

Development and application of a technique for analysing jobs.

by

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A thesis submitted for the Degree of Master of Philosophy

in

The University of Aston in Birmingham

November 1979

SUMMARYDevelopment and application of a technique
for analysing jobs

SANDRA ELIZABETH ANNE JOHNSON, M.Phil. 1979

The research involved a tripartite team: the sponsoring organisation (the Marketing Personnel Department, Tyre Division, Dunlop Limited), an interdisciplinary department at Aston University and the student. The team was created to consider ways of helping the company in the "development of its people".

This general initial concern became more precisely defined as a need to develop a technique for analysing the marketing jobs, in order to provide information for decisions regarding aspects of personnel development.

The literature on occupational analysis, in particular for executive jobs, was examined. However, none of the methods seemed to satisfy the aims of the project. The problem was reconsidered and Repertory Grid Technique was adopted as the method of analysis.

The technique was used to produce job profiles and applied to four areas of the development of people:- improving job performance, organisation development, training and career development.

The application of the technique allowed the Marketing Directors and the Personnel Department to be better informed about the marketing jobs. This will hopefully enable better decisions to be made regarding personnel development. Additional applications of the technique were recommended to the Personnel Department.

The objectives held by each member of the tripartite team for the research were met to a large extent.

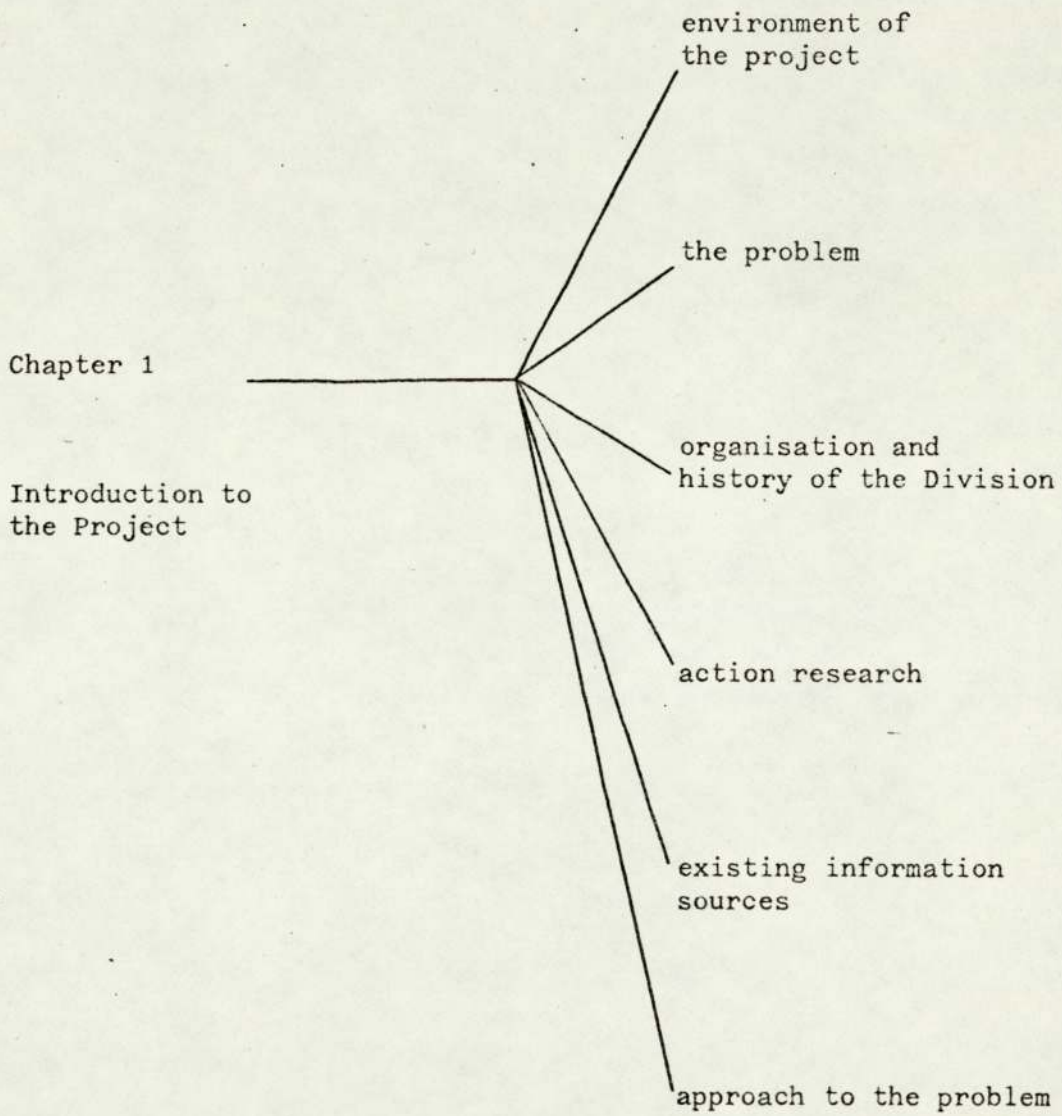
KEY WORDS

REPERTORY GRIDS ANALYSING EXECUTIVE JOBS

To my parents

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CHAPTER 1

ENVIRONMENT OF THE PROJECT

The project was conducted within the Interdisciplinary Higher Degrees (I.H.D.) Scheme at Aston University, Birmingham. The Scheme offers graduates the opportunity to earn a PhD or M.Phil. by working on a research and problem-solving project in an industrial organisation. Each student is employed by an organisation for the period of the research. The research is supervised by the organisation and the University. Therefore, there is a tripartite team: Organisation, university and student, tackling a practical problem.

The scheme places the project in an environment which is different to that of traditional research. Firstly the environment is dynamic as the project is concerned with a problem within an organisation which itself changes. Secondly, the interests of the members of the tripartite team maybe divergent and can conflict. Thirdly, the researcher is involved in action research rather than traditional research.

The organisation involved in the project was the Tyre Division of the Dunlop Company. The project was supervised by Mr. B. Ramsden, Personnel Manager for the Marketing Division. Sadly Mr Ramsden died in August, 1978 and supervision of the project passed to Mr. D. Copping, Training Manager.

THE PROBLEM

The project originated from a concern within the Personnel Department of the Marketing Division of the Dunlop Company Tyre Division that they were "not

very clever about the development of people" within the division.

In part this concern stemmed from a report presented by a firm of consultants, Marketing Improvements Limited (MIL) in 1974 when they reorganised one of the sales forces to make it more effective in the market place. The report contained a cautionary note that "clearly no organisation however accurately it is constructed, will function to the peak of its potential if the people lack the necessary knowledge and skills. We believe that the Division must adopt a more vigorous and thorough approach to the development of its people in the future, or it will again regress to its present unacceptable state".

Thus, the initial concern was the "development of people" within the Marketing Division and through discussions it became clear that this involved several areas:-

selection - it was important that the right people were selected to fill current vacancies and be suitable for future management needs.

training - having selected a person for a particular job it was necessary to know the training required for that job and for future developments.

career development - more information about the jobs in the Division would enable career development plans to be made.

organisation development - the development of people within the Division is of minimal value if the organisation structure is not correct. More information about the jobs would aid decisions on organisation development.

Collaboration with the organisation revealed that for more effective personnel decisions to be made more information was required as presently decisions were based upon the Personnel Manager's "gut feeling". Thus, the aim of the research became identified as, "to define the requirements for managers within the Marketing Division in terms of the skill, knowledge and experience they require". Once this information was available more informed decisions about personnel development could be made.

Through further discussions this purpose was elaborated into the need for a "profile" for each job in the Division. This profile would contain information about the skills and knowledge that an individual would require to do a particular job. Although jobs tend to be adjusted, often by the job holder, to match their particular skills, interests and personality, a formal definition of a job forms a framework in which these adjustments could be made. Thus, a profile produced for a job should be flexible within certain boundaries.

The relevance of a profile to each area of the "development of people" can be illustrated:-

selection - in order to decide whom to select for a particular job it is necessary to know the requirements of that job. These requirements include knowing the skills and knowledge necessary for that job. The selection decision might also be based upon whether a person has the potential to fill more senior positions in the organisation. Again this decision can only be made if the requirements of the senior posts are known. Therefore, a profile of a job would provide information upon which to base selection decisions as well as information on how to measure the skills and knowledge required. It should be noted that factors other than the skills and

knowledge required for a job should be considered when making a selection decision, for example whether the individual has the right personality to work with others in the Division.

training - Training Officers need to know the attributes required for a particular job before they can provide training. Training needs are identified by noting the differences between what is required for a job and the attributes of the person to be trained. A profile would identify the requirements of a job and allow the effectiveness of the training to be evaluated.

career development - if a profile for all the jobs within the organisation existed it would be possible to identify the experiences a person would need to do a certain job and which jobs in the organisation would provide suitable experience. Also, it would be possible to assess if an individual could perform his proposed job and if not training could be given prior to the start of the job.

organisation development - a profile for each job would allow a close examination of the jobs and anomalies, either in the assignment of tasks to a job or in the groupings of jobs, would be more readily perceived.

Therefore, the aim of the project was to produce profiles of jobs which detailed the skills and knowledge required in a job so that better decisions about personnel development could be made. An outline of the organisation and history of the Division contributes to an understanding of the project.

ORGANISATION AND HISTORY OF THE DIVISION

The Dunlop Company Limited is a major international company. Its origins date back to 1888 when John Boyd Dunlop developed the pneumatic tyre. The company has followed a policy of diversification and expansion overseas, so that it now produces a wide range of products which include tyres, floor tiles, sports goods and is represented in almost every country of the world.

The size of the Company made it necessary to adopt a decentralised organisation system. The Company is divided into four major groups:-

1. Tyre Division
2. Engineering Group
3. Industrial Group
4. Consumer Group

International Sports Company and Angus Fire Armour operate outside these groupings.

The project was initiated within Tyre Division whose organisation is shown in Figure 1. The boundary of the project was confined to the Marketing Division of the U.K. Tyre Division. Figure 2 shows the organisation of the Marketing Division. A knowledge of the structure of the Division contributes to understanding why the project was initiated and some of the problems faced during the research.

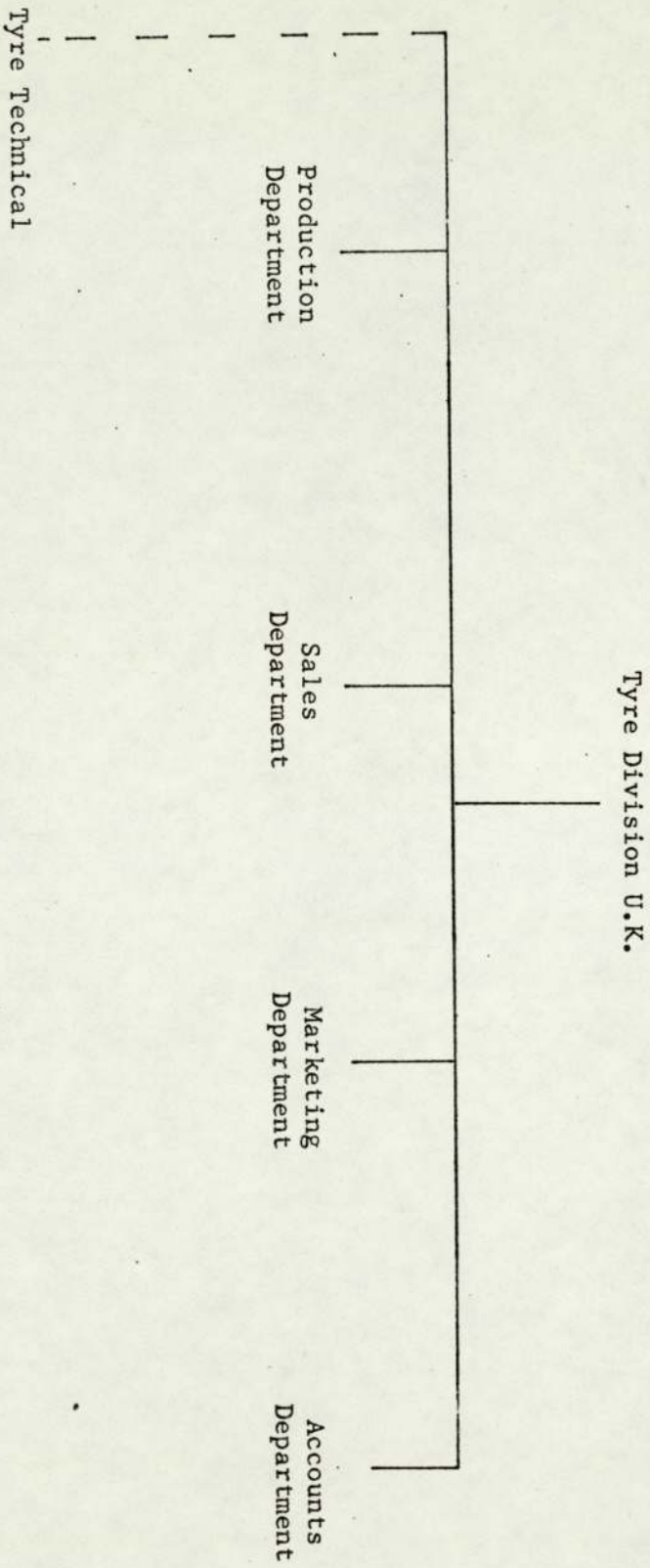


FIGURE 1 ORGANISATION OF TYRE DIVISION U.K.

The organisation of the Marketing Division is determined by the demands of its market. In an attempt to satisfy these demands, the Division is divided into three components:-

1. Original Equipment Division (OE)

This is responsible for the sale of tyres and wheels to vehicle manufacturers who fit these parts on new equipment. The Division is subdivided into four product groups:- car tyres, truck tyres, earthmover tyres, agricultural and industrial tyres. The sales force is separate to that of the Replacement Sales Division and operates largely from Fort Dunlop, Birmingham.

2. Replacement Sales Division (RS)

This Division sells tyres and tyre accessories to replace worn parts on vehicles. This Division is divided into two sales forces, although there is considerable liaison between the parts:-

- a) Trade Sales Force - they sell Tyre Division's goods to tyre distributors who then sell them to the public.

- b) Fleet Sales Force - they visit operators of fleets of vehicles to influence them to fit Dunlop equipment. This is an indirect selling operation as the fleet users buy from tyre distributors, not directly from Dunlop. This sales force is supported by service engineers.

The sales forces are organised into four regions:-

- Scotland and Northern Ireland
- the North
- the Midlands and West
- the South

In the regions there are 25 depots which act as distribution centres and as offices for the regional sales force.

3. Marketing Manager

He is responsible for two parts of the Division, - the Marketing Planning Department, including Advertising and Sales Promotion, and the Commercial Department which has four subdivisions:-

- i) Passenger Transport Division in which bus and coach firms have a mileage contract with Dunlop, in which Dunlop fit and maintain the operators' tyres.
- ii) Accessories Division in which tyre accessories are sold by Tyre Service Equipment Representatives and with the assistance of the Replacement Sales Force. The accessories range from tyre valves to tyre fitting equipment
- iii) Motorcycle Division which is responsible for the sales of motorcycle tyres. The Replacement Sales Force sells these tyres and their efforts are directed and coordinated by the Manager of the Motorcycle Division.
- iv) Competitions Division is responsible for organising rallies, car and motorcycle races, and other promotion events.

The Marketing Division is a collection of these separate parts which still retain some autonomy. A brief examination of the history of the Division and in particular a history of the Replacement Sales Force will help to explain its structure. There have been five stages in its development:-

pre 1970

At this time the Marketing Division did not exist by name. Its component parts, for example Replacement Sales, Original Equipment, were in existence but there was no formal structure linking these areas. A single market analyst attempted to coordinate their activities.

The salesmen of the Replacement Sales Force at this time were general salesmen, selling car and truck tyres to both fleet and trade users.

1970-1973

A Marketing Director was appointed to whom the Sales Directors of OE and RS and the other sections reported. From this time the title Marketing Division was established. In 1973 the Marketing Director left and was not replaced as it was thought that the Director Tyres U.K. could perform his duties. In 1971 the salesforce was divided into two forces:- one for car tyres and one for truck tyres.

1973 -

The Marketing Planning and Analysing Department was strengthened.

1974-1977

In 1974 Marketing Improvements Limited was employed by the Division to investigate the activities of the Replacement Sales Force. They recommended that the force should be further subdivided into fleet and

and trade forces to improve efficiency. This recommendation was adopted and resulted in the present structure (figure 2).

March 1978

The organisation was further modified when a Sales Director Tyres was appointed to whom the Directors of OE and RS and the Commercial Manager report, although the Marketing Manager continues to respond directly to the Director Tyres U.K.

These organisational changes have in part been the Divisions' reaction to the problems faced by the tyre industry. The industry has suffered from an influx of cheap imported tyres and a reduction of motorists spending on tyres due to higher motoring costs, which has resulted in less business but more competition. Dunlop's share of the market has also suffered due to its tardiness in producing steel radial tyres which allowed Michelin to become established in this market segment. These pressures have forced the Marketing Division to economise and the result has been a reduction in the size of the sales operation by 40%. This situation increases the pressure on the Personnel Department to ensure maximum efficiency from limited resources. The personnel function within the Marketing Division consists of a Personnel Manager, his Personal Assistant, and a Training Manager and Officer. This small team are responsible for administering personnel policies in the Marketing Division.

Their task is made harder by the character of the Division. Firstly, the history of the Division reveals its piecemeal nature which makes it difficult to devise personnel plans appropriate to all its segments. There have also been several recent changes in the Division's structure which have affected personnel policies, for example personnel have been involved

in training people for the new positions and in ensuring that the new organisation is working efficiently. Secondly, although the headquarters of the Division are at Fort Dunlop in Birmingham of the 1,250 people employed by the Division only 150 are located there, the remainder are scattered throughout the United Kingdom based at depots which makes it difficult for a central personnel function to operate. Therefore, much of the personnel administration is performed by local managers, for example the recruitment and training of staff, with the Central Department acting as an advice centre. Central personnel also formulates and monitors policies throughout the regions.

Thirdly, the Division encompasses a broad range of people from Tyre Fitters, to Sales Representatives, to Market Analysts. Thus, the Personnel Department has to be catholic to incorporate all types of personnel.

Thus, the Marketing Division has undergone several organisational changes and there are still pressures to ensure that the Division is working with maximum efficiency and economy. In order to help achieve this aim, the project was commissioned as it was hoped that it would enable more informed personnel decisions to be made. The project was different to traditional research, it would be better described as "action research".

ACTION RESEARCH

The term "action research" originates from the 1940's when psychologists in Britain and the U.S.A. were attempting to develop scientific understanding which was of both practical and theoretical value. The meaning of the term can be most readily understood with reference to an amended version of the typology used by Warr (1977), which in itself is

| <u>NATURE OF THE PROBLEM</u> | <u>METHOD</u> | <u>ROLE OF EXTERNAL PRACTITIONER</u> |
|---------------------------------------|--|--------------------------------------|
| 1. Pre-determined by the practitioner | (i) Pre-selected by practitioner | Basic researcher |
| | or | |
| | (ii) Jointly determined | Applied researcher |
| 2. Open for joint examination | Jointly determined | Action researcher |
| 3. Pre-determined by the organisation | (i) Pre-selected by the organisation | Technician |
| | or | |
| | (ii) Jointly determined | Consultant |

Figure 3. Typology of short-term engagements between an outside practitioner and an organisation.

an extension of that suggested by Cherns (1976), see figure 3. The five roles taken by an external practitioner are divided into three sets. The first set (1i and 1ii) derive from the external practitioner's choice of which problem is to be examined (column one) but differ in the origin of the method to be used. Roles 3i and 3ii focus upon problems determined by the organisation.

The action research role can be viewed as lying between roles 1.1 and 3. In these cases the organisation might have a general initial concern, for example morale or industrial relations, and the practitioner and organisation then work together to define the central problem areas and to create and apply some methods to tackle these problems. The researcher acts more like a 'consultant' as opposed to traditional university based research on applied issues where the company is used as a data source with the investigator "behind a one-way mirror" (Warr 1977), observing but not intervening in situations.

One of the significant features of action research is the collaborative nature of the relationship between action researcher and organization. Another distinguishing feature is that it is change-orientated. There is a strong emphasis on intervention to alter and improve a system. Warr (1977) stresses that this intervention is not only for practical reasons but also for scientific reasons, "to learn more about people and organizations through the manipulation of variables". This change-orientation involves the researcher in the initiation and implementation of the changes.

The concept of an action researcher can be expanded by referring to Warr's analysis of their activities and to Argyris' (1970) Primary tasks of an Interventionist.

Argyris' primary cycle involves three stages:-

- i) collecting valid and useful information
- ii) making of an informed decision
- iii) development of internal commitment to that decision, so that the organisation is acting on the choice because it fulfils its needs.

Warr elaborates how these stages can be achieved:-

- i) collecting data:- Warr indicates that this is an ongoing process. It involves the collection of preliminary data plus material to monitor and evaluate the change programme.
- ii) informed decision:- this is helped by the researcher taking part in formal educational, training or counselling activities and by data feedback procedures.
- iii) developing internal commitment:- this is a continuous process starting at the inception of the project. The researcher must remember that the purpose of the project is to create systems which are effective in his absence. Thus it is important that he does not allow the organisation to become too dependent but some assistance can be given in the development of plans and policies.

Warr also highlights some of the problems facing action researchers:-

1. To whom is the action researcher responsible? Frequently different groups within a project will have conflicting wishes and the researcher then has to decide "who is my client?"
2. Where is the boundary of the project? If the boundary of the project is too narrowly defined, whilst it is easier to work with, it is apparent that the larger system of which they are a part is often extremely

influential. Thus, attempts have to be made to define the boundary so that is manageable yet comprehensive.

3. The problem of dependence? During the research some organisations become too dependent upon the researcher. This point needs to be considered by researchers who should encourage a gradual reduction in dependence towards the end of the project so that the organisation begins to take the initiative.

4 Action versus research "Because of the varied objectives of action research there is inevitably some tension between the requirements of research and those of action". Sometimes neat experimental designs and systematic data collection methods have to be sacrificed for immediate action.

Despite these problems Warr is confident that action research is desirable and should be used more frequently.

To summarise action research is change orientated work performed in collaboration with an organisation. This work involves three stages:-

1. collecting data
2. making decisions
3. developing internal commitment

The third stage is perhaps the most important as if this is lacking the quality of the data collected and the decisions made are largely irrelevant. The development of internal commitment is crucial to action research as only through this can changes be made in collaboration with the organisation.

The action research nature of the project is exemplified by the collaboration between the company and student in defining the problem. Other aspects of action research will be evident during the course of the research. The initial stage of the work is data collection and as a preliminary step an investigation of existing information sources was made.

EXISTING INFORMATION SOURCES

There appeared to be three relevant areas of information:-

- . job descriptions
- . information about the executives employed in the Division
- . knowledge that the Staff Controller and Training Manager had gained through their experiences in the Division.

1. Job Descriptions

Job descriptions existed for all the jobs within the Marketing Division (see appendix for examples). Although these descriptions existed they were not particularly helpful for the following reasons:-

- a) many of the descriptions had been compiled several years ago. However, as explained in Chapter I the organisation structure and the nature of individual jobs has frequently changed.
- b) the descriptions of the jobs within the Replacement Sales Force had been compiled by MIL and it was not known to what extent people had worked according to these descriptions, or if changes had been made. To some extent this comment applied to all the jobs within the Division because job descriptions tell you the tasks that should be covered by that job, not what the individual actually does.
- c) Even if these two points were ignored the job descriptions provided little information about the skills and knowledge required to do a job. Instead they described the responsibilities and objectives of the job from which it was difficult to infer accurately the knowledge and skills required.

2. Managers' Personal Records

It was considered that information about the managers presently employed in the Division would contribute to an understanding of career development as it presently exists. Also, an analysis of the jobs managers have occupied might indicate where they have acquired certain attributes and what experience was deemed necessary for their present job.

The Personnel Department of the Marketing Division does not possess personal records of the staff within the Division. An individual's personal history record is kept by his manager. Proposals have been made that these records should be kept by the Personnel Department, but as yet this has not been carried out.

Therefore, the information available was limited but about 70% (approximately 100) of the personal records were obtained by searching Tyre Division's central records office. An examination of these showed that:-

- career paths were stereotyped, for example of the 8 Divisional Fleet Sales Managers, six had begun their careers as a salesman, moved to a truck tyre specialist, and then an Area Fleet Manager.
- only one person had experience of a function other than marketing
- few people moved between sales regions
- few people moved between different parts of the Division, for example from Replacement Sales to Original Equipment.

These records showed that career development was limited. Indeed a person was usually promoted into the post directly above him according to the organisation chart. This progression appears to have developed because it is easy to organise, rather than it being a definite policy. The Staff

Controller was concerned that the Division had become too "inbred" and was anxious to change this state of affairs.

Thus, the information available about the managers did not contribute significantly to an understanding of the skills and knowledge required by them to do their jobs. However, it did help to indicate some of the problem areas of personnel development.

3. The Staff Controller and the Training Manager's knowledge of the jobs.

Discussions with the Staff Controller and the Training Manager revealed their considerable knowledge about the managers employed and the jobs within the Marketing Division. However, this information was not systematically organised or objective.

The problem having been identified in some detail and the current situation investigated, the next stage was to see how the problem could be approached.

Approach to the Problem

The researcher initially considered two general approaches to the problem. Either the researcher could identify the skills and knowledge required for each of the jobs within the Marketing Division, or develop a method to identify the skills and knowledge required which could be used by the Personnel Department after the completion of the project.

1. Identification of Skills and Knowledge

The advantage of the researcher's concentrating efforts on identifying the skills and knowledge required for each of the jobs of the Division is that the Personnel Department would have a comprehensive survey of these requirements upon the completion of the research.

However, this approach has two disadvantages:-

- a) the information would become outdated, and thus redundant as the nature of jobs change over time.
- b) there are approximately 65 different job titles within the Division and it was thought unlikely that useful information could be collected from this number of jobs in the time available.

2. Develop a Method

This approach has long term benefits as having established a method it could be applied to any job by the Personnel Department, even after the completion of the project. Also, if a method is developed it can be applied to situations outside the Marketing Division. It thus has broader implications than merely finding out information relevant to a small part of the Dunlop Company.

However, adopting this approach has the disadvantage that only a sample of the jobs in the Division could be analysed in the duration of the project.

The decision about which approach should be adopted was made in collaboration with the organisation. During this collaboration several of the problems which Warr (1977) identified for the action researcher were encountered:-

1. To whom is the action researcher responsible?

The research project can be viewed in three ways:-

- a) as a means of providing information for the Personnel Department of the Division.
- b) as a training vehicle for the student
- c) as a means of obtaining a higher degree

Therefore, the action researcher has three responsibilities and at times it seemed that these conflicted. For example whilst it would be of short-term value to the Personnel Department to identify the skills and knowledge required for all the jobs in the Division, there would be minimal benefit to the student to be cast in the role of a "technician" (Warr 1977).

2. Where is the boundary of the project?

There appeared to be several boundaries to the project which it was important to define. For example what type of information was required by the Personnel Department - both its content and level of detail, what type of method would be acceptable? did all the jobs in the Division have

to be covered? if not which ones were important? All these boundary problems had to be resolved before conducting the research.

3. Action versus research

During the collaboration on the choice of approach and the boundaries of the project, the organisation was concerned that action should be taken soon. However, one of the advantages to the company of the I.H.D. scheme is that it permits someone to make a careful study of the total problem, rather than someone having to take short term 'fire-fighting' action which needs changing as inadequacies are revealed. The latter course of action is the one that organisations usually adopt for various reasons. This illustrates the conflict between action and research.

Finally, it was decided that the better approach would be to develop a method which identified the skills and knowledge required for a particular job. The method should be tested on jobs within the Division so that some factual information would also be obtained. This decision was principally made as the development of a method which could be used in the future would be of more value than a survey of the skills and knowledge required to do the jobs at the present time as it would become out-dated. This approach also seemed more valuable as it has applications outside of the specific problem area. Thus, this decision satisfied both interested parties.

Following this decision it was necessary to identify what type of method was pertinent. There seemed to be two criteria that the method should fulfil. Firstly, the method must provide results that were useful to the areas of the "development of people" previously identified. Secondly, it

must be feasible for the Personnel Department to apply the method.

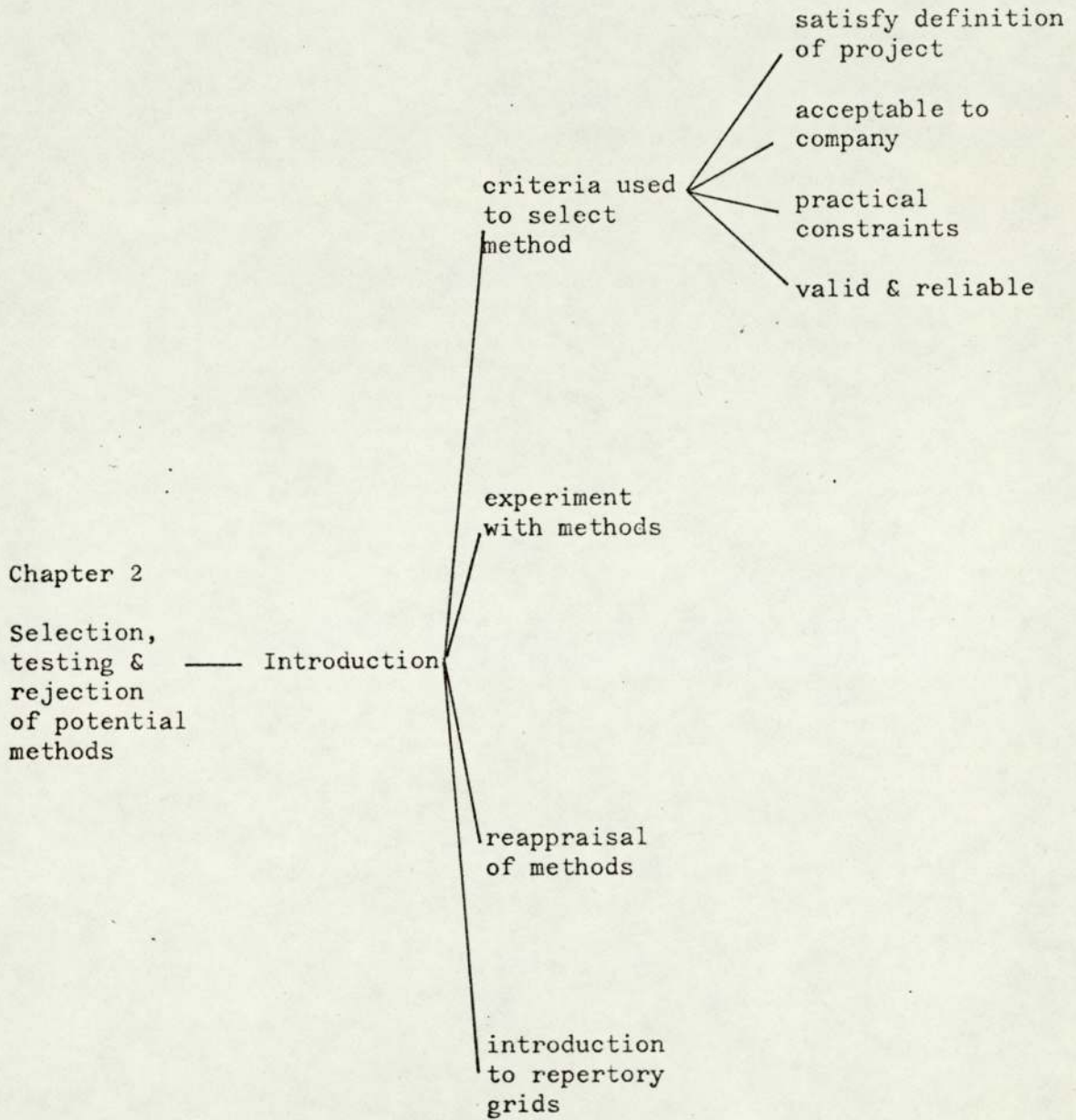
The necessity to satisfy the latter criterion highlights another aspect of action research, namely, as the purpose of the research was to develop a method which would be used by the Personnel Department it would be essential to develop internal commitment so that the method would be used upon completion of the project. As part of this process it is important that the researcher does not allow the organisation to become too dependant upon the researcher, as again the method would not be used.

Therefore, the project was defined as "to develop a method which could be used by the Personnel Department to identify the skills and knowledge required for the jobs in the Marketing Division. This information should be suitable for taking decisions regarding many aspects of personnel development". The project being defined, the principal problems facing the researcher were the development of internal commitment to the method, without permitting over-dependancy and developing a suitable method.

It appeared that a form of occupational analysis would enable the skills and knowledge required for jobs to be identified. The relevant literature on occupational analysis was consulted in search of a suitable technique. This review showed that two questions had to be answered:-

- . what type of information was needed?
- . what method was most suitable?

The jobs in the Marketing Division are of a management/executive type, as opposed to operative jobs, and before answering these questions, investigations were made as to how other researchers had studied the knowledge and skill required for management jobs. These reviews of literature are detailed in Appendix I.



INTRODUCTION

The project having been clearly defined and a knowledge gained of the ways in which other researchers had approached similar problems, it was necessary to return to the questions of:-

1. what type of information is needed?
2. what method is most suitable?

Figures 1 and 2 summarise the alternatives as previously stated. Particular difficulties were encountered in finding a method which provided the right type of information. This problem will be expanded in this chapter.

Criteria used to select method

When considering these questions several criteria needed to be satisfied:-

1. that the type of information obtained and the method chosen satisfied the definition of the project
2. the project was action research orientated which meant that the selection of a method was a collaborative venture, so the method had to be acceptable to the Company, as well as the researcher.
3. there were practical constraints upon the choice of method.
4. the method adopted should be valid and reliable.

Each of these points will be discussed in detail as the selection of an appropriate method was important.

FIGURE 1 TYPES OF OCCUPATIONAL ANALYSIS/CLASSIFICATION

| <u>DIMENSIONS OF ANALYSIS</u> | <u>DEFINITION</u> |
|-------------------------------|---|
| 1 TASKS | What people do in jobs, including outcome ie tasks analysis always include some description of achievement. |
| 2 SKILLS | Behaviour fundamental to the performance of many tasks carried out in a wide range of occupations. After Smith |
| 3 JOB ATTRIBUTES | Characteristics of a job other than the tasks actually performed eg environment, working conditions. |
| 4 INDIVIDUAL CHARACTERISTICS | Characteristics of people doing jobs. |
| 5 ACTIVITIES | Observable activity of people doing jobs. |
| 6 ORGANISATIONAL LEVEL | Place in organisational hierarchy of the job. |
| 7 JOB TITLES | The name given to the complete job. |

Figure 2 METHODS OF OCCUPATIONAL ANALYSIS/CLASSIFICATION

Morsh (1964)

1. Questionnaire
2. Check Lists - tasks orientated approach
- worker orientated approach
3. Individual interview
4. Observation interview
5. Group interview
6. Technical conference
7. Daily diary
8. Work participation
9. Critical incident technique

1. The type of information and method should satisfy the definition of the project.

Although there are numerous job analysis methods it was essential that an appropriate one be selected so the definition of the project was examined. The project was defined as "To develop a method which could be used by the Personnel Department to identify the skills and knowledge required for the jobs in the Marketing Division. This information should be suitable for taking decisions regarding many aspects of personnel development". The definition has been subdivided into 4 parts to identify the pertinent criteria:-

a) To develop a method which could be used by the Personnel Department

The above statement limited the type of method which would be suitable as the Personnel Department in the Marketing Division is a small busy department. Thus, if the method was to be used after the project it must be relatively quick to administer and easy to understand as the staff have insufficient time to learn new techniques.

This prohibited the use of work participation and observation interviews which would be too time consuming. Also, some of the sophisticated check-lists, for example PAQ would not be desirable as the staff would need some understanding of the statistical procedures involved.

b) To identify the skills and knowledge

In addition to identifying the knowledge or information required for a job, it was necessary to know the intellectual abilities and skills required. Bloom's (1956) Taxonomy of Educational Objectives defines 'skills' as the individuals' ability to do something with their knowledge, that is, that they can apply the information to new situations and problems. This has been labelled creative thinking by some, problem solving by others, but Bloom used the term 'intellectual abilities and skills'.

Therefore, the analysis should identify the behaviour/skill and knowledge required to do a job, rather than analysing what people do in their jobs, ie the tasks.

However, it was difficult to discover a method which identified skills and knowledge. The methods either analyse the tasks involved in a job eg critical incidents or a diary and infer the skills required, or the methods ask people the skills required eg interview, questionnaires.

However, the first method required a largely intuitive leap to be made by

the researcher from tasks to skills, whilst the latter method was open to interviewee bias, particularly in an organisational context where people are concerned to say what they should be doing rather than what they actually do.

c) Required for the jobs in the Marketing Division

The Marketing Division consists of 70 different Management jobs which meant that the method had to be suitable for the analysis of a management rather than an operatives job, and it should not be so time consuming that it is impossible to analyse 70 jobs, yet the information obtained should be sufficiently detailed to differentiate the jobs. The fact that the jobs studied were management jobs restricted the type of method which would be suitable, for example, it was difficult to observe a managers' job because of the time span of the activities which would require a lengthy period of observation. Also, a manager's job involves principally cognitive and inter-personal skills which were more difficult to observe than motor skills. Therefore, although Fleishman (1967) used an observation interview on 20 jobs to identify psychomotor and physical proficiency factors the technique would not be suitable for managerial jobs.

d) The information should be suitable for taking decisions regarding many aspects of personnel development.

This requirement meant that the information should be sufficiently detailed to make these decisions and should be relevant to personnel development.

Summary

Thus, to meet the requirements of the project definition the method should provide information about skills and knowledge at a sufficiently

detailed level for decisions about personnel development to be made. The method should be suitable for management jobs, easy to understand, quick to administer, yet able to differentiate jobs.

2. The method had to be acceptable to the Company

The Personnel Department wanted a method which would provide adequate information for making decisions regarding personnel development, but they were concerned that the method should not be time consuming for the managers or themselves as inaccurate results would be produced as the managers would not complete them conscientiously. Also a lengthy method would restrict the Departments' application of the method after the project.

These considerations restricted the use of lengthy check lists, for example it was doubted that a manager would complete accurately Hemphill's 575 item EPDQ. Similarly, it was felt that the managers would not use the diary method of recording their activities if they were asked to make an entry after each work episode, although this procedure was more accurate than making daily notes. Although other researchers have used these methods the Department did not feel they could persuade their personnel to co-operate.

3. Practical Constraints on the choice of method

There were also practical constraints on the choice of a method as the project was limited to 18 months and the managers were scattered throughout the United Kingdom. For example, a combination of these factors made it impossible for one person to observe 70 jobs spread

throughout the UK in the time available and even if a sample was taken it would be too small to be representative.

4. The method should be valid and reliable

Any method selected should meet two further criteria. Firstly, the method should be valid, that is whether the method measures or analyses the right thing for a particular purpose, eg if a method claims to identify the tasks of a job it should be capable of this analysis. A method should also have face validity, ie the method looks good for a particular purpose. The co-operation of the job holder is unlikely to be obtained during job analysis if he feels the method is unrelated to his job. Also, it was important for the method to have face validity in the eyes of the Personnel Department otherwise they would not permit usage of the method.

Secondly, the method must be reliable. Reliability refers to consistency throughout a series of measurements, for example if the same method was used on different occasions the results of the analysis should be the same and if a method requires a person to rate or observe an activity the same results must be obtained by different raters.

Therefore, a method was required which would be valid and reliable in defining the skills and knowledge required for a job. This was particularly difficult as many job analysis methods analyse the tasks of a job from which the skills required are inferred intuitively so the method should be valid and reliable at 2 stages:-

- . when analysing the tasks
- . when inferring the skills required for those tasks.

The validity and reliability of the methods will be discussed separately.

a. VALIDITY

For a test to be valid when analysing the tasks of a job there are two principal factors to be considered. Firstly, does the method identify all the aspects of a job? for example, if a job is only observed for a short period of time, but the activities have a long time cycle some tasks may not be performed during the observation period. Therefore, a valid picture of the job is not obtained. Similarly diaries are usually kept for only 2 - 4 weeks. If a sampling method is to be valid attempts must be made to ensure that the period studied is representative of the total job.

Also, for the method to be valid the data collected should be objective. This is a limitation of interview methods and diaries, as Horne and Lupton (1965) state they are not working with 'objective data' but rather "a description of the Manager's activities as he himself sees them". Another source of invalidity with questionnaires, check lists and diaries is that the information is a description of the job using the limited vocabulary provided by the recording device. Therefore, the information about a job can only be as good as the questions posed. Providing questions may also cause invalidation of the method as it is easy for the subject to respond in the way he believes to be "correct", rather than it being factual. This is a problem in all questionnaires but particularly in job analysis where the job holder may want to impress people in the firm and will be cautious about revealing the real situation.

Secondly, is the method used to identify the skills required for the job valid? Few of the methods appeared to even nearly satisfy this requirement. For instance Horne and Lupton (1965) analysed the activities of middle managers and recorded the time spent on each of

them in a typical week, but as they say "to infer from this the skills and knowledge required for effective middle managers in general is not a great deal better than speculation", although they consider the attempt worthwhile.

An alternative approach is to identify the skills required for a job directly rather than making inferences from tasks. However, it is difficult to obtain this information for managerial jobs. Probably the closest identification of skills are the items on the PAQ which are job elements that embrace the spectrum of human behaviours in work, as well as communication and situational aspects of the job.

b. RELIABILITY

Many of the methods appeared unreliable as the information was subjective. Marples (1967) shows that there is some evidence that self-recording is inaccurate. He reports that Gilchrist and Marples (1961) compared diary records kept by managers with observations recorded for the same period by a work study engineer. The three different managers recorded 24, 13 and 18 episodes respectively when the works study engineer reported 63, 52 and 108 episodes. They believe the error has two main causes, firstly, several different topics are discussed in one self-recorded interaction which an observer reports as several episodes and secondly, many short episodes are omitted in the self-recorded version. The need to classify episodes introduces further error as it is difficult (if not impossible) to ensure the categories are unambiguous. For example, Burns noted that in 237 matched episodes between a department manager and his three staff only 62% agreed as to the subject matter of the interaction. Similarly Stewart (1967) after testing had to drop some categories referring to subject matter as while individuals might be

consistent in their use of terms it was impossible to produce definitions which would be interpreted in the same way by different people.

Figure 3 summarises the criteria used to assess the job analysis methods and how the methods satisfy or do not satisfy the requirements. It is evident that none of the methods were considered ideal. However, their advantages and disadvantages were carefully considered to find the most suitable method which appeared to be the daily diary.

Experiment with method

The diary seemed the most suitable method for a number of reasons, one of the most important was that Stewart (1975) appeared to have obtained useful results. She had used a diary to find out how managers spend their time and from this data she produced a typology of managerial jobs which she claimed was useful for making decisions regarding selection, training and management development. Therefore, it appeared that diaries would provide information suitable for the project.

| Type of Method | Criteria | | | |
|-----------------------|-----------------|----------------------|--------------------------|--------------------|
| | Defn of project | Acceptable to Dunlop | Acceptable to researcher | Reliable and valid |
| Questionnaire | | X | | X |
| Check lists | X | X | | X |
| Individual interview | | | | X |
| Group interview | | X | | X |
| Technical conference | | X | | X |
| Daily diary | | X | | X |
| Work participation | X | X | X | X |
| Critical incident | X | | X | X |
| Observation interview | | | | X |

X Method does not satisfy the criteria

Figure 3. Summary of the criteria used to assess the suitability of job analysis methods.

Another advantage of the diary was that the information was more objective than individual interviews or critical incident technique as it does not rely so much on the subject's memory provided the entries are made in the diary after each episode. It was hoped that it would be possible to persuade the managers to comply with this requirement. Therefore, some time was spent producing a diary. The immediate problem was to produce unambiguous categories and it seemed that better categories would be produced if the researcher had an understanding of the jobs to be studied. Therefore, two days of observation interviews were conducted which as well as providing a better understanding of the jobs allowed the interview observation method to be assessed.

Figure 4 shows the record of a Divisional Fleet Sales Managers' job for one morning. In this period he spent:-

- . 52 mins on paperwork
- . 83 mins on the telephone
- . 38 mins with other people
- . 8 mins out of the office

The manager dealt with two main problems, casing charges and the European Breakdown Service and in total these problems took 44 minutes of his time. Although the job was observed only for a short time the study was illuminating for several reasons:-

1. the period of work observed was atypical as the manager spends approximately 60% of his time outside the office but it is harder to observe someone outside the office.

2. The observation provided detailed information of the tasks performed during a morning but the information it provided regarding skills was limited, other than to infer that social skills were required as 38 mins were spent with other people and 83 mins talking on the telephone.

Figure 4

OBSERVATION OF DIVISIONAL FLEET SALES MANAGER

March 1978

Mick Loomes

- 9.10 Paperwork - examining in-basket (interrupted by phone ringing in outer office)
- 9.15 Phoned Tony Logan re BOC and SP411, also discussed personnel matter and the new TSM.
- 9.25 Secretary brings in message, reads whilst on phone.
- 9.35 End call
- 9.36 Answers phone for John
- 9.37 Searches for related letter in filing cabinet
- 9.39 Rings Steve Munns - out
- 9.40 Answers phone call from Arthur
- 9.48 Discusses holiday arrangements with secretary because of course at Fort Dunlop (FD)
- 9.50 Steve Munns enters office and discusses Duraband arrangements with BRS Roadline, problem of casing charge
- 9.54 Call from Ron Muggleston re European Breakdown Service - an invoice has only just been sent in for a breakdown in June 1976
- 10.00 David Copping rings re visit of Mick Brooker and David Thomas to Coventry. Both are new to Dunlop and Mick asks questions about them.
Also arranging for two more people to visit the depot.
- 10.11 Looks for paper re Breakdown Service.
Talks to salesman on phone as Mick overhears secretary's conversation with rep - lasts 1 min.
- 10.15 Searches for phone number of fleet owner re Breakdown.
Rings Directory Enquiries.
- 10.17 Rings the fleet (Hercock & Simpson) they agree to pay.
- 10.25 Rings Ron Muggleston to arrange invoices - out.
- 10.26 Looks at paperwork.
- 10.27 Rings Paul - out.
- 10.32 Paul returns call re Durabands for BRS and casing charges - wait till Monday.
- 10.46 Goes out of office to see Peter Hagan
- 10.55 Returns to office
- 11.05 Maurice rings re sales rep who hasn't got his car.
Arranges a meeting to visit a fleet, probably on a Friday or Saturday.
- 11.15 Tries to plan meeting - makes note in diary
- 11.16 Phones Ron Muggleston - confirms Breakdown Service, decides procedure for getting payment.
- 11.20 Reads incoming letter
- 11.43 Rings Ted Cutler O.E. - out.
- 11.44 Internal call to Agnes to know stocks of certain tyre.
- 11.45 Rep calls in and Mick asks him about service engineer.
Checks for Pickfords at Redditch. David also reports that Goodyear are giving calculators away. Mick asks him to get a copy of Goodyears literature if possible.
- 11.50 Returns to paperwork.
Visit to gents - John followed - I could not observe.
Returns to offices and chats to Secretary.
Paperwork re a new fleet depot opening - salesman want more information.
- 12.30 Rang Alan Gilbert, Denovo, at FD - out

However, this method does not directly indicate the skills required for the job.

3. The method was not acceptable to the manager or the researcher. For the manager it was distracting, even annoying, to be constantly observed, whilst for the researcher it was a tedious, uninteresting activity.

However, the observation interview did provide a better understanding of the jobs for the researcher and provided useful background information for designing a diary. The format of the diary was based on Stewart's (1967) and Horne and Luptons (1965). Several formats were tried in an attempt to make the diary easy for the manager to complete whilst still providing sufficiently detailed information. The researcher wanted the managers to complete a diary sheet after each episode but the Personnel manager felt it to be too time consuming for the managers and would not permit this format. Therefore, a daily diary sheet was produced, see figure 5.

However, the more closely the diary method was examined the more unsatisfactory it seemed in 2 main respects, firstly if a record of the activities was only made daily it would not be reliable and secondly, even if an accurate record of what a manager does in his job was obtained it seemed a large intuitive leap to infer the skills and knowledge required for that job. Therefore, the diary method was rejected as a suitable technique. The other methods were re-examined but the questionnaires and check lists had the same disadvantage as the diary, namely the difficulty of making inferences about skills. Whilst the interview methods appeared to be subjective and unreliable, a reappraisal of the problem was required.

Figure 5 DAILY DIARY

At the end of each working day please estimate the amount of time (in hours and minutes) you have spent on each of the following activities.

Hours Mins

1. How long have you spent:-
 - a) in your own office building
 - b) in travelling
(do not include time spent travelling to and from work)
 - c) in places other than your own office building

2. How long have you spent:-
 - a) alone
 - b) reading
 - c) writing
 - d) calculating
 - e) planning
 - f) talking (to one other person)
 - g) in meetings (2+ people)
 - h) social functions
 - i) in committees

3. How long have you spent with the following people:-

internal

 - a) your immediate boss
 - b) your staff (people directly responsible to you)
 - c) your colleagues
 - d) other people more senior than yourself
 - e) other juniors (not on your staff)

external

 - f) customers for Dunlop products
 - g) suppliers to Dunlop
 - h) other external people

4. How long have you spent on matters to do with:-
 - a) marketing
 - b) selling
 - c) production
 - d) research
 - e) finance
 - f) personnel and industrial relations
 - g) others - please specify

Hours Mins

5. What have been your major problems today and how much of your time has been spent dealing with each:-

1.

2.

3.

etc.

6. Time you arrived at work today

Time spent at lunch

Time you left work

(Don't worry - I'm not checking up! It is only to see if the time you spent on the above functions accounts fully for your working day).

Reappraisal of the Problem

The major limitation of all the methods was the difficulty of identifying the skills required to do the tasks of a job. This difficulty led the researcher to examine a form of Skills Analysis suggested by Dunn (1971). Dunn was interested in skills analysis as a new approach to accident research, but the methods seemed appropriate to job analysis. He says that "Skills Analysis is dependent upon regarding the human being as a processor of information", that is, the human being takes in information from the environment through his senses and having gained the necessary information it is then processed in some way in the central nervous system and decisions are made regarding appropriate action. The action is then taken by the limbs, vocal chords or other effector processes. Man monitors his output in order to be sure that the required action is being taken.

Briefly, skills analysis attempts to identify the receptor, central and effector requirements of the job. The receptor requirements are the senses the individual needs to receive inputs from the environment. The central requirements include such things as strategies for dealing with incoming data and the output requirements are the things the individual needs to achieve his desired course of action.

Traditional forms of job analysis have tapped the inputs and outputs of the system in that they can find out the tasks an individual performs in a job. However, they have been relatively unsuccessful at identifying the central processors. Dunn explains the term central processors further. He states that "the human being has an internal model of the world on which he bases decisions about the world". Internal models/central processors are a way of considering the concept of cognitive skill.

If an individual is cognitively skilled at an activity he has a particular internal model which allows him to perform that task effectively but an unskilled person does not have a suitable model to enable him to accomplish a task, although this does not take into consideration the necessary skilled physical co-ordination.

The concept of man as possessing an internal model of the world on which he bases decisions about the world prompted the question; what are a manager's internal models of the world on which he bases his decisions?. If a manager has a suitable internal model he becomes 'skilled' at his job, so if these models could be identified the skills necessary for the managers' job would be known.

An understanding of the internal model necessary for a job could be used in many aspects of personnel development, for example selection decisions could be made depending upon whether a person had a suitable internal model for a particular job. Also, perhaps individuals internal models could be changed to make them better at their job, ie training decisions could be based on this data. The concept of an internal model matches the idea of a "profile" for jobs as it would detail the internal model required for each job.

It seemed that the identification of internal models would provide valuable information and that the problem was to find a method which could identify these models. None of the job analysis techniques previously examined were suitable. Therefore, an alternative method had to be found and the possibility of using repertory grid technique to identify internal models was examined.

Repertory Grids

Repertory grids were developed by George Kelly (1955), a clinical psychologist, to investigate his theory of Personal Constructs. Kelly maintained that people have their own individual ways of looking at the world. Each individual builds his view of the world into a 'mental map' which is built up from experience and is constantly adjusted in the light of experience. The individual's behaviour is determined by his mental map. Kelly developed Repertory grids to render mental maps objective and explicit in order for him to understand his clients' behaviour. Kelly's idea of mental maps corresponds closely to the concept of man possessing an internal model of the world. Thus, it seemed possible that repertory grids would identify these models.

Although repertory grids have been used in clinical psychology for over 20 years it was only in the last five years that their potential had begun to be realised in the field of industrial psychology. They are an extremely flexible tool for "establishing the content and structure of a manager's thoughts" (Smith and Stewart 1977) as grids can be elicited on any aspect of an individual's mental map of the world which might be of interest to an analyst, in this case the individuals' job.

The principal advantage of a repertory grid is that it concentrates on the individual and the way he structures his view of his world. In order to understand the repertory grid it is necessary to introduce two further concepts. Firstly, elements which are the things the individual thinks about, for example the individual could be asked to list the tasks he does in his job and these are the elements of the grid. Secondly, constructs which are the qualities a person uses to describe the elements of his map, for example an individual might describe his

tasks as interesting or boring, as difficult or easy.

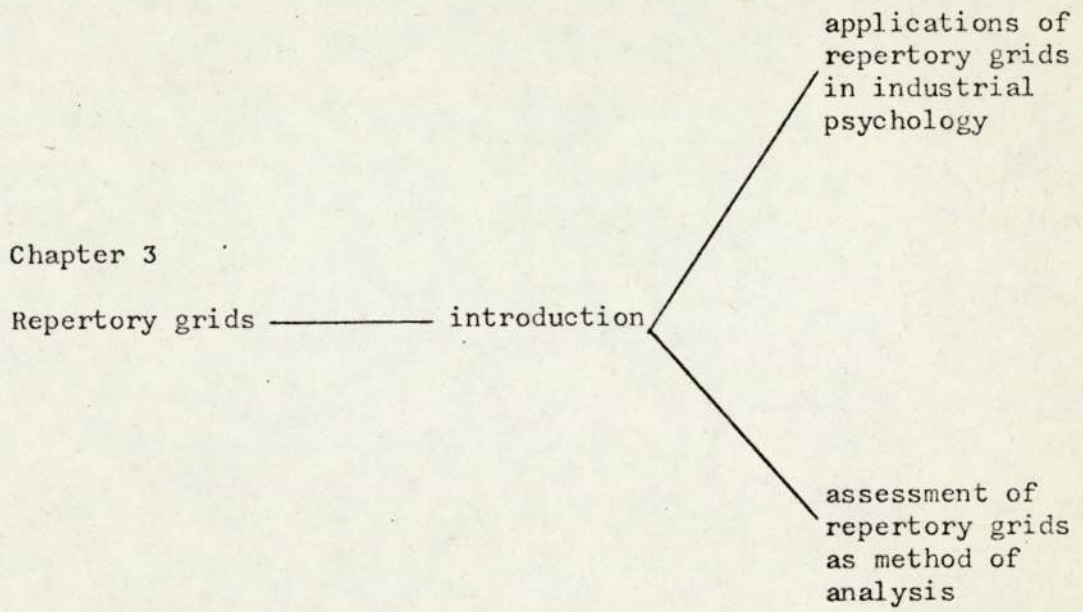
Even this preliminary understanding of repertory grids seemed to show that they did not suffer some of the disadvantages of other techniques:-

1. Repertory grids eliminate the problem of developing unambiguous categories for diaries, instead all the labels are provided by the subject.
2. As the labels are provided by the subject there is no bias from the researcher, unlike questionnaires where the perceptions of the subject are forced into the 'conceptual boxes' (Smith and Ashton 1975) of the researcher.
3. The technique almost eliminates the problem of subjects' biasing the results as the measurements are oblique. This point will be elaborated later.
4. The grids elicit the subjects' 'mental map' of his job which can include the tasks of the job and the skills required making it unnecessary for the researcher to make an intuitive leap from tasks to skills, instead the individuals' perceptions are elicited.
5. There was also some evidence that the grids were reliable and valid although as Smith and Stewart (1977) state there is some doubt as to whether these are useful concepts for grids. Some researchers have attempted to assess their reliability, Epting (1972) obtained test-retest reliabilities in three areas of 0.65, 0.62 and 0.64. Some indication of the validity of grids may be drawn from the relationships that have been detected using grid methodology. For example Bender (1976) reports a study in which grids were used to predict the way that individuals behaved towards other people. These predictions were then validated against wives' reports of actual behaviour towards the same people. The results were highly significant.

As well as highlighting the strengths of repertory grids some disadvantages were apparent. Firstly, because of its novelty the technique employs concepts that are alien to current managerial vocabulary which makes it difficult to communicate the method and results. Secondly, the grids are elicited in an interview lasting approximately two hours which made it time consuming for the managers and the researcher. Thirdly, most forms of grid analysis rely on computer programmes which might have discouraged the Personnel Department adopting the technique.

Thus, the disadvantages of the method were that it was time consuming and required the Personnel Department to understand new techniques. However, discussions with the Personnel Manager revealed that if the information obtained was useful these disadvantages would be outweighed ie a method which provided good quality information on a few jobs was more useful to him than one that gave poor information on many jobs.

On this basis it was decided to investigate Personal Construct theory and the method of eliciting and analysing repertory grids more closely. If after this detailed investigation the grids still appeared useful a pilot study would be made using the technique.



INTRODUCTION

Personal Construct Theory

Repertory grids are founded on Kelly's Personal Construct Theory which was examined to obtain a better understanding of repertory grids.

In 1955 George Kelly, a Clinical Psychologist, developed Personal Construct Theory, in an attempt to understand the behaviour of his patients. Kelly begins by pointing out that most psychological theories, for instances those of Man the machine or of Man the biological organism, fail to account for the behaviour of those who devise and use such theories, it is as though there are two types of people, Man and Psychologists or Scientists. Therefore, Kelly wanted to produce a theory which regarded Man as a Scientist attempting to make sense of his environment. Thus, like a scientist Man constructs theories, tests hypothesis and weighs the experimental evidence.

The basic philosophical assumption in Kelly's Personal Construct Theory (PCT) is that all events are subject to 'alternative constructions'. There is no absolute truth but only ways of interpreting events, which are more or less useful in advancing our ability to predict future events. Each individual formulates his own personal construct system and Kelly thought he could find out 'why people act as they do' by knowing how they make sense of their environment.

Kelly defines his theory in terms of the fundamental postulate that "a person's processes are psychologically channelised by the ways in which he anticipates events". He elaborated his postulate by means of eleven corollaries.

The details of PCT have been included in Appendix II. Kelly devised various methods for eliciting and measuring personal construct systems and since Kelly other researchers have developed ways of analysing both the content and structure of construct systems. These methods were studied and are detailed in Appendix II. This chapter deals solely with the application of repertory grids in industrial psychology which is of direct concern to the project.

Smith and Stewart (1977) provide a useful review article in which they state that 'although repertory grids have been used in a clinical setting since before 1955 the potential applications for management have only recently been recognised' and even more recently areas outside management.

Five main areas of application can be identified: job analysis, selection, vocational guidance, training and quality control.

a) Job analysis

In their paper Smith and Stewart suggest that grids can be used in job analysis. Managers can be asked 'to complete logs of the tasks they complete and these tasks can be used as elements in a grid. The constructs can be provided from a standard list'. They consider that a job description based on these results will be better organised and more quantitative than usual descriptions of management jobs.

They used repertory grids in a similar study to investigate the role of field training advisors in an Industrial Training Board (1979). Two groups of advisors were interviewed and the results analysed using PREFAN and COIN computer packages. Five components were found to explain the

advisors' conception of their role:-

1. interpersonal skills
2. reasoning and administrative skills
3. training expertise
4. writing letters
5. to maintain credibility

As well as analysing jobs grids have been used for identifying criteria of effective management. A. and V. Stewart (1976) used the procedure for eliciting constructs to produce questions for a performance questionnaire. Acting as consultants, they were concerned in their work to produce a questionnaire which reflected the perceptions of the client organisation of what constituted the character of an effective manager at a given level in a given type of job. They found that the grid technique enabled them to elicit far more questions than they had previously, the yield increased from 20 to 60 - 85 items, and the items were free of interviewer bias. This method of producing a performance questionnaire has been used by several companies, including Imperial Chemical Industries (I.C.I.).

b) Selection

Repertory grids, as well as being used for job analysis, which should be the first stage of the selection process, have been used at a further stage of selection. For example M. Smith has recently carried out research (unpublished) with the Knitting and Lace Industrial Training Board where he analysed the jobs of instructors and supervisors. After discovering the major components of the jobs he identified tests which measure the components, for example "reasoning ability" might be measured by an

intelligence test. Therefore, grids can be used for identifying suitable selection tests.

V. Stewart (1975) used the repertory grid technique as a method of selecting Training Officers. The elements were a list of types of training from which she elicited constructs from the applicants. She relied on a subjective analysis of the constructs elicited but she comments that the procedure revealed everything she needed to know. Smith and Stewart (1977) say that 'it is quite easy to envisage the use of repertory grids in the classic selection situation where the grid and its various indices could be compared to norms obtained by groups of successful managers'.

c) Vocational guidance

Smith, Hartley and Stewart (1978) have used repertory grids in vocational guidance. Their aim was to map objectively an individual's own ideas about the work and the different occupational routes. For example in a case study of a university student unhappy with his course they were able to reveal the superficial nature of the subjects' constructs and suggest ways in which he might be counselled.

Could (1978) used repertory grids to match the unskilled job seeker to jobs. Employment Agencies found difficulty in placing unskilled workers in satisfactory jobs, although the job seekers themselves had little difficulty in finding suitable jobs by means of newspapers or direct approaches to employers. It seemed that if unskilled people were able to find their own jobs satisfactorily why not ask them how to do it. This was based on Kelly's first principle which was 'if you dont know what is

wrong with the patient, ask him, he may be able to tell you!'. .

Therefore, the aim was to classify unskilled jobs according to the way unskilled jobseekers perceive them and then match jobs and jobseekers on the same criteria as they successfully match themselves. Constructs were elicited from 75 jobseekers and used as the items on a checklist. The list has been tested at an Employment Office where it was found to improve matching of jobs and jobseekers. Jobseekers stated that they liked the checklist as it aided them in describing the type of work they wanted and employers found it of assistance in describing the characteristics of their vacancy.

d) Training

There has been substantial application of repertory grids in all aspects of training: analysis, design and evaluation.

Analysis. Easterby-Smith and Edwards (1977) used a form of repertory grid to analyse training needs, as elements they used a list of 'problems' the subjects faced and elicited 'solutions' to these problems as constructs. The grid is completed according to the appropriateness of each 'solution' to each of the problems defined. The analysis of these grids showed areas where the subjects lacked solutions to their problems and so training needs were identified.

Design. The repertory grid can be used as a training technique in its own right as exposing an individual to his own cognitive map can be an important learning experience. Boot (1979) developed an interactive computer programme, 'NIPPER', to aid management learning. The role of the computer was to aid the process of learning by feeding back to the

learner patterns which emerge in their reflections. These patterns are represented spatially which makes them easy to comprehend.

A similar programme, PEGASUS, has been developed by Shaw (1977). She considers the PEGASUS procedure to be stimulating and demanding for the individual. This training method has considerable potential in any area where an individuals' judgement is important.

Evaluation Grids have been used extensively to evaluate training for several reasons. Firstly, traditional evaluation procedures have proved inadequate for evaluating management training where there is no observable or concrete end product, for example management training in industrial relations is concerned with attitudes and perceptions, but repertory grids are ideally suited for the measurement of perceptions.

Secondly, repertory grids provide a picture of an individual's map at a point in time and the map changes in the light of new experiences. Therefore, a training course can be evaluated by using repertory grids before and after the course, noting the changes that have taken place and seeing if the changes satisfy the objectives of the course.

Smith and Ashton (1975) used repertory grids to evaluate a management training course. The evaluation design was to take before and after measures of the training groups and a matched control group. Critical differences were noted between the training and control group. The maps also allowed the direction of change of the training group to be measured and matched with the course objectives.

Fairbairns (1978) used grids to evaluate the 'Wider Opportunities for Women (WOW) Courses' run by the Training Services Division of the Manpower Services Commission. The aims of the courses were to help students, mainly women who have been out of full-time employment for some time, to make informed occupational plans and to equip them with both the information and self-confidence to carry out these plans. A repertory grid was given before and at the end of the course and it was found that the grid detected changes which seemed to fit the original hypothesis. One example 'Martha' at the beginning of the course did not make distinctions between jobs, but in the second grid the jobs were sorted into groups and a clear choice of how she would ideally spend her time had been made. Therefore, the grids had been successful at evaluating the courses.

Quality Control

Thomas (1978) used repertory grids to attempt an understanding of the human aspect of quality control. He identified two aspects of subjective judgement, one was the assessment of the quality of those aspects of the product which were as yet unmeasurable in objective terms. The other was an understanding of how all the aspects of a product combine into the quality of its performance.

The use of grids in this context can be illustrated by a project on the inspection of knitwear by Pope, Shaw and Thomas (1977). A group of inspectors and supervisors were asked to examine a collection of garments and produce a list of possible faults. The faults became the elements of the grid and constructs were elicited concerning the similarities and differences of these faults. The pilot study revealed that the results

could be used to explore various problems associated with achieving and maintaining quality within a manufacturing organisation. Grids have also been used for market research.

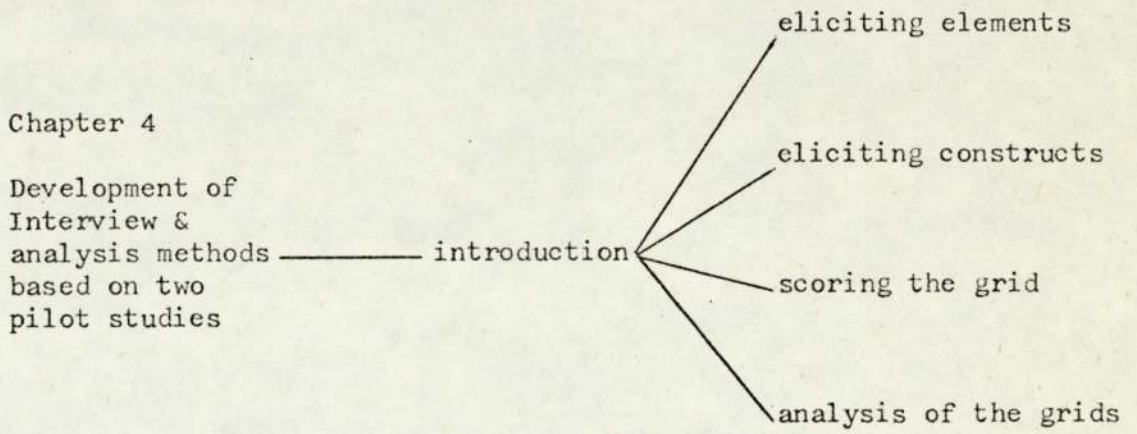
Assessment of the Technique

This review of the applications of repertory grid technique indicates their potential as a personnel tool. Easterby-Smith (1976) says that 'the main strength of the technique is its ability to indicate how people see the world around themselves in their own terms, rather than in the terms of the psychologists who may be testing them'. Therefore, its main application has been to gain information about the way that people view their jobs and the people they work with. Much of the research has yet to be published which indicates the speed at which this technique is developing.

The drawbacks of the technique have also been investigated. Murphy (1978) shares some of the problems he has faced in using repertory grids in an organisational context. He found that the application of grid methodology 'is a source of some apprehension and not a little alienation. The attribution of ulterior motives, the difficulties in comprehending the task and particular measuring techniques and above all the apparent irrelevance of the procedure creates for the researcher a situation in which the validity of the activity is in some doubt'. As a consequence he found that participation is less committed and 'the grids elicited are of dubious value'. Ultimately 'it is extremely difficult to encourage the client to take action on the basis of conclusions which may be drawn from repertory grid data'. Thus, the major difficulty seemed to be in explaining the method to the subjects. If this was unsuccessful there

would be a lack of internal commitment to the results. However, this difficulty is common to most new techniques.

On the basis of the review of applications and the assessment it seemed that the application of the technique would prove fruitful. The primary reason for adoption of the technique was adherence to Kelly's first principle, the simple statement 'if you dont know what is wrong with the patient, ask him, he may be able to tell you.'" Thus, if it was not known what skills and knowledge a manager requires for his job 'ask him he may be able to tell you.'" The secondary reason was that repertory grid technique offered a way of finding out this information objectively, as it is not biased by the interviewer. The technique also satisfied the practical constraints of the project, principally time, and was acceptable to the company as it promised to provide useful information. It was hoped that the drawbacks caused by misunderstanding could be overcome.



Form of Interview and Analysis Method

The form of the interview and analysis method was developed by reading the literature on repertory grids and two pilot studies. A preliminary pilot study (Pilot I) was made on a departmental tutor to give the researcher some experience at using repertory grids. This was followed by a pilot study (Pilot II) on four Account Executives in the Original Equipment Division of Marketing Division. These executives were selected for the pilot study as they were based in Birmingham which minimised the cost of the interviews which was important if they proved unsuccessful. This study was conducted in order to refine the methodology and to evaluate the results produced.

There are four stages to the methodology:-

- . eliciting elements
- . eliciting constructs
- . scoring the elements on each grid
- . analysis of the grids

Appendix II outlined several different forms of repertory grid. Two criteria were used to determine the appropriateness of various methods:-

1. does the method provide suitable information about a job?
2. is the method easy for the subject to understand and complete?

Special attention was paid to the second criteria following Murphy's (1978) reservations on the use of grids in organisations.

The development of a suitable format for each stage in the grid will be discussed with reference to both pilot studies.

1. Eliciting Elements

To decide upon suitable elements the investigator must first decide upon the subject area (domain) he wishes to map, then he must elicit a sample of objects his subject thinks about within that subject area.

The domain of interest was the subject's job and in particular the skills and knowledge required to do that job. There appeared to be two sets of objects the subject might think about within the domain of his job: tasks he performs and people he works with i.e. superiors, colleagues and subordinates. However, it was thought that the names of tasks would be more suitable elements as the aim of the grid was to discover the skills and knowledge required to do these tasks. Also, the list of tasks itself might contribute to the job profile.

The next question was how to elicit the tasks. A. & V. Stewart (1976) elicited tasks by asking the interviewee to write the name of activities he performs in his job. They stressed that the word should be an activity, not a role or area of responsibility. "A good rule of thumb is that the statement should have a verb in it". The subject was then asked to write down on a card:-

1. something he does which is very important
2. something he does frequently - not necessarily important, but something that occupies a good deal of time
3. an activity which, though important, is unlikely to appear in his diary - the one-off problem; or sudden emergency

4. two more important tasks
5. two more frequent tasks
6. the final (eighth) card is filled "by saying to the interviewee that it should now be obvious that we are trying to pick out the highlights of his job and is there an activity which he thinks is missing?"

A similar method was used by Fairbairns (1977)

Following these examples, a similar list of tasks was used for pilot I. The subject had no difficulty in naming tasks in response to these questions (listed in figure 1) but on analysing the results it was felt that nine elements were insufficient to describe the subjects' job. Therefore, an amended and extended list of questions was used at the start of pilot II (see figure 2). It was intended that this list would provide a complete picture of the job. It was found that the subjects had difficulty in describing a task which was a 'one-off problem, sudden emergency' as the greater part of their job involves reacting quickly to customers' queries and problems. This study also showed the importance of ensuring the elements were precisely defined activities because if the elements were vague it was difficult for the grid to be completed.

After three interviews of pilot II had been conducted it was thought that a more complete picture of a job could be elicited by merely asking the subject to list activities he spends his time doing in his job, rather than asking an elaborate series of questions. This method was tried in the last interview of pilot II. The subject had no difficulty in listing his activities and they seemed to be a more complete picture of the important parts of his job rather than an assortment of activities he found boring, dislikable or interesting. The latter method had the

FIGURE 1

Questions asked to elicit elements in Pilot I

Could you say the name of an activity you perform in your job:-

- 1) which is very important in your job
- 2) which is not really very important in your job
- 3) almost every day
- 4) infrequently but is important
- 5) which is also very important in your job
- 6) which you spend a lot of time doing
- 7) which is important but unlikely to appear in your diary -
i.e. the one-off problem, the sudden emergency.
- 8) which is essential in your job?
- 9) it should now be obvious that I am trying to pick out
"highlights" of your job - have I missed any?

FIGURE 2

ELICITING ELEMENTS IN PILOT II

INTRODUCTION

I would like you to think about your job - the actual tasks you spend your time doing etc.

Could you name an activity you perform:-

- 1) which is very important in your job
- 2) almost every day
- 3) something that you like doing
- 4) something that tends to irritate you that you have to do
- 5) which you spend a lot of time doing
- 6) infrequently but is important
- 7) which is important but unlikely to appear in your diary - the one-off problem, sudden emergency
- 8) something you dislike doing
- 9) which is essential in your job
- 10) something you do well
- 11) something that you find boring to do
- 12) any other important aspects of your job I have missed

additional advantage that the elicitation of the elements was not biased by the interviewer. In eliciting the elements it was important that the activities were tasks the subject actually spent his time doing as opposed to duties detailed in his job description. Usually about 15 elements were elicited.

2. Eliciting Constructs

The job tasks (elements) were each written on separate cards which were numbered on the reverse side. The cards were presented in triads to the subject and he was asked to identify the two cards that made a pair and the odd man out. Once the cards had been arranged the subject was asked to say what made two the same and different from the other, and the answer to these questions provided names for both poles of the construct. Frequently, several constructs were elicited from the same triad.

Some of the constructs were not considered suitable following the guidance provided by Smith and Stewart (1977). Constructs were not suitable if they were:-

- situational (done in Birmingham ... done in Maidstone)
- impermeable (driving ... not driving)
- permeable (requires communicating skill ... ability to talk)
- superficial (task is easy ... task is hard)
- vague (task is OK ... task is not OK)
- direct product of role title (he is a Director)

When an unsuitable construct was given, the interviewer would say "that is one way in which they are alike. Can you tell me any other way in which they are alike?" A similar procedure was followed when a construct was repeated. Different triads of elements were presented to the subject until he failed to produce new constructs, which varied from 6 - 12 constructs.

Several researchers do not elicit the contrast pole of the construct but when Kelly developed construct theory he stressed the bipolar characteristic of a construct. Therefore, the contrast pole was always elicited by asking how the element in the elicitation triad was different from the two that were stated to be alike? An alternative method was to ask "what the opposite of the stated likeness is?" The latter method has been shown to produce more bipolar constructs. Epting, Suchman and Micheson (1977) state 'no doubt people often give the conventional opposite of the construct rather than the opposite the person actually uses'. This made Kelly's approach seem preferable. During the pilot studies it was evident that the contrast pole would frequently be a negation of the emergent pole, but it was still considered important to make this negation explicit so that the subject's construct is fully understood.

The pilot studies also revealed difficulties in eliciting suitable constructs. A list of unsuitable constructs has already been given but an additional criterion of suitability was applied. The aim of the grid interviews was to discover the skills and knowledge the subject perceived necessary for his job. Pilot study II revealed that many of the constructs would not contribute this information, for example, the constructs "enjoyable - not enjoyable", interesting activity - boring activity".

Therefore, the elicitation procedure was changed so that the interviewer asked the subject to identify the two tasks that made a pair in terms of the skills and knowledge they required and to identify the odd man out. If a construct was elicited that did not concern skills and knowledge, the interviewer would say "that is the one way in which they are alike. Can you tell me another way in terms of the skills and knowledge required".

This procedure allowed the domain to be more clearly defined which helped the subjects' produce constructs as they understood the type of information required. It was not thought that the procedure introduced any interviewer bias merely, it defined the domain.

Pilot study II showed that subjects at the beginning of the interview found it difficult to produce constructs, instead they described the tasks in more detail and gave examples of the activities but once a couple of constructs had been elicited, the subjects found them easier to produce.

3. Scoring the Grid

There are various formats for completing the grid. Smith and Stewart (1977) indicate that "careful choice of the mode of presentation can do much to maintain rapport between investigator and his subject". There are 3 variables to consider:-

1. How the grid is to be scored?

Kelly merely asked his subjects to indicate whether the emergent or contrast pole applied to each element. Other investigators have asked subjects to rank the elements on each of the constructs, but



if the number of elements is large, ranking becomes difficult and may force a discrimination where no difference in fact exists. Alternatively the subject can be asked to rate the elements on each construct using a points scale. A three, five or even hundred point scale can be used provided the individual's level of discrimination can cope with the range of values available. Pilot I used a 7 point scale, but it was found that the executives in pilot II could not cope with this range of values and a 5 point scale was adopted. The subjects appeared to be able to cope with this range of values.

2. When the constructs are to be scored?

In pilot I and the beginning of pilot II all the constructs were elicited, then the subject was asked to examine the first construct and score the elements. However, it was a daunting prospect to fill in a whole grid at once, so, after the construct(s) had been elicited from each triad they were scored. Fairbairns (1978) used this procedure and lists several of its advantages:-

- " . people new to grid procedures grasp the point of what they are doing early on by being shown the whole process
- . none of the flavour of the constructs is lost through the meaning of the verbal labels being forgotten (as often happens by the end of the interview).
- . constructs are rated independently since each 'row' of the grid is completed at a separate stage of the procedure".

These advantages were found in pilot II.

3. The format of the grid?

The format of the grid was also changed in pilot II to allow the constructs to be scored more easily. The first format positioned the poles of the construct at opposite sides of a 15" piece of paper, with the elements between the poles, but the subjects tended to regard only one pole of the construct. Therefore, to persuade them that the constructs were bipolar both poles were written at the left side of the grid with the rating scale drawn above the poles which permitted easier scoring. Figure 3 and 4 show examples of both forms.

FIGURE 3 EXAMPLE OF REPERTORY GRID FORM USED IN PILOT 1

SCALE 7..6..5..4..3..2..1

| <u>CONSTRUCT</u> | <u>ELEMENTS</u> | | | | | | | | | | | | <u>CONSTRUCT</u> | |
|------------------|-----------------|---|---|---|---|---|---|---|---|----|----|----|------------------|--|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | |
| 1. | | | | | | | | | | | | | | |
| 2. | | | | | | | | | | | | | | |
| 3. | | | | | | | | | | | | | | |
| 4. | | | | | | | | | | | | | | |
| 5. | | | | | | | | | | | | | | |
| 6. | | | | | | | | | | | | | | |
| 7. | | | | | | | | | | | | | | |

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FIGURE 4. EXAMPLE OF REFERENCE CASE FORM

| <u>CONSTRUCTS</u> | | | | | <u>ELEMENTS</u> | | | | | | | | | | | |
|-------------------|--------|--------|--------|---|-----------------|---|---|---|---|---|---|---|---|----|----|----|
| 5..... | 4..... | 3..... | 2..... | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | |

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1

SUMMARY OF ELICITATION PROCEDURE

In summary there were three stages to the elicitation of a grid:-

- . eliciting elements: the subject was asked to list activities he spends his time doing in his job (approximately 15). These tasks were each written on separate cards.

- . eliciting constructs: the cards were presented in triads to the subject and he was asked to identify the two cards that made a pair, in terms of the skills or knowledge they required, and the odd man out. Frequently several constructs were elicited from one triad. Different triads of elements were presented to the subject until he failed to produce new constructs, which ranged from 6-12 constructs.

- . scoring the grid: after the construct(s) had been elicited from each triad the elements were scored on a five point scale.

Analysis of the Grids

The pilot studies were also useful in determining the best way to analyse the data. Bannister and Mair distinguished two forms of grid analysis:-

- . analysis of content
- . analysis of structure

As reviewed in Appendix II there are several ways in which both forms of analysis can be done, including computer programmes.

Content Analysis. Each grid contains a wealth of information as it details the tasks of a job, the skills and knowledge perceived as necessary and the importance of each skill for each task. Therefore, it seemed worthwhile analysing the content of the grid.

In pilot II the content was analysed by listing the tasks and skills required for the Account Executives' job (see figures 5 and 6). Although these lists provided an adequate profile of the job they gave no indication of which skills each task required. Therefore, a 'general grid' was developed which summarises the information which is detailed in Chapter 5 (OE Study). The disadvantage of this method was that the description was purely qualitative and it was easier for the results to be influenced by the analyst using this method than if a computer programme was used.

However, content analysis had these advantages:-

1. the analysis procedure was simple which was essential if they were to be used upon completion of the project.

FIGURE 5

LIST OF ELEMENTS PRODUCED BY A/C EXECUTIVES, OE

1. Tasks concerned with customer relationships.
 - creating a working relationship
 - liaise with customer
 - being reliable
 - lunch time entertaining
 - explaining Dunlop's failure to customer
 - fly Dunlop flag

2. Tasks concerned with business and the customer.
 - establishing business share
 - establishing schedules
 - fixing prices
 - negotiating with customer
 - selling company products
 - trouble shooting

3. Tasks concerned with customer information.
 - intelligence collecting
 - intelligence reporting

4. Tasks internal to Dunlop.
 - dealing with supply problems
 - chasing deliveries
 - doing other departments work
 - planning
 - writing monthly reports
 - telephoning
 - correspondence
 - filing
 - paperwork

5. Task necessary to job.
 - driving

FIGURE 6

LIST OF SKILLS - A/C EXECUTIVES

The executives' bipolar constructs, on which their tasks were rated, can be sorted into four main groups:-

- 1) customer - internal to Dunlop
- 2) personal contact - adhering to set procedures
- 3) seeking information - reporting information
- 4) requires technical, market or supplies knowledge - activities not requiring this knowledge

Apart from these constructs, tasks were construed as being flexible - routine, productive - non-productive, and future - past orientated. (In all cases the preferred side of the bipolar construct is listed first).

2. the methods can be comprehended by the managers within the Division which was important if they were to use the findings.

The above advantages were the main reasons why the structure of the grids were not analysed and why computers were not used for analysis, as neither of them have these advantages.

In addition the structural measures e.g. cognitive complexity did not seem to contribute significantly to the job profile. Structural measures have been used to differentiate between 'normal' and 'neurotic' groups, for example Makhlouf Norris et al (1970), but it was doubtful whether the measures would discriminate between job holders all probably 'normal'. Some exploratory investigations confirmed this opinion.

Computer programmes were rejected as they did not satisfy the above two advantages. Even if these problems had been overcome, their use was limited because of the Company's concern to elicit the individual's perception of his job which excluded all the programmes in which it was necessary to have common elements or constructs. Both instances require the researcher to supply the elements or constructs which biases the results. Also, generally research has shown that people prefer their own constructs (Bender 1974) and the sample size was small which made computer analysis less necessary.

The possibility of using computer programmes to analyse individual grids e.g. INGRID or FOCUS was considered during the pilot studies. Some 'maps' were drawn from the INGRID analysis (see figures 7 & 8). However, when the maps were presented to managers they expressed difficulty in understanding them and it was awkward to compare the maps of different subjects.

- . concerned with people
- . flexible activity
- . essence of job

- . future looking tasks
- . can influence a situation
- . explaining & analysing
- . responsible to customers

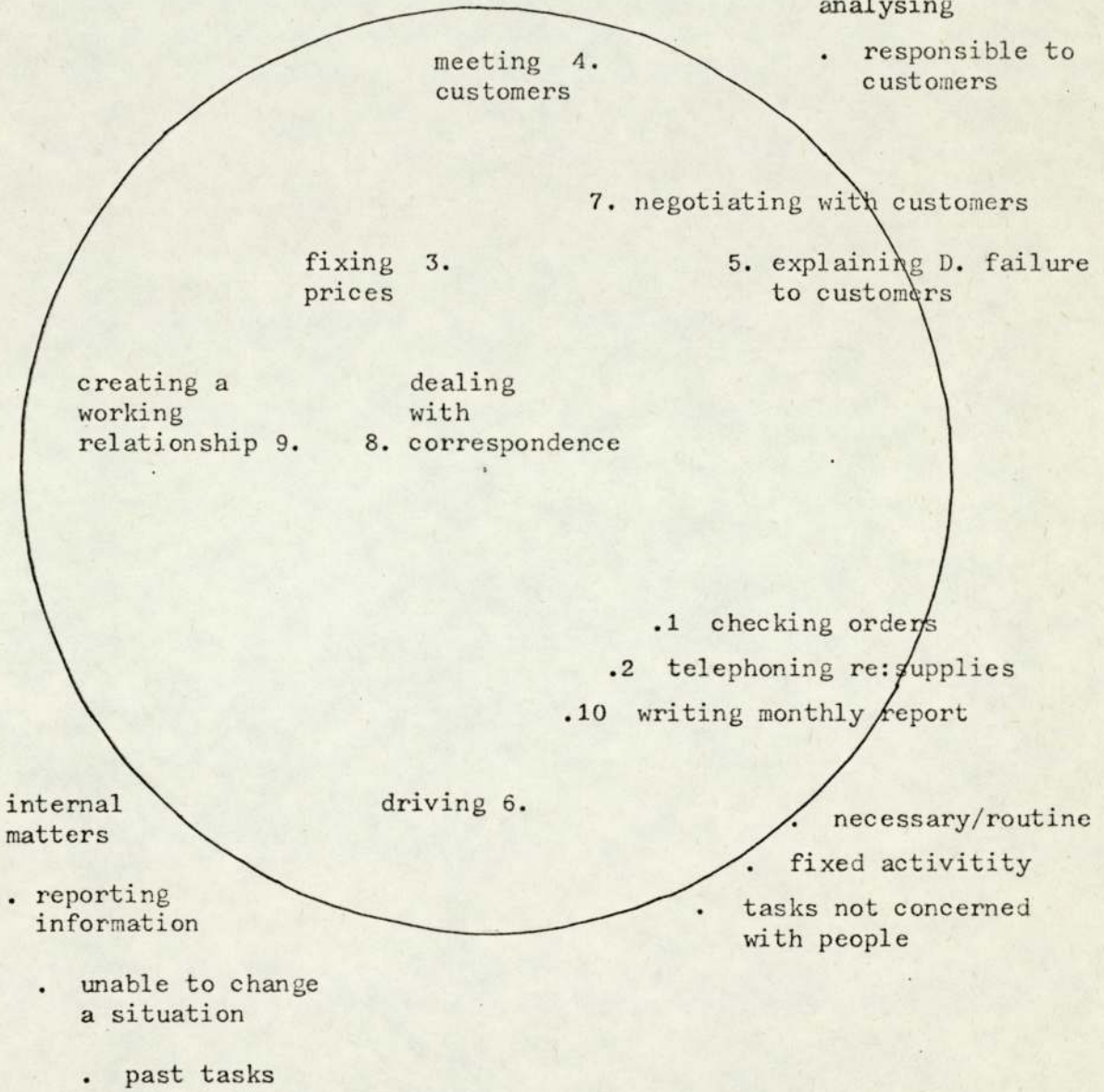


FIGURE 7 MAP PRODUCED FROM INGRID

- . knowledge of market & customer
- . communicating with customer
- . personal relationship
- . long term

- . requires knowledge of market and customer
- . short term problems
- . business relationship

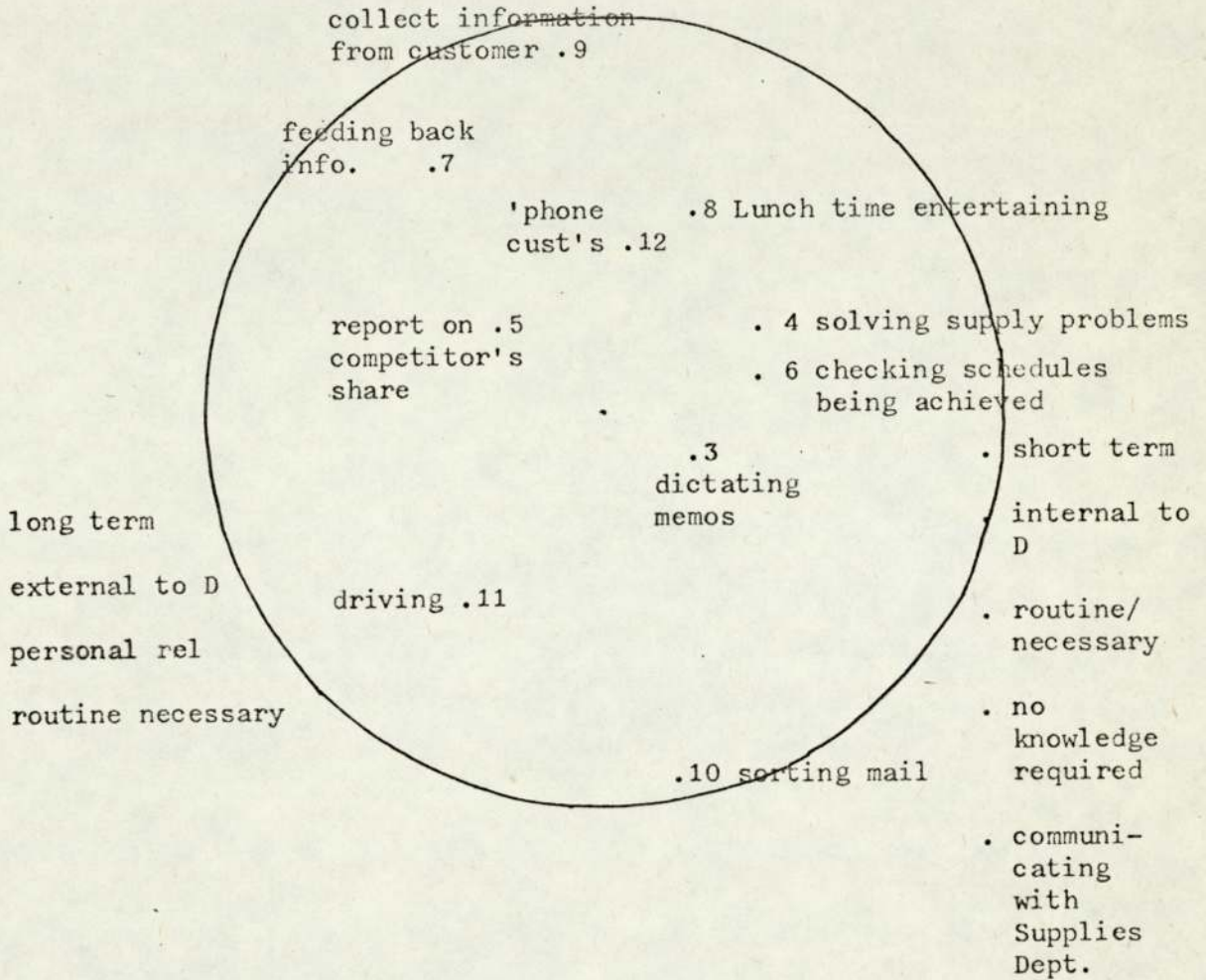


FIGURE 8 MAP PRODUCED FROM INGRID

Therefore, the conclusion at the end of the pilot study was that some form of content analysis would be most suitable for the purposes of the project because:-

- a) it provided satisfactory information
- b) it was easy for the company to use
- c) it was easy for the managers to understand

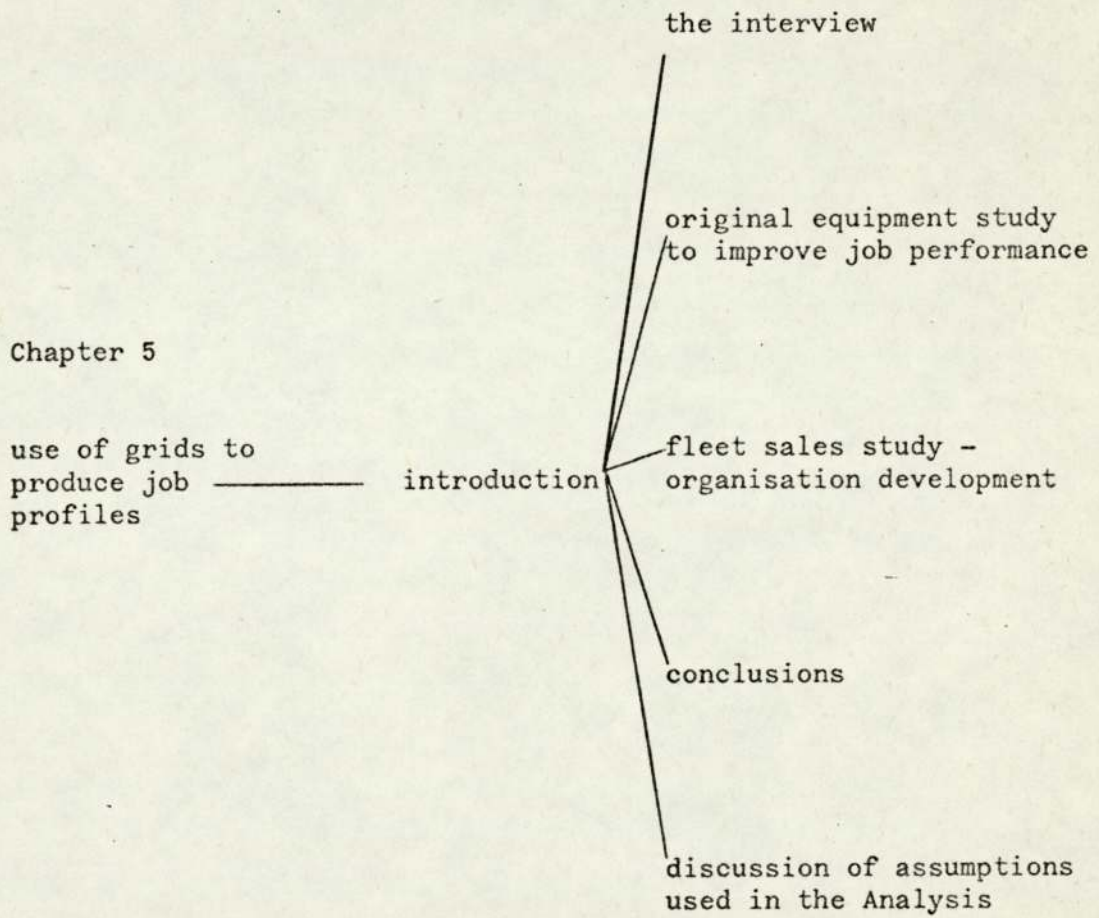
CONCLUSIONS

The next stage in the research was to apply the method to jobs within the organisation.

The following studies were made:-

1. Job profiles in Original Equipment Division were produced to improve job performance.
2. Job profiles in Fleet Sales were produced for organisational development.
3. An in-depth study of a job was made to validate the repertory grid method and to produce a training programme.
4. Job profiles were used to produce career development plans.

Thirty seven subjects were interviewed for approximately 2 hours each, and one in-depth, totalling approximately 78 hours, plus travelling time due to the geographical spread of the managers. The following chapters detail these studies.



USE OF GRIDS TO PRODUCE JOB PROFILES

INTRODUCTION

This study was the initial application of the method and difficulties were encountered which resulted in the method being changed during and after the study. Most of the alterations were caused by the fact that the work was taking place within an organisation, in particular it was necessary to present the results in a format which managers could understand.

The results of the pilot study in the Original Equipment Division had been interesting and it seemed profitable to extend the study, at the same time a larger sample group was sought and this was provided by the Fleet Sales Force. Therefore, studies on the O.E. and Fleet Sales Force were made concurrently. The same interview method was used in both studies, but the analysis method was different due to the different size of the sample population. The interview method will be briefly examined, the studies will then be detailed separately and this will be followed by a discussion of the assumptions behind the analysis methods.

THE INTERVIEW

The general aim of both studies was to produce a job profile. Therefore, the first question to be considered was who should be interviewed to produce a profile of a specific job? Should it be the job holder, his peers, his subordinates, his manager? People differ in their views as to whose opinion should be taken for job analysis, Roadman (1964) has shown that peer ratings can identify managers who were later promoted

rapidly in a large organisation. However, Kelly's first Principle 'if you don't know what is wrong with the patient, ask him, he may be able to tell you' suggests that the job holder should be interviewed. It was also thought that the job holders' managers should be interviewed as they guide their subordinates performance. Therefore, a job profile was produced by combining the job holders' perception and their managers' view of the job.

Interview Procedure Used

Before the interviews took place, the subject was briefed by his manager about the researcher's position in the company and the purpose of the interview. The subjects were interviewed individually, each interview lasting 1 - 2 hours, and followed the procedure outlined in Chapter 4.

Original Equipment (O.E.) Study: To improve job performance

The aim of the study in O.E. was to produce a profile of the Account Executive's job which could be used to improve job performance. The Sales Director was new to the position and wanted to introduce changes to improve job performance but lacked information about the jobs in his division. The Personnel Department also considered the information would be useful because they were encouraging people to change jobs in the division in order to promote career development.

The Original Equipment Division is divided into four product groups:

car tyres

truck tyres

earthmover tyres

agricultural and industrial tyres

The organisation of the division is shown in figure 1. The 5 Account Executives and the 2 managers in Earthmover were interviewed about their own job, and the 4 Sales Managers were interviewed to provide their perceptions of the subordinates job. The results were shown to the Sales Director.

Sample interviewed

| | Account Exec. | Sales Managers | Total |
|--------------|---------------|----------------|-------|
| Car | 2 | 1 | 3 |
| Truck | 2 | 1 | 3 |
| Earthmover | 2 | 1 | 3 |
| Agricultural | 1 | 1 | 2 |
| Total | 7 | 4 | 11 |

Analysis of the Information

The objectives of the analysis were two fold:

1. to produce a profile of the Account Executive's job
2. to see how perceptions of the job differed between the executives, and between the managers and their subordinates.

These objectives required different approaches. The first required an analysis procedure which identified the similarities of the grids, whereas the second required an analysis of the differences.

ORGANISATION CHART OF ORIGINAL EQUIPMENT DIVISION

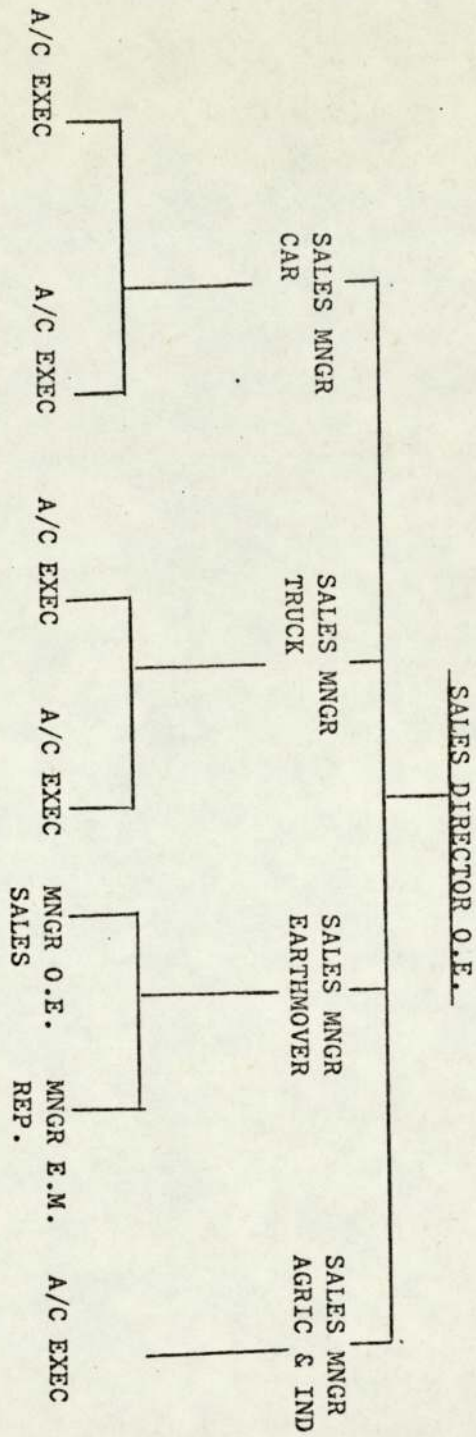


FIGURE 1.

Analysis to produce a job profile

Some difficulties were encountered in producing a profile for a job due to the choice of repertory grid method. The company wanted to discover how individuals construed their jobs, and in order to satisfy this demand both the elements and constructs were elicited. This excluded the use of computer programmes to compare grids and an alternative method of analysis was developed.

It was found to be fairly simple to examine the grids elicited from the subject and produce a composite list of elements and constructs.

Figures 2 and 3 show the lists produced for the Car and Truck Account Executives which were compiled by examining the raw data and arranging the elements and constructs in a logical order so that the information could be readily understood. The lists formed a profile of the job.

Whilst the interview and analysis method produced satisfactory results, it was felt that the profile produced lacked precision. This was partly due to the fact that the data could not be computer analysed and also because the subjects had difficulty in defining precisely the tasks they performed and the skills required. Despite these reservations a picture of how a job was being done at the present time was produced.

The Account Executives were found to pay more attention to the functional aspects of their job, i.e. seeing customers to sell company products, than they did to the broader aspects i.e. planning and reporting information. This was shown by the paucity of elements and constructs elicited regarding these broader aspects. These points disturbed the Sales Director and through liaison with the Personnel Department, the

FIGURE 2

Categories of constructs elicited from Account Executives -
Car and Truck Tyres

1. Tasks relating to the customer which involved selling, the ability to get on with people and were regarded as the mainstream of the job.
2. Tasks involved with Dunlop which were secretarial, involved adhering to set procedures and were seen as necessary but non-productive.
3. Tasks requiring knowledge of the product, supplies, market and customer's company.
4. Constructs relating to the need for initiative, motivation, personal discipline and where they had control of the situation.
5. A few constructs were concerned with the collecting and reporting of information.
6. Others were short or long term problems, and tasks involved with people or not.

FIGURE 3

Tasks elicited from the Account Executives - Car and Truck Tyres

Planning

Contact customer

sell company products

establish business share

negotiate with customer

create relationship with customer

deal with his problems - personal and business

fly Dunlop flag and explain Dunlops' failures

deal with other departments at customers

deal with supply problems

investigate new customers

paperwork and telephone

prepare figures

report to Sales Manager

entertaining

travelling

researcher recommended in the final report that the executive's role concerning these broader aspects seemed ill-defined, and that efficiency in these areas could be improved by formalising procedures to some extent.

The reports seem to have been useful to the Director as he commented that the study has shown him the executives' perception of their job, and allowed him to realise the importance of some aspects of the job for example the flows of information, whilst placing other aspects more into perspective. He intends to introduce more formal procedures but before this can be done he has to overcome opposition from some of the Sales Managers. In June 1979 he wrote "I am now in a position to take the initiative".

The Personnel Department also found the report valuable as it provided them with a profile of the job and an indication of the experience an individual would gain as an Account Executive.

Analysis to see how perceptions of the job differed

Instead of producing a composite picture of the repertory grids, attention was paid to the differences between the grids.

- a) Differences in the elements elicited were shown by producing an Element Chart (Figure 4). The names of the elements elicited from the subjects were listed on the chart. Often the name given to a task by different subjects was not identical, but appeared to refer to the same activity, for example "visit customers" and "contact customers" were considered similar. In this case a check mark was placed in the chart to indicate that the element was elicited from that subject. These charts allowed comparisons

FIGURE 4

ELEMENT CHART

Elements elicited from A/C Exec and Managers

| | CAR | | | TRUCK | | |
|---------------------------------------|--------|--------|--------|--------|--------|--------|
| | Exec 2 | Exec 4 | Mngr 9 | Exec 3 | Exec 5 | Mngr 8 |
| Contact customer | ✓ | ✓ | ✓ | ✓ | | |
| Sell company products | | | | ✓ | ✓ | |
| Liaise with customer | ✓ | ✓ | | | | |
| See various departments at customers' | | | ✓ | ✓ | | ✓ |
| Customer problems | | | ✓ | | | ✓ |
| Negotiate with customer | | ✓ | ✓ | ✓ | ✓ | |
| Fly Dunlop flag | ✓ | ✓ | | | | |
| Investigate new customers | | | | | | ✓ |
| Supply problems | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Monthly & other reports | | ✓ | ✓ | | ✓ | ✓ |
| Planning | | | ✓ | ✓ | | ✓ |
| Prepare figures | ✓ | | | | | |
| Paperwork & phone | ✓ | ✓ | | ✓ | | ✓ |
| Entertaining | | | ✓ | | ✓ | ✓ |
| Travelling | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

to be made easily between subjects. Differences between the manager and the job holder's perception were evident, for example 'planning' was elicited from both managers but from only one executive.

- b) A method was also required which identified differences in the constructs elicited. The constructs were grouped into general categories by scanning the grids in order to simplify the data. These categories were not formally defined because the reports were wanted quickly by the Company, and time was not available to follow rigorous psychometric procedures. In subsequent studies (see Ch. 6) some attention has been devoted to a more formal definition of these categories. Figure 5 shows the categories used in the O.E. study. The individual grids were examined and the category marked if a relevant construct had been elicited. This allowed comparisons between subjects to be readily made, for example, few subjects said that they required analytical or planning skills. The value of the analysis method can be illustrated by detailing the differences between the Sales Managers view of the Executives job for Car and Truck Tyres and the Executives' view.

From the list of elements it appears that the managers see the role of the executives to collect information and deal with customers' problems, whereas the executives see themselves as having two roles. One in which they visit customers to 'fly the Dunlop flag' and explain Dunlops' failures and the other where they return to Dunlop to chase supplies and do secretarial work.

FIGURE 5
CHART SHOWING CONSTRUCT CATEGORIES USED
BY SUBJECTS IN O.E. STUDY

| CONSTRUCT CATEGORIES | CAR | | | TRUCK | | | A.&I. | | | EARTHMOVER | |
|---|--------|--------|---------|--------|-------|-------|-------|-------|-----|------------|--------|
| | Cutler | Lawson | Barr'gh | Musson | Brown | Lodge | Baker | Loach | Way | Sanders | Rogers |
| Factual knowledge | / | | / | | / | / | / | / | / | / | / |
| Selling ability, personal contact, persuasive, being a nice guy | / | / | / | / | / | / | / | / | / | / | / |
| Admin. tasks, knowledge of systems | / | | | / | | | / | | / | | / |
| Planning tasks | | / | / | / | / | | | / | | | |
| Explaining and analysing | | / | / | | | | / | | | | |
| Information flows | / | | / | / | / | / | / | | / | / | |
| Importance of task | / | / | | / | | / | | / | / | / | |
| Initiative, creative, motivation. | / | / | / | | | / | | / | / | / | / |
| Customer or Company | | / | | / | / | | | | / | | |
| Enjoyable, flexible | | / | / | | | | | | / | | |

KEY
 [] construct not used by the individual
 [/] construct used by individual

This divergence was reflected in the constructs the managers and executives used. One of the constructs the executives used to differentiate was a construct which described tasks as either customer or Dunlop orientated. This construct was not used by the managers.

Therefore, both the elements and constructs suggest that the managers view the job in a more coherent way i.e. that the executives purpose is to deal with the customer whether he be in Dunlop or on the customer's premises. The executives, however, see themselves as playing two roles; one in Dunlop and the other with the customer.

CONCLUSIONS

The analysis was effective for showing differences between the grids elicited and revealed important omissions of constructs by some subjects. These results concerned the Sales Director who through the Sales Manager is now trying to encourage the Account Executives to pay more attention to the planning and administrative aspects of their work.

This analysis assumes that the subjects' behaviour in their job will be determined by the way they construe that job. The conclusions and inferences drawn later in this chapter are in many ways based on the validity of this assumption. The assumption will be discussed in some detail at the end of this chapter.

The analysis produced information about individuals' perceptions of their jobs which allowed a profile of the job and differences in incumbents perception to be analysed. The results were easily

understood by the Company and in many cases confirmed 'suspicions' already held by managers which provided support for the validity of the technique. The principal advantage of the method seemed to be the relatively objective nature of the data.

Fleet Sales Study - Organisation Development

The interview and analysis methods used in the O.E. study were also used in the Fleet Sales Force. The aim of this study was to produce job profiles upon which decisions regarding organisation development could be based.

The jobs of the Area Fleet Manager (AFM) and Fleet Salesman (FSM) were studied because the Fleet Sales Director and others were questioning whether the AFM's were actually doing a different job to the FSM's. The AFM's ostensibly had the additional task of managing a Fleet Service Engineer (FSe) but it was unknown what proportion of the AFM's job was taken up in managing the FSe or how they performed this man-management task. Both these matters were difficult to assess as it was in the AFM's interest to exaggerate their responsibilities concerning the FSe's as they provided status and financial rewards.

The study was also of interest because the Fleet Sales Force had been created in 1974 by Marketing Improvements Limited, consultants, (see Ch. I) but no systematic investigation had been made of its functioning since its inception. There was particular concern because the sales force was organised regionally and no-one knew how similarly or differently the regions had interpreted the consultants' report.

In addition the study was useful to the Personnel Department as the jobs of the AFM and FSM have a large number of incumbents which involves the Department in considerable work. Therefore, additional information about these jobs would be valuable.

A sample of AFM's and FSM's were interviewed and because the study wanted to detect regional differences the subjects were selected from the three main regions. The Sales Director selected the DFSM's who were interviewed in order to elicit their perception of the subordinates job. The DFSM's selected 2 AFM's and 2 FSM's whom they believed to be doing the job efficiently. It is difficult to measure efficiency but it was hoped that the manager would be able to select suitable subjects as the purpose of the study was to produce a picture of the job as it should be done, rather than how it should not be done. Figure 6 shows the sample studied.

Analysis of the Interviews

As in the O.E. study the objectives of the analysis were twofold:

1. to produce a profile of the job
2. to see how perceptions of the job differed between different job titles, between managers and subordinates and between the sales regions.

The first objective required the similarities between the grids to be identified, whilst the second required an analysis of the differences.

To produce job profiles

A composite list of tasks and skills of the AFM and FSM was produced by examining the raw data and arranging the elements and constructs in a

FIGURE 6

SAMPLE OF MANAGERS STUDIED IN THE FLEET SALES FORCE

| | DFSM | AFM | FSM | Totals |
|----------|------|-----|-----|--------|
| North | 1 | 2 | 2 | 5 |
| Midlands | 1 | 2 | 2 | 5 |
| South | 1 | 2 | 2 | 5 |
| | 3 | 6 | 6 | 15 |

logical order so that the information could be readily understood (see Figures 7 & 8). In addition to the lists a general grid was drawn which summarised the repertory grids elicited for a particular job (see Figure 9 for an example). The general grid was produced by studying the grids elicited and summarising the perceptions of the job.

The general grid shows the position of the most commonly elicited elements on each of the principal constructs and provides a useful summary of the grids elicited, e.g. if a manager is interested in a particular task he can easily see how it has been construed by his subordinates. Figure 9 shows that 'monthly meetings' were construed as an administrative task, requiring no product knowledge and as unnecessary to have the ability to get on with people. The other elements included on the general grid can be interpreted in a similar way. Whilst this technique may not be particularly formal or rigorous, the results produced were easily comprehended by the Company. This is of prime importance as the aim was to provide information upon which others could base their decisions. Some support for the validity of the results was provided by the fact that they seemed feasible to the Director and the Personnel Manager.

The tasks elicited from the AFM regarding his FSE duties were listed separately (Figure 10). However, these tasks were not construed as requiring any skills or knowledge different from their selling duties. This was evident from the general grid for the AFM's task re FSE (Figure 11). It was expected that constructs relating to man-management skills might have been elicited. The absence of such constructs indicated that the AFM's were probably not managing the FSE, rather they saw their duties as administrative.

FIGURE 7

Tasks elicited from FSM and AFM

Plan week

Prepare for calls

Sell tyres to user

See Tyre Distributor

See Commercial Vehicle Distributor

Maintain record cards

Do correspondence

Fleet surveys

Monthly meetings

Fleet intelligence reports

Monthly and weekly reports

Liaise with Trade Sales Force

Liaise with Depots

Deal with complaints

Driving

Entertaining

FIGURE 8

Constructs Elicited from AFM and FSM

1. Tasks requiring knowledge of products, market and the user and technical knowledge.
2. Tasks requiring selling ability, ability to get on with people, being a nice guy, a professional salesman.
3. Tasks described as administrative, organisational tasks. They are seen as a necessary part of the job but not a productive part.
4. Constructs were also produced relating to planning and information flows.
5. Other constructs related to their attitude towards the job, for example some tasks require personal discipline, motivation, initiative, independence.

| Elements | Elicited Construct | Elements | Contrast Construct | Elements |
|--|---|---|---|--|
| selling brand fleet surveys entertaining | tasks requiring selling ability, essence of job | | admin., orgn. task, not necessary to get on with people | plan week, corresp. monthly meetings, write reports liaise in Dunlop. |
| selling brands fleet surveys | need product & technical knowledge | writing reports entertaining | not necessary to have knowledge | plan week, corresp. monthly meetings, records, liaise in D. |
| plan week, writing reports records & corres | planning imp. to task | fleet surveys | planning not so important, doing task | sell brands, liaise monthly meeting, entertaining |
| plan week, writing reports, liaise with trade | report informa- tion | sell brand, records & corres. fleet surveys | collect informa- tion | monthly meeting entertaining |
| plan week, fleet surveys, writing reports, liaise selling brand, entertaining. | need self-discip- line, motivation, arrange own time. | | not need discipline, follow set procedures, restricted activity, imposed discipline. | record cards & corresp., monthly meetings |

FIGURE 9. A 'General Grid' for FSM's and AFM's (excluding their FSe responsibilities).

FIGURE 10

List of Tasks Elicited From the AFM
Regarding his FSE duties

1. Planning Tasks

Prepare quarterly plan
Compile FSE master sheets
Arrange itinerary

2. Monitor Work of FSE

Check done fleet inspections
Check reports
Check itinerary
Monthly review

3. Guide the FSE

Accompany Service Engineer
Guide FSE
Deal with problems of FSE

| Elements | Elicited Construct | Elements | Contrast Construct | Elements |
|------------------------|--|-------------|--|---------------------------------|
| guide FSE | tasks requiring selling ability, prime function of job | | admin & orgn task, paperwork, necessary part of job. | plan work of FSE monitor FSE |
| plan work guide FSE | need knowledge of user & market | | not necessary | monitor FSE |
| guide FSE | need product & tech. knowledge | monitor FSE | not necessary | plan work |
| plan work guide FSE | personal contact, need to get on with people | | not as necessary | monitor FSE |
| plan work guide FSE | initiate activities self-discipline. in control of sitn. | | follow set procedures | monitor FSE |
| plan work | planning tasks | | doing & monitoring | guide FSE monitor FSE |

FIGURE 11. A 'General Grid' for AFM's task re: FSE

This report was important to the Sales Director as it indicated that the AFM's were not performing an appropriate management role. Discussions with the Director indicated two courses of action. Firstly, the AFM's could be encouraged by their managers, the DFSM's, to become man-managers or, secondly the position of the AFM could be phased out. The latter course of action causes obvious problems, not least amongst them the question as to whom would do the necessary administrative work involved with the FSE's. The Director faces a difficult decision, particularly in the light of recent extensive redundancies at the Company. Thus, for the Director the report had been useful as it revealed individuals' perceptions of their jobs and it was useful to the Personnel Department as they may be involved in training the AFM's in man-management if the post is retained and if changes were made they would be involved in assessing the organisational implications.

Identify differences between the grids elicited

Differences in the elements elicited were shown by an element chart (Figure 12). The subjects were grouped by sales region to highlight regional differences, for example North region did not mention writing fleet intelligence reports or seeing Commercial Vehicle Distributors, whereas these tasks were elicited from the majority of subjects from other regions.

Differences in the constructs elicited were identified by a method similar to that used in the O.E. study but the larger size of the sample allowed differences between subjects to be tested statistically.

FIGURE 12 Element Chart for AFM & FSM

| | N O R T H | | | M I D L A N D S | | | | S O U T H | | | | |
|----------------------------|-----------|------|-----|-----------------|------|------|------|-----------|------|------|------|------|
| | FS6 | FS10 | AF7 | AF11 | FS12 | FS14 | AF13 | AF15 | FS17 | FS18 | AF16 | FA19 |
| plan week | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| prepn for call | ✓ | ✓ | | | | | | | | | | |
| sell tyres to user | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| see tyre distributor | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| see commercial veh. distb. | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| record cards | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| correspondence | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| fleet survey | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| special tasks | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| monthly meetings | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| entertaining | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| driving | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| fleet intelligence reports | | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| weekly reports | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| liaise with trade | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| sales force | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| depot business | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| complaints | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

N.B. "Driving" was excluded from later interviews because it was outside the range of convenience of most constructs elicited.

Firstly, the constructs elicited were grouped into four general categories by scanning the grids:-

Construct categories

1. Constructs concerned with selling ability
2. Constructs which detailed knowledge required for tasks
i.e. knowledge of tyres, the user and markets
3. Constructs which described tasks as administrative
4. Constructs which described tasks as planning

Almost all of the subjects in the Fleet study produced constructs in each of the four categories, so to differentiate between the subjects the grids were analysed to discover how important each area of knowledge or skill was to the job.

The importance of a skill/knowledge to a job could be influenced by several factors. These include how frequently the skill or knowledge was used in a job and how important the skill was to an individual's performance in the job. Thus, if a skill was used frequently but had little effect on job performance it could be less important than a skill used infrequently but vital to the success of the job.

The problem was how to measure the above factors to determine the importance of a skill. One measure of how frequently a skill/knowledge was used would be to identify both the tasks requiring that skill and the time spent on those tasks. However, as explained in Chapter 2, it would be difficult to obtain accurate measures of time spent on tasks.

In the Fleet study it was considered that accurate measures of time could not be obtained and only the number of tasks requiring each category of knowledge/skill was measured. The inadequacy of this single measure was realised but it was hoped that it would provide some indication of the importance of each skill category.

Another factor which had been identified as influencing the importance of a skill was the contribution of the skill to the success of the job. Difficulties were met in isolating the contribution any one skill made to the success of a job, for example if selling skills were considered of prime importance to a job, they would be of little use if the job incumbent had no administrative skills and it seemed that the job should be conceived as a system in which all the tasks and skills were mutually dependent.

Thus, in the Fleet Sales study the only measure made of the importance of a skill was the number of tasks requiring that skill. This method provided useful information for the study but was inadequate as it did not take into account the factors detailed above. In later stages of the research, estimates of time spent on groups of tasks were obtained (see Chapter 6) to provide additional information about the jobs. In the Career Development Study (Chapter 8) the subject was asked to rank the constructs in order of importance. This ranking was subjective but did nevertheless provide guidance on the relative importance of the skills/knowledge. The company was told not to place too much emphasis on these rankings but that they provided a useful guideline.

In the Fleet study, the importance of each knowledge/skill was measured by calculating how many tasks in the job (i.e. elements) had been rated by the subject as requiring that specific attribute. The number of tasks was expressed as a percentage of the total number of tasks elicited. This analysis will be illustrated by an example. Two subjects, A & B, with different job titles had produced constructs which fell into the same categories. A preliminary examination would have interpreted jobs A and B as requiring the same skills but after the importance of each category had been calculated the following information was obtained:-

| <u>Category</u> | <u>Percentage importance of each category</u> | |
|-----------------|---|------------------|
| | <u>Subject A</u> | <u>Subject B</u> |
| Selling | 80% | 10% |
| Knowledge | 70% | 15% |
| Administrative | 20% | 90% |
| Planning | 30% | 70% |

Therefore, whilst similar constructs were elicited from A and B the analysis shows that job A primarily requires selling ability and factual knowledge, whilst job B is administrative and requires planning ability. Therefore, the latter analysis is a useful tool for differentiating jobs. (Details of the method are given in Figure 13).

Therefore, for each grid a measure of the importance of factual knowledge, selling, administrative and planning ability was calculated. For example for a DFSM the following percentages were obtained:

FIGURE 13

Method used for calculating the importance of knowledge/skills to a job

1. Each grid was taken separately and the number of elements counted.
2. All constructs are bipolar, they have an elicited and contrast pole. If the element was considered by the job-holder to be on the elicited pole he graded it 5 or 4 but if on the contrast pole he graded it 1 or 2, 3 was used if the element fell between the poles.

Thus, to summarise the grids for each construct the number of elements graded 5 and 4 were counted and expressed as a percentage of the total. The number of elements graded 1 and 2 were counted and expressed as a percentage; the same was done for those graded 3.

For example

| construct one | | elements | | | | | | | |
|---------------------|-------------------------|----------|---|---|---|---|---|---|---|
| 5 4 elicited | 3 2 1 contrast | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| technical knowledge | not technical knowledge | 5 | 3 | 4 | 5 | 5 | 3 | 1 | 2 |

n = 8

number of 5 and 4 = 4 therefore 50%

number of 1 and 2 = 2 therefore 25%

number of 3 = 2 therefore 25%

FIGURE 13 (Continued)

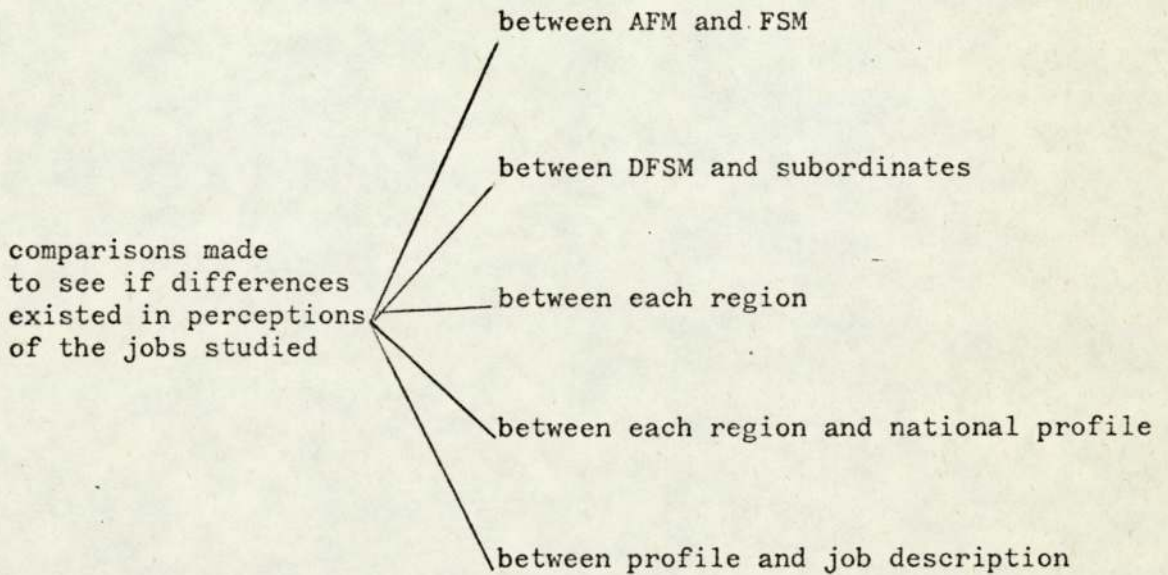
Therefore, in this grid the manager describes 50% of his tasks as requiring technical knowledge and only 25% not requiring such knowledge. This method was repeated for every construct within each grid.

In any one grid several constructs might have been elicited which were in the same construct category. In this case the mean of the percentages for each construct was calculated. This produced a percentage for the construct category.

| | |
|-------------------|--------|
| factual knowledge | 66.66% |
| selling | 69.16% |
| administrative | 40.00% |
| planning | 46.66% |

To produce a profile of a job the mean of the percentages for each construct category was calculated, for example, if a profile of the job of AFM was required, the average of the percentages for the 6 AFM's was calculated, to allow comparisons to be made between the jobs.

These comparisons represent the main findings of the study of the Fleet Sales Force and are detailed:



The differences in the perceptions were tested for statistical significance using two-tailed student 't' tests. Although the sample size was small (smallest n = 3) McNemar (1969) quotes evidence from Boneau (1960) demonstrating that "the 't' test is "robust" under violation of assumptions for both deviations from a normal distribution and very small sample sizes. McNemar is confident that the worry about violating

the assumptions seems ill-founded and does not consider the use of non-parametric statistics advantageous as they are not "as powerful for avoiding type II errors" as the appropriate parametric statistic. Despite this confidence, caution was exercised in the interpretation of the results.

1. Jobs of AFM & FSM compared

One of the aims of the study was to see if the jobs of AFM and FSM were actually different. Therefore, the average perception of the job elicited from the FSM was compared to the average elicited from the AFM.

Figure 14 shows the AFM & FSM's mean percentage of the importance of each construct category. The scores were tested for significant difference by a two-tailed student 't' test.

The analysis showed that there was no statistically significant difference in the perception of the AFM & FSM job, except in the category of constructs relating to planning ability. The FSM's said that planning ability was important to more of their tasks than the AFM's. This was surprising considering that the AFM's were managers who were expected to plan more than the salesman, however, it did support the conclusions drawn from the examinations of the elements which suggested that they were not 'man-managers'.

2. Differences between managers and subordinates perception

The study was designed to see if the managers' perception of the job differed from that of his subordinates.

FIGURE 14. Differences between AFM and FSM

H_0 : there is no difference between the AFM's perception of his job and the FSM's perception of his job.

| | <u>construct categories</u> | | | |
|--------------------|-----------------------------|-----------|----------------|-----------|
| | selling | knowledge | administrative | planning |
| AREA FLEET | 43.14 | 44.44 | 27.68 | 36.66 |
| MANAGER | (10.68) | (9.70) | (8.58) | (11.60) |
| FLEET SALES- | 41.75 | 44.04 | 40.86 | 67.78 |
| MAN | (6.27) | (15.28) | (13.42) | (9.35) |
| value of t | -0.275 | 0.054 | 1.90 | 4.47 |
| significance level | 5% | 5% | 5% | 5% |
| d.f. | 10 | 10 | 9 | 8 |
| significance value | 2.228 | 2.228 | 2.262 | 2.306 |
| | | | | \bar{X} |
| | | | | σ |

The average perception of the DFSM's was compared to the average perception of the AFM & FSM. Figure 15 shows the mean percentages. The scores were tested for significant differences by a two-tailed student 't' test.

The DFSM's perception of their subordinates' job was similar with regard to selling ability and planning tasks as that of the subordinates. However, the DFSM's considered that more tasks required factual knowledge and they described a higher percentage as being administrative. There were several possible explanations for this difference, but it was interpreted by the Personnel Manager as reflecting the salesman's inability to understand the importance of the administrative aspect of his job, he was only concerned with selling. With respect to the differences concerning factual knowledge it was possible that the salesmen underestimate the knowledge required as the job becomes 'second nature' to them and they find difficulty in analysing its requirements.

3. Differences between each region

The study wanted to see if the three regions of the sales force were doing the jobs in a similar way.

To test this statement the average perception of the job elicited from all the AFM & FSM's was calculated, i.e. a national average. The national average was compared to the average of the AFM & FSM for each region. The difference was tested for significance by Z scores (Figure 16).

FIGURE 15. Differences between Managers and Subordinates

H_0 : there is no difference between the managers' perception of his subordinates job and the subordinates perception.

| | <u>construct categories</u> | | | |
|-----------------------------------|-----------------------------|-----------|----------------|----------|
| | selling | knowledge | administrative | planning |
| DIVISIONAL | 51.94 | 59.99 | 45.55 | 59.99 |
| FLEET MNGR | (14.66) | (9.43) | (4.16) | (14.40) |
| SUBORDINATES | 42.44 | 44.24 | 33.67 | 55.33 |
| (AFM + FSM) | (8.74) | (12.87) | (12.85) | (18.40) |
| value of t | 1.075 | 2.38 | 2.179 | 0.459 |
| two-tailed test, 5% level d.f. | 13 | 13 | 12 | 11 |
| significance value | 2.160 | 2.160 | 2.179 | 2.201 |

FIGURE 16. Differences between regions' and national perception

H₀: there is no difference between each regions perception of their job and the 'national average'

| | <u>Construct categories</u> | | | | |
|---------------------|-----------------------------|------------------|------------------|-----------------|----------------|
| | selling | knowledge | administrative | planning | |
| NORTH | 46.66 (0.48) | 39.16 (0.394) | 33.49 (0.014) | 50.84 (0.24) | \bar{X} Z |
| MIDLANDS | 41.54 (0.102) | 57.47 (1.02) | 33.96 (0.02) | 62.63 (0.39) | \bar{X} Z |
| SOUTH | 39.11 (0.397) | 48.46 (0.329) | 37.97 (0.36) | 58.27 (0.16) | \bar{X} Z |
| NATIONAL AVERAGE | 42.44 | 44.24 | 33.67 | 55.33 | \bar{X} |

Z significant at +/- 1.96 (5% level of confidence)

Also the average perception of each region was compared to each other region and tested for significance by analysis of variance. (Figure 17)

The analysis showed no statistically significant differences between the national and regional perception of the job, or any differences between each region. This result was pleasing to the Sales Director as it suggested that policies issued from the central unit were effectively disseminated to the regions.

4. Differences between profile and job description

In both the O.E. and Fleet study, the picture of the job elicited from the subjects was compared to the formal job description. A direct comparison could not be made as the job description details the objectives and responsibilities of a job, whereas the grids detailed the activities actually performed in the job.

Several differences were noticed which were of interest to the manager of the subject. If a difference existed either the subject was neglecting his duties or the job description had become out-dated. Therefore, it was recommended that the manager should consider the differences carefully before taking remedial action. The comparisons also revealed many similarities which provided evidence for the validity of the grid interviews.

The Fleet study has been of great value to the Sales Director and as a result of the reports, meetings have been held with the Regional Managers to discuss the findings. The managers were satisfied with the finding that the regions perceived their jobs similarly, but there was concern that the AFM's construed their job in the same way as the FSM's.

FIGURE 17. Differences between each regions' perception

H₀: there is no difference between each regions' perception of their jobs.

| | <u>construct categories</u> (<u>sum of observations</u>) | | | |
|---------------------------|---|-----------|----------------|----------|
| | selling | knowledge | administrative | planning |
| NORTH | 219.98 | 203.32 | 168.32 | 221.66 |
| MIDLANDS | 219.57 | 243.51 | 146.80 | 231.92 |
| SOUTH | 225.64 | 264.02 | 191.88 | 279.73 |
| TOTAL | 665.19 | 710.85 | 507.00 | 733.31 |
| values for F, 5% level | 0.0155 | 0.926 | 0.145 | 0.0009 |
| of significance | 3.89 | 3.89 | 3.98 | 4.10 |

The problem facing the managers was how to take appropriate action, but the sentiment at the Regional Managers' meeting was that at least now they had objective data upon which to base their decisions. The information was also of value to the Personnel Department in view of their involvement if any organisation changes occurred.

CONCLUSIONS

Repertory grids have been used to produce job profiles. The profiles were used in the O.E. Division to enable the Sales Director to have a better understanding of the Account Executives' job and on the basis of this information he will be able to make any changes he considers necessary for their improved performance. In the Fleet Sales study, the job profiles have been used as a basis for organisational change.

The information has been readily understood and accepted by the managers. This initial application of the interview and analysis methods had been successful but some modifications were necessary before the technique was applied again and these are detailed in the next chapter. Before examining these changes the assumptions used in the analysis are discussed.

Detailed reports of the O.E. and Fleet study which were written for the company are attached.

Discussion of the assumption used in the Analysis

The assumption underlying the interpretation of the repertory grids was derived from Kelly's Fundamental Postulate that "A person's processes are

psychologically channelized by the ways in which he anticipates events". Bender (1976) recognised that a direct deduction from this "is that the way a person behaves towards another will be determined by the way he construes that person".

Thus, in the studies of managers in the Marketing Division, it was considered that the managers' behaviour in their job would be determined by the way they construed that job, for example, if a manager construed his job as involving selling and planning skills he would use these skills in the job, conversely if he did not construe the job as requiring these skills he did not use them in his job. Also, it was considered that the elements elicited from the manager reflected the way he behaved in his job.

Bender (1976) said that whilst it was possible to take Kelly's "postulate as axiomatic within Personal Construct Theory and thus in no need of empirical testing, it is preferable if hypotheses bearing directly on its axioms can be deduced and tested, in order to minimise the number of assumptions that have to be carried before one can start using the theory". Bender carried out two empirical studies to test the postulate. Bender (1968) hypothesised that if a subject construed X and Y as similar, he will behave similarly towards them. 15 subjects were asked to complete a modified form of Kelly's repertory test in which the subject wrote down the names of 19 people he knew plus his own name. Constructs were elicited by presenting the subject with triads and asking him to state the most important way in which any two of them were similar and different from the third. Then the subject assigned the elements to the explicit or contrast pole (he was allowed to judge both poles irrelevant for any given person). After the test had been

completed, the subject was presented with a different series of triads and asked to think of himself alone with each of these three people and to indicate the two people towards whom he behaved most similarly. The matching scores between the test and the 'similar' persons were calculated and the results supported his hypothesis at far beyond the $P=0.001$ level (two-tailed test).

However, the weakness of this experiment was that it was ipsative one has only the subject's word as to which two persons he behaves most similarly towards. Therefore, Bender (1976) performed a similar experiment but asked the subjects' spouse to report on their partners behaviour, again the results were significant at far beyond the 0.001 level (two-tailed test). Similar research has been done by Shoemaker (1955) quoted by Bonarius (1965).

These studies provided some evidence for the postulate that a persons' behaviour was determined by the way he construed events. Therefore, the researcher considered that the constructs elicited from the managers determined the way they behaved in their job and on this basis inferences were made about the way the subjects performed their jobs. For example the AFM's did not produce any constructs concerning 'man-management ability' from which it was inferred that they might not be performing the managerial aspects of their job. This inference was supported by Bender's work and evidence of its validity was provided in these studies as the results supported the Director's and Personnel Department's subjective assessments of the way in which the AFM's were working.

Thus, there was substantial evidence that an individual's construct system determined the way he behaved but there was uncertainty as to whether

the elements elicited were also indicative of behaviour. The elements were elicited by asking the subject to name the tasks he actually spent his time doing in his job. The omission of a task by a subject could be the result of the subject not performing that task, or forgetting to mention the task during the interview.

Attempts were made to avoid the latter situation by encouraging the subject to remember all the tasks of his job, even those he did infrequently, although few prompts could be given without biasing the results. It was hoped that by eliciting 15 elements the majority of the tasks of the job would have been elicited, as by that number the subject was usually having to search his mind to remember tasks.

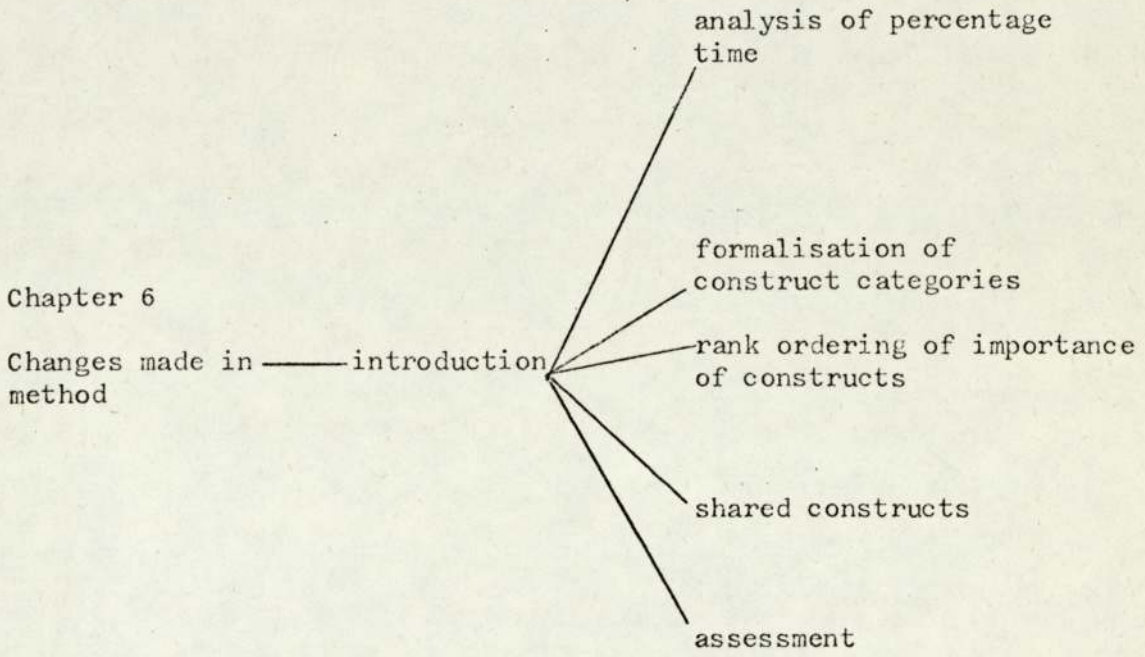
There seemed to be three possible reasons why a task could be forgotten:-

1. the subject had genuinely forgotten i.e. a lapse of memory
2. the subject did the task so frequently it had become second nature, i.e. a deeply ingrained habit, and so forgot to mention the task.
3. the subject did not consider the task sufficiently important to mention.

When interpreting the differences in the elements elicited the problem was to distinguish between the above three reasons as the inferences made from an omission due to the task being second nature as opposed to unimportant are very different. The opinion adopted in most of the studies was that the omission of an element showed that the subject either did not perform the task or he considered it unimportant, both of which

were of concern to the managers. It was hoped that omissions due to forgetfulness were minimised by the interviewee being prompted. However, when the results were reported to the managers, it was evident that this opinion was not always correct, for example one subject did not mention writing Fleet Intelligence Reports but his manager stated that this individual submitted the best intelligence reports in his region. It would appear in this instance that the task had not been elicited because it was second nature to the subject. There seemed to be no way of ensuring against this type of omission, unless the data from the grid interviews were supported by observing the subject in his job.

Despite this evidence there was substantial support to suggest that the elements elicited did reflect the way the subject spent his time in his job. In the reports to the Company regarding the differences in the elements elicited it was always noted that omissions may be due to genuine forgetfulness or because the task had become second nature.



CHAPTER 9 CHANGES MADE IN METHOD

INTRODUCTION

When the reports of the O.E. and Fleet Sales Force studies had been produced for the Company, they were given critical consideration and certain modifications were suggested, some of which were included in later studies.

These modifications included:-

1. analysis of percentage time
2. shared constructs
3. formalisation of construct categories
4. rank ordering of importance of constructs

1. Analysis of Percentage Time

When the profiles of the jobs in the O.E. and Fleet Sales Force were examined by the Personnel Department, they were considered inadequate in one respect. The profiles showed the tasks and skills of a job, but there was no indication of how large or small a part each task was of the total job which would provide a more complete picture of a job. Therefore, it was felt that estimates of time spent on the tasks should be obtained.

There were three objectives to discovering estimates of time:-

1. to complete the profile of a job
2. to check if the elements elicited accounted for the whole working day which would support the validity of the interview method.
3. to check the conclusions of differences and similarities between jobs drawn in Chapter 5.

Method

A questionnaire (see Figure 1) was sent to each interviewee in the Fleet Sales Force after the grids had been elicited which asked them to estimate the percentage of their working day spent on each of their major tasks. The list of tasks was produced by examining the elements elicited and grouping them into major areas.

This method for assessing the amount of time spent on tasks has disadvantages principally because people find it difficult to estimate time, for example if a subject finds a task boring he may over-estimate the amount of time spent on that task.

F. de P. Hanika (1963) shows a table (Figure 2) of actual percentages of time obtained from diaries and a 'time-study observer', and estimates of time. Hanika noted that "technical content" tends to be underestimated fairly regularly and "personnel" given more than its actual percentage share". He suggested that technical matters were based on proven professional knowledge whereas 'personnel' deals with human imponderables and that the distortion was because "issues which put the individual under stress may well stand out in his memory".

Despite these drawbacks the method does allow a measure of time spent on the tasks to be gained quickly, and as previously explained alternative methods are not entirely accurate.

Could you please give an approximate idea of the percentage of your working time that you spend, in an average month, on each of the following:-

Percentage:

1. Contacting Customers
(include both face-to-face and telephone contact with users, commercial vehicle distributors, tyre distributors, and fleet surveys). _____%

2. Administrative Tasks
(including correspondence, record cards, filing and writing reports). _____%

3. Planning and thinking tasks
(including meetings) _____%

4. Driving _____%

5. Dealing with Fleet Service Engineer matters
(including planning his work, monitoring his activities) _____%

This is a list of the major activities of your job which I derived from my interviews. If you think I have omitted any major task, please make a note of it below with an indication of the percentage of your time spent on that task.

_____%

NAME AND DIVISION:

FIGURE 2

RESULTS OF INDIVIDUAL JOB ANALYSIS QUESTIONNAIRE

Actual and estimated percentage distribution of time by activity and subject-matter for a Technical Manager

| Activity | Technical | Financial | Manning | Personnel | Extramural | Course Work | Miscellaneous | Travelling | Totals |
|-----------------------|-----------|-----------|-----------|-----------|------------|-------------|---------------|------------|-------------|
| Reading | 12 (8) | (2) | | (3) | | 1 | | | 13 (13) |
| Writing and dictation | 4 (11) | 1 (2.5) | 2 (1) | 1 (4) | | 4 | | | 12 (18.5) |
| Talking and listening | 26 (10) | 3 (6) | 6 (5.5) | 7 (22) | 3 | 6 | 3 | | 54 (43.5) |
| Observing | 2 (3) | | | (3) | | | | | 2 (6) |
| Calculating) | (5) | | (.5) | (2) | | | | | (7.5) |
|) | 1 (3) | 1 (2.5) | 1 (3) | 1 (3) | 1 | | | | 5 (11.5) |
| Thinking only) | | | | | | | | | |
| Miscellaneous | | | | | | | 6 | | 6 |
| Travelling | | | | | | | | 8 | 8 |
| Totals | 45 (40) | 5 (13) | 9 (10) | 9 (37) | 4 | 11 | 9 | 8 | 100% |

From F. de P. Hanika (1963)

Analysis

All subjects completed the questionnaire and the estimates of time were analysed by drawing bar diagrams according to each sales region and by job title (Figures 3 & 4). The estimates of time between and within the groups were similar, more variation was expected as estimates of time are usually inaccurate. A possible explanation for the small variation was that the questionnaire was based on the repertory grid interviews which enabled the items to be relevant and expressed in words used by the subject. This shows the benefits of using repertory grids on a sample of a population and then producing a questionnaire to be distributed to the total population.

Results

Objective 1 To contribute to the picture of the job. The time estimates provided useful additional information to the grids, for example, although the grids showed that the AFM's were not managing the FSe, it was evident that their FSe duties were time consuming (10.3% of the working day). The estimates also complemented the grid data, as again the picture was of the salesmen spending most of their time seeing customers and a minor part on administration and planning tasks.

The information provided by the estimates of time highlights the difficulty of measuring the importance of any one skill or task to a job as discussed in Chapter 5. These difficulties were taken into consideration in the design of the career development study.

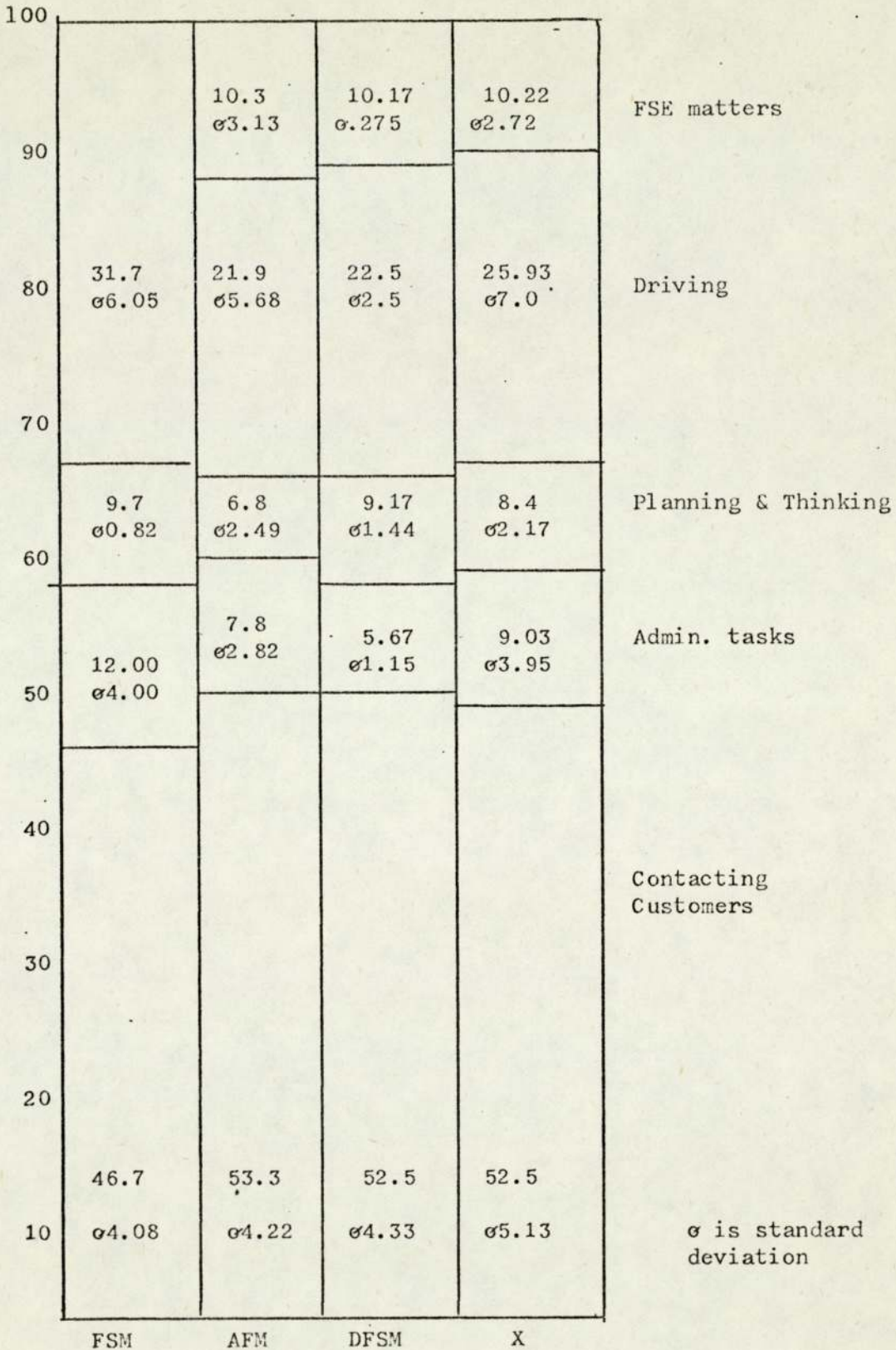
% time

100

| | | | | | |
|----|---------------|---------------|---------------|----------------|-------------------------|
| | 9.0 σ3.46 | 10.8 σ1.44 | 10.8 σ3.81 | 10.22 σ2.82 | FSE matters |
| 90 | | | | | |
| 80 | 24.2 σ5.76 | 23.5 σ7.16 | 27.1 σ8.35 | 25.93 σ7.0 | Driving |
| 70 | | | | | |
| 60 | 8.4 σ1.52 | 9.7 σ0.67 | 7.1 σ3.09 | 8.4 σ2.17 | Planning and Thinking |
| 50 | 10.2 σ3.27 | 10.5 σ3.12 | 6.4 σ2.19 | 9.03 σ3.95 | Admin. tasks |
| 40 | | | | | |
| 30 | | | | | Contacting Customers |
| 20 | | | | | |
| 10 | 50.8 σ3.96 | 48.8 σ3.83 | 51.9 σ7.28 | 50.5 σ5.13 | σ is standard deviation |
| | NORTH | MIDLAND | SOUTH | X | |

AVERAGE PERCENTAGE OF WORKING TIME BY REGION FIGURE 3

% time



AVERAGE PERCENTAGE OF WORKING TIME BY JOB TITLE FIGURE 4

NB: DFSM was asked to estimate the percentage of time his AFM spent on each major area of tasks.

Objective 2 All the questionnaires returned totalled 100% and no tasks had been added by the subjects. Thus, the estimates of time suggest that the elements elicited describe the total job. Evidence for the appropriateness of the elements was provided by the similarity of the estimates.

Objective 3 The bar diagrams also showed that there were no major differences in the estimates of time between regions or between job titles which supported the conclusions drawn in Chapter 5 from the repertory grids.

Therefore, the study provided useful additional information plus data which supported the grid interviews.

2. Shared Constructs

Kelly's Commonality Corollary states 'to the extent that one person employs a construction of experience which is similar to that employed by another, his psychological processes are similar to those of the other person'. Several studies of this corollary had been made which show that similarity of experience, if defined according to this corollary, was a favourable condition for effective communication. It seemed feasible that effective communication would enhance a sales regions' efficiency and it was hypothesised that the number of constructs shared by the DFSM and his subordinates would vary between regions and the number of shared constructs would be related to the efficiency of a region.

Triandis described two types of similarity of experience:

1. categoric similarity (CS) is similarity of categorisation of events; the degrees of similarity of construct content on Reptests
2. syndetic similarity (SS) i.e. similarity of application of categories provided to persons in the Reptest. He found a highly significant relationship between CS and communication effectiveness and several studies have related improvement on psychotherapy to effective communication or similarity of construction (Cartwright and Lerner 1963). Thus, personal construct theory postulates commonality of construct dimensions in order to achieve communication.

Therefore, the constructs elicited within each region were examined. The constructs elicited from the DFSM were compared to those elicited from his 2 AFM and 2 FSM's for categoric similarity. A construct was counted as similar if the dimension appeared to refer to the same characteristic, for example the construct "prime function....necessary part of job" was considered similar to "essence of job....necessary task" although not entirely accurate, the method provided an indication of the categoric similarity of constructs.

It was found that Southern region had 50% more shared constructs than North or Midlands region with an equal number. It was tentatively suggested from this data that Southern region has more effective communication than the other regions but it was not possible to relate it to a measure of the regions efficiency as no accurate measure was readily available. This was a potential area of research and if the hypothesis was supported it could have implications for training and selection. For example, training courses could be organised regionally

to encourage the development of shared experiences and it might be important in selection decisions to give priority to people already working in the region.

3. Formalisation of Construct Categories

In both the O.E. and Fleet Sales Study, the constructs elicited from the subjects had been grouped into categories by the researcher which allowed the data to be simplified so that comparisons between grids could be made readily. This approach had proved useful, but the categories were not rigorously formed, rather they were the researcher's subjective opinion as to how the constructs should be grouped. It was considered necessary to formalise the construct categories if the method was to be used in further studies and by the Company.

A general framework or taxonomy was required for the construct categories. Such a framework was provided by Burgoyne and Stuart (1976) in their model of the "Qualities of an Effective Manager" (Figure 5). "The basic postulate of the model is that the manager at work is acting on his environment by carrying out 'inner plans'...with some purpose in view. At the same time he is receiving information from his environment, which is about the circumstances that surround him and changes in it, some of which may be the consequences of his actions (and hence constitute feedback). The effectiveness of the manager will be something to do with the appropriateness of the plans and purposes to each other and the situation which will be determined directly or indirectly by his 'qualities and skills' in the ten cells set out in the model'.

Inner World: (In the psychological sense, the world of ideas, skills, feelings, values etc, in which are located the personal 'qualities' that make a person a good manager).

Outer World: (On which behaviour has its effects, achievements are realised, etc)

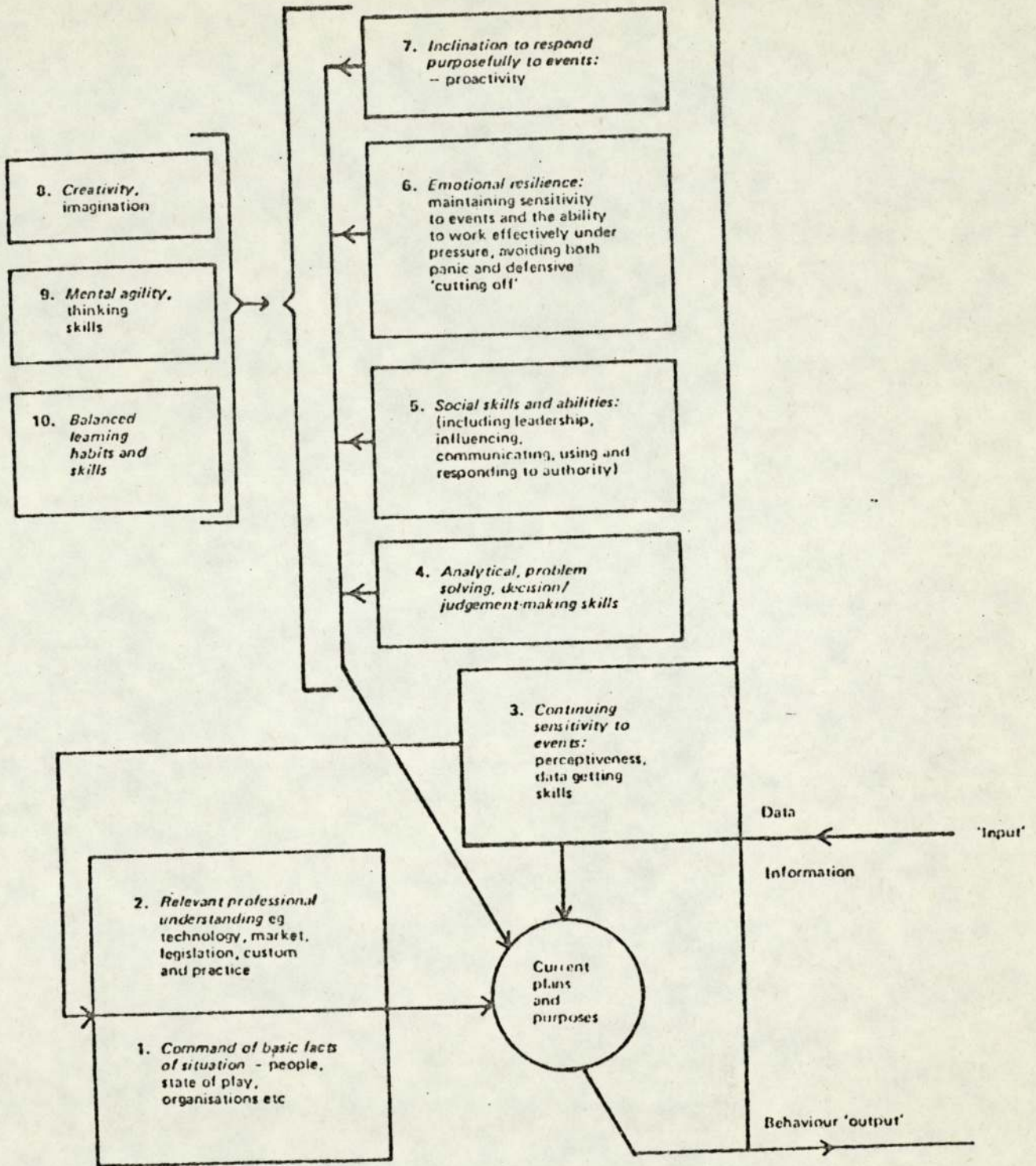


Figure 5 Hypothetical qualities of an effective manager

(From Burgoyne and Stuart 1976)

This model was adopted as a basis for the construct categories primarily because it related to the categories used in the studies of the sales forces, for example, in the fleet study the category of factual knowledge related to cells 1 and 2 of the model, i.e. "command of basic facts of situation" and "relevant professional understanding", selling ability related to cell 5 "social skills and abilities". Therefore, the model seemed appropriate to the constructs elicited, except for cells 8, 9 and 10 which were described as "meta-qualities" and were those which help in the learning process, i.e. creativity, mental agility and balanced learning habits. Constructs relating to these skills were not elicited from any of the subjects.

The taxonomy formed the framework for the construct categories (Figure 6) with some amendments to make it relevant to the study:-

1. cells 1 and 2 were combined into one category known as "command of data and facts".
2. "information output" was included as a separate category (no. 3) as several such constructs had been elicited.
3. an additional category (no. 8) concerned with skills relating to subordinates was included as these skills were of particular interest to the Company.
4. some constructs were elicited which were not concerned with skills and knowledge, for example they referred to the place of work, time span of job, these were included in a separate category (no. 9).

FIGURE 6

CATEGORIES - CONSTRUCTS RELATING TO:

CATEGORY 1

Command of data and facts.

- e.g. technical facts
- market knowledge, including customer & distributor
- product knowledge
- stock levels

CATEGORY 2

Sensitivity to events i.e. skills concerned with perceptiveness, reactivity and collecting data

CATEGORY 3

Information output

- e.g. reporting information
- administrative tasks
- written/final communication

CATEGORY 4

Problem solving & planning

- e.g. analytical skills
- decision/judgement making skills
- planning activities
- acting on own decisions

CATEGORY 5

Social skills & abilities

- e.g. interpersonal skills used in selling
- communicating
- influencing
- respond to formal discipline
- motivating people (other than subordinates)

CATEGORY 6

Emotional resilience:

- e.g. things that help people work well under stress
- personality characteristics

CATEGORY 7

Inclination to respond purposefully:

- e.g. initiative
- being constructive

CATEGORY 8

Skills specifically relating to dealings with subordinates

- e.g. man - management
- leadership
- passing on experience 'teaching'

CATEGORY 9

These constructs do not relate to skills, knowledge or personal qualities

- e.g. place of work
- time span of job
- routine - non-routine tasks

Inter-judge reliability was satisfactorily high (agreement on 82% of classification decisions as between four judges). The construct categories were used in the Career Development study and recommended to the Company as a means of analysing the repertory grids.

4. Rank ordering of importance of constructs

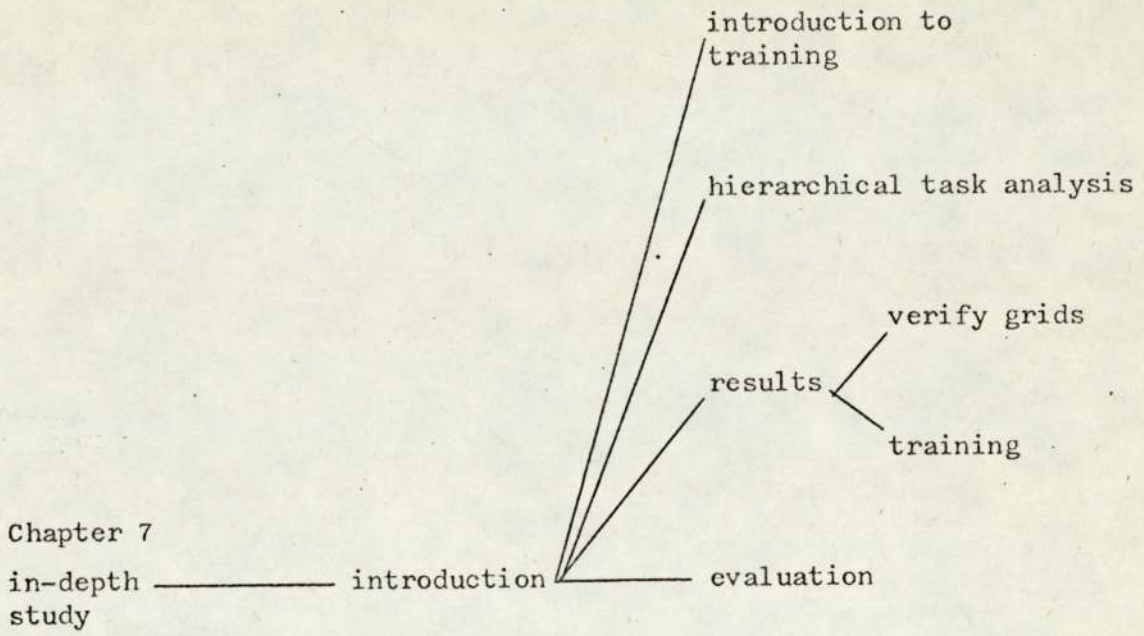
The O.E. and Fleet studies had shown that to produce a profile of a job it was useful to know the order of importance of the skills and knowledge to a job. In the Fleet study the importance of a construct was measured by calculating the percentage of tasks in a job that required a particular skill and this measure was used to distinguish between jobs.

However, it was a cumbersome way of assessing the importance of skills to a job and it was thought that the method would not be used by the Company. Therefore, it was decided that in further studies the subject would be asked to rank the constructs in order of importance to his job after his repertory grid interview. This method proved viable and contributed valuable information to the job profiles.

Assessment

After the initial application of repertory grids some weaknesses in the methodology were recognised by the researcher and the Company. This led to changes being made, estimates of time spent on tasks were obtained from subjects, constructs elicited were grouped into categories and the subject asked to rank his constructs in order of importance. These changes were used in the Career Development study and allowed job profiles to be produced more accurately, also the method was more rigorous which

was necessary for its use by the Company. Unfortunately, the implications of the number of shared constructs was not researched further due to difficulties of measuring efficiency.



IN-DEPTH STUDY

INTRODUCTION

Chapter 5 described the use of repertory grids to produce job profiles and the application of these profiles to improve job performance and for organisation development. The profiles consist of a description of the tasks involved and the knowledge and skills required in a job. The information contained in each profile was at a very general level of description and at this stage in the project it was felt necessary to verify the profiles as it was conceivable that the generalised task and skill descriptors did not truly describe the job.

The profile could be inadequate in several respects. They might merely represent broad descriptors of work so that when the job was studied in detail these descriptors would be irrelevant, or significant parts of a job might have been omitted from the profile due to inadequacies in the analysis method, but these would probably be revealed in a detailed study.

At about the same time the idea of designing a training programme was raised. Training had been identified earlier as an area of 'personnel development' and the Company was particularly interested in the proposal as supervision of the project was now under the Training Manager (Mr D. Copping).

Therefore, an in-depth study of a job would be made to satisfy two objectives:-

1. to verify the data produced from the repertory grid interviews.
2. to design a training programme

A subject was chosen from whom a repertory grid had previously been elicited, who was co-operative and who held a position in the Company of interest to the Training Manager. On these criteria, an Area Fleet Manager was selected (Mr. J. Tutton, AFM, Southern Region).

Hinrichs (1976) in a review of personnel training describes it as "a many faceted though imprecisely delimited area of theory, knowledge and practice". There appeared to be two approaches to training; on the one hand there were a list of 'principles' derived out of learning research which include motivate the learner, make the learning task similar to the final task etc, and on the other hand there were a vast range of popular methodologies, including lectures, audio visuals and simulation. There seemed to be no cohesive taxonomy of training variables.

The situation appeared even more confused for management development training, Hinrichs comments that "only rarely is time spent in determining in detail just what the training should accomplish. Usually there is a very imprecise idea of the specific task towards which managers should be trained. Even less is there any understanding of the basic components which make up that task. Finally, there is seldom a determination of how to achieve proficiency in the total task".

A framework which appeared useful to analysing a training problem was provided by Gagne (1962). He proposed a series of questions:-

1. what are the task components of the job?
2. what 'mediates' or influences performance on these job tasks; that is, what must be learned in order to enhance job performance?

3. how should these mediators (the training content) be broken down into elements for purposes of training?
4. how should the learning of these elements be sequenced in order to ensure optimal progression from one learning stage to another and to provide for maximum mediation effects, or transfer to the job?

Thus, the first step in analysing a training problem was to identify the task components of the job, i.e. describing what a manager does, which was the problem faced at the start of the project. The studies showed that repertory grids contributed to describing a managers' job, but for the present study a more detailed approach was required. In addition it was desirable that Stammers and Patrick's (1975) chief criterion should be satisfied, namely that any analysis method must "lead to positive training recommendations".

In order to select a method which satisfied these criteria, the review of occupational analysis methods was re-examined. Hierarchical task analysis (HTA) developed by Annett and Duncan (1971) appeared the most suitable as it was a detailed analysis which could lead directly to training recommendations. The technique had been dismissed previously on the grounds that it would not be acceptable to the Company as it was time consuming for the interviewer and interviewee but these matters did not have to be taken into consideration for an in-depth study.

The identification of needs was only the initial stage of training, it should then be implemented and evaluated, but the success of these latter stages are dependent upon the identification of needs. The researcher was concerned only with the initial stage because it was considered that the Training Manager would be in a better position, due to his expertise

and experience of the Company, to implement the training. Also, only the identification of needs contributed to the first objective of the study i.e. to verify the data produced from the repertory grid interviews.

Hierarchical Task Analysis

Introduction

HTA was developed by Annett and Duncan in 1971 and has been recently refined by Shepherd of the Chemical and Allied Products, Industry Training Board. Annett and Duncan based HTA on their "Theory of Human Performance" in which they consider 'a man as skilled if he can accomplish the purpose of the task efficiently'. Therefore, they focus attention on what a task achieves rather than the specific movements required to do a task. Their first principle "is that a task can be defined in terms of its objectives or end products", further they consider that to achieve an objective it is necessary to have a plan and "the process of analysing a task, therefore, is the process of diagnosing the plan which is needed to achieve a stated goal". However, plans are an abstract concept, one "cannot by looking at a person say what plans he has or doesn't have" so to be able to recognise these plans the individual has to do something, or operate. Therefore, the behaviours that can be seen when analysing a task they call "an operation".

The term operation is central to HTA and stands "for any unit of behaviour, no matter how long or how short its duration and no matter how simple or complex its structure, which can be defined in terms of its objective". A complex operation will involve sub-operations. This concept leads to Annett and Duncan's aim which is 'to describe performance in terms of a

hierarchical structure of operations and sub-operations', within the hierarchy the top position is occupied by the most general statement of the goal or objective.

Shepherd (1978) emphasised that re-description of a task into subordinate operations was only complete if a plan "stating the conditions when the subordinates should be carried out" was identified, although the concept of a plan was introduced by Annett and Duncan it was not included in their form of analysis. However, Shepherd says that 'the plan is crucial since the difficulties of a job "may be completely overlooked if an analyst uses an approach concentrating on what should be done, without systematically examining when these things should be done". Indeed, many complex jobs appear superficial if their planning aspects are ignored'.

Another question to be asked of HTA was how the analyst collects the information? From Annett and Duncan's paper it seemed that the analyst should observe the task and due to the difficulties of observing a managerial job, HTA seemed inappropriate to many researchers for managerial jobs. However, Shepherd suggests that HTA can be carried out during discussion between the analyst and one or more people experienced at the task.

Thus, HTA at the highest level consists of an operation defined in terms of its goals. The operation can be broken down into sub-operations each defined by a sub-goal with a plan stating when these sub-goals should be performed. There is a hierarchical relationship between operations and sub-operations.

A simple example will help to explain the analysis method (see figure 1). The general statement of the task was to 'play a round of golf'. By questioning an experienced golfer we can say that this involved four subordinate operations, but simply listing these operations does not provide a complete re-description of the operation, their plan must be stated. The same process of re-description can be applied to each of the subordinate operations, figure 1 shows how one of these re-descriptions has been carried out.

Such an analysis could proceed to absurdly minute levels which would be of no interest to training so the next question was to what level of detail should the analysis procedure be taken? Annett and Duncan suggested that further re-description was unnecessary where the product of cost and probability of failure ($p \times c$) of an operation was acceptable. Thus, if the cost to the system of failure was negligible then the likelihood of failure does not matter either. Similarly even when the cost of failure was high, if the probability of failure was zero, there was no problem.

The difficulties of assigning precise values to either P or C has distressed many analysts but Shepherd doubts whether it was ever intended that "the rule should be interpreted in the tight mathematical way that the formula implies". He suggested that re-description of an operation was unjustified if:-

1. current performance was regarded as acceptable
2. a means to ensure satisfactory performance could be proposed. These proposals may involve training or other solutions e.g. job-aids, modifying the work-place, should be considered.

Plan 0: → 1 before leave office

→ 2 → 3 → 4 → 5
until → 6
after 6 → 7

0 To play a round
of golf.

- 1. ensure have clubs
- 2. drive to golf course
- 3. visit changing rooms
- 4. walk to 1st tee
- 5. play shot
- 6. play 18th hole
- 7. take refreshment in bar ;

Plan 5
→ 1 → 2 → 3

- 1. analyse hole
- 2. make practise swing
- 3. hit ball

Plan 5.1
→ 1 → 2 → 3

- 1. look at hole
- 2. select club
- 3. place ball

FIGURE 1

Hierarchical task analysis of playing golf.

3. No way of further re-describing the operation could be seen. If such a situation occurred it may be necessary to examine more thoroughly all the possible solutions to the problem.

Shepherd details three advantages of HTA:-

1. A hierarchical re-description provides the analyst with a means of "getting to grips with some very complex tasks". If only one level of re-description is chosen, the analyst will need only one plan to state how operations are selected and sequenced, but since this one plan may govern many operations it may prove difficult for the analyst to state. But with a hierarchy of operations several plans will be needed but each of these will govern fewer operations and be easier for the analyst to sort out.
2. The analysis aids the design of training. Firstly, the trainee is assisted by being clearer how the various goals and sub-goals inter-relate rather than trying to make sense of a confusion of new experiences. Secondly, the more simply stated plans will be easier for the trainee to learn and he can concentrate on rationally identified parts of the task, rather than trying to master the complexities of the whole task from the outset. Thirdly, the plans suggest how the trainer should sequence the operations in training which helps answer Gagne's fourth question regarding the sequencing of elements for learning.
3. A hierarchical form of description enables the analyst to examine some parts of the task in considerable detail, while leaving other parts in far less detail.

Thus, it seemed that HTA would allow an in-depth analysis of an executive's job which could verify the information obtained from repertory grids and would lead directly to training recommendations.

Method Used in Study

An interview was arranged with the Area Fleet Manager who was told that the data collected was being used to verify the earlier interview and to aid the design of a training programme. At the beginning of the interview a brief explanation of the method was given.

The top level of the hierarchy was identified by the general statement "Carry out the duties of an AFM". This operation had to be subdivided and the elements elicited from the subjects repertory grid provided cues for the first re-description. The elements were approximately grouped; firstly into tasks concerned with being a salesman, secondly tasks involving the management of a Fleet Service Engineer and a third group concerned with matters internal to Dunlop. The first group was identified as "carry out duties of a salesman" which was written on a piece of card and shown to the subject, who was asked the question "what tasks does this involve?". The answers provided subordinate operations and once these had been identified the subject was asked when he performed the tasks, and the answers formed the plan of the operation, then one of these operations was taken and subdivided in the same way. The method of re-description continued until the researcher considered that "a means of ensuring adequate performance" was known.

The analysis was recorded by writing each operation on a separate piece of card. The subject was asked to organise them into a hierarchy which was arranged for small parts of the job to make the task manageable for the subject. The analyst recorded the hierarchy and the plans for the subordinate operations separately. In addition the analyst noted training recommendations, or job-aids during the interview which was helpful as the information was fresh in the analysts' mind.

The interview procedure was not rigorous, indeed it was extremely flexible, for example often when the plan for the subordinate operation was identified the subject would remember additional operations which contributed to the higher level task. This illustrates the value of identifying the plan as it ensures a more precise description of the operations and that all parts of the job were identified which was required to validate the grids. The analysis procedure continued until the subject considered that all the operations of his job had been described and a means of ensuring satisfactory performance had been proposed.

Results

Figure 2 shows the completed hierarchical task analysis which details the subordinate operations and their plans. A line drawn under an operation shows it has not be re-defined. The results are also shown as a series of linked algorithms (Appendix IV), a double line on the right hand side of the boxes denotes "no further re-description". The reader wishing to see how the other operations are re-described, seeks out the page headed by the number of the operation concerned, this format is easier for people unfamiliar with task analysis to read.

FIGURE 2 HIERARCHICAL TASK ANALYSIS

attached at back of thesis

The extent to which the results satisfied the two objectives will be discussed.

1. To verify the repertory grid interviews

The HTA presented a similar picture of the AFM's job to the one formed from the repertory grid interview, although the HTA was more detailed as the job was subdivided into approximately 75 operations as opposed to 12 elements in the grid, but no entirely new areas of work were identified. The HTA showed that "carry out duties of a salesman" was the major part of the job, and that the "management of FSe" was secondary which reflects the information obtained from the repertory grid interviews, i.e. few tasks were elicited concerning the FSe and there were no constructs concerning management skills.

Therefore, it appears that the HTA verified the repertory grid interviews and that if a general picture of a job is required quickly, a repertory grid interview is suitable. However, if details are required the more time consuming method of HTA should be used.

2. To design a training programme

It was considered that the HTA answered the first question Gagne posed i.e. "what are the task components of the job", in addition the hierarchical structure of the analysis and the identification of plans suggested how the training should be sequenced.

The value of HTA for designing training is best illustrated by an example of a course to train new AFM's to perform their "salesmen duties". The analysis shows that 7 operations make-up that task, each part could form a separate module of the course whose sequence is suggested by the plan.

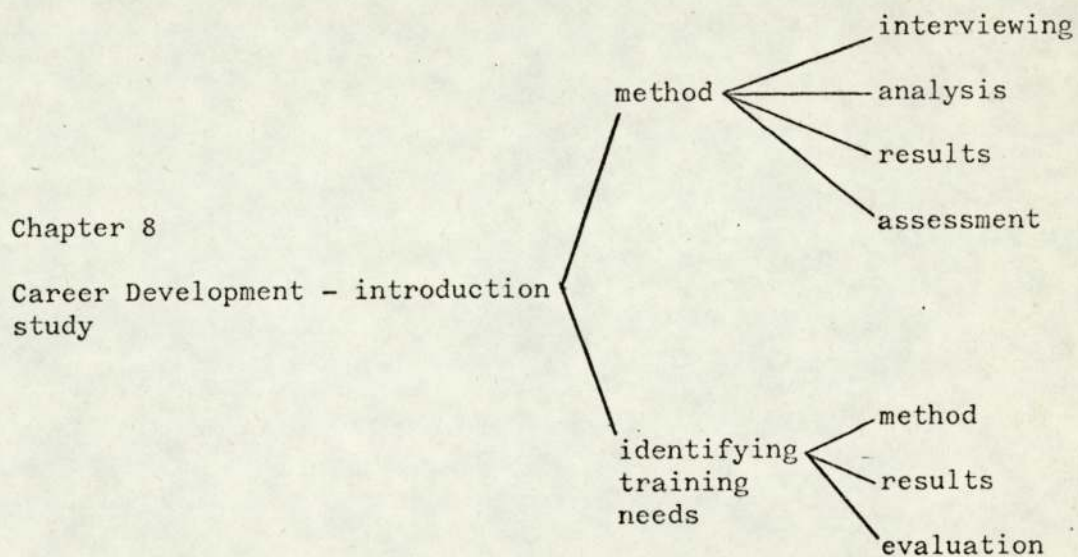
Therefore, the first module would concern "set up sales programme and up-date strategy" which in turn involves 5 operations, i.e. locate customers, find out information, programme call frequency, record information and up-date information, simulation suggests itself as a potential training method. A similar analysis could be made for the other operations.

During the HTA an attempt was made to establish the "skills" required for the tasks by asking the subject to assign each task to the appropriate category of skills used in the analysis of the repertory grid interviews. It was believed that this information could be useful in designing training courses as a course could be organised to teach a specific skill, e.g. social skills and the analysis would provide examples from the job in which this skill was required. This would allow the training to be like the real job which learning theorists consider desirable. However, with so many subordinate operations it proved too difficult for the subject to assign each operation to a skill category, but this method might be useful in further studies.

The use of HTA encouraged the researcher to consider non-training solutions to the problem of "ensuring competence" on each operation. For example the analysis clearly showed that "carry out customer sales activities" involved the subject in deciding the purpose of the meeting, and according to that selecting an appropriate selling tool. This led the researcher to pose the question, firstly are there sufficient selling tools?, and secondly are there any guidelines given to the salesmen as to which tool is appropriate? These questions are being considered by the Director and Senior Managers of the sales force.

The HTA was also shown to the Training Manager who considered the information valuable. It is possible that in the next few months he will be asked to train the AFM's as their role is being scrutinised by the Sales Director following the repertory grid study.

Thus, it would appear that the in-depth study has satisfied both its objectives. The use of HTA has provided some verification for the repertory grid interviews and has provided an input into training. In addition the use of a detailed procedure has shown repertory grids to be a relatively quick and accurate method of eliciting a job profile.



CAREER DEVELOPMENT

The Personnel Department were interested in using job profiles as a basis for career development planning and this interest formed the final study of the project.

Career development is part of the broader topic of manpower planning. Thomason (1975) says that 'manpower planning aims to ensure that an organisation so reacts to its internal and external environment that it has now, and will continue to have in the future, the numbers and qualities of personnel required to enable the enterprise to achieve its output objectives (whether of goods or of services) with whatever cultural constraints of efficiency may be imposed upon it'.

A number of policies can be adopted to ensure that the right 'numbers and qualities of personnel' are available, including the selection of suitable staff and the training of staff to ensure job competence.

Many large organisations employ staff who make the greater part of their careers within the organisation, so that today's recruits are tomorrow's senior managers which necessitates the planning of the careers of staff.

Profiles for each job within the organisation which detail the tasks a person has to perform in a particular job and the necessary skills could form the basis of career development plans.

Career development plans are a valuable personnel tool as they help to ensure suitable personnel are available for the jobs within an organisation. Plans can be made so that selected people gain experience in different jobs to equip them for senior management roles. If a position becomes vacant the plans should indicate where qualified personnel could

be found within the organisation, and if it was known in advance that a vacancy would occur, for example if personnel records show that a person would soon reach retirement age, it would be possible to train a successor before the job becomes vacant. The career plans would also identify whether the organisation structure offers its personnel suitable career opportunities and if this was not the case the organisation should be studied and changes made if thought desirable.

Thus, career plans are useful for making selection decisions, recommending training, ensuring the organisation has suitable 'talent' for its senior management positions and for organisation development.

However, it must be remembered that these plans are only an aid to decision making and that other factors must be considered, for example in selection has the individual the right personality to work in a certain department?, can the structure of the organisation be changed or would that be detrimental to its efficiency in other ways? Also, having decided upon a person with the best experiences for a job it is possible that the individual concerned will not want to move, particularly if it required geographical relocation. Despite these limiting factors the importance of manpower to any organisation must warrant attempts to plan for the most efficient use of this resource.

The study of career development enabled the changes made in the method detailed in Chapter 6 to be tested and as the career plans were for jobs within the Marketing Division the job profiles produced for the O.E. and Fleet Sales studies contributed to the data. Therefore, this study brought the project to a conclusion.

METHOD

For career development plans to be produced for the Marketing Division a profile of each job within the Division would be required. In the present study there was insufficient time to include all the jobs in the Division so one middle management job was selected as the peak of the hierarchy and the organisation chart was consulted to identify potential sources of candidates. The job selected was the Divisional Fleet Sales Manager and Figure 1a lists the jobs studied. A broad perspective was adopted in choosing the sample to see if any unexpected sources were highlighted. Figure 1b indicates the positions studied within the organisation.

A profile of each job within the sample was obtained by interviewing one representative of the job who was doing the job in the "preferred manner", this decision was made by the manager of that job. Each subject was interviewed individually for approximately 2½ hours.

FIGURE 1a

List of jobs studied

Divisional Fleet Sales Manager DFSM

Fleet Technical Specialist

Regional Fleet Service Manager

Area Fleet Manager AFM

Fleet Salesman FS

Account Executive Original Equipment OE

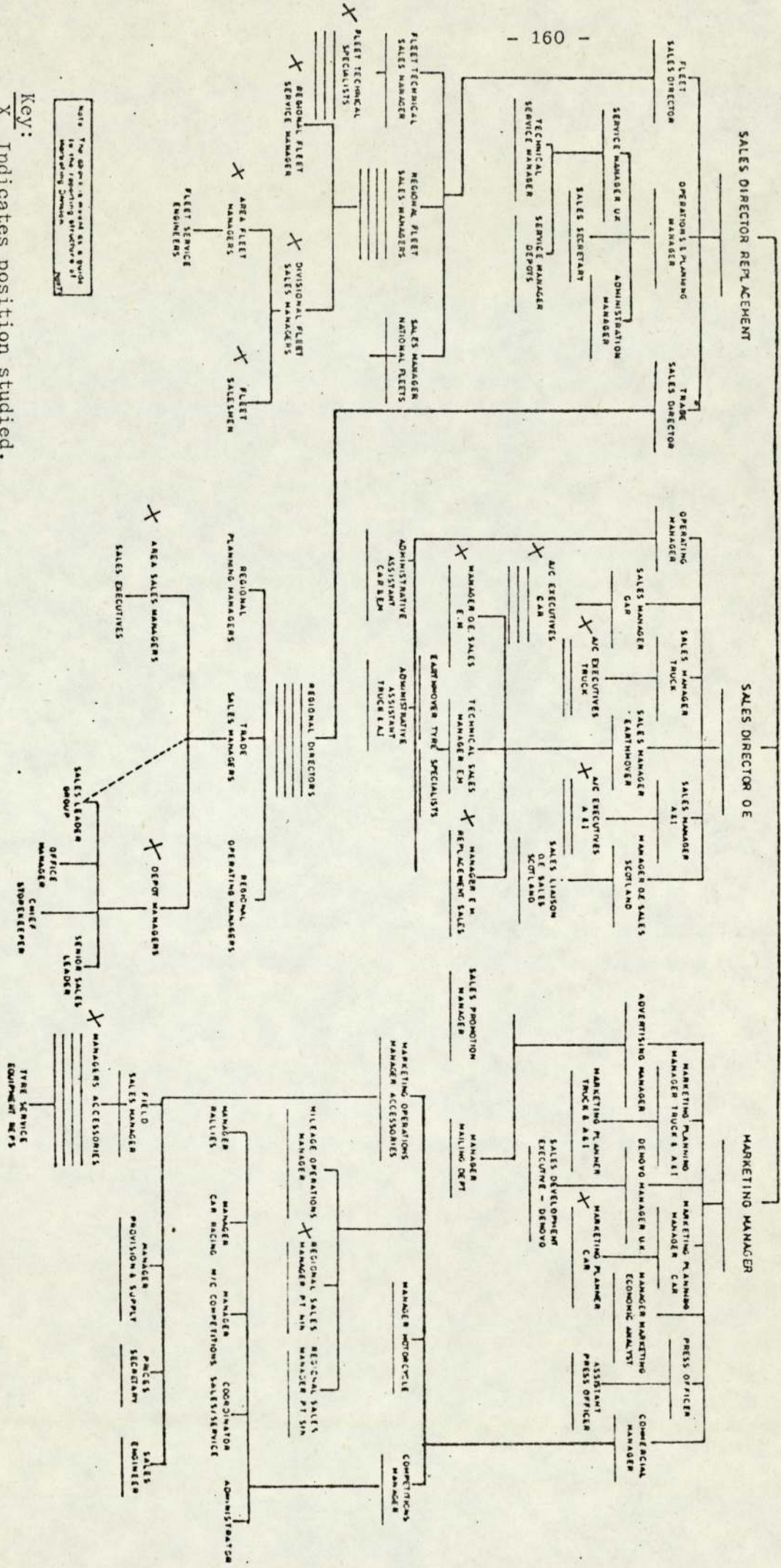
Area Sales Manager ASM

Depot Manager DM

Marketing Planner

Accessories Manager

Area Manager Passenger Transport Division PTD



Key:

X Indicates position studied.

FIGURE 1b. Organisation Chart showing positions studied.

NOTE: The above is based on a guide to the structure of the Director Tyres - U.K. as of 1st January 1960.

INTERVIEWING

The interview method was based on the experiences of the pilot studies and the application of repertory grids in the OE and Fleet Sales force. Briefly the interview involved three stages:-

1. eliciting tasks important to the job
2. eliciting constructs about the skills and knowledge required to do the job
3. the subject rated the tasks on each construct on a 5 point scale

Two additional stages were performed to obtain more detailed information about the job:-

4. after the constructs had been elicited the subject was asked to rank the constructs in order of importance to the job, (1 being the most important). Subjects were allowed to rank several constructs the same if they could not differentiate their importance.
5. the tasks were grouped into major areas by the interviewer and adjusted if necessary when shown to the subject who was asked to estimate the percentage of his working day spent on each area.

This procedure was followed for each of the jobs studied.

ANALYSING THE INFORMATION

The aim of the analysis was to identify the similarities and differences between jobs so that career development plans could be produced. There were two stages to the analysis:-

Stage 1.

A profile of each job was produced by categorising the constructs elicited from the subject according to the system detailed in Figure 2 and explained in Chapter 6. In addition the category "command of data" was subdivided, see Figure 3, as the category covers a broad range of data, from tyres to the Health and Safety at Work etc. Act, and if command of specific data was important for a job it could be a major determinant in a decision regarding career development. The three or four constructs identified as most important by the job holder were listed and a pi diagram illustrating the percentage of the working day spent on each major task area was drawn (see Figure 4).

FIGURE 2

Categories of Constructs

Category 1

Command of data and facts:

- eg technical facts
- market knowledge - customer and area
- product knowledge
- stock levels

Category 2

Sensitivity to events

- ie skills concerned with perceptiveness, reactivity
and collecting data

Category 3

information output

- reporting information
- administrative tasks
- written/formal communication

Category 4

Problem solving and planning

- analytical skills
- decision/judgment making skills
- planning activities
- acting on own decisions

Category 5

Social skills and abilities

- interpersonal skills used in selling
- communicating
- influencing
- respond to formal discipline
- motivating people (other than subordinates)

Category 6

Inclination to respond purposefully:

- initiative
- being constructive

Category 7

Skills specifically relating to dealings with subordinates:

man-management
leadership
passing on experience, 'teaching'

Category 8

These constructs do not relate to skills, knowledge or personal qualities

place of work
time span of work
routine-non-routine tasks

FIGURE 3

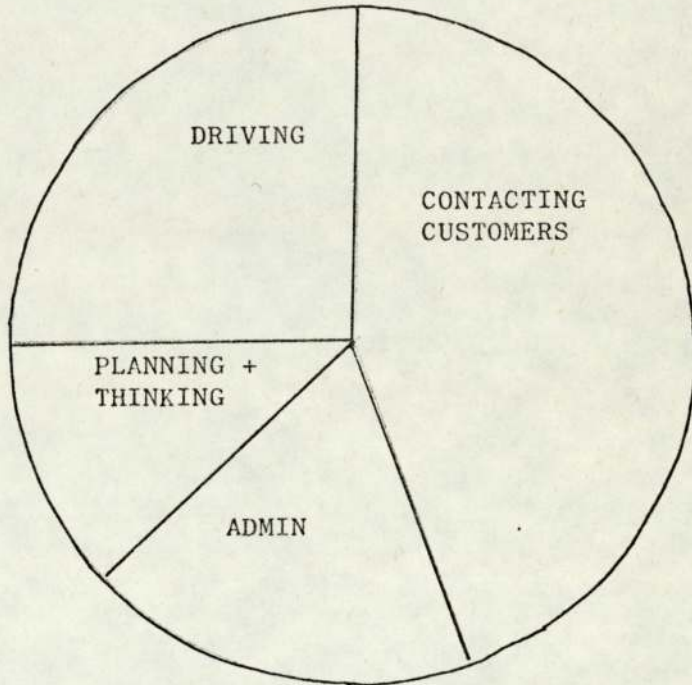
Data Categories

1. Product knowledge and service knowledge, eg tyres, range etc.
and wear of tyres.
3 grades: A = detail, B = moderate, C = low
2. Vehicle knowledge
3. Knowledge of the industry, competitors, markets.
4. Knowledge of the users in a particular area.
5. Knowledge of Dunlop systems and procedures
6. Legislation:-
A = tyre legislation, claims procedure.
B = Health and Safety, Disciplinary etc.
7. Market research procedures
8. Factory planning and production
9. Account and costing

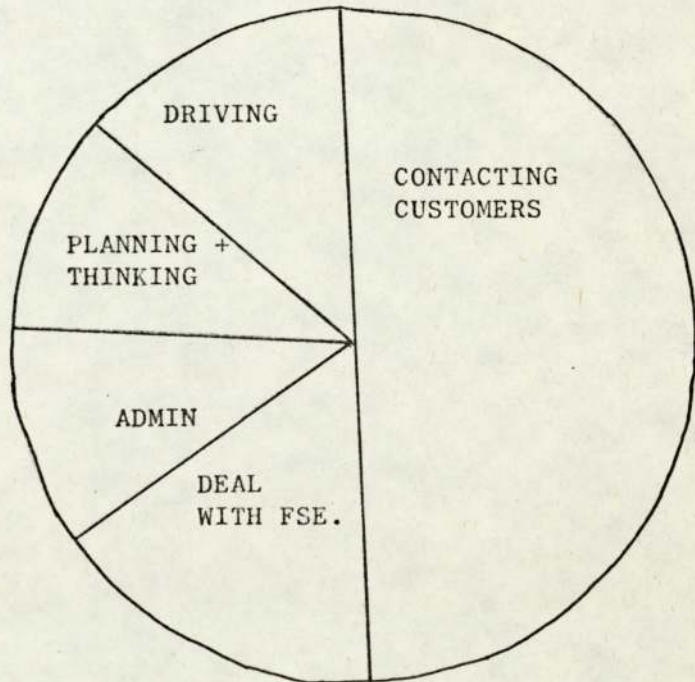
FIGURE 4

Example of pie diagram showing Percentage Time spent on major tasks.

FLEET
SALESMEN



AREA
FLEET
MANAGER



STAGE 2

A scoring system was developed to match the profiles of each job in the sample to the profile of the job at the peak of the hierarchy, in this study the Divisional Fleet Sales Manager. The scoring system is detailed in Figure 5. The scoring helps produce a short list of jobs most similar to the job being studied, but closer, more qualitative assessment is needed before a career plan is produced. This system is particularly valuable in large organisations as it can provide information about a number of jobs in a concise manageable form.

FIGURE 5 SCORING SYSTEM

a) The most important skills and the major tasks of the job to be examined were listed on a Career Development Chart (Figure 7).

b) Each entry was awarded 2 points

c) Next the tasks and skills of another job in the study were examined and:-

(i) 2 points were given if the same task as that in the top job was elicited and if approximately the same (within 10%) or greater percentage time was spent on that task.

(ii) One point was given if the same task was mentioned but much less time was spent on that task.

(iii) 2 points were given if the same skill category was elicited as the top job and if that construct was assigned the same or higher level of importance by the job holder.

(iv) One point was given if the same skill category was elicited as the top job but it was assigned a lower order of importance.

d) After the points have been assigned for each job they should be summed and a list of the scores produced.

RESULTS OF THE STUDY

Figure 6 shows a league table of the jobs most similar to that of the DFSM and Figure 7 shows the breakdown of the scores for each job. An examination of these figures illustrates ways in which the information could be used to produce career plans.

1. The job of ASM (scoring 15 points) was most similar to that of the DFSM (scoring 18 points). This suggests that ASM's would be the most suitable replacements' for a DFSM as they have carried out similar tasks and possess similar skills. One limiting factor was that the DFSM considered it important to have detailed knowledge of the users in a particular area and the ASM would not have this knowledge as he operates with the trade sales force, rather than the fleet. However, it would be possible to plan that the ASM's had already gained some fleet experience, for example as a fleet salesman. Another factor to consider was whether an ASM would apply for the post? Would he consider it a worthwhile move as the jobs were so similar?
2. The second job in the league was Accessories Manager. He lacks experience in setting budgets and attending meetings (although reference to the interview shows that he does attend some small meetings). Concerning skills his present job used all the skills required for the DFSM job although their level of importance was different. Therefore, the job of Accessories Manager provides useful experience but the individual may not be entirely competent in the job, for example skills with subordinates was a minor part of his present job, but it was the most important skill required for a DFSM, so the individual would need to develop this skill to be competent in the new job. However, the

FIGURE 6

League of jobs most similar to DFSM

| | |
|----------------------------|-----------|
| DFSM | 18 points |
| ASM | 15 |
| Accessories Manager | 12 |
| AFM | 10 |
| Fleet Service Manager | 9 |
| Fleet Technical Specialist | 8 |
| FS | 8 |
| Account Executive | 8 |
| Depot Manager | 8 |
| Area Manager PTD | 8 |
| Marketing Planner | 3 |

FIGURE 7

CAREER DEVELOPMENT CHART FOR DFSM

| | DFSM | Fleet Tech Spec. | Fleet Serv Mngr. | AFM | FSM | Account Exec. | ASM | DM | Mktg Pln. | Access. Mngr. | Area PTD |
|-----------------------|------|------------------|------------------|-----|-----|---------------|-----|----|-----------|---------------|----------|
| <u>Tasks</u> | | | | | | | | | | | |
| subordinates | 2 | | 1 | 1 | | | 2 | 1 | | 1 | 2 |
| customer | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 2 | 2 |
| budgets reports | 2 | | 1 | 1 | | 1 | 2 | 1 | | | |
| general problems | 2 | 1 | | 2 | 2 | 2 | 2 | | | 2 | |
| meetings | 2 | 1 | 2 | | | | 2 | | | | |
| <u>Skills</u> | | | | | | | | | | | |
| subordinates | 2 | | | | | | 2 | 2 | | 1 | |
| social skills | 2 | | 1 | 2 | 2 | 1 | 2 | 1 | | 2 | 2 |
| sensitivity to events | 2 | 2 | | | | | | | 2 | 2 | |
| data 4. Ib 5 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | 2 | 2 |
| TOTALS | 18 | 8 | 9 | 10 | 8 | 8 | 15 | 8 | 3 | 12 | 8 |

Accessories Managers' job does offer a sound basis from which the additional requirements for a DFSM could be developed.

The only other limiting factor was his knowledge of the product and the user as the Accessories Manager was responsible for accessories rather than tyres. However, the products are related and the knowledge could be taught readily, it is easier to teach factual data than skills.

It is quite possible that the Accessories Manager would apply as it would be significant promotion. It is worth noting that this move has not occurred previously but the analysis has shown it to be a feasible career move.

3. A similar analysis could be made of the other jobs in the league, that is identifying the similarities and differences between the DFSM job and any other job, and considering if the differences could be removed by training, either on or off the job, or if suitable experience could have been gained earlier in the career plan. For instance, the Marketing Planner job only scores 3 points, but two of these points are for the skill 'sensitivity to events', which is not found in any other job at that level in the organisation hierarchy. Therefore, if a person experienced as a Marketing Planner, moved to AFM, he would be in a strong position for the DFSM job. This illustrates the need to examine the previous jobs to the present position when considering career moves.

4. The interpretation so far has shown the use of the method for identifying potential applicants for a job but another use for the method is planning an individual's career, for example if a person was recruited today what experience would he require to become a DFSM? An examination of the tasks and skills necessary for a DFSM suggests several routes. He could begin as a fleet salesman or account executive which would provide experience at dealing with customers, general problems and attending meetings, and would acquire social skills and knowledge of the product and user. The individual would then need to gain experience with subordinates which could be done as an Accessories Manager, ASM or Depot Manager (except that this job removes him from direct selling) or some experience with subordinates is found as an AFM or Manager PTD. An alternative would be to spend time as a Marketing Planner to gain 'sensitivity to events' before moving to a job offering skills with subordinates.

If a job other than DFSM is of interest another Career Development Chart and League Table can be produced. Figures 8 and 9 show charts and tables for an ASM.

This analysis assumes that if an individual has used a skill, or performed a task, in one job he will be capable of using that same skill in a different job. This seems reasonable as all selection decisions rest on this assumption but it is recognised that problems might occur when skills are transferred between jobs.

FIGURE 8

CAREER DEVELOPMENT CHART FOR ASM

| Tasks | ASM | Fleet Tech Spec. | Fleet Serv Mngr. | AFM | FSM | Account Exec. | DM | Mktg Pln. | Access Mngr. | Area PTD |
|------------------------------------|-----|------------------|------------------|-----|-----|---------------|----|-----------|--------------|----------|
| general admin & queries | 2 | | 1 | 1 | 1 | 1 | | | 1 | 1 |
| subordinates | 2 | | 1 | 1 | | | 1 | | 1 | 2 |
| meetings | 2 | 2 | 2 | | | | | 1 | | |
| analyse & reports customers Skills | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 2 |
| subordinates | 2 | | | | | | 1 | | 1 | |
| social | 2 | | 2 | 2 | 2 | 2 | 2 | | 2 | 2 |
| analytical | 2 | 2 | | 2 | 2 | 2 | | 2 | | |
| data 3, Ib | 2 | 2 | 2 | 2 | 2 | 2 | | 1 | 2 | 2 |
| TOTALS | 18 | 8 | 10 | 10 | 10 | 10 | 6 | 5 | 9 | 9 |

FIGURE 9

League table of jobs most similar to ASM

| | |
|----------------------------|-----------|
| ASM | 18 points |
| AFM | 10 |
| Fleet Service Manager | 10 |
| FS | 10 |
| Account executive | 10 |
| Accessories manager | 9 |
| Area manager PTD | 9 |
| Fleet Technical Specialist | 8 |
| DM | 6 |
| Marketing Planner | 5 |

ASSESSMENT OF THE METHOD

The above illustrates ways in which the information obtained from the job profiles and the scoring system could be used as a basis of career development planning. This planning could form the foundation of all training and development activities so that people were developed in ways that maximised the opportunities for promotion and would ensure that the organisation always had suitable personnel for all its positions.

The scoring system appeared valid as it correlated with the Training managers' subjective assessment of the suitability of the jobs to that of DFSM. The validity of only interviewing one subject from each job title to obtain a picture of the job was considered. In the investigation of the Fleet Sales force six representatives of a job were interviewed, but no major differences were found in the way they perceived their job and on this basis a decision was made to interview only one subject believed to be doing the job in the 'correct' way. A subjective assessment of the validity of this assumption was derived from the fact that the managers of the jobs studied agreed that the picture of the job was representative.

It would have been interesting to establish predictive validity for the scoring system. This could be done by seeing whether the more suitable the subjects' score was for the job being examined, if he was likely to be selected for that post. This information could be obtained by monitoring future selection decisions and comparing these with the scores. However, the selection decision is not an ideal criterion measure as there is no evidence that the selection decision is correct. For example

people are frequently selected to satisfy political demands of an organisation, rather than on the basis of which applicant is most suitable. Rather it might be better to look at success in the new job and correlate this with similarity scores.

The advantages of this method as a way of producing career plans for the Marketing Division, or any organisation are twofold. Firstly, it provides information in a concise, manageable form which is essential for career planning in a large organisation. It would be possible to store and retrieve the information using a computer. Secondly, the plans have been developed using an objective method which affords the plans more respect from managers than if they had been produced by the personnel departments' subjective assessment. This respect is crucial if the plans are to be implemented. In addition these two factors encourage the development of objective written plans which is important as it enables the plans to be thought through and examined more closely.

It was strongly recommended that the method should be applied by the Personnel Department to all the jobs within the Division so that complete career plans could be produced and it is possible that this recommendation will be adopted. A system should also be created to ensure that the job profiles are kept up-to-date. This method could be applied within any reasonable sized organisation.

USE OF REPERTORY GRIDS TO IDENTIFY TRAINING NEEDS

A reason for the value of career development plans is that it is possible to train an individual for a new job before he takes up the position. Hierarchical task analysis has been used to analyse the training needs of a job but often it is necessary to identify an individuals' training needs, ie to discover in which operations his performance is inadequate and to provide training to overcome these inadequacies. Therefore, following the career development study, a method of identifying the ways

in which an individuals' abilities do not match the demands of a job was required.

It was considered that repertory grids might be a suitable way of identifying these mismatches. A repertory grid interview could be used to elicit a profile for the job which could be compared to a grid elicited from an individual and mismatches identified. One cause of inadequate job performance is lack of experience in the job. Therefore, to test the use of grids for identifying an individuals training needs an experienced manager was interviewed to elicit a profile for a job and a manager inexperienced in the same job were interviewed. The grids were examined for mismatches.

This methodology rests on several assumptions. Firstly, that the perception of the job held by the experienced subject represents the 'best' way to do the job. Secondly, that the differences in perception are caused by the subjects different experience in the job and not by their 'personality'. The researchers' previous studies using repertory grids provide some support for the assumptions in that repertory grids elicited from several different people with the same job title were very similar. This suggests that people experienced in a job perceive the job in a similar way.

METHOD

Therefore, taking these assumptions and those discussed in the study on job profiles a brief study was made of the potential of repertory grids to identify training needs. Two subjects were interviewed, one a person who had been a DFSM for 4 years and the other for only 2 weeks

(although in the month prior to the interview the subject had begun to be involved in the DFSM's work). Prior to his appointment the subject had been an Area Sales Manager when he was responsible for 4 salesmen in the Trade Sales force. Therefore, he has had managerial experience but none regarding the Fleet Sales force. It is interesting to note that the ASM was identified in the Career Development study as the job most similar to that of the DFSM.

A repertory grid was elicited from the two subjects in the same way as in the Career Development study.

RESULTS

As only 2 subjects were interviewed the results cannot be conclusive. However, comparisons of the grids revealed several differences.

a) Differences in the elements elicited

Figure 10 details the elements elicited. The major differences are that:-

- i) more tasks concerning customers were elicited from the new DFSM
- ii) the experienced DFSM lists 'monitoring sales targets', reports on marketing intelligence and 'evaluate staff at assessments'. These elements were not elicited from the new DFSM.

b) Differences in the constructs elicited

Figure 11 details the constructs elicited in rank order of importance assigned by the subjects. The experienced DFSM identified the category 'skills with subordinates' as of prime importance, but this skill was

FIGURE 10

Elements elicited from Experienced and New DFSM

Experienced DFSM

See users and distributors
Promote sales

Accompany and train FS & AFM
Motivate AFM + FS
Evaluate at staff assessments

Attend Reg/Dv. meetings
Meet RFSM
Plan Dv. meetings
Control meetings
Prepare Tech reports
Report on mkt intelligence
Admin & reports
Monitor targets
Project forward plans.

Advise on Ind Rel.

New DFSM

Give lectures to customer
Talk on phone to customers etc.
Sell tyres to distributor
Obtain OE specifications
Call on C.V. operators

Accompany salesmen
Salesmen probs. indiv. + group
Judge salesmen on perf.

Reg plng meeting

Chair DFS meetings
Solve probs with mng colleagues

Read corresp & reply.
Investigate corresp.
Discuss future plans.

FIGURE 11

Constructs elicited from Experienced and New DFSM

Experienced DFSM

1. Skills with subordinates
2. Administrative ability
3. Sensitivity to events
4. Analytical skills
5. Social Skills

New DFSM

1. Sensitivity to people and events
2. Product knowledge
3. Social skills, communicating
4. Knowledge of company policy
5. Knowledge of customers

not elicited from the new DFSM. He details the category 'sensitivity to events and people' and knowledge of the product and customer as important.

c) Differences in estimates of time

The estimates of time spent on the major tasks (Figure 12) are similar. The experienced DFSM estimates a slightly higher percentage of time on seeing customers and distributors.

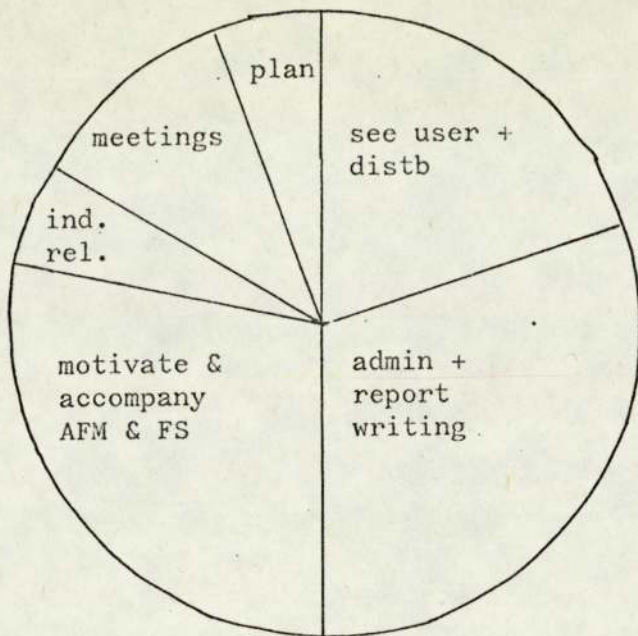
Training Recommendations

The new DFSM has emphasised the parts of his job concerned with the customer more than the experienced DFSM. There are several possible interpretations of this difference. The training manager suggested that the subject might be concentrating on these aspects of the job because he lacks experience of the fleet sales force. It was also possible that the subject had yet to come to terms with his management responsibilities which may be related to his inexperience in fleet sales, ie he needs to acquire knowledge of the selling operation before he can act as a manager. This explains his emphasis on the skill of 'sensitivity to events'.

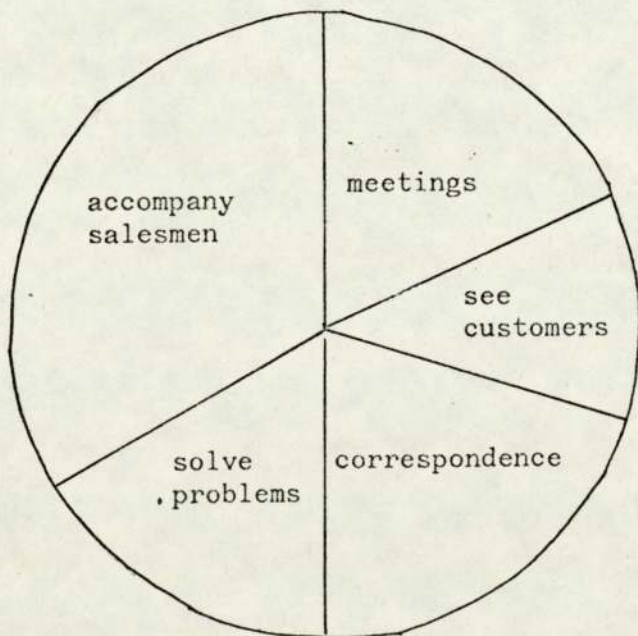
Therefore, it is recommended that the new DFSM's training should concentrate initially on providing information concerning the fleet sales operation. The training could take the form of an off-the-job course or coaching by an experienced colleague. After this initial period training in man-management may be necessary but the necessity of this training should be reassessed after the individual has come to understand

FIGURE 12 ESTIMATES OF TIME:-

Percentage Time spent on Major Tasks - Experienced DFSM



Percentage Time spent on Major Tasks - New DFSM



the fleet sales operation.

Evaluation of the method

Differences were detected between the repertory grid elicited from the experienced manager and from the inexperienced manager and it was possible to recommend training to resolve these mismatches.

It is difficult to evaluate the validity of the recommendations. Some support for their validity was provided by the Training Manager's subjective opinion as he would have expected the mismatch to be in this area. It would be interesting to train the DFSM as suggested and to see how his perception of the job changed but this is beyond the scope of the present study.

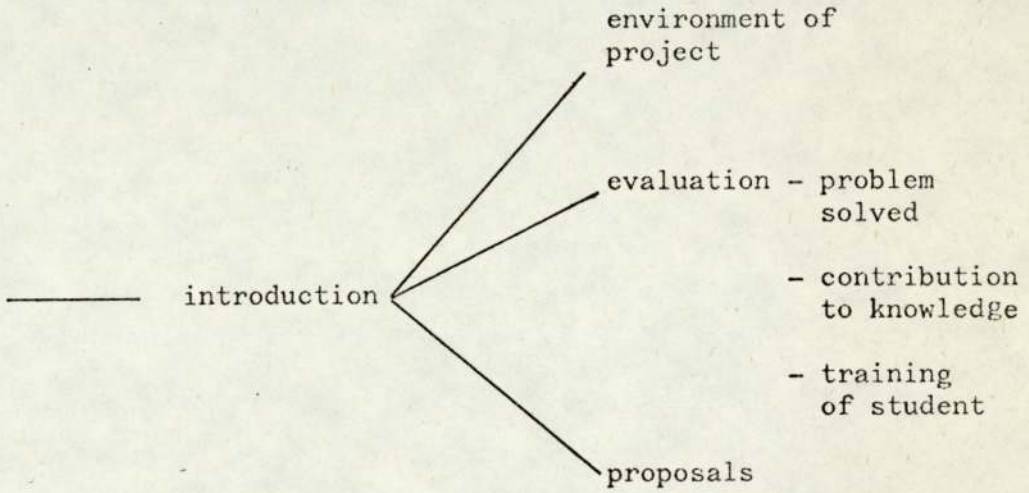
In conclusion, it appears that repertory grids may be useful in identifying an individuals' training needs. The repertory grids could also be used to evaluate the training as the grids could identify the changes in the individual. However, hierarchical task analysis is more suitable for an in-depth analysis of a job.

CONCLUSION

This chapter has shown the application of repertory grid interviews to identifying training needs and producing career development plans. Both applications were based on profiles for a job, which illustrates the value to the Personnel Department of profiles for all the jobs within the Division. It was recommended that such profiles be produced and kept up-to-date, unfortunately, due to a lack of staff within the department it has been impossible to act upon this recommendation.

Chapter 9

evaluation and proposals of the project

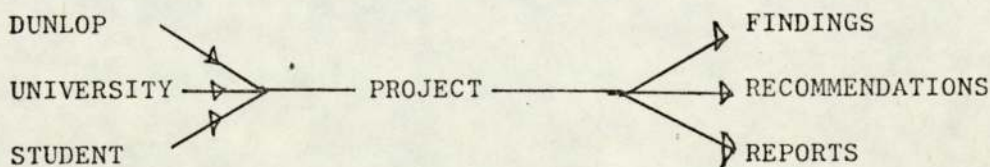


EVALUATION AND PROPOSALS OF THE PROJECT

INTRODUCTION

The project has brought together three groups, the Dunlop company, the University and the research student, to tackle a problem within industry. At the outset of the project the three groups had different perceptions (or constructs) of the project. The initial stage was to establish a common perception of the research. Suitable methods were then developed to deal with the problem and were applied in four case studies. The evolution of the project is detailed in Figure 1.

Any evaluation of the project should consider both the tripartite nature of the research and its orientation towards action research. This project environment did not permit traditional research methods to be used, ie the formulation of hypotheses which are tested in controlled experimental conditions. Instead a more flexible structure to the project was required to cope with changing conditions. It is worthwhile considering the factors which influenced the projects environment. The environment can be identified as the three parties involved in the research which act as inputs to the system, whilst the outputs are the findings, recommendations and reports of the research.



EVOLUTION OF THE PROJECT FIGURE 1

Stage 1 Define project and obtain an understanding of
 the company.

Stage 2 Discover techniques which might be suitable

Stage 3 Use techniques on real problems - ie case studies

Stage 4 Analyse results and write thesis

None of the inputs were constant factors. At the outset the project resembled little more than a black box to all three parties and during the research the parties understanding of the problem and the way it could be approached developed. Also there was an increase in the interest and commitment to the project, at times all parties wondered if the idea had been ill-conceived but these feelings dissipated as the project became less of a black-box.

Other factors specific to each input can be detailed:-

1. Dunlop; The sudden death of the project supervisor affected the research. Fortunately the aims of the research had been clarified by this time, but the student had to direct the course of the project more than would otherwise have been necessary.

The latter stages of the project were affected by the difficulties the Dunlop company were facing within the tyre industry which resulted in major redundancies, some in the Marketing Division. This affected the project as some people became cautious of discussing their jobs for fear of how the information would be used. Also, it meant that the Division was exceptionally busy securing orders and it was a difficult climate in which to persuade managers to adopt a longer term view of their problems instead of "fire-fighting". This resulted in few of the recommendations being implemented during the research, although the Directors agreed they were correct but that the time was not right to introduce changes.

2. The University The input from the university changed when the supervisor of the project left in April 1978. This caused the nature of the project to alter as the new supervisor was knowledgeable and

interested in different areas. However, at that time the research lacked direction and a fresh input was required.

3. The Student During the course of the project the students' knowledge of the relevant subject areas and abilities at problem solving and working within the tripartite group developed. This enabled the student to make a more positive contribution which increased her interest and commitment to the work.

All these factors influenced the project during the 18 months and the work evolved slowly. It is within this environment that the project should be evaluated.

Evaluation of the Project

In order for the project to be evaluated it is necessary to consider its objectives. Each party involved had different objectives:-

1. Dunlop

Dunlop's objectives in sponsoring the project can be subdivided into two groups:-

- a) to solve a specific problem within the Marketing Division.
- b) to use the project as training for the future senior management within the company.

2. The University

To encourage liaison between the university and industry which will

produce research that may:-

- a) benefit industry by attracting talented graduates and to train those graduates.
- b) contribute to 'knowledge' within an area.

3. The Student

- a) to widen both academic knowledge and practical experience in order to enhance career opportunities.
- b) to gain an informal understanding of the choice of career and bridge the gap between University life and the career.

Therefore, the project can be evaluated by seeing the extent to which these objectives were satisfied. For this purpose the objectives can be grouped into three areas:-

1. the extent to which the problem within the Marketing Division was solved.
2. the contribution to knowledge made by the research.
3. the training gained by the student.

Extent to which the problem within the Marketing Division was solved.

This area accounts for the major part of the research. The objectives within this area evolved through the course of the project and are detailed in Figure 2. The broad objective was to provide information about jobs within the Division so that more informed personnel decisions could be made. It was recognised that one way this could be achieved was to identify the skills and knowledge required for the jobs which could be used to produce a 'job profile'. The remainder of the research was concerned with developing a method to identify these profiles and applying the method to case studies. These are outlined in Figure 3.

1. Improve job performance

The role of the account executives in the Original Equipment Division was investigated. The executives perception of their job was compared to their managers perception and the information passed to the Sales

FIGURE 2

OBJECTIVES OF THE PROJECT

To provide information about jobs within Marketing Division so that better personnel decisions could be made.

To identify skills and knowledge required for jobs in the Marketing Division.

To develop a method to identify these skills and knowledge.

To test the method by applying it to 'real' problems.

To ensure the method is suitable for Dunlop to use after the end of the project.

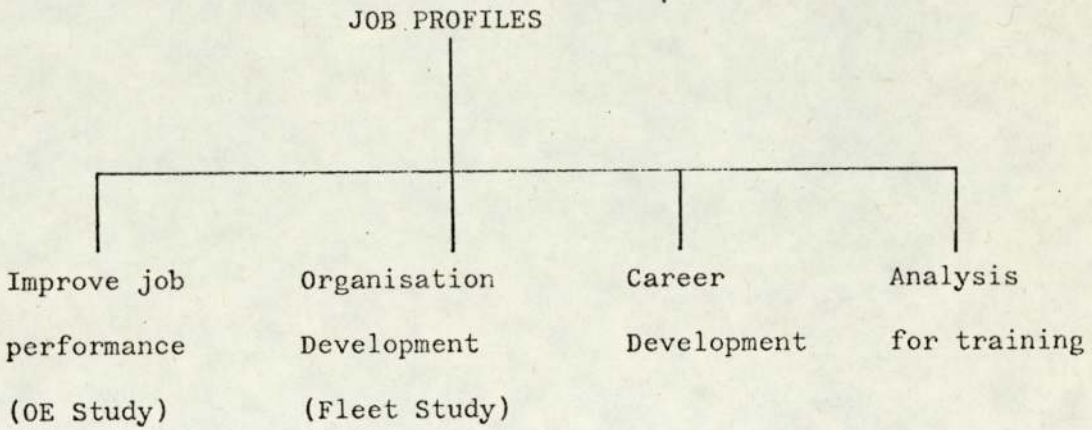


FIGURE 3 . CASE STUDIES

The case studies show the application of job profiles in the above areas.

Director.

The Director found the information valuable as it revealed how the executives job was actually being performed at the present time. This enabled him to identify areas he considered unsatisfactory, eg their lack of attention to planning and on the basis of this information take remedial action.

He considered that the information had the benefits of being produced from an objective method used by an unbiased person. This removed many of the ways in which similar reports had been criticised in the past.

To date the Director has used the reports as a document for discussion with his Sales Managers. There was general agreement with the findings of the report but so far no changes have been made. This is partly due to Dunlop's present economic problems and to the Directors need to tread cautiously within the Division because of 'personality conflicts'.

It seems that the repertory grid interviews have provided the Director with information that he can use to improve job performance. It is difficult to evaluate the quality of the information as it may be several months before the Director is in a position to take action.

2. Organisation Development

This study was similar to the OE study as it showed the Area Fleet Managers' perception of his job. When this was reported to the Sales Director (Fleet) it confirmed his opinions regarding the AFM's ie that they were not performing the managerial aspects of their job.

He considered the report valuable because a "scientific technique" had been used.

Also the report was successful because it showed that some of the policies of the Division were effective. For example it revealed that the three sales regions were working in the same way. Previously the Directors and the Senior Managers of the Division had been concerned that some regions might be "going their own way".

As in the OE study the reports were useful because they provide a picture of how the jobs were actually being done. Also, the information came from the job holders and was expressed in their own words. This enhanced the credibility of the research which is vital if changes are to be made based on the results. It seems probable that the next few months will see changes in the organisation of the Fleet Sales force.

3. Analysis for training

The hierarchical task analysis of the AFM's job proved valuable in a meeting with the Fleet Sales Director and the Regional Managers because it supported the repertory grid study. The analysis may also be used by the Training Manager if he is asked to train the AFM's.

However, whilst the technique of using repertory grids to identify an individuals training needs seemed useful, it is doubtful whether the method will be used due to the lack of suitable personnel to conduct the interviews. The value of this case study is that it showed the potential of repertory grids to the Training Manager.

4. Career Development

This case study came closest to solving the original problem of the project ie finding out information about the jobs within the Division. The feedback received from managers has been encouraging. Mr D Copping hopes to generate interest in the method amongst the senior managers and the personnel departments within Tyre Division. It will be several months before the value of this report can be truly gauged but it has widespread implications.

This evaluation of the case studies shows that the research has solved the Division's original problem to some extent. An exact evaluation is not possible as many of the implications of the research will not be visible for several months. However, the reports have been accepted by the Directors and managers and will act as an input to their future personnel decisions. Also, the company has been provided with a technique that it can use.

The contribution to knowledge made by the research

Prior to the present research a few people had used repertory grids to evaluate training and produce job descriptions in industry. However, the number of applications has been small and many have not been published. Therefore, the contribution of the research was to use the technique to tackle real problems within industry.

The study showed the application of repertory grids to produce job profiles. The elicitation and analysis methods have been detailed in a User Manual for the company which it is hoped will encourage the use of the method. Also, the research has concentrated on a content analysis

of the repertory grids whilst most other studies have used computer analysis which has advantages but is a deterrent to many companies wishing to use repertory grids.

The research has shown how the job profiles can form the basis of Career Development plans. This technique could be applied in large companies where the information could be stored on computers. This seems to be of considerable importance as presently most career plans are based on subjective and often incomplete information.

Another relatively new application of a method was the use of hierarchical task analysis for a managerial job. Whilst Sheppard has used the technique within the Chemical and Allied Products Industrial Training Board his work has not been published. It is hoped that this research may encourage the use of HTA on managerial jobs.

Therefore, the contribution of the research has been to develop a job analysis method which can be used by people within industry for studying managerial jobs. It is acknowledged that other researchers are working along similar lines but the method is still not readily available. In view of the paucity of job analysis methods identified by the review in Appendix 1 this seems a significant contribution.

The training gained by the student

The objectives in this area have been well satisfied as both academic knowledge and practical experience have been widened. The project has allowed an increased understanding of possible careers. As a result

the student has left the sponsoring organisation in order to fulfil career aspirations. In this respect the project could be seen as a failure in training the company's future managers. However, it is not a failure of the project but rather a symptom of the company's poor career development plans.

In conclusion, the project appears to have satisfied most of its objectives. It is difficult to evaluate the project as many of its implications are long term but the company appears satisfied with the project.

PROPOSALS

There are two main proposals:-

1. Career development plans should be produced using the suggested method. It is considered that this would be beneficial to the organisation as it would help to ensure that it had suitably qualified personnel.
2. Repertory grids should be used to identify training needs and later to evaluate training. Their use in evaluating training is well documented elsewhere (Smith and Ashton 1975)

It is also hoped that in the future repertory grids might be considered when new personnel problems are encountered.

Acknowledgements

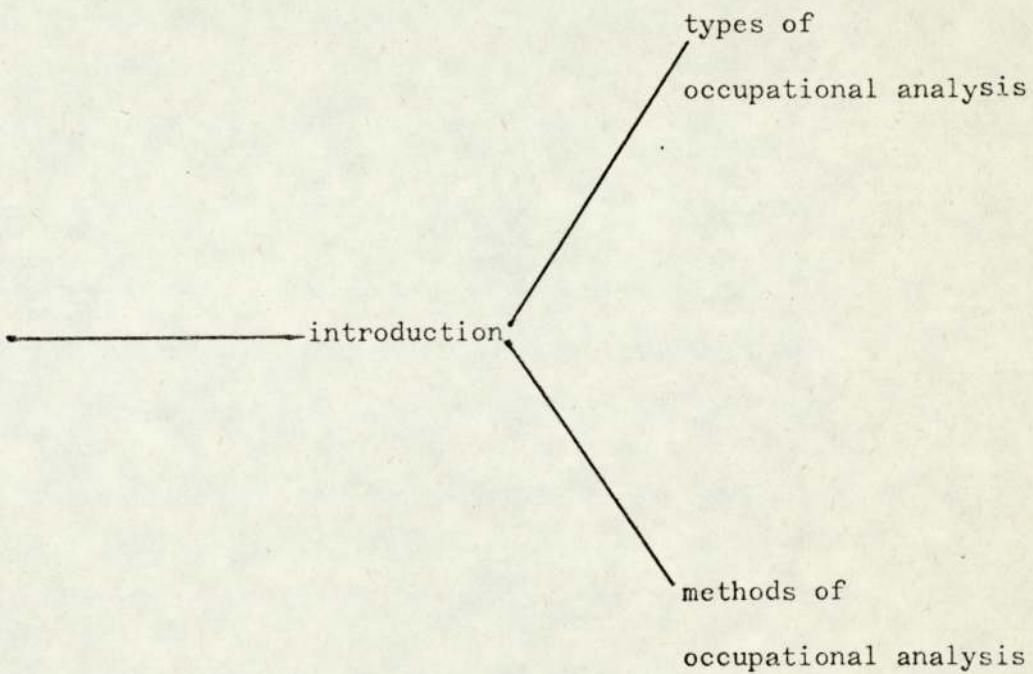
I would like to thank everyone who has helped me complete the thesis, in particular my tutor, Dr. I.T. Robertson and my industrial sponsor, Mr. D. Copping. Also, all my friends in Birmingham who have supported me in my work.

Appendix I
Review of job
analysis
techniques

introduction

types of
occupational analysis

methods of
occupational analysis



APPENDIX I

REVIEW OF OCCUPATIONAL ANALYSIS LITERATURE

There is a vast library of job analysis techniques which can be examined from two view points:-

- a) types of occupational analysis ie producing information for a specific purpose eg selection.
- b) methods of occupational analysis ie what method is used to obtain the information?

These will be examined in turn as both points of view need to be considered when choosing a form of analysis.

a) Types of Occupational Analysis

Dunn and Morgan (1979) base their classification on the assumption 'that there is an infinite variety in jobs and people doing jobs and that any analysis/classification will pick on particular aspects of the world of work to describe jobs and people in a way that will reduce the variety and be helpful in solving particular kinds of problems'.

They identify 7 outcomes of Occupational Analysis, which are summarised in figure 1.

1. Tasks.

Analysis of tasks attempts to find out what things people do in their job. This includes the activities involved, the decisions made and the outcomes achieved. This kind of analysis is specific to an occupational area.

2. Skills.

This type of analysis identifies broad skills that are required in groups of jobs. It does not specify exactly what has to be done, but rather some underlying capability which is required in jobs. It implies that the job can be learned more readily by a person possessing those skills, than a person who does not have them.

3. Job Attributes

This analysis describes those characteristics of the job which are not part of the work itself but are nevertheless important, that is what is the job generally like. This sort of analysis can be done with job preference/disposition checklists.

4. Individual Characteristics

This type of analysis identifies the characteristics, such as intelligence, personality, aptitudes than an individual should have to do a job.

FIGURE 1 TYPES OF OCCUPATIONAL ANALYSIS/CLASSIFICATION

| <u>DIMENSIONS OF ANALYSIS</u> | <u>DEFINITION</u> |
|-------------------------------|---|
| 1 TASKS | What people do in jobs, including outcomes ie tasks analysis always include some description of achievement. |
| 2 SKILLS | Behaviour fundamental to the performance of many tasks carried out in a wide range of occupations. after Smith |
| 3 JOB ATTRIBUTES | Characteristics of a job other than the tasks actually performed eg environment, working conditions. |
| 4 INDIVIDUAL CHARACTERISTICS | Characteristics of people doing jobs. |
| 5 ACTIVITIES | Observable activity of people doing jobs. |
| 6 ORGANISATIONAL LEVEL | Place in the organisational hierarchy of the job. |
| 7 JOB TITLES | The name given to the complete job. |

from Dunn and Morgan 1979

5. Activities

This analysis is concerned only with observable activities. Such a method is used in Work Study where physical activities are described and classified.

6. Organisation Level

This type of analysis does not attempt detailed description of job content but broadly equates jobs in terms of the place in an organisational hierarchy. For example is a job senior management or supervisory?

7. Job Titles

This analysis is a general one for finding out "what jobs are being done", for example CODOT (the Department of Employment's Classification and Dictionary of Occupational Titles). This analysis assumes that jobs with similar titles have similar content.

The above are seven different kinds of occupational analysis. It should be noted that no one technique is satisfactory for completely describing people doing jobs.

Before discussing which method of analysis seemed most suitable for the present problem the different methods available will be presented.

Where appropriate the suitability of a method to a type of analysis will be indicated.

Morsh (1964) has identified nine job analysis methods which are summarised in figure 2.

Figure 2 METHODS OF OCCUPATIONAL ANALYSIS/CLASSIFICATION

Morsh (1964)

1. Questionnaire
2. Check Lists - tasks orientated approach
- worker orientated approach
3. Individual interview
4. Observation Interview
5. Group Interview
6. Technical conference
7. Daily diary
8. Work participation
9. Critical incident technique

1. Questionnaire.

The questionnaire is usually used to obtain occupational information by means of a mail survey. "The respondent is asked to give identifying data and to describe his position in his own words" (Morsh 1964). However, Morsh considers the data obtained tends to be incomplete because of the heavy demand placed upon recall, and often inaccurate as people record what they think should happen in the job rather than what actually happens. The information obtained is usually related to tasks and job attributes.

2. Check Lists

In this method the job holder checks the tasks he does and/or the behaviours he exhibits from a list of statements which describe a job. Research in this area falls into two main categories:-

- a) task orientated approach
- b) worker orientated approach

Task orientated

This method typically involves the collection of a list of tasks that are pertinent to some occupational area.

Task inventories have been used extensively in the United States Air Force as described by Morsh (1964). The inventories he compiled consisted of between 200 to 300 task statements grouped under major functions. A particular inventory relates to all levels of one airmans career ladder, for example for officer jobs, all grades from junior officer to staff officer. The inventory is completed by the job

incumbent. Lawshe (1955) performed a similar study when he produced the Job Description Checklist of Office Operations.

A wealth of data is provided by such methods but because it is unwieldy it can be rather uninformative. However, by means of statistical procedures, such as factor and cluster analysis, it is possible to identify groups of related tasks. These groups can be thought of as job dimensions. Baehr (1967) used a questionnaire containing 122 generic job elements which was administered to 600 industrial employees in nine occupational groups. When analysed twelve factors were obtained to represent the content of higher level positions.

Worker Orientated

Like Baehr (1967) and Hemphill (1970), McCormick, Jeanneret and Mecham (1972) used a questionnaire to identify job dimensions but based on worker-orientated elements. They applied their Position Analysis Questionnaire (PAQ) to 536 jobs and subjected the results to a factor analysis. The analysis resulted in the identification of five dimensions:-

1. having decision making/communication/social responsibilities
2. performing skilled activities
3. being physically active/related environmental conditions
4. operating vehicles/equipment
5. processing information

Therefore, the PAQ provides information which can be analysed into dimensions and is more generally applicable than task-orientated approaches as it can apply to several occupational areas. Despite

this fact "the optimum questionnaire remains an unanswered question" (Prien and Ronan 1971). Thus, worker orientated checklist provide information for a classification of occupations by skills.

3. Individual Interview

This method involves the selection of representative incumbents of a job. The results are typically recorded in a standardized form and the responses from several interviews are combined into a single job description.

There are many different types of interview ranging from a very structured approach, interviews with some prompts, to an open-ended question. These methods have advantages and disadvantages. An over structured approach can lead to interviewer bias whilst an open-ended question can be unreliable as it is dependent upon the interviewee's recall.

Whilst the individual interview is impractical for obtaining information from large samples as it is time-consuming, there are occasions when it is more important to have reliable and valid information from a small sample, than to have spurious data from a large sample, eg when selecting for an important job. Therefore, information collected in this way can be useful for several forms of classification depending upon the aim of the analysis.

4. Observation Interview

The interview takes place at the work site while the job holder performs his work. Some researchers merely observe the activities, whilst others

supplement their observations by questioning the worker. Therefore, the information obtained can be used to analyse occupation by activities. The latter method has been used by Annett, Duncan et al (1971) who observed jobs in an attempt to describe performance in terms of a 'hierarchical structure of operations and sub-operations'. The top position in the hierarchy is occupied by the most general statement of the objective or end product. The goal is then subdivided into sub goals which occupy a lower position in the hierarchy.

It is interesting to compare this method to that of Hemphill's as both methods can be used for task analysis. The EPDQ provides general descriptors of tasks, whilst hierarchical task analysis is more detailed. The choice of method will depend upon the purpose of the analysis.

Fleishman (1967) also used the observation method to produce a behavioural taxonomy for describing jobs. He studied the performances of 20 tasks and identified 10 psychomotor factors, eg multilimb co-ordination, and 9 physical proficiency factors, eg gross body co-ordination. Although his study is supported by a mass of research evidence Prien and Ronan (1971) question "the relevance of this approach to the total number of jobs of interest to the industrial psychologist". To take an extreme example the job of an artist is not really explained by knowing what psychomotor and physical proficiency factors are required.

The observation interview is relatively slow and it is often difficult for an observer to interpret the workers actions. However, this method can produce detailed data and as with the individual interview there may be occasions where such data is necessary.

5. Group Interview

A large number of representatives of the same job are selected. With the assistance of the analyst they record their work activities. At the conclusion of the meeting the information is combined into a single description.

Like the individual interview the information obtained can be used for several forms of analysis.

6. Technical conference

A group of experts, selected for their broad knowledge and experience, work together to record the activities that comprise the job under investigation. The disadvantages with this method is that experienced technical experts hold supervisory positions, and have lost intimate contact with their work.

This method attempts to provide information for a task analysis and some analysis of the skills required for a particular group of occupations.

7. Daily diary

This requires job holders to record their tasks day by day, or even after each episode during the day. This method provides information for an analysis of occupation by activities although some diaries include information about objectives of the tasks which is useful for task analysis.

Tom Burns (1957) asked 76 managers in eight firms to keep diaries of their activities. His study showed the importance of lateral communications amongst managers which was opposed to the traditional view of management as a working hierarchy on organisation charts. Rosemary Stewart (1967 and 1976) has also used diaries. In her latter work she combined the information obtained from diaries with a questionnaire to examine the differences between managers jobs and the demands the jobs placed upon their occupants.

The advantages of the diary method are that the memory requirement is reduced as tasks are recorded more frequently which should improve the reliability of the information. The frequency of task performance is readily determined and tasks can be coded to facilitate statistical analysis. The disadvantages of the diary method will be given later when the possible use of a diary for the problem in hand is considered.

8. Work Participation

This involves work performance by the job analyst. He may perform simple tasks with little instruction. In the case of more complex activities he must first learn the job and then work at it along with the regular incumbents. In certain circumstances this method has advantages but is obviously impractical for analysing many jobs.

This method provides information which is useful to several forms of classification. However, because it is time consuming it would be impractical to classify jobs in this way.

9. Critical Incident technique

Developed by Flanagan (1954) the technique involves the collection of statements based on direct observation or recollection of behaviour which typifies both excellent and unsatisfactory performance.

Flanagan used critical incidents technique with the United States Army Air Forces. For example in 1944 several thousand incidents were collected from combat veterans who were asked to report incidents observed by them that involved behaviour which was especially helpful or inadequate in accomplishing the assigned mission. The incidents were analysed to provide a relatively objective and factual definition of effective combat leadership.

The method has also been used in an industrial situation. Miller and Flanagan (1950) studied the critical job requirements for the hourly wage employees in the Delco-Remy Division of the General Motors Corporation. On the basis of 2,500 critical incidents collected from foremen a form was prepared for collecting incidents on a day-to-day basis as a continuous record of job performance.

Although this method identified the crucial requirements of the job it does not provide sufficient information for a complete job description. However, it does provide information for analysis of occupations by tasks and skills.

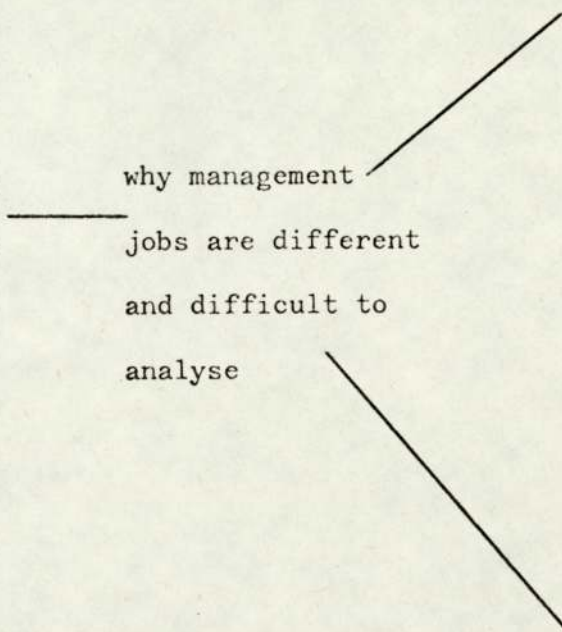
Appendix I cont.

Review of analysis
of management jobs

why management
jobs are different
and difficult to
analyse

theories about
management jobs

observation of
management jobs



REVIEW OF ANALYSIS OF MANAGEMENT JOBS

Campbell et al (1970) believes it is difficult to "describe any job and discover what it calls for in employee behaviour, but unusually so for managerial jobs because they change so much from one setting to another"

They identify three principal changes:-

1. time-determined changes;- the work of an executive is varied and non-routine. For example the things an executive does when he is writing a report differs from those he does when selling tyres.
2. person-determined changes:- managers are given broad assignments, but they are allowed great latitude in the means they use to accomplish them.
3. situation-determined changes:- managerial jobs vary according to organisation level, function, from company to company.

Research on management jobs can be divided into two main categories:-

1. Theories about management jobs
2. Observation of management jobs

These categories will be examined separately.

1. Theories about management jobs

An early and much quoted theory of management was produced by Fayol (1961).

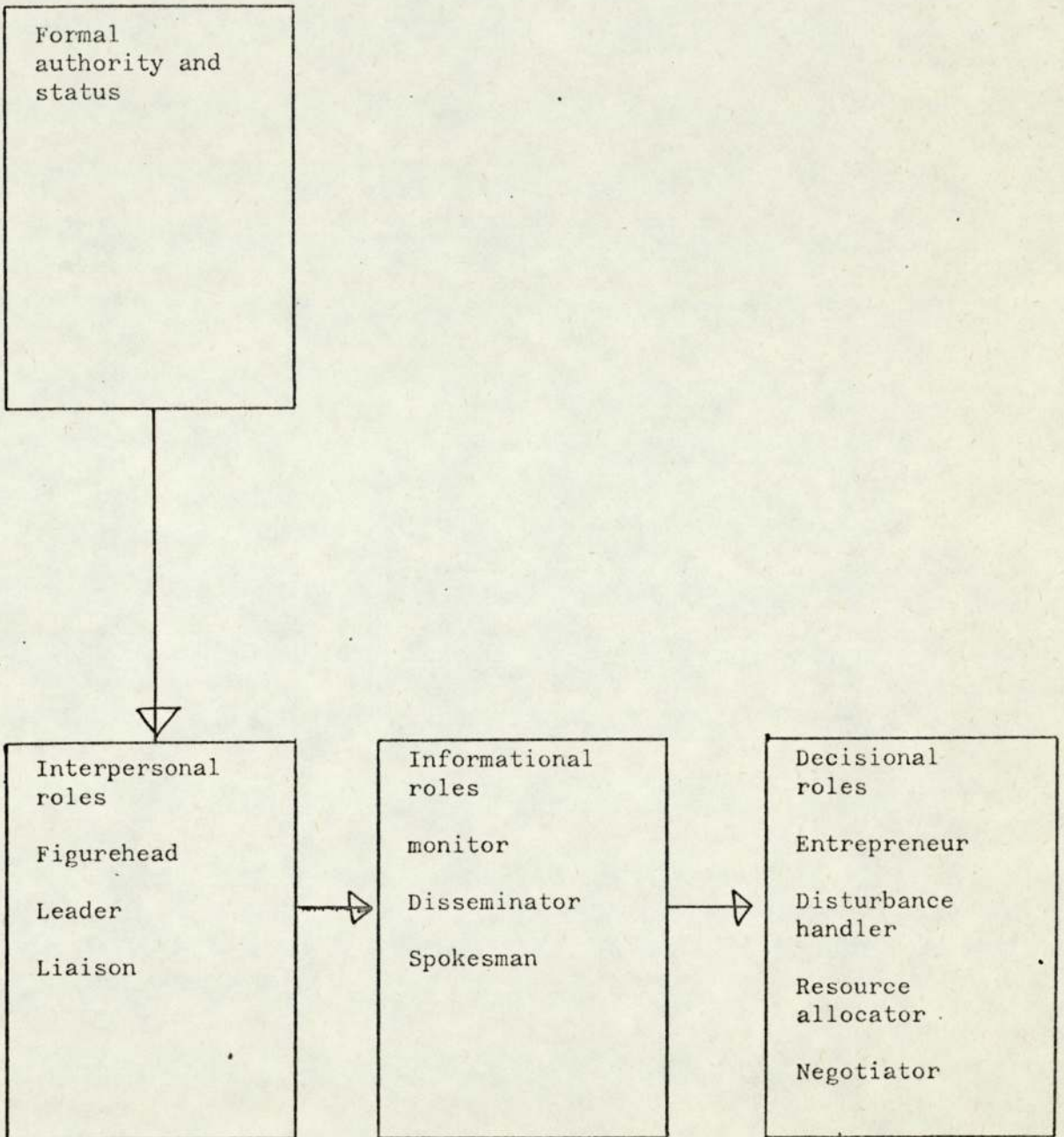
He described five elements in the process of management: planning, organising, commanding, co-ordinating and controlling. These elements have continued to be used by writers to the present day. However, the elements are imprecise and an overgeneralisation of management jobs as some managerial jobs do not involve them all. Also, the generality of the elements restrict their usefulness as they do not provide sufficiently detailed information for selection, training decisions etc., to be made.

Fayol's theory promoted an analytical approach to managerial work but did nothing to explain managerial behaviour. In 1965 Drucker identified five basic operations that a manager had to perform. A manager sets objectives, organizes, motivates and communicates, measures performance and develops people. These are similar to the elements identified by Fayol, but he attempts to show the different qualities required for these tasks. The manager requires analytical ability and integrity to set objectives, organise, measure performance and develop people, and social skills to motivate and communicate. In this way Drucker related his theory to the needs of management development programmes.

Another theory of management this time based on some "structural observation" was developed by Mintzberg (1971 and 1975). As a starting point he says all managers are vested with formal authority from which comes status. Status leads to various interpersonal relations, and from these comes access to information. In turn, information enables the manager to make decisions and strategies for his unit. He describes the job in terms of various "roles", or organised sets of behaviours identified with a position, see figure 3.

FIGURE 3

The Manager's roles : Mintzberg 1975



These ten roles form a gestalt, an integrated whole whose parts cannot be considered in isolation.

Mintzberg's description of managerial work suggests a number of managerial skills, for example developing peer relationships, motivating subordinates, resolving conflicts, but these skills are not a part of his theory about management. Burgoyne and Stuart (1976) have attempted to produce a "model of managerial skills and qualities". The basic postulate of the model is that the manager at work is acting on his environment by carrying out "inner plans" with some purpose in view. At the same time he is receiving information from the environment, some of which may be the consequences of his actions (and hence constitute feedback), whilst the remainder is input to the system. The manager's inner plans and purposes will be determined directly or indirectly by his 'qualities and skills'. This model is illustrated in figure 4.

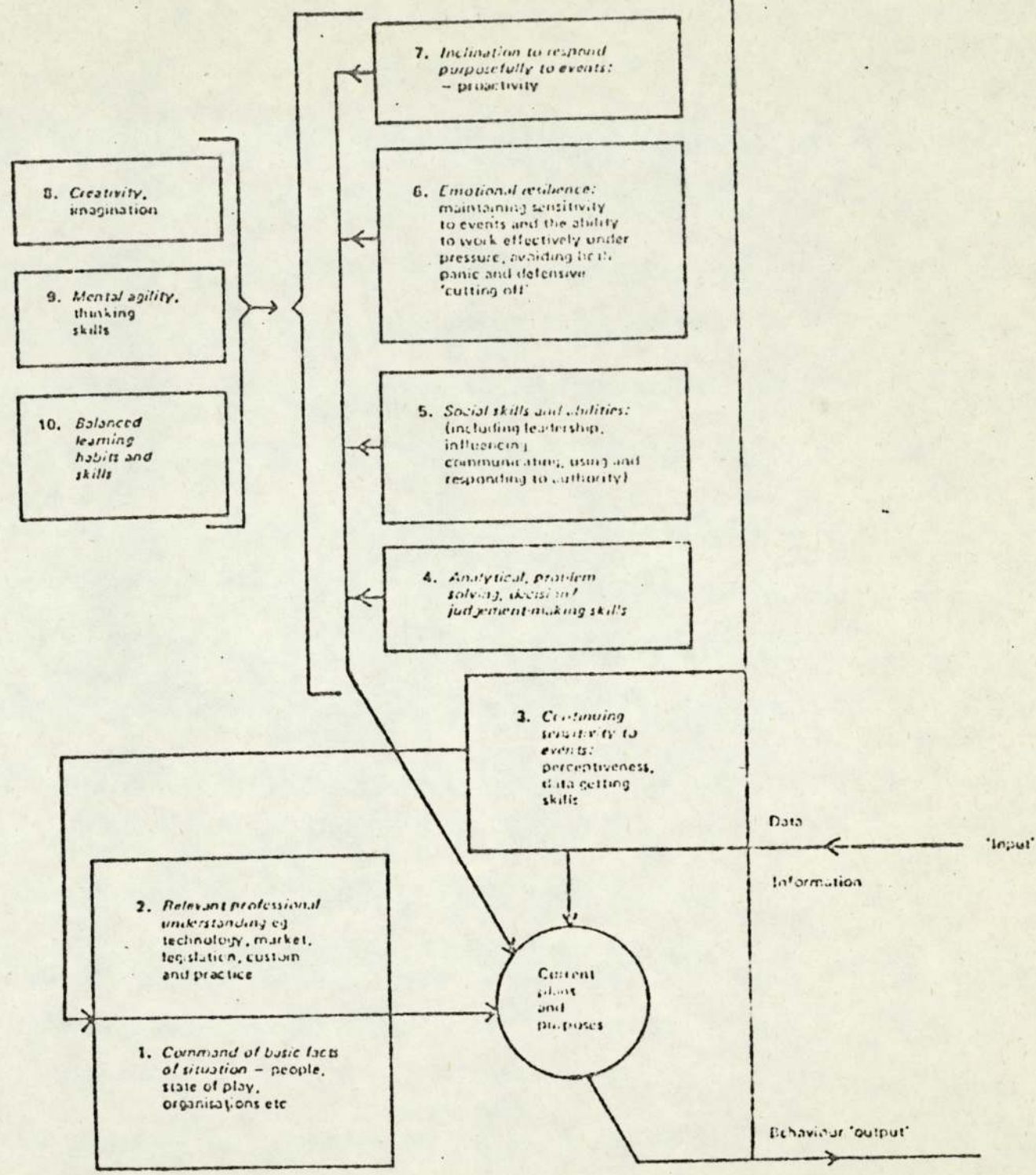
A trend can be detected in these theories, from Fayol to Burgoyne and Stuart, to move away from generalised to more specific theories. In this latter form the theories are of more direct use for a broad range of manpower planning purposes, eg selection, training etc. However, it is doubtful whether even the more recent theories are sufficiently detailed for these purposes. Therefore, other researchers have approached the problem of finding out what managers do and skills they require by observing management jobs.

2. Observation of Management Jobs

Campbell et al (1970) have identified the problem of describing jobs as similar to the one faced by psychologists in their early efforts to

Inner World: (In the psychological sense, the world of ideas, skills, feelings, values etc, in which are located the personal 'qualities' that make a person a good manager).

Outer World: (On which behaviour has its effects, achievements are realised, etc)



Hypothetical qualities of an effective manager
FIGURE 4

discover "lawful regularities in human behaviour". As people differ greatly, psychologists had to develop fundamental measures or dimensions for describing the various ways in which they differ. Therefore, Campbell argues that because managerial jobs differ greatly and change rapidly there is a need to discover fundamental dimensions along which they differ.

The identification of these dimensions involves 3 stages:-

Stage 1. systematic observations or records of manager's jobs.

Stage 2. analyse these records, either rationally or statistically, to define relatively similar groupings of behavioural components.

Stage 3. try out, and if necessary modify, these categories for describing the major dimensions of managerial jobs.

Many investigators have begun various parts of the task of defining the managerial job in this way, but few have completed the task. The methods of observation and the identification of dimensions will be examined:-

a) Methods of Observation

Stewart (1976) lists three methods commonly used to study what managers do on their jobs:-

1. an observer may record what a manager does
2. the manager may keep his own record or diary of his activities during a workday.

3. a manager may be asked to estimate how he spends his time, or he may use a prepared checklist.

An early observational study was made by Sune Carlson (1951). He enlisted the co-operation of many "reporters" (including executive's themselves and those persons surrounding them in their work settings eg. secretaries) to record the job actions of ten executives for a period of four weeks. For each action a record was made of:-

1. the site of the action
2. contact with persons and/or institutions
3. technique of communication (telephone, written etc)
4. nature of question or issue handled.
5. Kind of action taken.

He concluded that these executives worked excessive hours, spending one-third of their working time outside the firm. Burns (1957) used a similar recording form, in his study previously cited. His conclusions dealt mostly with differing communication patterns shown by managers.

Horne and Lupton (1965) obtained manager's activity records from 66 middle managers for a time span of one week. The managers were from 10 different firms and worked in different functional areas. The information collected was similar to Carlson's. They found that "Managers talk most of the time, and mostly face-to-face. They seem not to be overwhelmed with paper or formal meetings. They swap information and advice and instructions, mostly through informal face-to-face contact in their offices. Middle management does not

seem, on this showing, to require the exercise of remarkable powers to analyse, weigh alternatives, and decide. Rather, it calls for an ability to shape and utilise the person-to-person channels of communication, to influence, to persuade, to facilitate".

However, as Horne and Lupton admit themselves they have only described the managers' activities "to infer from this the skills and knowledge required for effective middle managers in general is not a great deal better than speculation, but enough to make the attempt worthwhile. Also, they generalise about the 'typical' middle manager's job, rather than attempting to find fundamental differences among jobs.

These studies have increased the knowledge of how managers spend their time, but it has done little to produce general job behaviour dimensions. This conclusion is supported by O'Neill and Kubany (1959) who gathered 31,886 job behaviour observations for 85 foremen over a 20 week period and correlated their behaviour with a variety of objective criteria of supervisory effectiveness. They found no consistent patterns of relationship and concluded that mechanistic recording of job activities was incapable of revealing crucial differences between more and less effective foremen.

One method which specifically focuses on the important aspects of managerial behaviour is the Critical Incidents Method. By gathering many behavioural incidents, about excellent or unsatisfactory performance, an investigator can discover important time-, situation- or person- determined changes. The incidents collected can be categorised into broad content areas or dimensions.

b) Identification of dimensions:-

Campbell et al recognise that it is difficult to summarise studies using factor analysis to identify dimensions because "factor naming depends so importantly on one's interpretation of the statements and behavioural descriptions defining the factor". Another limitation of factor analysis studies is that the behavioural dimensions produced describe basic human predispositions, rather than describing the characteristics of, and differences between managerial jobs.

This point can be illustrated with reference to Fleishman (1953b) Leadership Behaviour Description Scales. He started with over 1800 statements of leader behaviour. These were culled by experts to 150 and then classified into 9 categories. However, these 9 categories were found not to be independent and when their intercorrelations were factor analysed two basic dimensions of leader behaviour - 'consideration and initiating structure' - were found. These two dimensions almost certainly reflect personal behavioural styles rather than specific behavioural demands of different managerial jobs.

In this way Campbell et al argue that what is needed are managerial job dimensions which are independent of the personal characteristics brought to jobs by particular job holders. They only know of two such studies:- Hemphills (1960) and Stewart (1967). Hemphill used his EPDQ (previously cited) and Stewart analysed information from job activity diaries kept for four weeks by 160 managers.

a) Hemphill

Hemphill asked 93 executives in 5 different firms to complete an EPDQ. Factor analysis of the questionnaires produced ten clusters (see figure 5). He developed scoring keys for items most relevant to each cluster and established norms for each cluster based on his 93 executives. This final stage makes it possible to use his EPDQ to describe a managerial job and to 'profile' the job along the ten dimensions. The establishment of norms allows one to know in advance the kinds of performance emphasised in a particular executive position. Such information is useful for the purposes of selection, training and career development.

b) Stewart

Stewart's study is similar to Horne and Lupton's but she highlights the differences between manager's jobs as well as the similarities. She believes that "there is too little analysis of different jobs in the organisation and of the ways in which experience in these jobs may help or hinder a mans development". She found that the managers varied in where they spent most of the time, with whom they spent it, and what they did.

Like Hemphill, Stewart took the study one stage further by scoring each of the 160 jobs on 25 variables. These variables included items such as total number of hours worked, percentage of time spent with one other person, percentage of time spent with customers. A cluster analysis was performed on the results and 5 groups were identified (see figure 6).

Figure 5

HEMPHILLS DIMENSIONS

Cluster A: Providing a staff service in non-operational areas
Is considered a staff rather than a line position
Be capable of performing the jobs of all subordinates
Selection of new employees.
(Services such as gathering information, interviewing, selecting employees, briefing superiors, checking statements, verifying facts, or making recommendations).

Cluster B: Supervision of work
Troubleshoot special problems as they arise. Plan the best use of available facilities.
Involves firsthand contact with machines and their operation.
(Planning organisation and control of the work of others, direct contact with workers and with the machines they use, and concern with getting work done effectively and efficiently).

Cluster C: Internal business control
Maintenance of proper inventories.
Reduction of costs.
Review budgets for operations.
(Cost reduction, inventory control, budget preparation, justification of capital expenditures, determination of goals, definition of supervisory responsibilities, payment of salaries, or enforcement of regulations).

Cluster D: Technical aspects with products and markets
Anticipate new or changed demands for products and services.
Assist salesmen in securing important accounts.
Involves firsthand contact with customers of the company.
(Concern with product-market-customer details and relations, development of new business, checking on activities of competitors, changes in demand, customer contact, data analysis, and assistance in sales).

Cluster E: Human, community, and social affairs
Be active in community affairs.
Nominate key personnel in the organisation for promotion.
Take a leading part in local community projects.
(Working well with others, both in and out of the organisation; concern for company goodwill; public speaking; evaluating people and their performance, and participation in community and civic affairs).

Cluster F: Long-range planning
Keep informed about the latest technical developments in a professional area.
Long-range solvency of the company.
Long-range objectives of the organisation.
(Orientated toward the future of the organisation: thinking about, and planning for the future in industrial relations, management development, organisational objectives, corporate solvency, new ventures, new ideas, and new legislation relevant to the organisation).

Cluster G: Exercise of broad power and authority

Provides opportunity for actually managing an important part of the business.

Offers an opportunity to gain experience in management.

Make recommendations on matters at least as important as the construction of a new plant.

(Status, independence, and power are the key characteristics of this dimension).

Cluster H: Business reputation

Directly affects the quality of the company products or services.

Involves activities that are not closely supervised or controlled.

Avoid any public comment critical of a good customer or supplier.

(Responsibility for reputation of the organisation's products or services for both product design and public relations, requiring little in the way of attention to details but making rather than stringent demands on personal behaviour).

Cluster I: Personal demands

Refrain from activities that might imply sympathy from unions.

Involves spending at least ten hours per week in direct association with superiors.

Spend at least fifty hours per week on the job.

(Constraints upon the personal behaviour of the incumbent calling for propriety of behaviour, fulfilling the stereotype of the conservative businessman).

Cluster J: Preservation of assets

Handle taxes (other than personal).

Write or dictate at least 25 letters per week.

Sign documents that obligate the company to the extent of at least \$1,000.

(Concern with capital expenditures, operational expenditures of major amounts, taxes, profits and losses, including authority to obligate the organisation).

Figure 6

STEWARTS CLUSTERS

Managerial job group I

Number of jobs: 45

Characteristics of time expenditure: These managers travelled a great deal and made contacts mostly with customers and officials from other companies or public institutions. They also attended many conferences and exhibitions.

Representative job titles:

Sales Director

Sales Manager

Marketing Manager

General Manager

Group Works Manager

Works and Purchasing Manager

Managerial job group II

Number of jobs: 33

Characteristics of time expenditure: These managers spent relatively more time by themselves, reading, writing and dictating reports and memorandums. They made fewer group contacts and tended to work with relatively specialised or technical matters.

Representative job titles:

Section Head, computing

Works Manager

Chief Accountant

Assistant Company Assistant

Production Manager

Payroll Manager

Managerial job group III

Number of jobs: 35

Characteristics of time expenditure: These managers spent their time in the same way as that shown by the averages for all managers in Stewart's sample. They spent most time with other colleagues at their same organisational level and undertook a diverse sampling of activities and functions.

Representative job titles:

Chief Accountant

Office Services Manager

Financial Director

Works Engineer

Sales Manager

Public Relations Officer

Managerial job group IV

Number of jobs: 33

Characteristics of time expenditure: These managers made more short, fleeting contacts than managers in other groups. They were called upon to cope more with crises, problems needing immediate solutions and actions. Their work time was highly fragmented and they spent relatively more time in inspection and within hierarchical relationships.

Representative job titles:

Works Manager
Factory Manager
Maintenance Engineer
General Manager, Manufacturing
Chief Engineer
Brewer in Charge

Managerial job group V

Number of jobs: 14

Characteristics of time expenditure: These managers spent more time in group discussions and in committee meetings. Their contacts were nearly all within their own companies and dealt relatively more with questions related to personnel.

Representative job titles:

Production Manager
Factory Services Manager
Principal, Training School
Director, Production Planning
Technical Officer

Stewart (1976) elaborated this research by applying a questionnaire to 274 managers and using 16 managers to complete a diary as well. The information collected was classified according to two typologies of management jobs:- one based on the nature of the relationships that they require, the other on the work pattern that jobs impose. She then analysed the differences between manager's jobs in terms of their demands, choices and constraints.

Both these studies show that differences exist between managerial jobs and that meaningful job dimensions can be produced.

APPENDIX II

This appendix includes details of Personal Construct Theory (PCT) and of the methods of analysing personal construct systems.

PERSONAL CONSTRUCT THEORY

Kelly defines his theory in terms of the fundamental postulate that "a person's processes are psychologically channelised by the ways in which he anticipates events". He elaborated his postulate by means of eleven corollaries.

These corollaries will be briefly examined. To aid understanding of the theory they have been grouped into four categories:-

1. the nature of constructs
2. how constructs develop and change
3. the construct system
4. the individual and other peoples' constructs

1. The nature of constructs

Kelly's basic unit of analysis, a personal construct, is defined as a representational schema which a person "creates and then attempts to fit over the realities of the world" (J.R. Adams-Webber 1970).

"Each construct is convenient for the anticipation of a finite range of events only" (Range Corollary). Kelly also used the term 'focus of convenience' to indicate those things for which a construct was specifically developed and 'range of convenience' for all those things to which people might eventually find the construct applicable.

Kelly argues that it is more useful to see constructs as having two poles, positive and negative, such as black versus white. Even when there is not a label readily available for the contrast pole "we do not affirm without implicitly negating within a context" (Bannister and Fransella 1970), for example there would be little point in asserting 'I am tired' if the contrast assertion of freshness and energy were not implicitly around somewhere to be negated. Kelly formerly asserts this in the Dichotomy Corollary "a person's construction system is composed of a finite number of dichotomous constructs".

By the Choice Corollary Kelly shows that people choose their own contrast pole in a construct in order to maximise their understanding of an event. "A person chooses for himself that alternative in a dichotomised construct through which he anticipates the greater possibility for the elaboration of his system".

2. How constructs develop and change

The Individuality Corollary: "persons differ from each other in their construction of events" is directly related to Kelly's philosophical assumption of 'constructive alternativism'.

It is assumed that each individual employs his personal constructs both to forecast events and to assess the accuracy of his previous forecasts. In short "A person anticipates events by construing their replications" (Construction Corollary). As events subject a person's anticipation to a validation process his constructs undergo change in the light of this "feedback". Thus, "A person's construction system varies as he successively construes the replication of events" (Experience Corollary).

The amount that a construct system will change depends on the permeability of the constructs. A construct is permeable if it will admit to its range of convenience new elements which are not yet construed within its framework. This is stated in the Modulation Corollary "The variation in a person's construction system is limited by the permeability of the constructs within whose range of convenience the variants lie".

3. The construct system

Kelly argued that "Each person characteristically evolves, for his own convenience in anticipating events, a construction system embracing ordinal relationships between constructs" (Organisation Corollary).

This hierarchical quality of construct systems is what makes the world a manageable place for the individual. Bannister and Fransella (1971) give an example "The simple trick of grouping hundreds of different ways of making a living under the construct job (versus hobbies....) means

that we can then handle a whole range of such subordinate constructions easily".

Thus, a construct system is a hierarchy and also a series of sub-systems having varying ranges of convenience. So inferences about the same event can be drawn at levels which are not necessarily consistent with each other. The Fragmentation Corollary says that "A person may successively employ a variety of construction sub-systems which are inferentially incompatible with each other".

4. The individual and other people's constructs

Kelly's Commonality Corollary asserts that "to the extent that one person employs a construction of experience which is similar to that employed by another, his processes are psychologically similar to those of the other person", that is to say that people are similar because they construe, i.e. interpret, discriminate, events in a similar way.

This is followed by the Sociality Corollary "to the extent that one person construes the construction processes of another, he may play a role in a social process involving the other person". Kelly does not mean that two people must have identical construct systems for them to interact but rather that they must be capable of effectively construing the other person's outlook.

2. KELLY'S METHOD OF MEASURING PERSONAL CONSTRUCT SYSTEMS

Kelly devised various methods for eliciting and measuring personal construct systems. His original method is the Role Construct Repertory Test (Rep Test). It is designed as a test to be used in a clinical setting primarily 'to furnish clinical hypotheses which may subsequently be checked and put to use' (Kelly 1955).

The test is aimed at 'role constructs' which Kelly believed to be of particular importance in psychological practise. It uses as 'objects' or elements those persons with whom the subject has to deal with in his daily living and the test is concerned with the subject's relations (or role) with particular people.

Eliciting a Rep Test

The subject is given a Role Title list which includes 20 or 30 roles, such as 'A teacher you liked', 'Your wife or present girl friend', and is asked to name someone he knows personally who fits the role titles. The names are put on cards. The subject is then presented with three of the cards and asked 'In what important way are two of them alike but different from the third?'

The examiner notes which two cards are alike and the construct used to describe them. He then points to the odd card and says 'How is this person different'? He records the response as the contrast pole. The examiner continues presenting triads of cards until he feels he has exhausted the subjects repertoire of constructs.

Rep Test results can be analysed in several ways. The constructs can be analysed as to content and judgement of the flexibility of the subject's constructs can be made. The figures can also be examined to see the kind of people they are construed to be.

However, the methods of analysing Rep Tests rely heavily upon one's interpretation of the clients' language. By re-designing the test, Kelly has made it possible to "look beyond words" (Kelly 1955) and to study the relationships between personal constructs, by analysing the way in which they are applied to the elements. This analysis is possible using the Repertory Grid Technique.

Repertory Grid Technique

The Grid is elicited in a similar way to the Rep Test but includes an additional step. The subject is again presented with three cards and the bipolar construct is elicited, the subject is then asked to consider each of the other figures in the grid and indicate which pole of the construct is applicable. Therefore, a grid form consists of a list of rôle titles along one axis and a list of personal constructs along the other. At the intersection of each row and column is a cell indicating which pole of the construct dimension applies to the figure. (See figure 1).

In order to simplify the array of data so that relationships between constructs can be more easily conceptualised various factor analytic procedures have been developed. However, before these are examined variations of the grid will be considered.

List of sort. used

- 1. 2. 3.
- 4. 5. 6.
- 2. 3. 4.
- 3. 4. 5.

ELEMENTS/ROLE TITLES

| | 1 | 2 | 3 | 4 | 5 | 6 | IMPLICIT POLE |
|----------------------|------|--------|--------|---------|--------|---------|---------------------|
| PERSONAL CONSTRUCTS | BOSS | MOTHER | FATHER | BROTHER | SISTER | TEACHER | |
| Don't believe in God | ✓ | ✓ | X | ✓ | ✓ | X | Very religious |
| Understand me better | X | ✓ | ✓ | ✓ | ✓ | X | Don't understand me |
| Cheerful people | X | X | ✓ | ✓ | ✓ | X | Unhappy people |
| Helpful | X | ✓ | ✓ | X | ✓ | X | Unhelpful |

Key

- ✓ emergent pole (represents the 2 like figures)
- X implicit pole (contrast pole)

Variations of the Grid

Several forms of repertory grids have been developed but they all have certain characteristics in common according to Bannister and Fransella (1971). To obtain a clearer understanding of these variations it is useful to consider their commonalities.

1. they are concerned with eliciting the relationships for a person between sets of constructs either in terms of construing elements (as in the Rep Test) or by directly comparing construct with construct (as in Hinkle's Impgrid, see later).
2. the central aim is to reveal the construct patterning for a person.
3. there is no fixed form or content. It is called repertory grid 'technique' and not 'test' and the selection of the form and content is related to each particular problem.
4. all forms are designed so that statistical tests of significance can be applied to the set of comparisons each individual has made. A basic assumption underlying the method is that the 'psychological' relationships between any two constructs are reflected in their statistical association.

A major variation of the technique was introduced by Hinkle in 1965 (see Bannister and Mair 1968 for a full explanation). Hinkle was interested in the structural links between constructs. These links can be found indirectly from analysing Kelly's Repertory Grid. However, the structure produced is open to the criticism that it "owes more to the stringencies of the mathematical technique employed than to the subject's constructs as he actually uses them" (Chris Abel 1975).

Therefore, Hinkle developed an alternative method in which structural links between constructs were elicited 'direct' from the subject. He devised a set of three associated techniques:-

1. Laddering Technique was designed to "stretch-out" the subjects construct. For each construct elicited, the person is asked which pole of that construct he would prefer to be described by and why? The answer to the question 'why' produces another construct which is superordinate to the first. The same process is repeated until there is no further answer to the question 'why'.
2. Resistance to Change Grid uses the constructs elicited by 'laddering' to derive a rank ordering of the constructs. This is determined by presenting the person with pairs of constructs and asking on which he would prefer to remain the same if he were forced to change on one. Hinkle demonstrated that the more resistant to change a construct is, the more likely it is to be superordinate in the hierarchy.

3. Implications grid is used to trace the chain of implicative effects each construct has on any other construct in the subject's repertoire. On this occasion the person is presented with a pair of constructs and asked if a change along the dimension of construct 'A' implies a change along the dimension of construct 'B'. Each construct is paired with every other construct.

While each technique serves a different purpose, it is seen that the information derived from them is closely related. Chris Abel (1975) highlights two aspects of Hinkle's technique:-

1. the direct method of elicitation entails that a person consciously employs his own superordinate constructs. There is inevitably an element of self-construing involved in which the individual learns about his own ways of construing events.
2. the method's are designed to focus on the potential for change within an individual's construct system.

Both these features concur with Personal Construct Theory, as the first shows the reflexive quality of the theory and the latter Kelly's emphasis on change of personal construct systems.

Honess (1978) found greater retest reliability coefficients with the Impgrid than with the Rep Grid. He considers that Hinkle's techniques deserve careful consideration for use in studies concerned only with construct relationships.

However, Bannister and Mair (1968) argue that "it seems likely that neither approach supplants the other but rather supplements it. Kelly's method may uncover possible construct links of which the subject himself is unaware, while in the Impgrid situation, only relationships construed by the subject can readily appear".

Other Variations

1. Eliciting Elements

Instead of presenting the subject with a list of role titles, it is possible to ask the subject to list people or things related to any particular domain. Harri-Augustein (1978) asked managers on a man-management training course to list 'personally known managers'. These names were used as elements. Similarly Maureen Pope (1977) when investigating the training of teachers used as elements "those things which the person thought of when he had "teaching" in mind".

In some situations where the domain of interest is rigidly specified it may be preferable to supply elements. The elements can also be non-verbal. For example, Ranulph Glanville (1977) investigating how architects construed space used slides of Alvar Aalto's Tuberculosis Sanitorium at Paimio, Finland. Another interesting variation is the Dyad Grid reported by Ryle and Lunghi (1970). Instead of having people as their elements they use relationships between people, such as Mother's relationship to John; John's relationship to Margaret and so forth. This method enables relationships within a group to be explored thoroughly.

2. Eliciting the constructs

As well as supplying elements it is possible to supply constructs.

Although this seems quite legitimate Bannister and Mair (1968) point out that "exclusive use of supplied words seems to negate the important ideas in construct theory noted in the individuality corollary".

Research has shown that generally people prefer their own constructs, Bonarius (1965).

Many grids use unipolar constructs (Warren 1970) since they are easier to handle and less confusing to the subject. However, Kelly did emphasise the bipolar nature of constructs as even though two individuals may share the same emergent pole, they may differ with its contrast. Although there has been some dispute about construct poles (Epting 1972 and Gibson 1976) it seems to the researcher that a great deal of information is lost if the contrast pole is not elicited.

3. Variations in eliciting a grid

Kelly merely asked his subject to indicate whether the emergent or contrast pole applied to each element. Through this procedure it is possible that the constructs will be lopsided. To overcome this difficulty which produces statistical artefacts, Bannister proposed the 'split half method'. The subject is asked to indicate the half of the elements which characterise the emergent pole, and as constructs are bipolar those which are left are allotted to the implicit pole. However, as Bannister admits this method rules "out the possibility of exploring the various features of construct systems which may be associated with lopsided constructs".

Other investigators have asked subjects to rank the elements on each construct. This form has the advantage of making an assessment of the degree of similarity between elements more precise.

Another variation is the rating form. The subject is asked to rate each element on each construct dimension. Any size of rating scale is acceptable, provided the individual's level of discrimination can cope with the range of values available. In practice a five or seven point scale seems most satisfactory. This method has the advantage that the subject can apply the same rating to elements which might be artificially separated by the ranking method. It also allows finer discrimination between elements than is possible in the original method.

Conclusion

Bannister and Mair (1968) note the ways in which the features of constructs and ideas derived from personal construct theory are reflected in the technique of measurements:-

1. the ideas that constructs are personal, bipolar abstractions with limited ranges of conveniences, used to structure aspects of a person's world are acknowledged in the procedure for eliciting constructs from the person being tested.
2. the importance of understanding a person's "system" of constructs, rather than single dimensions, is acknowledged by requiring the elicitation of a number of constructs and by providing statistical techniques which allow assessment of links between constructs.

3. Kelly was concerned to understand the dimensions along which his patients understood themselves and his method focuses attention on just this kind of construct.

3. ANALYSIS OF REPERTORY GRIDS

Bannister and Mair (1968) distinguish two forms of grid analysis, firstly an analysis of the content of the grid, and secondly an analysis of its structure.

To analyse a grids' content it is necessary only to study the names of the constructs. However, to analyse a grids' structure, more complicated techniques are required. Some of these techniques can be calculated by hand but increasingly computer analysis has become necessary.

This section on the analysis of grids will be divided into three parts:-

1. content
2. review of computer packages available
3. structural measures of repertory grids

1. Content Analysis

Content analysis has been overlooked by many researchers who have often been mesmerised by the matrix of grid scores. However, some researchers have obtained useful results from content analysis. Glossop et al (1975) used a version of the Repertory Grid Test on a sample of adolescents to investigate their modes of construing value concepts. They identified three levels of abstraction of such concepts and found that intelligence and social background were significantly correlated with the use of higher levels of abstraction.

Triandis (1959) used content analysis of grids to investigate the "categories of thought of managers, clerks and workers about jobs and people in an industry". He found differences in the lists obtained from the various groups and attempted to assess the significance of the differences for intergroup communications.

Content analysis is relatively simple and can provide a wealth of useful information. However, if only the names of the constructs are considered the results could be influenced by the verbal/written fluency of the subject. Also, Glossop et al (1975) found that "most adolescents in the sample we obtained seemed to apply a common stock of constructs". Critical differences did not emerge until the adolescents were interviewed further to discover the nature of the construct implications.

2. Review of Computer Packages available

The object of the mathematical analysis of a grid is to reveal the structure of the grid. George Kelly, himself outlined a non-parametric method of factor analysis. The first computer programme for this was written by Fager. There now exists a whole range of programmes, principal among them being Slater's Grid Analysis Package (GAP). Slater conceptualised psychological space as a hypersphere which enabled him to quantify the extent to which elements and constructs on a rank or rating grid interacted. He analyses the grids into their principal components.

One of the most commonly used of Slater's programmes is INGRID. This analyses individual grids and in non-statistical terms shows the following things:-

- how discriminating are the constructs
- important elements and constructs
- relationships between elements and the relationship between constructs
- the number and nature of underlying trends

The following list taken from Smith and Stewart (1977) briefly indicates the available programmes and their capabilities:-

| <u>Purpose</u> | <u>Programme</u> |
|--|------------------|
| Individual Grid Analysis | INGRID |
| Comparisons between two grids which are aligned by construct and by element | DELTA |
| Comparison of many grids aligned by construct and element. The programme also punches out the 'average' grid | SERIES |
| Comparison of several grids aligned by construct only | COIN |
| Principal Component Analysis of several grids aligned by construct only | ADELA |
| Principal Component Analysis of several grids aligned by element only | PREFAN |
| Generation of random grids of specified sized for comparison with experimental grids | GRANNY |

Thomas and Harri-Augustein (1977) have developed a programme called FOCUS. This is a two-way hierarchical cluster analysis technique which systematically re-orders the rows of constructs and columns of elements to produce a focused grid which shows the least variation between adjacent constructs and adjacent elements. Focusing a grid has the advantage of being more easily understood by subjects. As with GAP grids can be compared using the programme SOCIO-GRIDS.

Both INGRID and FOCUS have limitations from a statistical viewpoint. Wilson (1976) sets out the problem with respect to Slater's programme. He attempts to reveal the relation between constructs and elements which requires the simultaneous standardisation of rows and columns, but no such method is available at the present time. Thus, the relationships are distorted. No such problem exists with the cluster analysis used in FOCUS. However, FOCUS is unable to produce such rigorous measures of construct relationships which are valuable in grid analysis.

More recent developments have attempted to maximise the reflexive nature of Personal Construct Theory. Shaw (1977) has developed an interactive computer programme, PEGASUS, based on the focusing technique. PEGASUS enables a person to become aware of his models of the world, and to revise them in order to increase his capacity for anticipation.

Boxer and Boot (1978) have a similar programme, NIPPER, which aims to assist managers in decision-making, particularly in those areas not amenable to objective analysis i.e. strategic decision-making.

Both PEGASUS and NIPPER act as a cognitive mirror in which the user sees himself. The advantage of using the computer is that it can process a great deal of data very quickly and so allow the manager's mind to remain focused on his own feelings. These recent developments in computer analysis seem to have considerable potential for management training in the subjective areas of their work.

3. Structural Measures

Structural measures are derived from the mathematical analyses of grids. The validity of the measures rests on the assumption that the mathematical analyses are related to underlying psychological processes. Unfortunately some confusion has developed in structural measures as researchers have become mesmerised by the search for mathematical relationships, forgetting their connection with the psychological processes. Bannister (1977) "recounts how, in the search for a score, he once found himself adding up ranks along the diagonals".

The most common structural measure is 'cognitive complexity' which has become a separate area for research. This term has received a number of different definitions from different psychologists. This has had the result that different researchers have claimed to be investigating 'cognitive complexity' but in fact, have been investigating totally different concepts.

The concept of cognitive complexity is grounded in Werner's (1957) developmental psychology. He considers the development of cognition involves an increased differentiation and articulation of elements and, simultaneously, an increased interdependence of elements by virtue of their integration into a hierarchically organised system. Therefore, a

cognitive system will be considered relatively complex in structure when:-

- a) it contains a relatively large number of elements
- b) the elements are integrated hierarchically by relatively extensive bonds of relationship

Relativity is emphasised as the complexity of a cognitive system is not judged in absolute terms, but by comparison with other systems.

On the basis of the above, Crockett (1965) defined two theoretical aspects of cognitive complexity, namely:-

- a) the degree of differentiation of a cognitive system will refer to the number of constructs that it contains.
- b) the degree of hierarchic integration of the system will refer to the complexity of the relationships among constructs, and the degree to which clusters of constructs are related by superordinate, integrating constructs.

Prior to Crockett the distinction between the theoretical aspects had been hazy. He further clarified the position by stating that they "obviously require two different kinds of measures". The measures that have been used for these two aspects will be discussed separately. (See figure 2 for summary).

SUMMARY OF MEASURES OF COGNITIVE COMPLEXITY - FIGURE 2

| Type of Complexity to be measured | Measures |
|--------------------------------------|---|
| Differentiation | 1955 Hierl 'cognitive complexity' - total or average matching score between all pairs of constructs on a Rep Grid 1965 Crockett 'cognitive differentiation' - number of interpersonal statements. |
| Hierarchical Integration | 1960 Bannister 'Intensity Score' - sum of all the relationship scores for all constructs 1965 Hinkle 'Implications Grid' - direct elicitation from subject of structure of construct system. 1970 Norris et al 'Articulation' - identify differences between articulated and monolithic or segment cognitive structures. 1972 Smith and Leach - impoverishment of fine details of persons construct system. |
| Non-Specific | Measures taken from INGRID:- -% variation accounted for by first component. -number of significant components. -number of component with roots greater than two. |

A. Measures of Differentiation

It is unrealistic for a researcher to identify every construct a subject uses. However, it is possible to determine the number of constructs a subject uses in certain situations. These constructs will be a sample of the subjects' total repertoire of constructs. The researcher assumes that this sample represents the total number of constructs, in about the same proportion for all subjects. This assumption underlies all measures of cognitive differentiation and must limit their validity.

The first measure of differentiation was made by Bieri (1955) which he called 'cognitive complexity'. For Bieri, complexity reflects the relative differentiation in a person's system of dimensions for construing behaviour. In operational terms it is the total, or average matching score between all pairs of constructs on a Repertory Grid. Bieri (1966) asserts that 'a more cognitively complex individual has available a more versatile system for perceiving the behaviour of others than does a less cognitively complex person'. Bieri reported a positive relation between complexity and predictive accuracy but Honess (1976) claims the relation is spurious.

Although this measure does not ascertain directly the number of constructs a subject uses, rather it reflects the extent to which the subject's constructs distinguish a set of elements, Crockett assumes that these two variables are highly correlated.

Crockett's measure of cognitive differentiation is the number of 'interpersonal' statements elicited in free description of eight stimulus persons. However, as Honess indicates; it is likely that this measure is confounded by differences in verbal or written fluency.

B. Measures of Hierarchic Integration

It is relatively simple to obtain a measure of differentiation but far more effort is required to identify hierarchic integration. A measure of integration must determine the relationships among constructs. From these relationships inferences have to be made about the groupings into which related constructs fall, which constructs are superordinate or subordinate, which central or peripheral, and so on.

A very 'gross' score of integration is Bannister's (1960, 1962) Intensity Score. Kelly had the idea that a construct used in a 'tight' way led to unvarying predictions whereas a 'loose' one leads to varying predictions. Bannister developed this idea in his study of thought disorder. He argued that there is a relationship between the size of correlations obtained on a rank grid and tightness-looseness. Operationally the Intensity Score is the sum of all the relationship scores for all constructs. The lower the intensity score (that is the lower the correlations) the more disordered (loose) is one's thinking.

Kelly argues that we loosen and then tighten and then loosen our thinking in a cyclic process. With thought disordered people Bannister found that their thinking had become exclusively loose and that they were unable to tighten their thinking into plans for action.

Bannister and Mair (1968) and Adams-Webber (1970) assumed that the Intensity Score was inversely related to cognitive complexity. This produced a situation as described in Figure 3. Honess (1976) found a complete lack of correspondence between Bieri's measure of complexity and intensity scores.

SUMMARY OF THE RELATIONSHIP BETWEEN INTENSITY AND COMPLEXITY - FIGURE 3

| Type of Construing | Intensity Score | Cognitive State |
|--------------------|-----------------|---|
| Loose | Low | Thought disordered (Bannister 1960,1962) Cognitive complexity (Bannister and Mair 1968) |
| Tight | High | Not thought disordered Cognitive simplicity |

This confused state of affairs led Bannister and Mair (1968) to stress that cognitive complexity must be distinguished from cognitive confusion. Both 'complex' and 'confused' people use a large number of constructs. The difference between them is that 'confused' people have no way of integrating their constructs, whereas cognitively 'complex' people have this ability.

In the absence of further research it is difficult to resolve this confusion. However, one possible answer is that Intensity is a poor measure of hierarchical integration. It does not distinguish superordinate and subordinate constructs, rather it measures only relationships between constructs.

Smith and Leach (1972) developed a measure of hierarchical integration. It is based on the hypothesis that impoverishment of 'the fine details of the construct system will have a more dramatic effect on the relationships between people (i.e. elements) for the more complex subjects'. However, Honess (1976) found no relation between their measure of complexity and a subject's ability on a prediction task which would have been expected after Bieri (1955).

Another attempt to measure integration has been made by Makhoul Norris, Jones and Norris (1970) termed 'articulation'. Their method differentiated significantly an obsessional neurotic group from a normal control group. The measure is based on inter-construct correlations at beyond the five per cent level of significance. They identified 'primary' clusters in which all constructs are related significantly to all others within the cluster. The relationship of the remaining constructs to these clusters were then examined:-

1. a construct significantly correlated with one or more constructs in one primary cluster is a 'secondary construct'.
2. a construct significantly correlated with one or more constructs in two or more clusters is a 'linkage' construct.
3. a construct not significantly correlated with any other construct is an 'isolate'.

Once these clusters were identified they found differences in the structure between their two groups of subjects:-

"The normal conceptual structure is articulated. It contains at least two different clusters which are joined together by linkage clusters. The obsessional conceptual structure is non-articulated, it is monolithic consisting of one dominant cluster, with secondaries, or segmented consisting of more than one cluster, but with no linkage constructs".

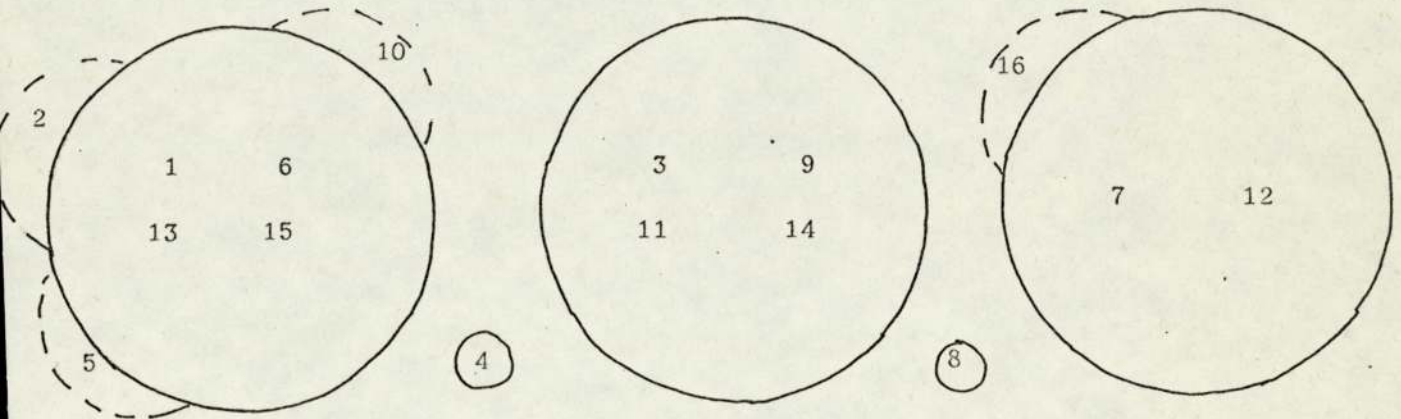
However, as Bannister (1977) points out although this measure is of potential interest "much more needs to be known about what difference it makes to live with a system that is articulated as opposed to non-articulated". Also, what happens if the arbitrarily chosen level of significance of five per cent is changed? Are different patterns produced? Figure 4 shows two examples of conceptual structure.

Another major attempt to deal with the hierarchical aspect of construct systems is Hinkle's (1965) implications and resistance to change grid. In this case he attempts to elicit directly from the subject the structure of the construct system, rather than indirectly through mathematical

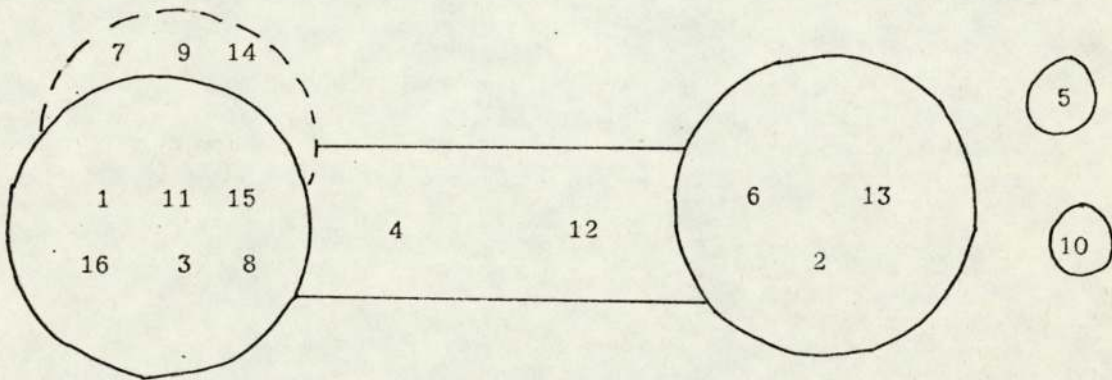
FIGURE 4

CONCEPTUAL STRUCTURE OF A PATIENT AND A CONTROL

(Makhlouf Norris et al 1970)



The segmented structure found in one obsessional patient. There are three primary clusters with four secondaries and two isolates, but no linkage constructs.



The matched control shows an articulated structure. There are two primary clusters, a secondary with a linkage cluster and two isolates.

analysis. The advantages and disadvantages of the method have been discussed previously.

A few other general measures of complexity based on Slater's INGRID analysis have been used and are worth a brief mention:-

1. the percentage variation accounted for by the first component: the higher the figure the greater the cognitive simplicity
2. the number of significant components according to the Bartlett test. The usual range is 1 (cognitively simple) to 4 (cognitively complex).
3. the number of components with roots (eigenvalues) greater than two. By definition, the average construct has a root of one. Consequently, the rationale is that any component with a root greater than two must be "superordinate" since it captures the variance of two 'average' constructs.

These measures tend to be crude, insensitive and even contradictory of each other. Their crudity reflects the confusion between differentiation and integration which bedevils attempts to measure complexity.

Prior to any further measures of 'cognitive complexity' being developed it is important that the concept should have a strong theoretical underpinning. Some writers have suggested that cognitive complexity-simplicity is a general trait pervading all realms of cognitive functioning. However, Vannoy (1965) used a battery of tests to investigate complexity-simplicity. A factor analysis of the scores revealed that no unitary dimension could be held accountable for the

test intercorrelations. He identifies three behavioural tendencies which may be viewed as aspects of cognitive complexity-simplicity with respect to the way the individual construes persons in his environment:-

1. a tendency to emphasize a few as opposed to many judgemental variables.
2. a tendency to assign people to a few positions on such variables, whereas others make much finer distinctions.
3. a tendency for certain persons to maintain a narrow perspective which permits a highly ordered view of the world, whereas others have a much wider perspective.

It is possible for a person who is cognitively simple according to one of these tendencies to be relatively complex on one or both of the other two.

Vannoy admits the possibility that none of the tests are a relevant indication of the construct complexity-simplicity. However, he suggests that since "different tendencies ought to have different behavioural consequences, that future research should be extended to observing differences between the behaviours of persons who differ in their responses to test instruments. This would increase understanding of the complexity-simplicity aspect of cognitive processes.

APPENDIX III

Examples of existing job descriptions.

AREA MANAGER - MILEAGE

Responsible to:-

Regional Mileage Sales Manager

General Scope

To provide and control resources which will enable an efficient tyre mileage service to operate in his/her area.

Main Duties

1. To constantly monitor, guide and control the activities of Mileage Supervisors in his/her area with a view to achieving optimum efficiency.
2. To ensure that his/her Mileage Supervisors have sufficient information, support and supplies to enable them to function efficiently.
3. To identify potential operational problems and by liaison with Mileage Operations Manager to take appropriate steps to overcome them.
4. To ensure that Company policy on training and safety is complied with in his/her sphere of activities.
5. To provide Mileage Operations Manager with realistic forward estimates of supply requirements for his/her area.

6. To maintain a regularly updated record of fleet details and competitors' activities and pass to Regional Sales Manager.
7. To arrange for the provision of accurate documentation as required by Manager - Mileage Records.
8. To establish and maintain contacts with Superintendents and Engineers to ensure good relationships and obtain general market intelligence. To supply Operators (up to Chief Engineer level) with technical information on tyres and wheels.
9. To advise Regional Sales Manager PT on existing manning levels and the economic levels required in potential new accounts.
10. To assist in a planned approach to the achievement of sales objectives in his/her area.
11. To engage and dismiss Mileage Contract Tyre Fitters in accordance with Company policies and procedures and establishments.
12. To control and calculate operational expenses, including overtime payment.
13. To act as the Company representative in any official union matter in his/her area of control.

AREA SALES MANAGER

Responsible to:- Trade Sales Manager

Scope and Purpose of Job

To motivate, guide and control a sales team in order to meet area targets for tyre and accessories sales through tyre distributors.

Key Tasks

1. To set tyre and accessories targets for his salesmen in order to meet the overall targets set by Trade Sales Manager. To plan the achievement of these targets with Trade Sales Manager and with his salesmen. To monitor progress, identify potential problems and take timely action to overcome them. To supply Trade Sales Manager with a weekly sales performance report.
2. To motivate his salesmen. To guide, control and where necessary co-ordinate their activities. To give them the information and support they need to undertake their tasks and meet their targets. To develop their skills by regular accompaniment in the field.
3. To ensure there is an active and successful sales effort of the accessories as well as the tyre range in his area.
4. Within the Trade Sales Manager's plan, to co-ordinate the efforts of his salesmen with the inside sales effort at local depots. To maintain a close working relationship with Depot Managers

supplying customers in his area but to refer any depot service or supply problem to the Trade Sales Manager which will prevent him giving adequate time to active field tasks.

5. To maintain regular contact with all area/regional managers of national independent and competitive equity tyre distributors located in his area in order to facilitate the achievement of his and other area sales targets, to consider sales promotion support and to gain useful information about these accounts and the market generally.
6. To evaluate and pass on competitive and other market intelligence reported from his salesmen. To ensure they receive useful competitive and other market intelligence in return.
7. To maintain direct contact with Regional Planning Manager on sales promotion budgets, policies, material and national plans. To ensure national sales promotion plans are properly implemented in his area, to encourage and monitor action on good sales promotion ideas among his salesmen designed to increase sales, principally car tyres, through distributor branches. To ensure local plans conform to budget and policy. As agreed, to have direct contact with Sales Promotion Manager, Fort Dunlop.
8. To maintain an up-to-date record of the details of all tyre distributors, their branches and major garages located in his area, including information about all negotiations concluded by his Trade Sales Executives.

9. To formulate and keep up-to-date a standard plan for covering salesman's call tasks in the event of their extended absence for any reason.
10. To recommend any alterations to the tyre and accessories range which will improve future area sales.
11. To advise Trade Sales Manager about area changes or trends which will affect sales planning in respect of brand, trade channel, terms levels and volume sales.
12. To inform Manager Tyre Equipment Sales of any sales opportunities for tyre service equipment, or the need to service Dunlop equipment already installed, notified to him by his staff.
13. To maintain liaison with the Area Fleet Manager(s) to exchange information of mutual sales benefit.

TRADE SALES MANAGER

Responsible to:- Regional Director

Scope and Purpose of Job

To plan, manage and co-ordinate the sales and depot operations in his Division and to provide necessary support for neighbouring Divisions. To ensure the maintenance of a close and successful working relationship with N.T.S.

Key Tasks

1. To set targets/objectives for his Area Sales and Depot Managers designed to meet the Divisional targets/objectives set by Regional Director.
2. To formulate detailed plans to meet these targets/objectives with the regional management planning team and with his managers. To monitor progress in depth, to identify potential problems and take timely action to overcome them. To supply Regional Director with a monthly Divisional report.
3. To guide and control his area and depot managers, ensuring they have enough information and support to achieve their objectives.
4. To obtain a regular flow of all types of product, product supply, trade and competitive information relating to the successful attainment of Divisional aims at lowest cost. To analyse this information and adjust plans accordingly.

5. To ensure the managerial control information he and his managers receive is useful and is used to good advantage. To recommend any changes to Regional Operating Manager.
6. To have regular meetings with N.T.S. Divisional Manager(s), and maintain intermediate contact, in order to ensure common interests remain identified, and there is a high level of mutual support in the achievement of objectives.
7. In conjunction with his Depot Managers to ensure that all depot staff are kept in touch with the sales picture, and are customer orientated. To ensure Sales Section staff are well briefed about their customers and are kept up-to-date with all the information necessary for them to secure as much business as possible. To help develop successful telephone selling and integrate this and his whole inside sales effort with that of his outside sales force. To ensure the N.T.S. Senior Sales Assistants are especially well briefed and are operating successfully.
8. To keep in touch with depot datum stocks levels and recommend adjustments in time to meet demands generated through the divisional sales operation. To monitor the outstanding order situation. To authorise C.O.P. stocks within current policy.
9. To advise Depot Managers about customer delivery service requirements and to help them to operate this service as economically as possible.

10. To monitor the effectiveness of commission and other sales incentive schemes and to recommend any cost effective changes.
11. To ensure adequate training and development is conducted for all sales and depot staff in the division, to foresee new training requirements and recommend action. To make sure adequate successors are developed to cover managers and key staff in both the sales and depot operations.
12. To maintain contact with neighbouring Divisional Managers to iron out any boundary problems and to provide the services or information required.

DIVISIONAL FLEET SALES MANAGER

Responsible to:- Regional Fleet Sales Manager

Scope and Purpose of Job

To plan, guide and control the operation aimed at securing enough tyre business of all ranges from large fleets operating in the Division to enable sales targets to be met and at maximising tyre business gained by the Major Fleet organisation.

Key Tasks

1. To be personally responsible for a few customers, selected and agreed with Regional Fleet Sales Manager.
2. To set himself, his Area Fleet Managers and Fleet Salesmen suitable tasks and objectives designed to meet the specific objectives set by Regional Fleet Sales Manager for the Division under his control. To plan the achievement of these objectives with his Area Fleet Managers and Fleet Salesmen, to monitor progress against plans, identify potential problems and ensure timely action is taken to overcome them.
3. To motivate, guide and control the Divisional sales team. To provide them with necessary information and support, and to develop the skills of Area Fleet Managers and Fleet Salesmen by regular field accompaniment.

4. To ensure the product and overall technical knowledge of all his staff is up-to-date, equal to their tasks and is used to maximum sales advantage. To recommend and, where appropriate, undertake training and development programmes for the staff under his control.
5. To make the best use of Divisional sales team resources to achieve objectives by, where necessary, varying customer call rates (own authority), co-ordinating activities and concentrating more than one person on one customer for limited periods (own authority), recommending boundary or other organisational changes.
6. To review Fleet Service Engineer activity programmes quarterly in order to ensure:-
 - a) They are being used efficiently and productively.
 - b) Fleet inspections are not exceeding the ratio limit to other activity set by the Regional Fleet Sales Manager.
 - c) Area Fleet Managers are aware of the forward needs of others for local surveys or inspections in planning future programmes for their Fleet Service Engineers.
7. To ensure that any significant changes in the forward supply requirements of User Customers are known to the Trade Sales Manager responsible for the Depot which services the supplying distributor, so that datum stocks may be reviewed in time.

To brief the Trade Sales Manager about fleet allocation priorities in the Division in times of supply shortage. To maintain a close working relationship with the Trade Sales Manager to co-ordinate the Divisional fleet and trade operations as far as possible.

8. To maintain close liaison with Divisional Managers and National Sales Executives of National Tyre Service and make occasional contact with the Managers of National Tyre Services branches doing major truck business in his Division; also with appropriate officials of other distributors as agreed with Regional Fleet Sales Manager.
9. To maintain liaison with the local Dunlop Earthmover Tyre Specialist and gain his support for User Customers in the Division doing adequate Earthmover business.
10. To identify and define the short and long term tyre product needs among fleet in his Division and make appropriate recommendations for range alteration on product development.
11. To supply Regional Fleet Sales Manager with accurate information about competitive activity and to ensure his Divisional sales team are active in gleaning useful market intelligence.
12. To maintain an up-to-date record of details of all fleets in the Division on whom there is a call task responsibility.

APPENDIX IV

Hierarchical task analysis of an Area Fleet Manager's job shown
as a series of linked algorithms.

0

CARRY OUT
DUTIES OF
AFM.

As required

carry out duties
of salesman

1

As supplement
to 1 & 3

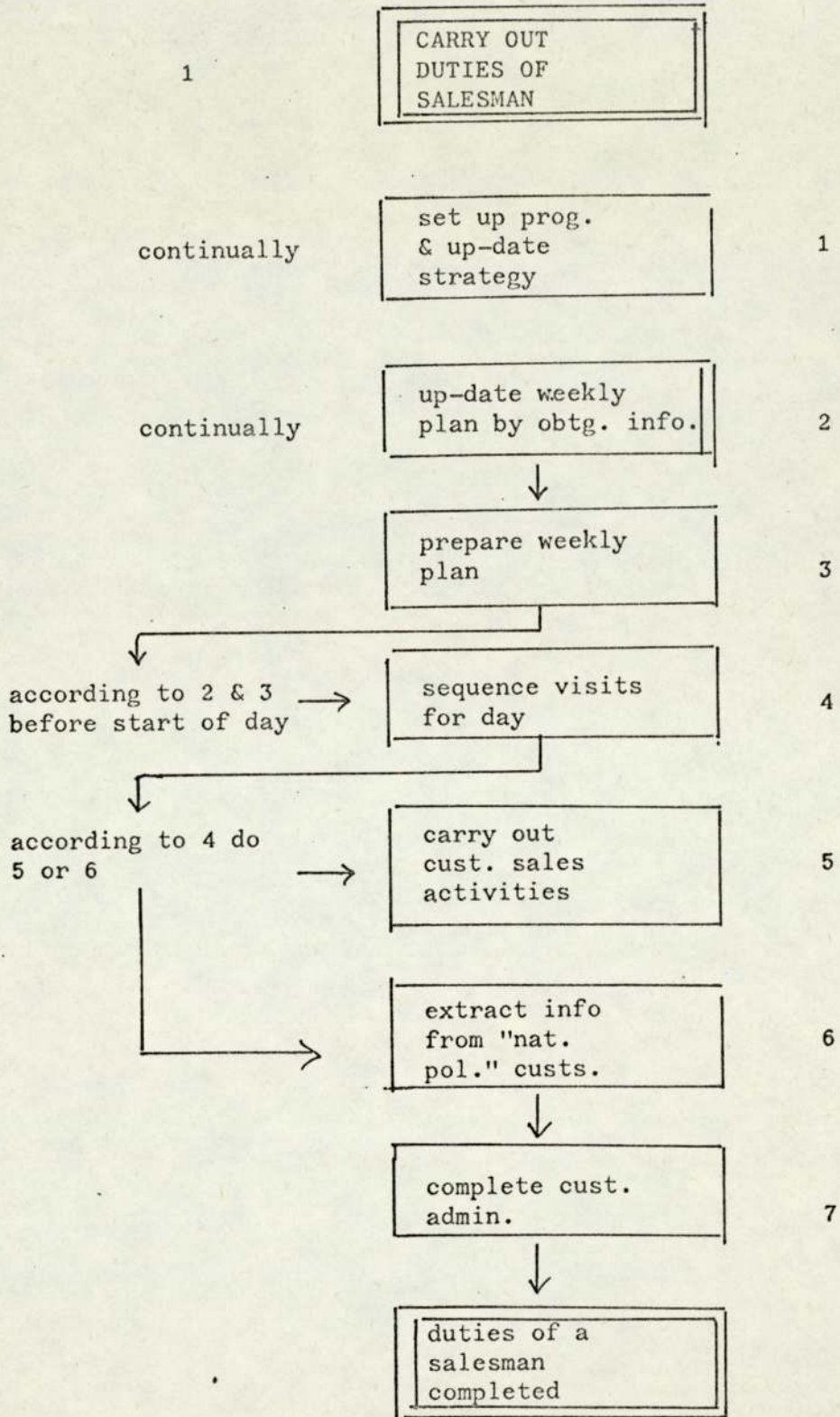
act as an
info. channel

2

As required

carry out mng
of FSe

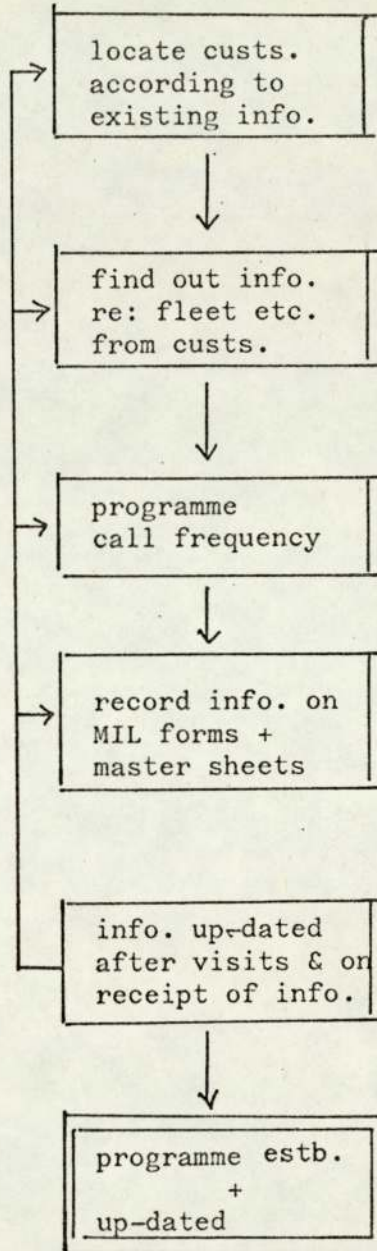
3



1.1

set up programme
+
up-date strategy

on-start of
job



1

C.V. distb
tyre distb
local & nat.
fleets, farmers
tractor veh's

2

3

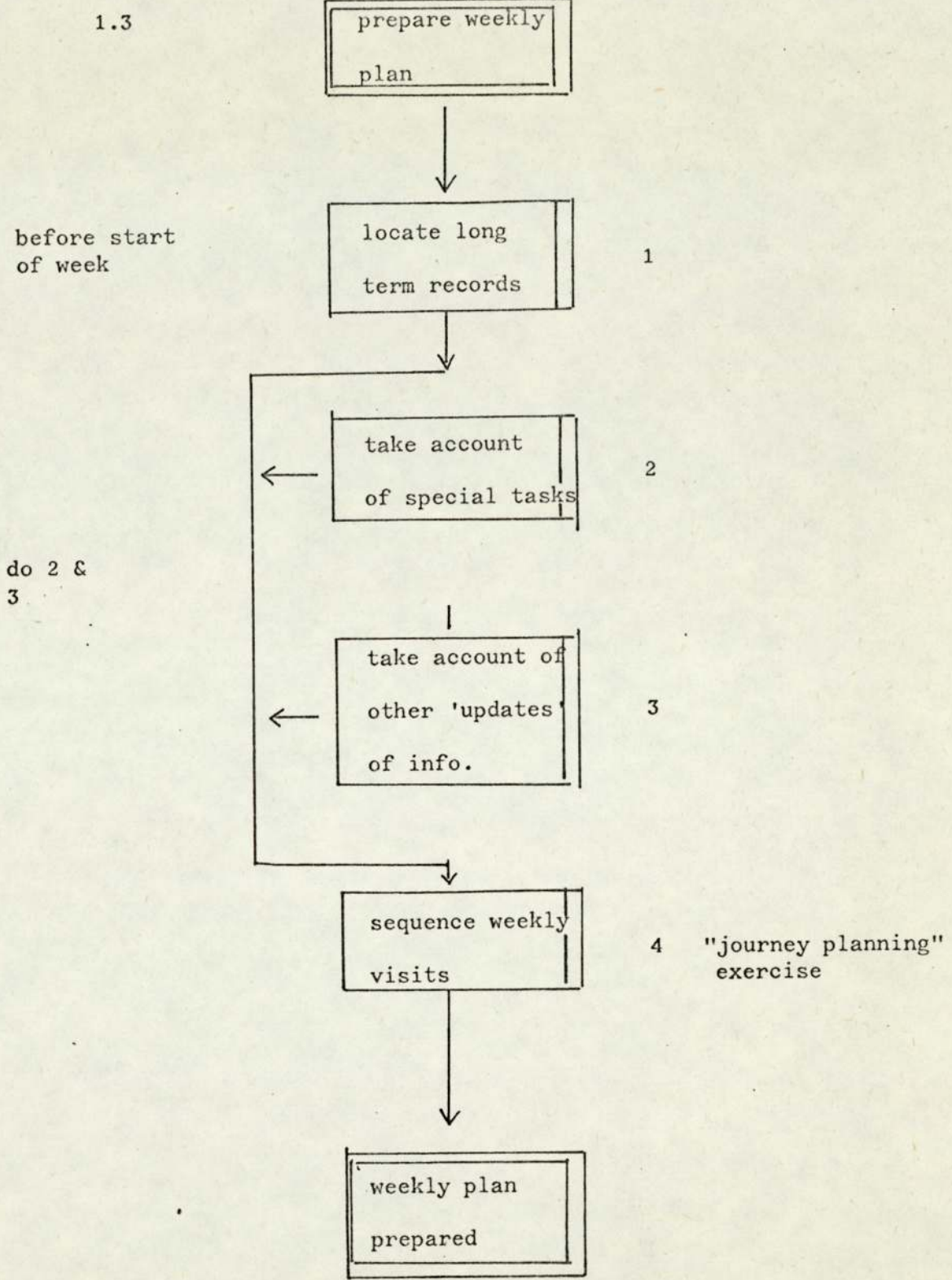
Rules for
frequency ?

4

specimen forms ?

5

programme estb.
+
up-dated



1.5

CARRY OUT CUST. SALES ACTIVITIES.



sort out purpose of meeting with reference to plan & file

1

offer relevant lit. .

2

discuss tyre sizes

3

arrange factory visits

4

arrange User evgs-viscom

5

entertain customers

6

issue mileage magazine

7

fleet survey

8

carry out a fleet check

9

place a test set

10

carry out stock holding

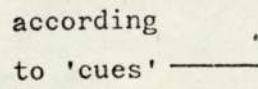
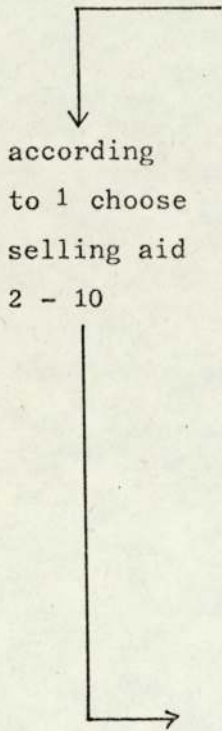
11

taking orders

12



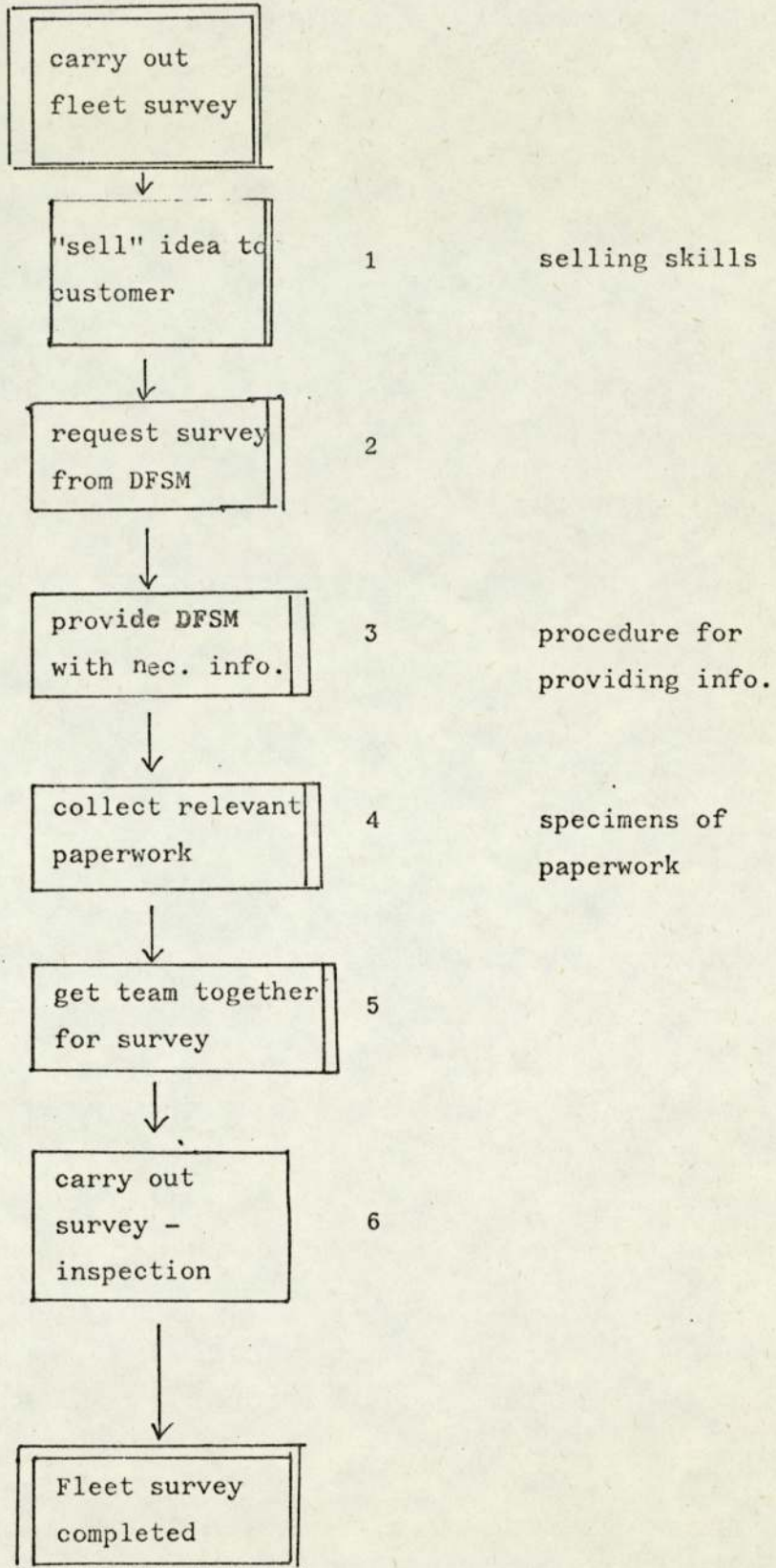
SALES ACTIVITIES COMPLETED



Training
give guidance as to which selling aid is appropriate for what situations.

Training
identify 'cues' experienced salesmen use & pass on to new salesmen.
Training films?

1.5.8



1.5.8.6

carry out
survey -
inspection

state reqⁿ of
survey to
direct team

1

inspect
vehicles

2

technical knowledge

deal with
"immediates"

3

guidelines for
"immediates" ?

write info.
on forms for
DFSM etc.

4

examples of forms.

extract info.
for own
purposes.

5

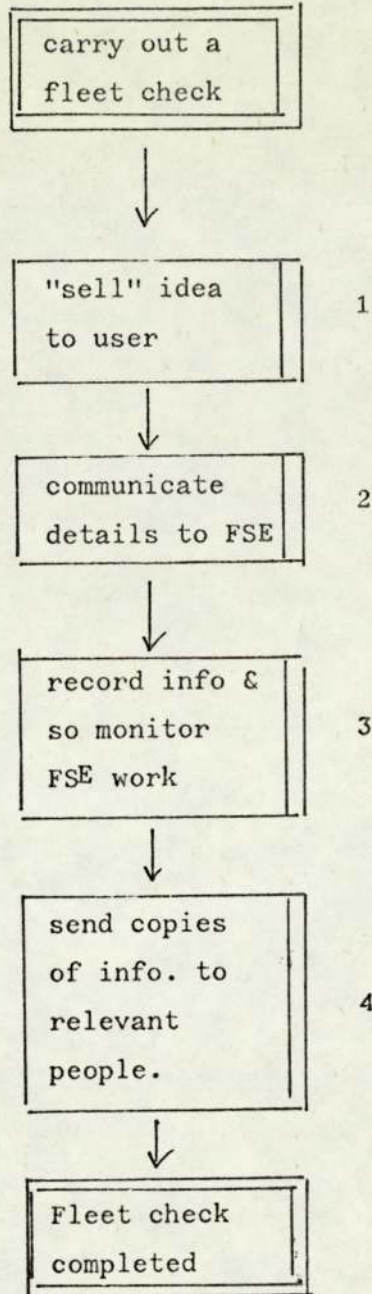
present &
discuss report
with customer.

6

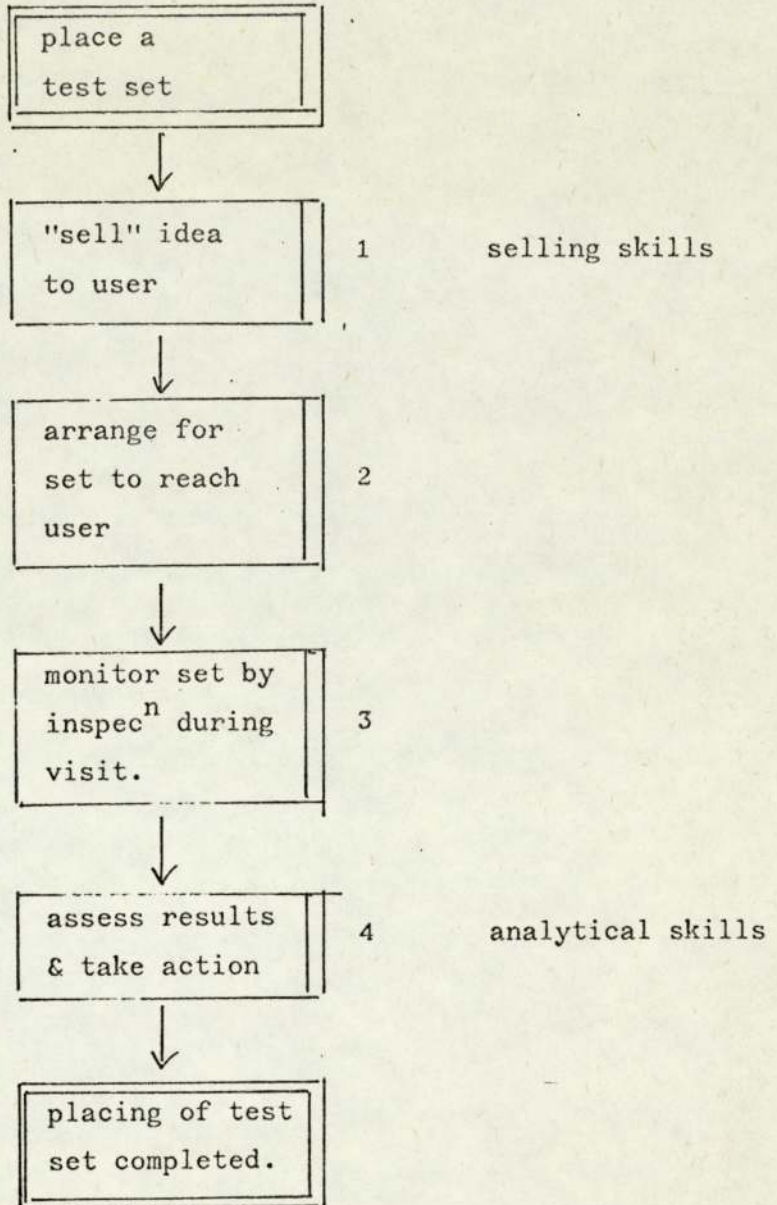
report writing &
selling skills.

inspection
completed.

1.5.9



1.5.10



1.5.11

carry out stock holding for cust.



assess if worthwhile offering service

1

are there guidelines for this assessment?



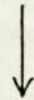
offer idea to cust.

2



report to DFSM who advises Depot.

3



ensure close contact with user to implement their directives.

4



stock holding completed

1.5.12

Taking
orders



recognise 'cues'
for close sale

1

elicit from
experienced
salesman, &
teach/expose
new salesman
to them.



write order
form

2



give order to
Depot to
despatch tyres

3



inform distb.
to supply
tyres

4



record orders
taken place

5



orders
taken

1.6

extract info.
from "national"
policy customers

visit custs.
to extract
info.

1

ensure info. is
current & record.

2

info. extracted
from national
customers

1.7

after seeing
customer
decide on
necessary
action and
do either
1,2,3, 4 or 5
or any
combination.

complete cust.
admin. & reports



answer correspⁿ
& requests for info. 1



record
expenses 2



record on order
form for C.V.
distb. 3



prepare intelligence
report & send to
DFSM 4

reporting skills



collate info.
over monthly
period. 5

analytical skills



cust. admin -
reports completed

2

Act as an
information
channel



continuously

liaise with
other members
of Dunlop

1

communication skills



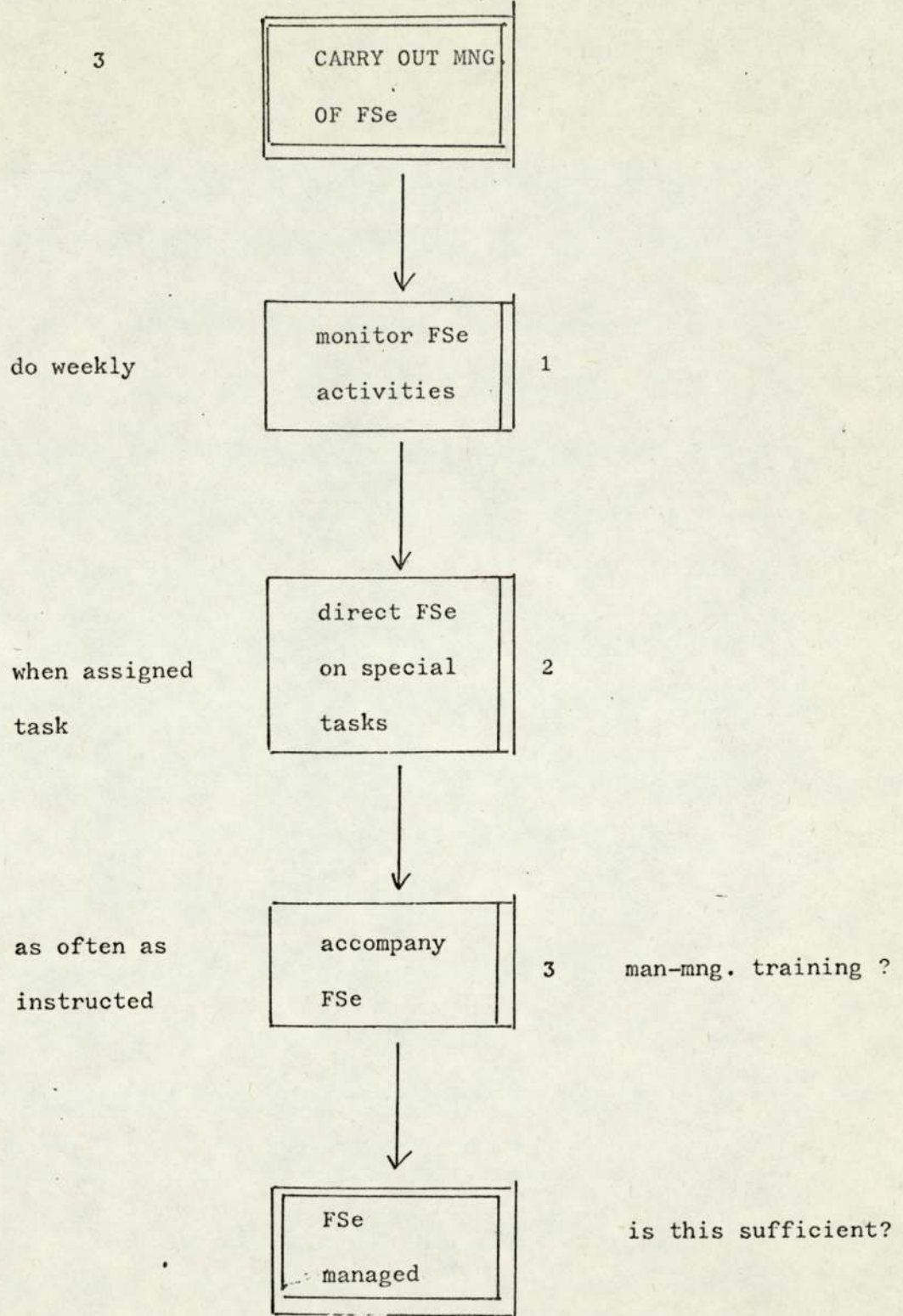
when necessary

attend
meetings

2



information
channel
completed



3.1

monitor FSE
activities



provide initial
info. on custs.

1



do weekly

ensure FSE
produced sensible
weekly routine

2



do weekly

ensure appropriate
action has been
taken

3



continuously

extract info.
from FSE reports

4



activities of FSE
monitored

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