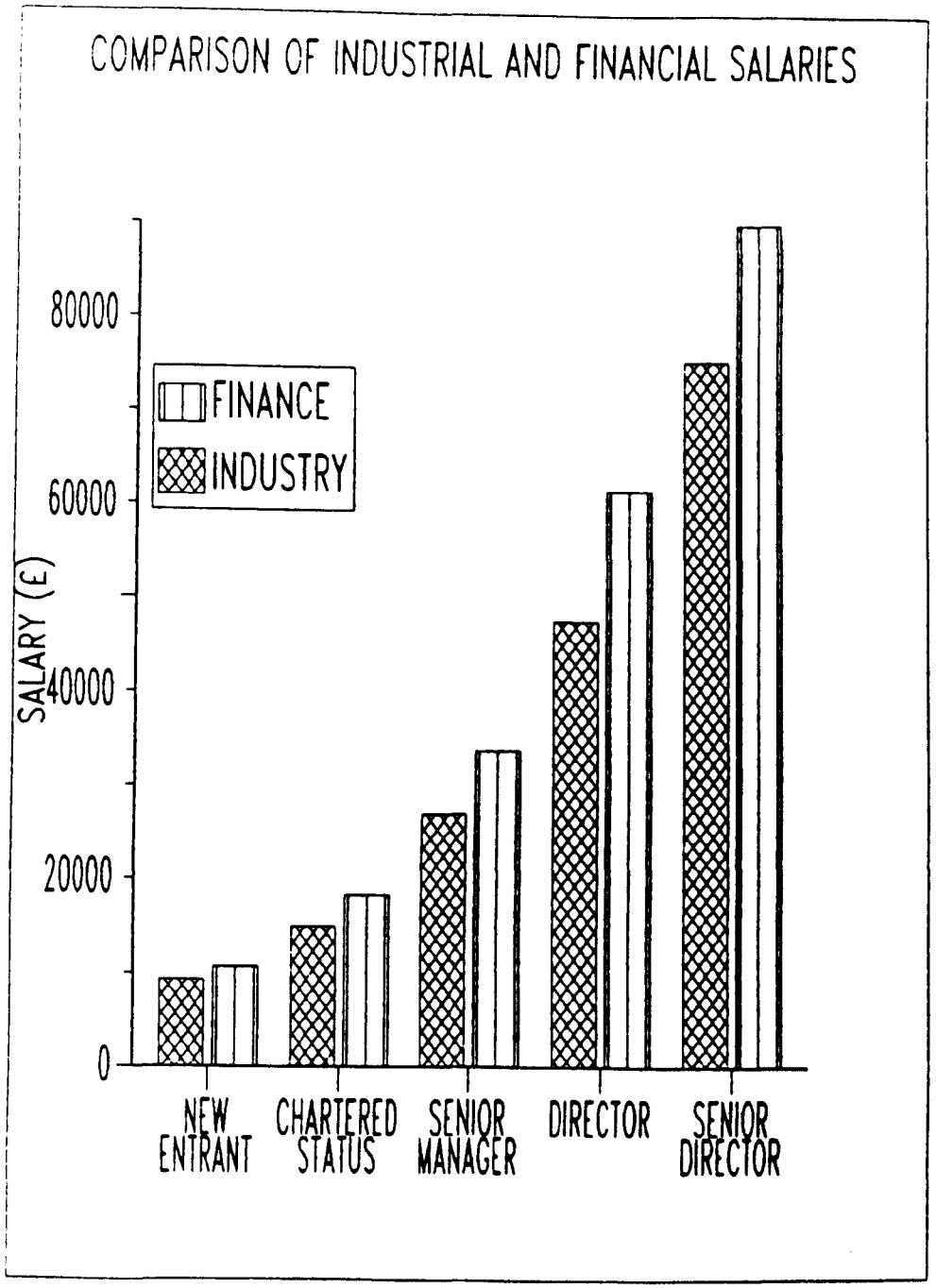

Figure 18

Figure 6: Comparison of Industrial and Financial Salaries

(Source: The Independent, 10 January 1989)

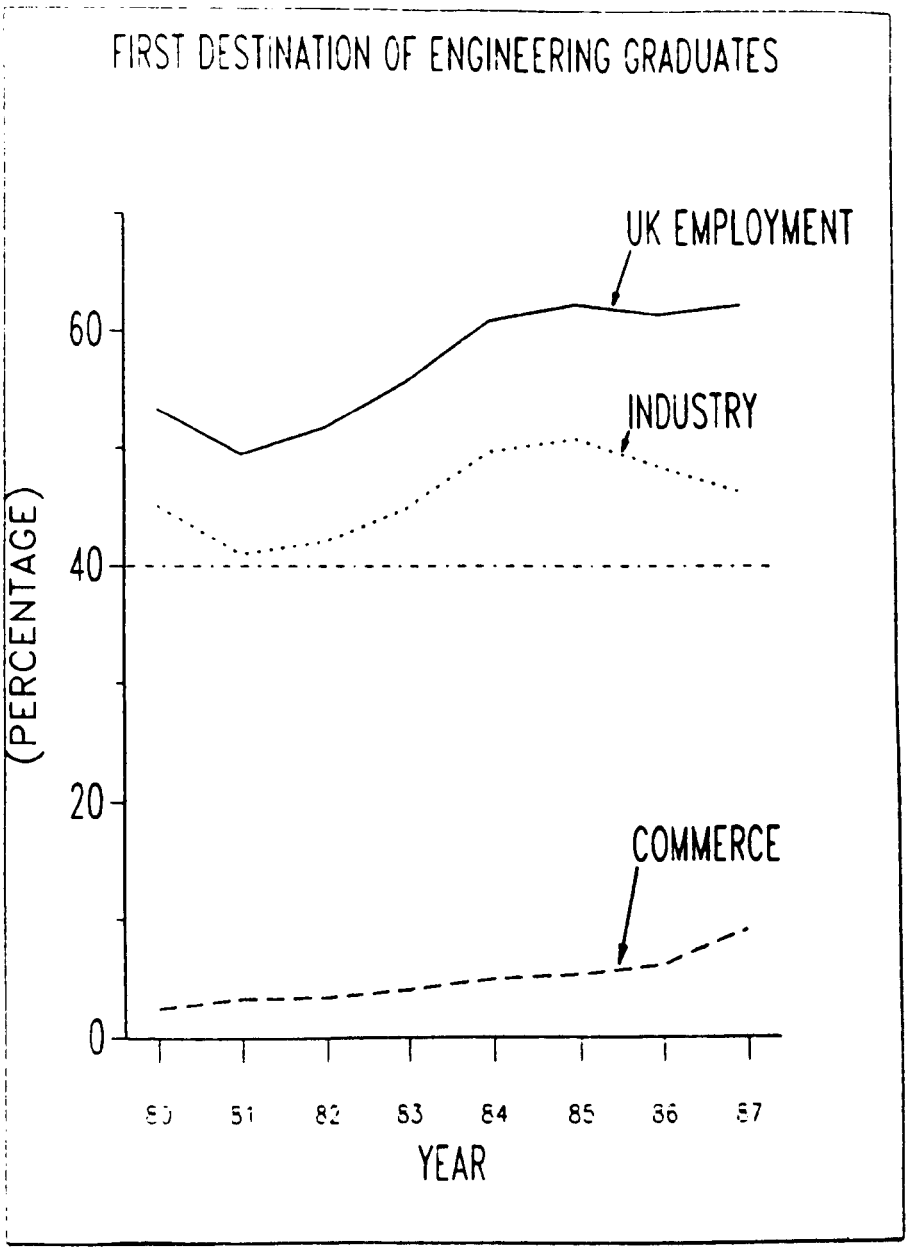

Figure 16

Figure 7: First Destination of Engineering Graduates

(Source: Manpower 2000)

APPENDIX II

PRE WORK QUESTIONNAIRE

PRE-WORK GRADUATE SURVEY

The following questionnaire is the starting point for a two year study of selected engineering graduates.

The aim of this research is to improve the content and timing of graduate recruitment, training and development to best suit both the individual's and company's needs.

You have been chosen, together with a number of other entrants, to be part of the graduate sample to be monitored.

This questionnaire concerns your personal opinions and as such has no right or wrong answers. However, please try not to select the the middle response. You are welcome to write any other comments you have straight onto the questionnaire.

The questionnaire is **strictly confidential**. The identity of the respondent will **not** be disclosed to the employer.

It is important that you complete and return this to me **before 19th September** as the objective of this part of the research study is to obtain your **prior** expectations and job needs.

Please answer all questions. The questionnaire should not take longer than 20-30 minutes to complete. Where alternatives are given please circle the appropriate number corresponding to your response.

If you have any problems completing the questionnaire please contact :

Peter Hawkins,
Research Student,
Department of Industrial Studies,
University of Liverpool,
Ashton Building,
P.O. Box 147,
Liverpool L69 3BX.

Telephone 051 709 6022 Extension 2359.

SECTION ONE PERSONAL DETAILS.

1. Surname ..... Forename{s}.....

   Home address .....

   Postcode..... Tel: .....

2. Prospective Employer .....

3. Sex: {please circle} Male 1 Female 2

4. Marital Status: Married 1 Single 2

5. Age {years}: [ ][ ]

SECTION TWO DEGREE

6. In what discipline was your undergraduate degree?

   Electrical/Electronic Engineering 1
   Mechanical Engineering 2
   Science 3
   Other {please specify}..... 4

7. Approx. what percentage of your degree was management based ? _____%

8. During your time in Higher Education, to what extent were the following methods of learning used? (5 = 100-81%, 4 = 80-61%, 3 = 60-41%, 2 = 40-21%, 1 = 20-0%). Please circle appropriate number for each item.

1.	lectures	5	4	3	2	1
2.	group exercises	5	4	3	2	1
3.	individual study	5	4	3	2	1
4.	presentations	5	4	3	2	1
5.	practical lab assignments	5	4	3	2	1
6.	tutorials	5	4	3	2	1
7.	project based work	5	4	3	2	1
8.	distance learning	5	4	3	2	1
9.	case studies	5	4	3	2	1
10.	simulation exercises	5	4	3	2	1
11.	other.....	5	4	3	2	1

9. What was your class of degree?

First	1
Upper Second	2
Lower Second	3
Third	4
Pass	5
Other (please specify).....	6

If you are a Sandwich Degree Graduate, please answer questions 10-14.
If you are a Non-Sandwich Degree Graduate, please answer only question 15.

SANDWICH DEGREE GRADUATE

10. Type of sandwich course :

Thick	1
Thin	2
Other {please specify}.....	3

11. By whom were you sponsored during your period of study?

The company you are joining	1
A different company	2
Other {please specify}.....	3

12. How much time did you spend in industrial placements?

☐☐ months

13. How much of this time in industrial placements was spent with the company you are joining?

☐☐ months

14. How relevant do you feel your industrial placement experience will be to your future job?

very relevant 5 4 3 2 1 not at all relevant

NON-SANDWICH DEGREE GRADUATES

15. What is the extent of your previous work experience (including vacation work)?

☐☐ months

Please specify types of work undertaken.

_____

_____

SECTION THREE QUALITIES NEEDED FOR THE JOB

This section is aimed at discovering how important you feel employers rate the following qualities in selecting an Engineering Graduate. It also looks at the ways the educational system has enhanced, or can be improved to enhance, the more important qualities needed for the job.

16. Please "rate" the importance you feel **employers** place on the following qualities for selection of engineering graduates. Please circle the appropriate number.

identity no.		*5* very important	*4*	*3*	*2*	*1* not important
01.	Verbal communication skills	5	4	3	2	1
02.	Industrial experience	5	4	3	2	1
03.	Interest in the company	5	4	3	2	1
04.	Business awareness	5	4	3	2	1
05.	Analytical skills	5	4	3	2	1
06.	Literacy	5	4	3	2	1
07.	Ability to work in a team	5	4	3	2	1
08.	Flexibility to change	5	4	3	2	1
09.	Motivation	5	4	3	2	1
10.	Creativity	5	4	3	2	1
11.	Ability to learn	5	4	3	2	1
12.	Management potential	5	4	3	2	1
13.	Strong personal impact	5	4	3	2	1
14.	Common sense	5	4	3	2	1
15.	Appearance	5	4	3	2	1
16.	Degree level result	5	4	3	2	1
17.	Mobility	5	4	3	2	1
18.	Degree discipline	5	4	3	2	1
19.	Other	5	4	3	2	1

16a. Which of the factors, 1-12 in Question 16, were developed by your experiences in Higher Education.
Please rank in order of importance, stating the left hand identity number for simplicity.

First ____

Second ____

Third ____

16b. Please also rank in order, which of the factors 1-12 in Question 16 that were either lacking or not developed by your experiences in Higher Education.

First ____

Second ____

Third ____

16c. Which of the factors 1-12 would you like to have been included to a greater extent on your degree course? Please rank in order .

First ____

Second ____

Third ____

Other {please specify}

_____

_____

SECTION FOUR JOB CHOICE

This section aims to determine how important various factors were to you *in choosing* your job and company, and in the case of more than one job offer, what qualities were *important to you in your decision* to join this company.

17. Different people tend to want different things from their job. Please 'rate' how important you feel each of the following factors were to you in choosing this job and company. Please circle appropriate number.

identity no.		5 very important	4	3	2	1 not important
01.	Company image	5	4	3	2	1
02.	Challenging work	5	4	3	2	1
03.	Visible career path	5	4	3	2	1
04.	Good working environment	5	4	3	2	1
05.	Opportunity to manage others	5	4	3	2	1
06.	Job security	5	4	3	2	1
07.	Early responsibility	5	4	3	2	1
08.	Travel opportunities	5	4	3	2	1
09.	Autonomy at work	5	4	3	2	1
10.	Location	5	4	3	2	1
11.	Good starting salary	5	4	3	2	1
12.	Structured training	5	4	3	2	1
13.	Opportunity for further education	5	4	3	2	1
14.	Opportunity to use abilities	5	4	3	2	1
15.	Nature of the work	5	4	3	2	1
16.	Managed by a good mentor	5	4	3	2	1
17.	Professional status	5	4	3	2	1
18.	Regular progress appraisal	5	4	3	2	1
19.	Other (please specify).....	5	4	3	2	1

18. How many jobs did you apply for in a formal way? _____

    How many : 1st interviews _____ 2nd interviews _____

19. How many job offers did you receive? _____

20. According to your original personal preference, where does the job you have accepted rank among the total number you applied for (first, second etc.)? _____

21. If you received more than one job offer please list, in order of priority, which of the above factors in Question 17 were most important in choosing this particular company {giving left hand identity number for simplicity}.

    First _____

    Second _____

    Third _____

SECTION FIVE EXPECTATIONS

The following set of questions attempts to assess your prior expectations of the job/organisation that you are entering, and to what extent these affected your job choice.

22. On the basis of what you already know about the job and organisation you are joining, through interviews/visits etc, to what extent do you agree with the following descriptive statements? Please circle the appropriate number.

4	3	2	1	0
strongly agree			strongly disagree	do not know at this stage

eg. if you slightly disagree with the comment that the working conditions are good then your response is,

4 3 (2) 1 0

01.	There are very good career prospects in this company	4	3	2	1	0
02.	Movement from one department/location to another is fairly easy	4	3	2	1	0
03.	The company offers steady employment for the foreseeable future	4	3	2	1	0
04.	The well-being of people is of prime importance to the management	4	3	2	1	0

Question 22 cont.

05.	Compared to other companies, the salary is good	4	3	2	1	0
06.	The company has salary differentials that reflect ability and aptitude	4	3	2	1	0
07.	There is an opportunity to travel in the job	4	3	2	1	0
08.	There is a relaxed, friendly atmosphere in the department	4	3	2	1	0
09.	The working conditions are good	4	3	2	1	0
10.	The job makes use of individual abilities	4	3	2	1	0
11.	The job involves a wide range of different activities	4	3	2	1	0
12.	The job provides an intellectual challenge	4	3	2	1	0
13.	The work is interesting	4	3	2	1	0
14.	The job offers high responsibility	4	3	2	1	0
15.	The job involves being in charge of other people	4	3	2	1	0
16.	Further professional training and education is encouraged and actively followed+	4	3	2	1	0

SECTION SIX AWARENESS

This section looks at the sources from which you have gained information about the company, and how they can be improved to aid the decision making process.

23. What were your main sources of information about the company? (Rank 1, 2.... as far as appropriate, according to amount of useful information).

e.g. If the company brochure gave you the most information, put number "1" beside the item. If the conversation at the interview gave you the second highest amount of information then put number "2" beside this item; and so on until all items are ranked.

1. careers service ____
2. company brochure ____
3. academic staff ____
4. interviews ____
5. company visits ____
6. family/friends ____
7. discussion with employees ____
8. company presentation ____
9. advertisements ____
10. vacation work ____
11. other (specify) _____ ____

24. To what extent do you feel that you were influenced by others (e.g. family, friends etc.) in your choice of job? Please circle.

decision made completely free from the influence of others	5	4	3	2	1	decision largely influenced by others

25. How much do you feel you know about the company you are joining?

A great deal	5	4	3	2	1	very little

26. How much do you know about the actual day-to-day job?

A great deal	5	4	3	2	1	very little

SECTION SEVEN THE RECRUITMENT PROCESS

This section aims at analysing views on the methods of recruitment and how fairly you were represented by them.

27.. What methods of recruitment do you feel gave you the best opportunity to fairly represent yourself? Please rank the following methods.

e.g. If a group exercise gave you the best opportunity to genuinely represent yourself then put a number "1" beside that item. Continue until you reach number "8" or until all items have been marked.
If you have not encountered one of the following, please mark it with an X.

1. psychometric tests and personality profiling ____
2. one-to-one technical interview ____
3. one-to-one personnel interview ____
4. interview board, technical and personnel ____
5. group discussions ____
6. group exercises ____
7. individual exercises ____
8. other _____ ____

SECTION EIGHT CAREER DEVELOPMENT

The final section looks at the formation and development of your career plans and ends with two more general questions.

28. Do you see this job as: * a "stepping stone" to something else 1

or * a career in itself 2

29. How long do you plan to remain with the company you are joining? Please circle the appropriate number.

1.	Less than 1 year	5.	4 - 5 years
2.	1 - 2 years	6.	5 - 10 years
3.	3 - 4 years	7.	over 10 years
		8.	do not know

30. What kind of job do you hope to pursue in the long term?

1.	Mainly Technical	4.	Mainly Managerial
3.	Both Equally	5.	Commercial

3. None of the above (please specify}.....

31. How can the mechanics of the 'milkround' and the role of the Careers Service be altered to further help a graduate's transition into employment?

32. You are most welcome to make any other comments and attach them to the questionnaire.

Thank you for your help. It is much appreciated. Once again let me emphasise that your replies will be treated with utmost confidentiality.

Your response will play an important part in the success of the research and I will be following your progress within the company for the next two years.

When you have completed the questionnaire please return it to me by **19th September** using the enclosed stamped, addressed envelope.

Could you also keep me in touch with any changes of address.

Many thanks and good luck with your new job.

APPENDIX III

POST ENTRY GRADUATE, AND COMPANY RETENTION/DEVELOPMENT

POST ENTRY GRADUATE INTERVIEWS AND GROUP DISCUSSIONS

TOPIC GUIDE

1. **Research Introduction :**

   Research Background

   Aims and Objectives

   Methodology

   Relevance of interview

2. **Personal Details :**

   Name

   Contact address

   Work telephone number

   Work Function

   Length of stay with current employer

3. **Initial Employment Experiences :**

   Level of match with prior expectations

   Key match / mismatch factors

   Cause of expectations match / mismatch

4. **Transition into Employment :**

   Account of the move into employment by creating a list of differences between educational and organisational environments, highlighting :

   i. Positive factors related to the move

   ii. Negertive factors related to the move

   Possible practical ethods of easing this move

5. **Early Career Development :**

   Content

   Positive factoors - "enhancers"

   Negative factors - "blockages"

   Improvements to the process

COMPANY INTERVIEW: RETENTION / DEVELOPMENT

TOPIC GUIDE

1. **Research Introduction :**

   Research Background

   Aims and Objectives

   Methodology

   Relevance of interview

2. **Company Information :**

   Company Name

   Address

   Interviewee Name

   Status/Dept

   Telephone Number

3. **The Concept of Graduate Recruitment and Retention :**

   Number recruited each year

   Recruitment strategy

   Need for graduates

   Level of involvement

   Development over time

   Link with business strategy

   Communicating the message

   Awareness of academic studies

4. **Importance placed on recruitment as opposed to retention :**

   Time

   Money

   Resources

5. **Current Awareness of Turnover Figures :**

Company figures

Awareness of national averages

Sector / departmental figures

Responsibility for recording turnover figures

Methods of recording - format and regularity

Communicating these facts - mediums and tools

Awareness in other departments

6. **Cost of Graduate Turnover :**

Awareness

Calculation of constituent costs

Longitudinal analysis

7. **Causes of Graduate Turnover :**

Main perceived determinants of turnover

Internal vs external factors

Pre and post entry determinants

Critical incidents

8. **Cures to the Turnover Problem :**

Content

Development over time

Timing

Effectiveness

9. **Knowledge of academic work in the field**

APPENDIX IV

GROUP DISCUSSION FORUM RESULTS

The following document records the findings from a series of group discussions focusing on the problems associated with the attraction, recruitment and retention of engineering graduates.

A forum of 56 participants, representing employers, the careers service and academia were divided into groups of 7/8 persons, with at least one group discussing each of the following topics :

i. Sponsorship
ii. Attraction
iii. H.E. / Careers / Employer Links
iv. Retention - transition to employment
- early development
- longer term development

KEY RESULTS

Several key points emerged from the group discussions. These are summarised as follows :

SPONSORSHIP

Improve the quality of all personnel, projects and individual participants involved in the sponsorship program.
The Ambassador principle.
Regular feedback / Debriefing session.
Bad news travels fast syndrome.
Critical sponsorship duration.

ATTRACTION

The initial barrier - The Image of Engineering: A problem that must be tackled collectively by employers.
The graduate product - Aggressive marketing.
Face-to-face contact - Selecting the Right Person.
Increase the provision of site visits.

H.E./CAREERS/EMPLOYER LINKS

Underutilisation of the careers service.
Closer links with academic departments.
Increased industrial input to curriculum development.
Encouragement of student input.

RETENTION

Companies must :

Avoid unrealistic expectations - Utilise recent graduates.
- Realistic Job Previews.
Manage the culture shock - Coping with the negative attitudes of the workforce.

Provide regular feedback.
Encourage self-development.

Carefully select line managers and mentors.
Provide clear communication channels for new entrants.

Invest in the individual.
Cross-functional career development.
Inform, and encourage the graduates of all career development opportunities available.

The following sections provide a more detailed account of the syndicate group discussions.

SPONSORSHIP

If managed in the correct manner, undergraduate sponsorship is a useful method of attracting and recruiting new talent. However, care must be taken to maximise the positive, and minimise the negative aspects of the package employers offer. Responses to the following questions are thus recorded below:

What are the positive aspects of sponsorship:

For the Individual ?

Response:

- A useful source of income.
- Inside information on the company prior to full-time employment.
- Work experience integrated within academic studies.
- Introduction to new styles of learning.
- Security, although students may still be asked to attend the recruitment process.

For the Organisation ?

Response:

- Early assessment of the student.
- Each sponsored student becomes an Ambassador for the company on return to university/polytechnic ie. they promote the organisation on campus.
- Sponsorship eliminates the need for the milkround in certain cases.
- Provides manpower to meet short-term needs.

How can they be maximised ?

Response:

- Careful selection of all staff involved in the sponsorship process
- Regular contact with students on their return to H.E.. informing them of organisational changes etc.
- Treat the sponsored student as part of the organisation
- Recruit the right person in the first place.

What are the negative aspects of sponsorship:

For the Individual ?

Response:

- They may feel tied to one company for the whole period of the degree course.
- Bad treatment within particular departments.
- Lack of responsibility/accountability/challenge.
- Lack of coordination.
- Lack of general interest - students would rather go windsurfing than work in a factory during the summer!

For the Organisation ?

Response:

- Image problem - "Bad news travels fast syndrome". Positive aspects of an organisation are rarely communicated amongst undergraduates due to fear of competition for future jobs. Negative aspects are, however, often highlighted by students and bad news travels fast.
- Administration is very time consuming.
- Students may go elsewhere on graduation.
- Duration - it is often difficult to find worthwhile work for students to do over short periods of time.

How can they be minimized ?

Response:

- Train line managers to utilise undergraduates properly.
- Provide worthwhile, inter-disciplinary project work.
- Lengthen each sponsorship period to allow for more indepth work.
- Delay sponsorship until the second academic year.
- Develop joint employer sponsorships.
- Improve internal communication links.
- Debriefing of all departing students to elicit their problems and views.
- Encourage students returning into H.E. to promote the positive aspects of their sponsor company to their colleagues.

ATTRACTION

Employers, careers advisers and academics discussed the following questions associated with the attraction of engineering undergraduates :

How can the Image of Engineering be realistically improved by :

i. Individual companies ?
ii. Companies acting collectively ?
iii. The careers service ?
iv. Academic institutions ?

What innovative steps can organisations take to improve their image in the undergraduate marketplace ?

Response:

It soon became apparent that the problem Engineering Employers face is twofold :

FIRSTLY - THE IMAGE OF ENGINEERING AS A WHOLE.

SECONDLY - THE IMAGE OF RESPECTIVE ORGANISATIONS IN THE UNDERGRADUATE MARKETPLACE.

It must be stressed that unless the Image of Engineering as a whole is addressed and tackled first, companies will fail to attract a high proportion of new talent into their engineering functions. A collaborative effort to solve this growing problem is therefore called for.

This begged the question :

- How can the Image of Engineering be collectively improved by employers ?

In the ensuing discussions, leading Engineering Employers called for a complete marketing strategy to tackle this major problem.

Suggestions on specific projects included :

i. A joint television promotion / video (paid for by larger employers) emphasising the variety of opportunities and challenges in the field of engineering.

ii. Joint employer presentations at school / college / university careers fairs.
N.B. These have already been arranged in the banking / finance sectors.

Academics were perceived to have a greater initial influence on the students' career decision than careers advisers, although this balance may change as the decision process develops. Closer links with both parties are no doubt a trend for the future, with their skills, services and influencing power being utilised to a greater extent by employers.

Face-to-face contact was felt to be the most powerful communicating medium in the undergraduate marketplace. Careful selection of all personnel representing the organisation is therefore a key factor in the successful attraction of new talent, as poor quality representatives can have a major negative effect on the student's perception of that organisation.

The **graduate's career** within an organisation should be seen, and aggressively marketed as a **complete product**. The elements constituting this product should be dependant on the current perceptions and needs of the undergraduate marketplace, and not governed by internal politics.

H.E./CAREERS/EMPLOYER LINKS

The following questions concerned with employer/education interactions were discussed and the results recorded :

How can employers make greater use of the careers service and academics (and vice-versa) during :

i. Sponsorship ?
ii. Recruitment ?
iii. In general, throughout the year ?

What are the current interactions between these parties ?

How can you see these changing in the future ?

Response:

The key points to emerge from this session were as follows :

i. A general confusion amongst employers on how each university / polytechnic operates - ie. interactions between careers and academic departments; academic departments involvement and attitudes towards industrial liaison etc. Clearer definitions were called for.

ii. The careers service were seen as the central interpreter and coordinator in the workings, although often underutilised.

iii. This exposed the need to develop closer links with careers and academic departments, and project a constant organisational image on campus (through presentations, site visits, posters etc) all year round.

iv. Encouragement of faculty / employer linkages in curriculum development.

v. A proposal that company interviewers are rated by students by means of a standard form, allowing interviewees to record their feelings during the recruitment process.

It was reported that current interactions between each party were often found to be on an ad hoc basis, with few employers having a structured strategy towards higher education liaison. The Campus Manager approach is a method that is currently being developed by several companies.

The roles of institutions such as the Engineering Council, the E.I.T.B., the Fellowship of Engineering and many others were also debated, with a general consensus doubting their impact on the problem of attracting students into engineering, and unaware of the steps they were taking to solve this growing problem.

RETENTION

It is the researcher's belief that the problem facing employers in the 1990's is not solely one of attracting and recruiting new talent, but more importantly retaining and developing existing graduates and staff. Several questions related to the early and longer term development of graduates were thus discussed :

How can the management of the graduate's transition into employment be improved by:

i. **The careers service ?**
ii. **Academic departments ?**
iii. **The company ?**
iv. **The individual graduate ?**

Response:

Cooperation from companies in providing relevant, realistic information, on their graduates' early experiences, to the careers services or academic departments where appropriate.

Recent graduates should return to their respective campuses and present their views of the transition into employment, highlighting the positive and negative aspects of the change and suggesting ways of coping with the problems faced on the way.

There was a general feeling amongst recruiters that academic staff inflate the expectations of graduates entering employment, although in many cases employers themselves are the culprits of the graduate's unrealistic expectations.

A number of previous surveys in this field were felt to place too great an emphasis on the faults of the employer and not on the student. Individual graduates were thus asked to air their views, and enable companies to be aware of, and act on, any problems arising.

The enhancement of the selection procedure to enable graduates to visit company sites at first or second round interviews was also encouraged. Here, undergraduates would gain a valuable insight into their future working environment, and be given the opportunity to talk with recent graduate entrants.

What hurdles and pitfalls face the graduate in his/her early development ?

Response:

- Culture shock - academic to commercial environment.
- Inflated expectations - created in the mutual selling process between employer and candidate.
- Reality of long-term employees - the lack of motivation and drive of many of the long standing personnel is hard to come to terms with in the early stages.
- Lack of early feedback.
- Lack of self-development.
- The line manager - who may feel threatened by, or have a negative attitude towards graduates.
- Although many companies provide frequent appraisals and

structured training early on in the graduates development, this soon tails off and the individual's interest soon wanes.

How can they be overcome ?

Response:

- Realistic Job Previews - provide realistic information on the day-to-day work activities.
- Provide regular feedback as early as possible in the development process.
- Early development of a mentoring system.
- Provide clear communication links for new entrants to air their views to peers and managers.
- In the latter case, individual graduates must be able to consult several other responsible personnel if their line managers block their views/development in any way.
- In the new learning organisation. employers are now encouraging a self-development culture.

How can the graduate's transition from initial training to a position of responsibility be better managed ?

Response:

The combination of a training manger, closely monitoring the development needs of the individual, and a mentor, aware of, and sympathetic to the problems the graduate will face is a powerful tool in the management of this transition.

Care must be taken to select the right mentor. They should not necessarily be senior managers, but more importantly "personal" managers. As mentioned above, the prerequisites of a successful mentor are awareness and sympathy. Therefore personnel showing these qualities, and having several years more experience (in a similar area to the graduate) are ideal candidates

Once chartered, how can companies retain their engineering graduates ?

Response:

The use of cross-functional career movement is a popular method of retaining quality graduates. This mult-disciplinary approach to career development also acts to enhance the wider business skills of the individual.

Further education in the form of an extended MBA, or the relatively new Integrated Graduate Development Scheme (IGDS) are also popular methods. These measures will only succeed if the organisation provides the enhanced career development prospects expected by graduates on completion of their further education and training. In other words, the graduate will become more marketable and will not stay with the organisation if their are better opportunities elsewhere.

CONCLUSIONS

1. Companies must act collectively to combat the initial image barrier associated with attracting students into engineering.

2. The graduate's career within an organisation should be seen, and marketed as a complete product.

3. Companies must project a quality image on campus all year round.

4. This involves the careful selection of all staff representing the organisation, and debriefing of sponsored students returning to higher education.

5. The challenge of the 1990's will not solely be one of attraction and recruitment, but more importantly one of retention and development.

6. Careful management of the individual's career transitions is a key factor in the successful retention of graduates.

7. Clear communication links, and the careful selection and training of all supporting staff can ease the transitions graduates face in their development process.

THE NEXT STEP

For further information on the development of the applied research program into the successful attraction, recruitment and retention of engineering graduates, please contact:

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APPENDIK V

CONFERENCE ATTENDANCE AND SAVINGS PAPERS

P HAWKINS.

Papers, Reports and Presentations

Papers

(1) HAWKINS P. & BARCLAY I., (1989), Attracting and Retaining Engineering Graduates in the 21st Century, Proceedings Manpower 2000, April, pp 142-148.

(2) BARCLAY I. & HAWKINS P., (1989), Preparing the Engineering Managers of the 21st Century, Proceedings Manpower 2000, April, pp 194-202.

(3) HAWKINS P. & JONES A., (1989), Gearing up to the Challenge of the 1990's: Graduate Recruitment and Retention, Stanley Armstrong Graduate Communications.

(4) JONES A. & HAWKINS P., (1989), The Clearest Path to Tomorrow's Recruits: Graduate Recruitment and Retention, Stanley Armstrong Graduate Communications.

(5) HAWKINS P., (1989), Graduate Recruitment and Retention: Annotated Bibliography, Intro U.K..

(6) HAWKINS P., (1989), The Changing Attitudes and Needs of Engineering Graduates, Intro U.K..

(7) HAWKINS P., (1989), Engineering Graduates' Perceptions and Needs, Unilever UK Holdings (Confidential).

(8) HAWKINS P. & BARCLAY I., (1990), Engineering and Manufacturing Managers of the 1990.s, Part I : Capturing the "Raw Material", Management Decision , 28, 4, pp 44-51.

(9) BARCLAY I. & HAWKINS P., (1990), Engineering and Manufacturing Managers of the 1990.s, Part II : Career Development and Progression, Management Decision , (to be published in August edition)

(10) HAWKINS P. & BARCLAY I., (1990), Career Management and the Career Product: Success in Graduate Recruitment and Retention, International Journal of Career Management, 2, 2.

(11) Career Officer (article accepted)

(12) HAWKINS P., (1990), School Leaver Survey, In. The School Leaver Recruitment Market, pp 31-57, Intro U.K..

(13) HAWKINS P. & BARCLAY I., (1990), Career Management for the Technical Professional : Development and Commitment for the Future, Special Edition: IEEE Transactions in Engineering Management.

Presentations

HAWKINS P., Retention - The Graduate Product, Annual Conference of the Association of Graduate Recruiters, July 1989.

HAWKINS P., Successful Attraction, Recruitment and Retention of Engineering Graduates, Association of Graduate Careers Advisory Services, Manchester, Sept 1989.

JONES A. & HAWKINS P., Attracting and Retaining Graduates, Graduate Industrial Society, Nov 1989.

HAWKINS P., Managing Graduate Recruitment and Development, Manchester Polytechnic, Dec 1989.

Conference Savings

Conference/Seminar	Actual Cost	Amount Paid
Developing Excellent Managers 3rd World Conference International Management Centres.	£500	0
Beyond the Charter Initiative Association of Management Education and Development.	£290	£45.15
Graduate Recruitment (2 Day Course) Industrial Society	£210	0
Graduate Recruitment and Retention Intro Conference	£410	0
The Commercial Engineer Business Skills for Engineers	£517.50	0
Manpower 2000 Critical to the Future of Engineering	£169	£69
Graduate Recruitment and Retention Association of Graduate Recruiters	£269	0
Graduate Recruitment and Retention Association of Careers Advisory Services	£269	0
Graduate Retention International Management Centres	£149	0
Effective Recruitment Advertising and Communications Institute for International Research	£549.30	0
Occupational Testing Course Assessment and Selection for Employment	£1201.75	0
Effective Retention Strategies (IIR)	£450	0
Retention (Industrial Society)	£270	0
AGR Annual Conference	£240	0
TOTAL SAVING		£5198.40

APPENDIX VI

THE LEARNING CENTRE PROPOSAL

THE UNIVERSITY OF LIVERPOOL
AND
OPEN LEARNING CENTRES

INTRODUCTION

This discussion document is the result of informal discussions between Applied Learning and the University of Liverpool.

Discussions have been held around the following topics:

- The Open Learning Centre Concept
- How it would fit into a University
- Potential and Benefits
- Funding Arrangements

The remainder of this document will explain these topics using information from previous discussions and the knowledge and experience from Applied Learning.

The Open Learning Centre Concept

Applied Learning has implemented Learning Centres for many of our clients over the last six years. A Learning Centre offers organisations a powerful, cost effective and consistent vehicle to deliver distance learning material. To the user it offers a facility which is both convenient and accessible. Their learning is supported in a non-threatening, self-paced environment.

Typically it gives access to many technology based training media, be it video based, computer based or interactive videodisc. The Learning Centre makes full advantage of the training technologies now available to teach an ever increasing range of skills e.g.:

- Human Resource Development;
  - Business skills
  - Personal skills
  - Management and Leadership skills

- End User Computing
  - Information Centre Overview
  - Computer Literacy
  - Personal Computing - Office Systems

- Information Technology skills
  - Programming
  - Systems Analysis & Design
  - IBM/DEC/ICL environments

- Manufacturing.
  - CIM
  - MRPII
  - TQM
  - JIT

How a Learning Centre Would Fit into the University

A Learning Centre will enhance the existing resources at the University. Students would use it at their convenience to learn skills and knowledge to compliment their course and future career. Located centrally, like a library, to either the whole University or to each Faculty, the Learning Centre(s) would provide a convenient and acceptable training and development resource.

Used as a facility such as a library or careers department it would offer any user:

- access to interactive workstations and a library of courseware;
- a quiet, self paced environment;
- a positive learning climate.

The facility would be convenient not only in location, but also in the integration of the academic schedule - availability of opening hours etc.

Potential and Benefits

The potential and benefits would be shared by three parties:

- the University;
- students;
- sponsoring companies.

The University would have a virtually cost free (apart from space and possible administration costs) training resource. As explained later the majority, possibly 60%, of this resource would be dedicated to the sponsoring companies objectives, but the remaining 40% could be used for various uses e.g.:

- Staff training and development;
- Non-sponsored student training and development;
- Training in conjunction with Short-Course department;
- Enterprise in Higher Education training;
- IGDS training.

A Learning Centre will not only assist and enhance these, and possibly other, areas of training but could act as a revenue earner for the University. Applied Learning has case examples of how Learning Centres can be a commercial proposition in academic settings.

The students would gain access to learning/training facilities equipped with the latest technology based delivery media and to a potential distance learning course library of over 9,000 courses covering 25,000 hours of training.

The marketing aspect of this facility cannot be overlooked. Not only could it attract students to Liverpool, but the large sponsoring companies could "steer" students to where these facilities exist.

Hopefully not only students allied to the sponsoring companies would benefit but some time would be allocated to others to train in the HRD, business or computing skills which would be available.

This type of training would enhance the University academic courses and assist the on-going initiatives in delivering "well rounded" graduates into industry.

The benefits to the sponsoring companies would culminate in them receiving these graduates as employees.

Obvious benefits would be an accelerated development programme, as the graduate would either be proficient or have an appreciation of the different skills usually taught in the first few months of a training programme. Possibly as important to the companies though would be the raised presence on campus. This would be achieved by marketing the centre plus sponsored 'events' using the Learning Centre for the wider student audience. Companies could use the Learning Centre as a 'shop window' for graduate recruitment.

Funding Arrangements

This initiative will require no funds from the University. Only the provision of space and possibly some administration support is envisaged.

The funding will be sought by Applied Learning from its major clients. Applied Learning includes in its extensive client base such companies as ICI, Rolls Royce, and British Aerospace.