A CRITICAL APPRAISAL OF SOME ASPECTS
OF
MANAGEMENT CONTROL SYSTEMS

- with special reference to the influence of
environmental and organisational characteristics on
the design and operation of management controls

by

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"It would be folly to suggest that only that is real which is measurable ..."

Karl W. Deutsch
CHAPTER 1

OBJECTIVES, METHOD AND DEFINITIONS

1. Introduction

This is a descriptive study. It deals with the operation of management controls in three large Irish undertakings, explores the interrelationships between the type of controls and the characteristics of each undertaking, presents the findings of four cases drawn from the three firms, and attempts to synthesise these findings so as to draw out generalizations relating to the design and operation of management controls.

To date little or no research work in the field of administration has been carried out in Ireland, a developing country whose teachers and administrators still rely largely on models of administration from Britain and the United States. The absence of any body of literature on administration is understandable in a country which is still only learning to live with independence, whose industrial resources and skills are scarce, and which until recently had an average annual emigration rate of 40,000 people. Of late, however, a dynamism has emerged and active steps are being taken to meet the economic and social challenges of the 'New Europe.' Today most Irishmen realise that they hold their country's destiny in their own hands and that England, the ancient enemy, cannot be blamed for their future. It is within this new dynamic that these studies were made.

The study is divided into three main parts.
This first part places the research in perspective. It deals with objectives, scope, methodology and definitions, presents an overview of the literature in the context of the research, and outlines the conceptual framework.

The second part is concerned with the four cases, and in each, findings are presented and interpreted, and preliminary conclusions drawn.

The third part synthesises the findings, presents generalisations about the influences of environmental and organisational characteristics on the design and operation of management controls, and indicates possible directions for further research.

2. Background to the Research Design

Following a period of almost ten years as a management consultant with the P.B. Consulting Group, seven of which were spent in working in Ireland, the writer became interested in how management controls actually operate in different types of undertakings. To enable this research to be carried out, he resigned from his position, and set up as a research consultant, with the emphasis on action research, i.e., directing effort "towards the practical improvement of situations under observation" (Lupton, 1966, p.66).

The descriptive, exploratory nature of the study is justified on the following grounds:—

First, the experience and training of the writer permitted

1 Possibly a euphemism for a person of mature years who wishes to carry out field research and 'eat' at the same time.
him access to situations and material not normally easily available to other research workers.

Secondly, the approach taken is the only one that suited the writer's experience and training, complemented by a fairly wide reading of the literature, both rationalistic and behaviourist.²

Thirdly, large undertakings are exceedingly complex, and involve "all the intricacies of human personality, images and communication."³ As yet there are no 'tablets of stone' inscribed with a universal frame of reference available even to describe different firms, apart from solving the problems that complexity brings to different participants.

Fourthly, a start has to be made on building up a body of literature on administrative theory and practice for Irish conditions.

Fifthly, despite the dislike of many social scientists of descriptive studies, there is a poverty of published work in the English-speaking world relating to the use of controls.

Sixthly, both practitioners and teachers have pressing needs for empirical evidence linked to theory.

And lastly, there is also a need for a more eclectic⁴ approach in the study and practice of administration.

There are, of course, limitations in any study such as this which tries to cover such a wide area including so many variables,

² See McGuire (1962) for a useful summary of the concepts of the firm.
³ See Moulding (1961, p.121).
⁴ See Koontz (1964, pp.1-17).
many of which are difficult to identify, far less quantify. However, it is hoped that what follows will contribute to the improvement of knowledge about how controls operate in practice, and will at least provide useful guidelines and insights for managers, teachers and research workers.

3. Objectives of the Research

The objectives of the research were:

- To provide empirical evidence on how management controls are used
- To identify the principal characteristics of each undertaking and the extent to which these appear to influence the design and operation of management controls
- To seek to identify the influences of management controls on each undertaking and to evaluate the appropriateness of the controls
- To try to draw out generalizations relating to the design and operation of management controls, and where possible, relate these to the findings of other research workers
- To identify some of the situational determinants that require to be considered in designing and operating management control systems.

4. Scope of the Research

Three of the four cases presented in this work are based on material obtained by the writer in his capacity as a research consultant, it being a condition in each contract research project,
apart from its action orientation, that the writer would be permitted to study the factors affecting the design and operation of controls. Material for the other case was obtained by the writer when directing part of a post-graduate programme in administrative studies at Trinity College, Dublin.

Before the research started, no formal plan was made to select the cases, the only overriding consideration being that it was essential to deal with large firms from the public and the private sectors. It was also recognised that only a small number of cases could be tackled if any real depth of analysis was to be achieved.

It was decided to confine the research to formal management controls and to concentrate as far as possible on managers and other executives, including staff agencies, thus excluding a large part of the labour force in each firm. This kept the study to some sort of manageable proportions, bearing in mind finance, time, and the fact that on most projects the writer was working on his own. In addition, the few published studies on the operation of controls fail, in the main, to deal with problems at middle and senior management level.

The four cases are presented in the order in which they were tackled. Cases I and II deal with controls in the Irish state-sponsored inland transport company. Case I, referred to as CIE, is concerned with the operation of controls (primarily management accounting) at senior and middle management level throughout the company, while Case II, which is referred to as Railshops, is concerned with the operation of a system of production planning and control in the railway workshops of CIE.

Case III, Radio Telefis Eireann (RTE) is the state-sponsored
radio and television broadcasting authority, and Case IV deals with controls in a large public company (PQR Ltd) engaged in supplying materials to the building and road construction industries.

To summarise, therefore: there are three firms, CIE, RTE and PQR Ltd, the first two being state-sponsored bodies, i.e., ultimate control is in the hands of the government; and the last, a public company in the private sector. The four cases are:

I CIE
II Railshops - a 'subsidiary' of CIE
III RTE
IV PQR Ltd

5. General Method of Approach

The general approach for each case was to identify and describe the controls in operation, to identify and describe the characteristics of each undertaking within which the controls operated, to assess how the controls were used, and to attempt to determine the interrelationships that exist between the characteristics of the undertaking and the controls. Data were obtained during extended periods of actually working in each firm, and because of the nature of the role of the writer as a research consultant and the ongoing nature of the studies it was necessary to use research techniques appropriate to each case. Written material, such as annual reports, organisation charts, standard operating procedures and control reports, was collected and studied, and where necessary, flow charts and diagrams, including simple descriptive models, were prepared.

Interviews and discussions were held with selected executives,
individually and in groups in each firm, and through attendance at formal management meetings. Apart from these means, contact was also established at lunch sessions and other social occasions, so that for each case, it was possible to build up a close relationship with most of the executives encountered.

Interview methods varied depending on the individual firm and the jobs and the levels of executives. Generally, focused interviewing techniques directed to eliciting views on specific themes relating to the operation of the organisation structure and the controls were used, and in two cases, where the situation lent itself to more highly structured interviewing, a schedule of questions was administered, help being received in designing, administering and analysing these schedules from a research assistant.

Following each case, the data were analysed and in three of the four cases a report was prepared for the individual firm. It is from the work done in each case that the findings in relation to controls emerged. These were then analysed and interpreted for each case, the study being concluded by a synthesis of all the cases which tries to draw out common features in relation to the design and use of controls.

6. Control, Controls, and Other Working Definitions

This section deals briefly with the distinction between control and controls, defines the type of controls with which the research is concerned, and provides working definitions of other terms used in the study.

For the purposes of this study, control is defined as the

---

5See Murray (1963) for a more detailed exposition.
regulation of an undertaking, including its parts and activities; in turn, regulation means the adjustment of these parts and activities when required to make them conform to what is required.  

To elaborate, control as a general process has a number of sub-processes which are integral to its operation - these cover planning, implementation, identification and measurement of actual results (feedback), comparison and review of planned against actual results, and finally regulation, where and when required. This last is the key sub-process and may involve action being taken to change the original plan, including the agencies and/or resources involved. Of course all these sub-processes must be seen in relation to time, and feedback of actual results can only occur after time has passed.  

Controls, in contrast, are the means that are used to help to achieve control, and can be classified into a number of groups. First, are the individuals in an undertaking using their faculties of vision, speech etc., in doing their work; some of these individuals have authority to direct the work of others, and they constitute the hierarchical structure, which is the primary means of control in all undertakings.  

Second, are technical controls which are broadly of two types: the fully automatic or self-regulating system which, as the name implies, requires no human intervention when in operation; and the semi-automatic, which does require some form of human  

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6. The term is used here without normative or emotional connotations. Those interested in different interpretations are referred to "57 Varieties in the Connotations of Control," Rathe (1960).

intervention for assisting in its regulation.

Lastly, are information systems comprising all forms of signals which are useless unless they are complemented by human forces. The research is concerned with this last group, and in particular with written or printed reports, which contain narrative and numerical data, and are produced at regular intervals (e.g., weekly, four-weekly) with the object of informing executives of how they and the units they command have performed over a specified period of time.

These 'score-card' reports are, of course, only one part of management information which in turn is only a part of the whole communication system of the firm. For simplicity, they will be referred to in this study as management controls, control reports, controls or other simple variants; where reference has to be made to other types of controls they will be specifically described.

It will be useful at this stage to provide some additional working definitions.

Throughout the study, care has been taken to avoid using

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8 For an introduction to a more fundamental approach to signals and signs, see Kuhn (1966, part II) and Norris (1956).

9 Even a cursory study of the literature will disclose the large variety of terms in use: e.g., 'performance records,' 'performance reports,' 'statistical records of performance,' 'control statements,' 'budgets,' 'feedback data.'

10 This term emanates from a study by Simon, et al. (1954) on the use of accounting data by operating departments in manufacturing concerns; the authors provide a useful classification of types of information used by executives. A summary of this classification is used by March & Simon (1958, ch. 6, sect. 5), as a basis for discussing occasions for communication.

11 See Deutsch (1952) for a brilliant generalised description of communication and control.
the term organisation as a synonym for the firm or undertaking being studied. Organisation(al) is used as a noun or adjective to describe the "job-task pyramid,"¹² i.e., the organisation structure of the undertaking, and to refer to certain features related to the type of structure and the way it operates, e.g., the organisational characteristics of the firm.

The term executives is used to refer to those individuals who form part of the hierarchy of the undertaking and act either in line or staff roles, while the term managers will normally be used when referring to those who are responsible for the primary tasks or functions of the firm, i.e., the conventional line managers at any level.

Senior management is used as a collective term to describe those executives in a firm who are directly accountable to the chief executive.

¹²See Pfiffner & Sherwood (1960, pp.18-20).
AN OVERVIEW OF THE LITERATURE

It has been asserted that "communication and control are the decisive processes in organisations. Communication is what makes organisations cohere; control is what regulates their behaviour," (Deutsch, 1952). Though this may be disputed, it is a fact that control and controls feature largely in the writings on administration. The aim of this chapter is to present an overview of the literature and to place this present study in context. For this purpose, the chapter is divided into three main sections: the first provides a brief general review; the second deals with studies on the operation of controls; and the last section summarises the primary emphases of the literature in relation to the operation of controls.

1. General Review

It will be appreciated that a full review of the literature on administration cannot be made here, nor is it intended to give an historical summary of developments in administrative theory, typically provided by Koontz (1964) and Scott (1963). The general literature for the purpose of this review has been classified into five groups.

1.1. Control techniques

The first group is concerned with control techniques and covers both quantitative methods and operations analysis. Included in this group are the publications relating to techniques such as
budgetary control, standard costing, production planning and
control, quality control, productivity measurements and ergonomics,
as well as operations research techniques and methods. Typical
of this type of literature are Adam (1962), Anthony (1966), Buffa
(1963), Carlson (1957), Churchman et al. (1957), Danielsson (1963),
Juran (1962), Kellerman (1963), Maynard (1960), Thorrell (1960),
and the majority of the publications by the AIM, the American
Management Association, the professional accounting, engineering
and operational research bodies, and many industrial federations.
These works are almost exclusively concerned with the mechanics
of measurement and control, and are obviously necessary in helping
to train executives. Many of them deal with 'theories' and
'principles,' which when analysed, only amount to rules, and each
usually mirrors the discipline or profession of its author. Thus,
specific techniques tend to monitor certain aspects or elements
and to emphasise only one unit of measurement; in turn, this leads
to a fragmented approach to control and controls, and in some
cases results in sub-optimisation caused by executives of different
disciplines pushing their own brand of controls as an end in
itself. The consequences of this will be dealt with later in this
study.

1.2 Control systems

The second group is concerned with control systems and here,
a more fundamental approach to control and controls is apparent.
This developed from the USA military programmes and most of the
literature emanates from the Systems Development Corporation (SDC),
Santa Monica, California. Here, advanced work has been carried
out on simulation and 'real-time' control using models and
electronic computers. Examples of this group are Heyne (1961), Kagdis and Lacknor (1962), Malcolm et al. (1960), and Rowe (1960), who present a comprehensive summary of the business simulation project at SDC. Coupled with this type is the work done by Forrester (1961) at MIT on industrial dynamics. In this group, though the firm is viewed as an entity, there is a tendency to deal only with variables that can be easily quantified, such as sales, orders, stocks, labour and material costs, and profits, i.e., what Seashore (1964) refers to as 'hard' variables; as opposed to those which are not easily measurable, i.e., 'soft' or qualitative variables, such as employee attitude and product leadership.

1.3 Cybernetics

The third group in this general review deals with cybernetics or "control and communication in the animal and the machine" (Wiener, 1961). This is at an even more fundamental level than the literature on control systems. It contains concepts from a number of disciplines and subjects, including neurophysiology, mechanical engineering, biology, information theory and mathematical logic, and tries to deal in a comprehensive way with theories on nerve networks, servos, men and societies. Apart from Wiener's main works (1954 and 1961), that of Beer (1959), Cherry (1957), Grünwald (1960), and Von Forrester and Zopf (1962) have proved reasonably comprehensible to this writer. This 'total' approach brings together such apparently diverse concepts and phenomena as

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1 In an unpublished paper read to the Irish Work Study Society in October, 1965, Murray defined cybernetics as "the science of communication and control, concerned with describing, analysing, categorising, building and testing communication and control systems relating to machines, plants, animals, men and social institutions."
negative feedback, homeostasis, entropy, and open and closed systems. These are certainly useful in studying the operation of management controls, but as with any new science some of its disciples have occasionally tended to go overboard in trying to find problems to fit the solutions and techniques, and in equating, without qualification, machines with men, and vice versa. However, the main danger in the indiscriminate application of cybernetic concepts is the almost total exclusion of human values.

1.4 General administration

The fourth group deals with what for simplicity is referred to as general administration and, as with the first group, (dealing with techniques), there is a plethora of writing. Most of this is concerned with the processes and practice of management, its authors usually having had considerable experience in dealing with actual situations. Most of it is heavily normative and is based on the pioneering efforts of the classical school of writers such as Taylor, Urwick, Follett and Mooney and Reilly. Typical of contemporary works in this field are Allen (1958), Drucker (1955), Holden et al. (1951), Newman (1963) and Stewart (1963); their great merit is that they are reasonably easy to read and understand, though from the viewpoint of the operation of controls they tend on the one hand to emphasise techniques, or on the other, to 'preach.'

This is not to say that literature on administration should be stripped of any values or exhortation; but rather to urge that when

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2 An example of this is Drucker's concept of "self-control through measurements" (Drucker, 1955, pp. 112-13); this is an attractive concept which in some situations will be of use in improving the operation of controls.
these are included it should be clearly stated that any general application will probably require modification.

1.5 Administrative theory.

The fifth and last group in this general review contains work which is concerned with administrative theory. Contributions in this category deal with administration, including control, at a higher level of abstraction, both in an inductive and deductive way. Chapple and Sayles (1961, chapter IV) discuss the development and use of organisational controls and though little evidence is provided, the authors question the traditional methods of accountants and the value of the reports they produce. They claim that "the information available to the executive ... touches only a segment of the total operations, and most of this is primarily designed to fit the special needs of the accountants" (pp.69-70), and that the accounting reports produced are not related to the area of responsibility of the individual executive who receives them. ³ Because of this, skilful executives ... learn to manoeuvre within this situation because they know they are judged by what the figures show. 'Balloon squeezing' then becomes a major art; one tries to make his financial statements look good by shoving expenses off on less astute colleagues. Although the total picture of the company does not improve, the steady flow of reports are the index of performance for top management that determine the method of reward and punishment, no matter how unreal. (Chapple and Sayles, 1961, p.70)

In dealing with records and reports, Cyert and March (1963, pp. 103-106) claim that these serve the twin purposes of control and

³ One could infer from this statement that the authors have never heard of the technique of responsibility accounting which had its origins in the USA as a development from budgetary control, and which has been used in many firms in the USA and in Europe in the last ten years. The fact that the only reference in this chapter of their book is dated 1953, may explain this.
prediction and "tend to be related to those elements of business operations that have seemed most important to the effective operation of the firm." This selectivity, they believe, substantially increases the significance of reports for individual members of the firm and largely determines what aspects of the environment will be observed. Haire (1956, p.212), with no supporting evidence, gives a psychologist's view of the operation of management controls:

Typically today, budget and production data are generated by the action of groups at middle and lower levels of the company. This information then goes immediately to the top of a centralised control. Here it is used almost entirely as a check on error and as a punitive weapon to chastise groups which have fallen below the mark. The first thing the group which produced the information knows about the results of its activity is when a superior descends, brandishing a summary and complaining about the lack of performance. Budget and production data are not made available to help people solve their problems but to strengthen the centralised top control and to act as a prod and error control. (Italics added)

These are strong words, and create in the European reader a definite impression that management controls in the USA are used almost exclusively as a coercive weapon.

Another behaviouralist, Likert (1961) believes that

`. . . generally speaking, management uses measurements today for control purposes: to set objectives, appraise progress and evaluate performance. Supervisory and non-supervisory employees are rewarded or punished by what the measurements reveal. They feel 'under the gun' much of the time. This invokes anxieties and resentment.'

(Likert, 1961, p.208)

However, the interest of Likert's work for this present research has been derived first, from the comparative study of different "systems of organization" presented by him in chapter 14, which arrays "operating characteristics" against a continuum of four systems of organisation which has, at one end "exploitive authoritative," and at the other, "participative group"; and second, from the
"character of control processes" for each type of these organisational systems.\(^4\) (pp.232-35).

Though "the heroic assemblage of propositions"\(^5\) in March and Simon (1958) is supported with data of varying quality, their work provides useful stimuli in relation to control and communications. Of particular interest to this study are the interpretations (pp.37-46) of the bureaucratic models described by Merton and Gouldner, the section dealing with intergroup conflict within an organisation (chapter 5.3), and especially the section on communication (chapter 6.5). Here the authors attempt to classify the occasions for communication, and introduce the concept of "uncertainty absorption" which "takes place when inferences are drawn from a body of evidence and the inferences, instead of the evidence itself, are then communicated," (p.165). This is of relevance to the assembly and interpretation of data in management control reports.

The classic study by Roethlisberger and Dickson (1939) has dated little since its publication, and some important cues were obtained from the section (in chapter XXV) on problems on control and communication where the authors state:

In order to exercise intelligent control, the management of a concern must be continually provided with accurate information as to the manner in which the total organization is functioning. . . . It was seen \(\text{in the Bank Wiring Observation Room}\) that many controls . . . failed to function in accordance with the logic upon which such controls were based. Yet this disparity between the actual situation and the way it was theoretically supposed to be was not clearly understood by management.\(^6\)

\((\text{Roethlisberger and Dickson, 1939, p.331})\)

\(^4\) Likert does not seem to have been aware of the work of Burns and Stalker (1961) and vice versa.

\(^5\) See Dubin (1962) who claims that March and Simon's propositions "have order and plausibility because the authors were good model builders" (Dubin, 1962, p.12).
The authors go on to discuss the sorting (i.e., filtering) of information as it is transmitted up the hierarchy and stress in rather idealised terms, the need for

... the proper selection of information ... at each level in the supervisory structure; otherwise, erroneous impressions of the actual situation will be conveyed. If the first appraisal of a situation is inaccurate, then a distorted picture is transmitted all through the structure. It is important, therefore, that an accurate representation of the situation be made in the initial stages of communication, and that at successive stages useful simplification of the information be made for transmission to higher levels.

(Roethlisberger and Dickson, 1939, p.582)

Joan Woodward (1958 and 1965) has highlighted the relationships between organisation structure and different types of technology. She suggests that "some technical environments impose greater strains than others on individuals at all levels of the hierarchy," (1965, p.80) and draws attention to the relationships between, on the one hand, the planning, control and executive functions, and, on the other, the characteristics (including technology) of different types of industry (1965, chapter 9).

She concludes this chapter by stating that "more detailed study of control systems as components in their own right might suggest ways in which some of the human relations problems associated with them might be overcome" (1965, p.181).

Also of interest as a background to this research are the studies of Whyte (1955) and Dalton (1959). The former deals with the effects of budgets on production managers and the power of "budget people" who, he states, "have control of one of the key

6Eilon and Woodward are now directing a research project on management control systems being undertaken by the Management Engineering Section of Imperial College, London. See Eilon's work on the technical aspects of classifying administrative control systems (1965 and 1966). An interim report on the project is given in Woodward and Eilon (1966).
sets of symbols in the organisation and thereby indirectly bring rewards and penalties to the production supervisors" (Whyte, 1955, p. 494). In his field study of compromises among key individuals and groups in rational organisations, Dalton (1959) highlights problems that can arise out of line and staff conflict. 'Control' bodies, he claims, "precipitate much unofficial activity among those subject to higher interpretations of the reports" which these bodies prepare. However, "great stress on minute control increases evasion and weakens the working assumption that personnel relations are perfectly stable and that controlless are much less ingenious than controllers" (Dalton, 1959, p. 11). Though he pin-points staff and line conflict, he believes that some form of staff-line arrangement is necessary. He, too, emphasises the importance of suiting the controls to the situation:

> There are indeed too many irrelevant controls, but possibly not enough based on intimate knowledge of people and conditions. . . . Developing such controls is of course the great task of all organisation.  
  
(Dalton, 1959, p. 107)

Dalton criticises the application of bureaucratic theory in USA conditions and claims (p. 264) that "the theory of bureaucracy . . . which assumes members are inert and ready to follow rules . . . hangs much better on the more stratified and disciplined European societies." He goes on:

> The spread of bureaucratic structure requires increasing conformity. This pressure reaches its highest when corps of specialists are developed to uncover deviations and maintain records of merit and demerit.  

(Dalton, 1959, p. 268)

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7This writer would not include Ireland in this category.
and though he sees bureaucracy as a means of reducing the complications of progress in civilization, he argues that "impersonal controls, devised by the few to control the many . . . provoke a condition of frustration and intrigue" (p.271).8

This completes the general review of the literature with particular relation to controls. It has covered techniques, control systems, cybernetics, general administration and administrative theory. The next section deals specifically with studies on the operation of management controls.

2. Studies on the Operation of Management Controls

The focus in this section is on studies which deal exclusively, or almost exclusively, with the operation of management controls. Here again, it has been necessary to develop a broad classification which is as follows:

- Studies which summarise and/or interpret the field work done by other researchers
- Experimental studies
- Studies based on the field experiences of research workers.

2.1 Reviews of field work

The brief review by Ridgway (1956) of the dysfunctional consequences resulting from the imposition of performance measurements is probably the most well-known. While agreeing that quantitative measures of performance are undoubtedly useful tools, he believes that their judicious use requires an awareness of possible side effects, so that, as with drugs, the cure does not

8For those who like to catalogue writers on administration by experience and background, this research worker places himself nearer to Dalton in approach and experience than to any other.
become worse than the disease. He focuses on what he calls the **type of criteria** selected for measurement and deals with three different types: **single**, which occur when only one quantity is measured, e.g., profit; **multiple**, when several quantities are measured simultaneously, e.g., output, quality, waste; and **composite**, when the separate quantities are weighted in some fashion and then added or averaged. Using this classification, he proceeds to analyse the scattered knowledge on the operation of controls, most of which is dealt with below. His study is of undoubted interest in that the criteria that management use for selecting elements of the business that they wish to control, and the type of units they adopt for measuring these elements, certainly have an important bearing on the operation of management controls.

Again, some of the field research studies are reviewed by Dubin (1962) who concentrates on managerial adaptation to controls. He claims that "among managers and executives - the personnel of organizations whose position demands commitment to organizational goals - there exists a strong tendency to meet formal criteria of performance, even if, in so doing, high but hidden costs are generated," and he suggests that "specialists in control systems, engineers and accountants particularly, might find additional sources of efficiency in eliminating some of the costs of managerial adaption to controls that evade their spirit but conform to their letter" (Dubin, 1962, pp.46-47).

The literature on the operation of controls gets further treatment in an interesting analysis by Becker and Green (1962) writing, respectively, as Associate Professors of Psychology, and
Accounting, at the University of Chicago. The authors review the history of budgeting and make a neat distinction between "clerical control, a technique employed in governmental budgeting to insure the completeness of record and one that is still unique in governmental accounting," and "communicative control - the extent that interim reports were prepared and distributed to department heads" (Becker and Green, 1962, p.393). They focus on the modifications that have taken place in the budgeting cycle, which until the 1930's was a simple process; the budget was imposed, performance measured, a comparison made between budget and actual performance and then on to the next cycle. With the development of budgetary control, "participation was introduced into the budgeting construct" (p.395, italics in original). But, the authors point out participation is not a single value variable, and instead of a simple cycle they portray a sequence which includes psychological variables at the budgeting and comparison stages. They question participation as a panacea and provide a further stimulus for the present study by challenging the appropriateness of participation in certain "environments," concluding (without entering the controversy over the various styles of leadership) that "participation is essential to democratic process and very probably antithetical to an authoritarian organisation" (p.401).

The views of experienced teachers from Britain, France and

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9 One of the few examples of inter-disciplinary research in this field.

10 For example: Professors Revans (Britain), Pousset and Taboulet (France), and Newman (USA).
the USA are given in a series of papers presented at a seminar on Control held in Barcelona (European Association of Management Teachers, 1961). Professor Revan's contributions on the 'pathology' of controls,¹¹ and the criteria used to select items and judge performance were particularly useful stimuli for this study.

2.2. Experimental studies

In this second group, Stedry (1960) has attempted to establish some relations between imposed budgets, the actual cost level, and the aspired level of cost which recipients of imposed budgets strive to achieve (Stedry, 1960, pp.19-24). Though the results do not portray reality for this writer, Stedry is one of the few who have tried to hypothesise on cost behaviour from experimental studies.¹²

2.3 Studies based on the field work experiences of research workers

The present research fits into the third group which deals with studies based on the field experiences of the researchers, illustrations from which are now given.

The operation of management controls in industry in the Soviet Union is dealt with by Berliner (1957) and Campbell (1963) who both dwell at some length on the amount of falsification of reports that appears to exist there. Berliner, though the majority of his data were collected from interviews with refugees,

¹¹Revan believes that the pathology of control systems is the pathology of management as a whole, just as the decay of the human nervous system is the demise of man.

¹²See Becker and Green (1962, pp.398-401) for a critical analysis of the work of Stedry and other experimentalists.
refers to the "three guiding principles of managerial behaviour flowing from the pursuit of premiums" (bonuses on meeting targets are still one of the principal ways of rewarding executives).

The first principle is to build 'slack' into the plan, the second, to 'simulate' successful performance by deceptive manipulation of reports, and the third, to use personal influence (Berliner, 1957, p.75ff). He claims that simulation "operates in every sphere of managerial decision-making in which there are indicators which must be achieved or surpassed" (p.169) and quotes examples of falsification of output figures, manipulation of norms, 'fiddling' of pay rates, 'padding' the pay envelope, 'shuffling' the accounts, inter-shop conflict, and 'storming' at the end of the accounting period to show a 'good' score. These practices are caused by pressure exerted by the state officials and their incessant demand for increased production, by the perpetual shortage of supplies needed to meet norms, by the artificiality of using a month as an accounting period, and of course, the tying of executive remuneration to performance as measured by a wide range of indicators. There is an "absence of a single generalised criterion of performance in which all indicators would play their role," namely profit, which for Berliner is "the *primum inter pares* of the qualitative indices" (pp.70-72). Though his work appears to be biased, with a fixation on all that is wrong with Soviet management, and his views on profit as the best index of performance a trifle naive, nonetheless he highlights certain unintended consequences that flow from premium motivation, particularly in the way managers

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13 This practice, which is like the Boy Scouts' game of walk, trot, dash, is described fully by Cranick (1960, pp.267-70) in his study of Russian executives.
perceive controls. Campbell's work is less highly flavoured, but in general, he supports Berliner's views on management practices in the Soviet Union "where there exist strong incentives to falsify cost reports" (Campbell, 1963, p.172). Though he is not an accountant, he makes some penetrating comments on the type of information supplied by accountants:

Ex post accounting data become useful for control purposes only if they can be related to some standard or norm . . . accounting data are only one among several kinds of information generated by the record-keeping operations of business units. The conventions that separate accounting information from other kinds frequently have a customary rather than an analytical justification.

(Campbell, 1963, pp.2-3, italics added)

The studies by Sord and Welsch in the USA provide some evidence of the budgeting policies and practices followed by selected leading companies (1958), and of the views of lower level supervisors on planning and control (1964). However, though both studies are of a general descriptive nature, they do counterbalance to some extent the impressions of management controls given by behaviouralists such as Haire and Likert.

The use and misuse of 'efficiency' controls is described in an article by Jasinski which is distinguished by the "long and lurid . . . list of counts" (Jasinski, 1956, p.105) he has included in his indictment of those who place too much reliance on accounting controls. The examples have been taken from several of the largest corporations in the USA (p.106), although little evidence is given of the activities and organisation structure etc., of each. Problems such as waste of executive time, production jams, increased maintenance costs, low morale due to 'fudging' figures, pressure on department foremen, and inter-departmental friction, are reported as being caused by senior managers and accountants.
misusing controls. Jasinski suggests that management, in using controls, should de-emphasise short-run efficiency figures, develop non-accounting sources and channels to provide data for reports, get around the work place a lot more, and consult the recipients of reports to get their opinions on how to overcome problems that arise with controls. He concludes with some strong comments on accountants:

... the accountant, with his rows of figures, becomes a dominant voice in the company, ... a manager by default, as it were, because knowledge is power and the knowledge on which action is based is what the accountant puts into his reports. The fact is that the day accountants can devise a balance sheet or graph which encompasses total reality, we can do away with executives - but not until then.

(Jasinski, 1956, p.111)

Probably the study most often quoted in relation to the operation of controls is Chris Argyris' "Impact of Budgets on People" (1952). With a research group he sought to find out answers to "how production supervisors in four plants [three of which were branches of one firm] in the USA feel about budgets and how the finance people feel about the same budgets." The budget people in this study saw themselves as the "eyes and ears of the plant," their task being to report on errors and weaknesses to top management, and to put pressure on operating supervisors. These accountants believed that factory people lacked both the interest and the education to understand budgets, and generally

14 The term 'budgets' as used by Argyris is interpreted as cost control reports. He also discusses the process of budgeting.

15 The Argyris study is now out of print, and a photo-copy of the original in possession of this writer has been lost. The references, therefore, are given from a summary made by this writer and unfortunately have no page numbers. However, a shortened version of the study can be found in Argyris (1963).
misunderstood and mistrusted the accountants and the reports. On the other hand, the views of the supervisors were that reports never gave the reasons why targets were not achieved, and tended to emphasize history; their use as "prime motivators" was resented, as the supervisors felt they did their best without having to be chased by reports. Argyris concludes that budget pressure tends to unite employees against the management, that finance staff obtain feelings of success by finding fault with supervisors, that the use of budget reports as 'needlers' tends to make factory supervisors 'department-centred,' and that some supervisors use budget reports as a way of expressing their own patterns of leadership. His suggestions for action to improve this type of situation include participation (in the real sense of the word, and not pseudo-participation) by supervisors in budgeting, and when changes in the control system are being introduced; the handling of individuals in their social groups when discussing changes; softening up the "narrow-minded rigidity of some finance people" through introducing some human relations problems in cases used at accountants' training schools; and joint in-plant discussions between accountants and supervisors on the problems of budgeting. In a footnote, the author also suggests that accountants dealing with plant controls should work direct to the factory manager. Argyris was the first to carry out field research in this area, and though his findings differ in a number of ways from the writer's, his methodology and concepts have been of considerable use in part of this present study.

The results of an attempt to measure the extent to which groups of employees accept, and perform in accordance with the
objectives of their company are reported in the proceedings of
a seminar conducted by the Foundation for Research on Human
Behavior, Ann Arbor, Michigan (Seashore, 1964, pp.1-9). An
Employee Relations Index (ERI) was compiled containing eight
component measures or indicators, including absences, suggestions,
suspensions, stoppages, grievances and dispensary visits. These
were weighted, some being computed on a three-monthly, and others
on a six-monthly basis. The system, which was applied to about
fifty units in the firm, had an early demise, because, inter alia,
the computation of the index was troublesome and difficult to
explain and justify to busy managers, and most of the component
measures were subject to influences beyond the control of the
managers. The "line managers tended to look upon the Index as
a source of threat rather than as an aid in their work, and the
fallibility of the measures provided some justification for doubting
its general validity ... or for not computing it at all" (Seashore,
1964, p.3). The anonymous discussant presenting this case
suggests that "managers seem willing to put up with fallible
measures in other areas that are close to their main objectives,
but to resent assessment measures that are perceived to be of
marginal concern or possibly outside of direct control" (pp.3-4).
Thus, though employee attitudes or relations is often cited as
one of the key result areas, its measurement, as a 'soft' variable,

16 See Seashore (1964, p.4) and Jerome (1961, ch.XIV) for an
elaboration of the key result areas identified by the General
Electric Company in their approach to performance measurements.
There are eight in all, the first three, profitability, market
position, and productivity, being relatively 'hard' and easy to
quantify; the remaining five, product leadership, personnel devel-
opment, employee attitudes, public responsibility, and balance
between short-range and long-range goals, being relatively 'soft'
and thus more difficult to quantify.
is extremely difficult.

A study of the views on budgetary planning and control in 30 British industrial firms has been made by Perrin (1958), an American post-graduate student, who obtained his data from structured interviews and postal questionnaires. As with the Sord and Welsch studies, Perrin's methods make it difficult to evaluate the candour of respondents, and therefore, the reliability of the data. In the 22 companies that had budgeting systems, Perrin found that budgets "appeared to play a markedly unimportant role in rating managerial performance" (Perrin, 1958, p.59), and that "the mental discipline involved in budgets as a guide to the trend of operating decisions and activities is, also, in its own right a form of inbuilt control" (p.124). He comments on firms which show actual figures against the previous year's on management reports, and claims that the interpretation of these reports requires much greater experience and analytical skills than is the case when properly constructed budgets are available. In relation to participation by managers in the preparation of budgets, the budget executives (i.e., accountants) in almost all companies in Perrin's survey group believed that "the most valuable budgets are those . . . based upon actual expectations of what managers think can and will occur" (p.80), though some of his respondents cited possible disadvantages of participation, including the "possible confusion or demoralisation of some managers due to lack of training or aptitude for accounting and statistical paperwork" (pp.200-206). The author makes a tentative attempt to relate certain environmental characteristics such as the firm's customers and products, organisation structure and management climate with the greater or lesser use of systems of budgetary control, one of his conclusions being that the co-operation of the
chief executive is vital for the success of any system of budgetary control. His overall conclusion from the study is that the personal relationships between British accountants and executives appear to be "more consistently harmonious than is usual in the United States" (p.x).  

The relative harmony found by Perrin in Britain is disturbed by McKenzie in his preliminary reports of research done on exploring the attitudes of production and inspection people to one another in 30 UK factories (McKenzie, 1957 and 1960). Inspection as a control function must, according to the author "exercise this control more and more immediately in more and more direct interaction with production people, and in particular with production supervisors" (p.771). Inspectors are expected to report upwards, and thus, have considerable power. This tends to encourage conflict between them and production supervisors: reports on rejected or defective work can be used to evaluate the person who did the work or supervised it. This breeds insecurity and can lead to falsification of reports, to concentrating on getting work past the inspector rather than on getting the quality right, and to blaming other people. McKenzie distinguishes between the type of pressure involved in interaction between staff agencies such as budget people and production schedulers, and the inspection function. He claims that though there is considerable pressure from budgetary and production scheduling staff, this is accepted as fair by production managers. However,

17 Perrin does not disclose whether or not his knowledge of these relationships in the USA has been obtained from field experience, or from the literature. There is no doubt that the literature gives an impression that fairly discordant relationships prevail in the USA.
the impact of inspection is of a rather different type. Production quotas and cost budgets simply mark the touch line. . . but inspection concerns itself with his [the production manager's] actual playing of the game, with the actual work of his department.

(McKensie, 1960, p.75)

Studies of the operation of controls at individual firm level are reported by Haberstroh (1958) and Greaves (1960). The former attempts to assess the degree to which concepts of control engineering and cybernetics can be used to describe, explain and predict the behaviour of undertakings, and he selected the safety programme of a large US steel plant to test certain 'ideal type' propositions on control systems. Greaves deals with the effects of changes which took place in a bakery as a result of a decision to introduce formal costing systems rather than rely on the old personalised method of management for providing the necessary information for control. He reports that considerable resistance was encountered by the proponents of the new management controls from many of the supervisors, and comments, in relation to the attempts made to introduce a control statement reconciling bread stocks with van despatches, on the "ingenuity and light-heartedness with which the sales staff whittled down any differences or actually ignored them as long as the vans had gone out on the road" (Greaves, 1960, p.69). He concludes that the costing system was introduced in a mechanistic way without any consideration of the types of people and problems that existed in the bakery, and suggests that "had some full recognition of the importance of sociological factors been given, the management would have been

18This writer is not competent to evaluate fully Haberstroh's work. The fact that the latter selected the results of the safety programme as the main type of control makes the study of less value to the present research.
fully prepared for the type of reactions that the scheme produced, and could have possibly have thought out beforehand some definite method of dealing with them as they arose" (p.154). He stresses the need to investigate the special characteristics of each situation, and in particular the interrelationships of various individuals and groups, before introducing change, rather than merely "rely upon the supposed technical effectiveness of the new order [i.e., the costing scheme] for its success, ... upon the fact that it may have worked well somewhere else" (pp.155-156). Murray (1965) at an early stage of this research, has dealt with the operation of management controls in a large transport company in Ireland, and has identified certain features, such as technology and geographical dispersion which, apart even from the type of controls and the individuals and groups involved, can be important determinants in relation to the operation of management controls.

The study by Wagner (1954) of the unanticipated consequences of a complex rating device developed for measuring the training activities of different squadrons of the US Air Force, illustrates the adaptive mechanisms or 'gimmicks' (as they were called) that operate when goals are increased without proportional increases in the resources provided to achieve them, as well as the influence of the staff agency which kept the score and thus knew the possible evasions and when they could be employed. Under such a rating scheme, the senior officer in the squadron could either try hard to obtain the norms, and fail; or beat the system and keep his job. The fact that the scheme had so many variables that were extremely difficult to measure, that it was constantly changing, and that it involved a large amount of paperwork, made it possible
to deviate from it at many points with almost no possibility of detection.  

Finally, in this summary of studies of controls based on the personal field experiences of the researchers, are those by Blau (1963) and Cohen (1965) who have reported on the operation of statistical records of performance in a public employment agency of one of the eastern states in the USA. Both writers draw on Max Weber’s ‘ideal type’ of administration (1946 and 1947), both use Merton’s scheme of functional analysis (1957), and both are concerned with demonstrating that bureaucratic structures are not completely rigid. Only in their method of approach do they differ. Blau acted as an observer in a department of the agency which he studied, and Cohen replicated this research after three years, as a participant in a different division of the same agency. Apart from their findings, which show that adaptation takes place when new controls are introduced and that this can have both favourable and adverse consequences for employees and clients, the studies are of interest in illustrating the complexity of interaction that exists in just one small sector of one undertaking, and this at the level of employees only.

3. Summary and Comments

This chapter has been concerned with reviewing the literature on controls. The first section provided a general review

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19 The ‘logic’ of certain regulations and their operation in the US Air Force are brilliantly, if disturbingly, portrayed by Robert Heller (1965) in his novel Catch-22.

20 It is of interest to note that Blau did not anticipate that statistical records of performance would be available for white collar workers (Blau, 1963, p.293).
covering the techniques of controls, control systems, cybernetics, and the place of control and controls in general administration, and in administrative theory. The second section dealt with studies on the operation of controls, and in particular with reports of field research.

The predominant impressions gained from the literature are first, the relatively few depth studies that have been made of the operation of controls in large and complex undertakings, even in the United States; secondly, the emphasis on the pathological aspects of controls, such as falsification of reports, caused by staff and line conflict (particularly between managers and accountants) and an over-reliance on accounting controls; thirdly, the importance of the criteria used to measure performance; fourthly, the stress on participation, particularly in budgeting; fifthly, the fragmented evidence relating to the impact of technology and other environmental factors; sixthly, the general lack of appreciation of the fact that many undertakings have to struggle to survive; and lastly, the almost complete absence of inter-disciplinary research.
CHAPTER 3

THE CONCEPTS UNDERLYING THE RESEARCH

As previously stated, this study deals with the interrelationships between controls and the characteristics of each firm and is exclusively concerned with managers and other executives.

The concepts used were developed from previous experiences as a management consultant in designing and introducing management controls in a large number of different undertakings in Ireland, Britain and other countries including Germany, Sweden, Borneo and the United States; from the literature on the operation of controls; and from experiences and discussions as each case progressed.

Out of these stimuli it was possible to identify a number of concepts and to arrange them in the following three groups paralleling the objectives of the study:

1. The characteristics of the controls
2. The characteristics of the undertaking
3. The interrelationships between 1 and 2.

1. The Characteristics of the Controls

In this group attention was directed to describing the technical features of the formal controls in existence in each case. This description includes, inter alia, the report frequency, the existence of standards and/or budgets, the items reported and
the units of measurement used, the methods adopted to record, collect and assemble data, and to present and interpret reports, and the amount of fragmentation of reports. At an early stage it was possible to detect a clear parallel between management controls, and negative feedback used in control and systems engineering.

2. The Characteristics of Each Undertaking

In this group, each undertaking was viewed as an open system using concepts from control engineering and cybernetics, and extending the strategy used by the Tavistock Institute. In this approach, a firm is viewed as an organised whole, consisting of a series of interrelated parts, each of which interacts in some way with the others. The firm, as a whole, is considered as a system, consisting of a hierarchy of sub-systems and containing a number of groups of participants who play various roles and who impact on the goals of the firm at differing degrees of intensity. In addition, each firm operates in an environment which is itself a much larger system, whose features and participants again impact on, and are impacted by, each undertaking at varying degrees of intensity. This of course is only a strategy for advancing knowledge of how administrative

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2 Revans (1961); Woodward and Klein (1966).

3 For definitions, see Churchman et al. (1957, pp.77-80), Haberstroh (1953, p.8) and Wiener (1961, p.97).

4 See Oppler (1965, p.30).

5 Rice (1965, pp.181-82) provides a useful summary of the work done by the Tavistock Institute.
systems operate.

For the purposes of this research the characteristics of the undertaking are divided into two groups. The first is referred to as environmental characteristics, and includes its history, technology, location (and geographical dispersion), seasonality, demographic and climatic factors, the impact of external agencies and the economic 'climate,' and the stability of the environment in which the undertaking operates.

The other sub-group comprises what are termed organisational characteristics; these include for each undertaking, its goals, the model(s) of administration in operation, (with specific reference to leadership style and organisational structure), staff agencies involved in controls, and the extent to which managers participate in setting plans.

3. The Interrelationship between Controls and the Characteristics of each Undertaking

This is the core of the research, the object being to try to assess the influence of the environmental characteristics on

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7. See Berliner (1957), and March and Simon (1958).

8. See Deutsch (1952) and Rowe (1960).

9. The term has been borrowed from Pfiffner and Sherwood (1960), ch. 4. See also Burns and Stalker (1961), Likert (1961), Haberstroh (1958), and Stewart (1963).


the organisational characteristics, and on the controls; and in turn, to identify the interrelationships between the organisational characteristics and the controls.

Evidence was sought on the adaptive responses of executives to the form of controls in operation, and attention was given to identifying pressure and conflict, particularly between line managers and staff agencies. Where pressures and conflict did exist, evidence was also sought on their causes (environmental and/or organisational) and effects, such as sub-optimisation, (where reports became ends in themselves), distortion (unintended or deliberate falsification of data) and "department-centredness."

However, though the literature generally tends to emphasise the punitive nature of controls, and the dysfunctional consequences that flow from their use, attention was not wholly directed to these phenomena. It was considered important to try to avoid an over-preoccupation with the pathological approach so as to be able to identify and analyse situations where controls appeared to be used with advantage, or where, though they existed,....

12 Sofer (1961, p.153) claims that "organisationalism and environment permeate each other."

13 See March and Simon (1958), especially the Gouldner and Merton models on pp.4.1 and 4.5.

14 See Argyris (1952), Chapple and Sayles (1961), and Roethlisberger and Dickson (1939).

they had little or no impact. Bearing this in mind, the final aim was to identify the criteria and assumptions used in the design and operation of management controls, and to assess the appropriateness of these controls in each case. In effect, what is the logic of the controls, and their relevance to the situational determinants?\(^\text{16}\)

It is reiterated that this was an exploratory study, for despite the literature, little has been written on the operation of controls and their interrelationship with the characteristics of the undertaking.

Before dealing with the individual cases, it should again be stressed that these are presented in the order in which they were tackled. Consequently, the first Case (C1E) was, in effect, a major pilot study which assisted the writer to clarify the conceptual framework used in the research, and provided valuable experience for analysing and interpreting the data obtained in the subsequent cases.

\(^{16}\) Little attention has been paid to this question by those who design control systems (e.g., management consultants), and it has only been touched upon by a few writers. See Dalton (1959), Greaves (1960), and Roethlisberger and Dickson (1939).
"The whole world is in a state of chassis."

Sean O'Casey
(Juno and the Paycock)

"In the years since independence, you have undergone a new and peaceful revolution, an economic and industrial revolution, transforming the face of this land, while still holding to the old spiritual and cultural values. You have modernised your economy, harnessed your rivers, diversified your industry, liberalised your trade, electrified your farms, accelerated your rate of growth, and improved the living standard of your people."

President John Fitzgerald Kennedy
(Address to the joint session of Dail Eireann and Seanad Eireann)
CHAPTER 4

CASE I: CIE - THE IRISH NATIONAL TRANSPORT COMPANY

1. Background

The study in CIE (Coras Iompair Eireann), the national transport company, started in August, 1964, when it was agreed with the general manager that a research project should be undertaken by the writer, with the following terms of reference:

Objectives

- Identify as far as possible the strengths and weaknesses of the existing formal management information systems (written reports, etc.).
- Identify the problems experienced by managers and specialist staff in operating management information systems.
- Prepare a report that will assist the company to improve and streamline its management information systems and help to ensure that the views of managers and specialist staff are given appropriate weight in any redesign of information systems.

Means

- Trace the main formal management information flows in the company.
- Carry out a pilot study followed by a main programme, to obtain representative views of managers and specialist staff on the existing management information systems.
- Observe in general the way management information systems operate.

These, and some of the main findings, have been extracted, with appropriate amendments, from a report prepared by the writer for CIE, titled "The Uses and Development of Management Information" which was submitted to the general manager and senior executives on completion of the project in January, 1965.
The company (whose activities are described below) had just begun a major review of all its clerical procedures and formal reporting systems, using a team built up from its own staff, the object being to streamline further its paperwork and management information and assess the feasibility of installing more advanced electronic data-processing equipment. Thus, the project assigned to the writer was intended to complement this review which dealt mainly with the technical aspects (including resources) of the paperwork flows.

Up to 1963, the writer had been attached as a supervisor to a firm of management consultants which had been retained to assist CIE on a number of projects, and from 1959-1962 had acquired considerable experience of the company's management and operations.

It is against this background that this Case (I) is presented in this chapter which is divided as follows:

- Environmental characteristics of CIE
- Organisational characteristics of CIE
- The management controls
- Methods of approach and field work
- Summary of findings
- Interpretation of findings
- Summary and conclusions

2. Environmental Characteristics of CIE

CIE was set up in 1950 as the national inland transport company for the Republic of Ireland. It is a state-sponsored body and as such, it operates as a distinct corporate entity outside the framework of government, though the members of its
board who apart from its chairman, are part-time, are appointed by the government. The creation of CIE followed a succession of crises, mergers, and legislation dating from as far back as 1844, primarily centering round the problem of the railways which in Britain and Ireland had attracted speculators who recklessly opened branch lines and extensions chiefly to acquire more capital by issuing new shares.

The company operates rail passenger and freight services, road freight services, and road passenger (bus) services throughout the State, and these are supported by civil engineering, and by rail and road mechanical engineering services, with separate overhaul and construction workshops in Dublin for rail and road vehicles. Though small compared with British Railways, CIE is the largest company in Ireland, and it employs just over 20,000 people, labour costs amounting to 66 per cent (approx.) of revenue expenditure. The company has 200 diesel locomotives, 86 rail cars, over 10,000 wagons and 500 rail passenger coaches and about 1,500 miles of track; for road services it operates over 1,000 lorries and about 1,400 road passenger vehicles; and rail and/or road services are served by 228 rail, 84 road freight and 63 road passenger locations. Thus its activities are

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2This study deals with the position during 1964 and early 1965.

3These points are taken from a comprehensive report on internal public transport prepared by the company (CIE, 1965). It is claimed in this report that: "If the railways had been more rigidly controlled many present-day complaints would be non-existent because many branch lines . . . would never have been built" (CIE, 1963, sect. 3, p.10).

4The company has to deal with 33 trade unions.
geographically dispersed, and its staff operate in urban and rural environments.

As with any public transport concern, its primary product, i.e., transport services, is highly perishable and cannot be stored, and is subject to seasonal peaks which follow consumer patterns of demand, both for passenger and freight services. In such a large and diverse undertaking, the tools, instruments, machines, as well as the methods and controls, vary considerably, even in one type of service. Railways, for example, require drivers, guards, ticket collectors, restaurant-car attendants, signalmen, porters, booking clerks, shunters, permanent-way linesmen, locomotive and repair gangs, civil engineers, as well as maintenance staff of many types, including blacksmiths, wood mechanics, coppersmiths, polishers, painters and highly skilled instrument mechanics. The same variety of labour, requiring different tools and skills, exist for the road services. The road and rail fleets are not standardised and the predictability of maintenance requirements is low.

In 1958 a new board was appointed by the government to implement the Transport Acts of that year. The chief duties of the board as set out in these Acts are:

- To provide reasonable, efficient and economical transport services with due regard to safety of operation, the encouragement of national economic development, and the maintenance of reasonable conditions of employment for its staff;

5 In freight, the impact of agriculture necessitates continuous redeployment of rail and road vehicles to meet seasonal demands for moving such products as limestone and sugar beet.

6 Adapted from Woodward (1965, p.36).
- To conduct its operations so that its financial losses would not exceed an annual subvention of £1,175,000 for each of the five years ending 31st March, 1964; and

- To achieve a balance between its annual expenditure and revenue as early as possible but not later than 31st March, 1964.

It will be evident that for the board and management of CIE this mandate contains a number of almost insurmountable problems and contradictions which cannot but foster conflict. This is further heightened because of the company's double obligation as a public transport concern to cater for both the 'Need' sector and the 'Demand' sector; the former (as with postal services) serves the community and usually involves the provision of some services which are inherently loss-making; the latter sector, while also serving the community, involves freedom of choice on the part of consumers and suppliers and is primarily commercially oriented.

Though there are legal restraints designed to protect it from competition, CIE is not by any means a monopoly. Its competitors include commercial road freight operators, firms running their own transport services and private car owners. And despite the fact that it is the sole operator of the railways, no one as yet has made a take-over bid.

It must also be recognised that a public transport concern constantly impacts on the public of all ages and types. Its activities are fair game for travellers, and particularly for politicians and newspaper editors. On one hand, throughout most

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7. This subvention is primarily to meet deficits incurred by the rail services, which are also cross-subsidised by the Dublin City passenger services.

8. See CIE (1963, sect. 7) for a fuller explanation of these concepts.
of the year, the company is constantly reminded that it has to provide a service to the community; on the other, when its annual accounts are published using the conventional profit and loss format, and showing losses of varying degrees of magnitude, due primarily to the railways, it is attacked for being inefficient. Such an image makes it particularly difficult for most of its staff, and even in their private lives, they are reminded by their relatives and friends of faults in the services.9

Apart from the peaks, CIE is also faced with 'creaming' of traffic by private operators, and with variations of weather in a climate which is not noted for its consistency.

Finally, in identifying environmental characteristics, one of the key factors is the long-term financing of the railways. In the past, prior to the formation of CIE, it was customary to neglect renewals and modernisation in periods of national economic stringency and in emergencies such as the two Great Wars, and though today CIE has modernised its railways, the company is still subject to restrictions in capital expenditure during credit squeezes; in particular, the fact that the government has not made up its mind about the future of the railways and at the same time has placed restrictions on capital expenditure makes it extremely difficult for management to formulate any long-term plan with confidence.

In summary therefore, CIE, the largest undertaking in Ireland,

9The story is told of how the chairman of CIE, dining quietly at his home was disturbed by an agitated elderly lady who called to see him. On being shown into his study and having interrupted his meal, she was asked by the chairman what was bothering her. "Please sir," she replied, lifting her long skirts to display her knees, "look what the 47 bus done to me new nylons!"
produces a highly perishable product which is subject to seasonal peaks and 'creaming' by competitors. As a state-sponsored body, it has a government mandate which is extremely difficult to interpret and make operational. In supplying services it employs a wide range of skills, technologies and methods over the whole State, in both urban and rural communities. The predictability of maintenance is low, and it is subject more than most industries to weather. It has obligations to cater for both the 'Need' and 'Demand' sectors and has no real monopoly of transport. It is judged by the public on whom it continually impacts, on two bases, service and profitability, depending on the timing of its annual accounts, which normally show losses. These are invariably due to the railway where the greatest dilemma between social costs and profitability exists. It is influenced directly by variations in the economic climate and it cannot plan its long-term future with any confidence until the government makes up its mind on the future of the railways.  

10 The picture therefore, is of a system which apart from its organisational characteristics is potentially, and in fact, highly unstable and one that would provide a severe test for any group of managers in the world.

There can obviously be no simple solution to the transport problem because of the conflicting aims of the many groups of participants. (CIE 1963, sect. II, 3). See also Beeching (1967) and Lemass (1967), regarding the need for a clearer government policy in relation to objectives of state enterprises. Though this last material only came to hand at the end of the whole research, the views expressed are in complete agreement with the findings of this writer. Mr. Lemass is general manager of CIE, and Lord Beeching was formerly chairman of British Railways.
3. Organisational Characteristics

In 1958, a new full-time chairman was appointed to the CIF board. Having previously achieved success in developing a completely new industry in Ireland, he immediately began to make his presence and ideas felt in CIF. In collaboration with the general manager, a highly experienced transport man and administrator, who had steered the company through many troubles and begun the modernisation of its rail fleet, he set out in his first five years of office to create 'The New CIF,' to cut costs, improve revenue, services, and labour relations, and to try to break-even (i.e., balance expenditure with revenue). From frequent contact with him, though he appreciated the many conflicts and dilemmas inherent in the government's mandate, he chose to ignore these and concentrate all his efforts on achieving the above goals, one of the primary means he used to achieve these goals being to insist on greater delegation of authority through decentralising and regrouping the company's activities.

Prior to this, CIF had been organised on a functional basis, and separate departments existed for rail, road freight and road passenger services, and for road and rail mechanical engineering. Each of these was organised on a geographical basis, and no two departments had the same number of geographical areas, nor had these areas the same boundaries. Separate centralised departments existed for personnel, purchasing etc., and though the accounting function was decentralised to some extent in that certain book-keeping units were placed alongside some operating and engineering departments, these units were in no sense under the control of these departments. In fact, in one case, though an accounting unit was sited in the same building occupied by one of the
engineering departments, there was little or no contact between the staffs of each. A chart of the organisation of CIE at this time is shown in appendix 4.1.

With this type of structure, communications even on minor matters flowed up the line to each department head based in Dublin and all the way down again to each departmental location, and though the company possessed (and still does) many competent and extremely dedicated managers, each department tended to view itself as a completely separate entity, so that in any geographical region, transport users often found themselves dealing with a number of regional departmental managers who had little business contact with each other though they frequently worked in the same location and even in the same premises. This type of organisation structure also tended to preserve the traditional conflict that had existed for many years between rail and road staffs, many of whom had belonged to separate companies before the formation of CIE.

With the arrival of the new chairman, a review of the organisation structure was made during 1959 and 1960 and a major scheme of decentralisation was effected early in 1961. This resulted in the creation of five separate regions or areas, each controlled by an area manager who is responsible for all transport services in his own area, as well as for track maintenance, and running maintenance of road vehicles. Certain headquarters’ departments such as commercial and personnel were strengthened; a development department for long-term planning, and a central traffic control unit for planning and coordinating overall fleet movements were created; staff in personnel, commercial and
accounting were assigned to work under each area manager; and accounting staff were also attached to work under the engineers in charge of central road and rail workshops, and civil engineering. All headquarters' departments with staff in areas or other departments had, of course, a specialist relationship with these 'attached' staff, with particular reference to standard procedures and selection. The revised organisation structure which was in operation at the time of this research is shown in appendix 4.2.

Concurrently with the reorganisation programme, extensive use was made of techniques such as work study, production planning, O and M, and market research, and a scheme of management accounting was introduced paralleling the new management structure and involving participation of all managers in budgeting. New managers were recruited to fill three of the five area managers' posts, an intensive programme of management and staff training was launched, and a redundancy compensation payment scheme initiated to cater for staff who could not be redeployed. Management consultants were engaged to assist in all of these changes which resulted in fairly substantial economies, including a reduction of staff of over 1,000, improvement in services, closures of uneconomic branch lines and a more aggressive and confident CIE. However, though in 1961 the

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11 The running maintenance of rail vehicles was not brought under the command of area managers, even though separate maintenance depots were located throughout the network; this was due primarily to the difficulties that CIE were experiencing in maintaining the type of diesel locomotives they possessed at this time. Though track maintenance was decentralised and under the command of area managers, the civil engineer, apart from specifying and auditing standards, was also responsible for track renewal and major building construction.
company just missed breaking even (by an amount equal to 1% of its annual revenue expenditure), the problem of deficits in the railway could not be overcome and by 1962 CIE was again very much 'in the red.' Management, however, decided to take the initiative in analysing the problems facing the company, realising that it was virtually impossible under the present mandate to break-even, and this resulted in the production of the "Report on Internal Public Transport" to which reference has already been made (CIE, 1963), and which was placed in the Bail (the Irish Parliament) after being presented to the government.

Thus, by 1964, when the computer feasibility study and this present research had started, the new chairman had been responsible for making a considerable impact on the company, and though failing to break-even, the revised organisation structure was working in practice under a new management team and the emphasis had been changed from operating individual transport services, to looking at transport as a whole in each region and at future customer requirements. Considerable economies had been made, revenue had increased, and a number of new management planning and control schemes were in operation, the chief one being management accounting which permeated the whole company and involved practically all managers being both administratively and financially responsible for the activities which they commanded.

4. The Research Plan

Because of previous associations with the company, the writer already had a considerable amount of background knowledge about its activities and management, and had easy access to all relevant
internal literature including the paperwork and information flows which were being concurrently studied by the Computer Feasibility Team. With this background it was possible to proceed almost at once to classifying the management controls, and when this was completed, to carry out a pilot study in order to decide on how the main field work should be done so as to obtain representative views of executives on the operation of the controls.

The next two sections deal with the types of controls in existence in CIE, and the method of approach (including the limitations) of the study, and these are followed by sections which summarise and interpret the findings.

5. The Management Controls in CIE

The management controls (or performance reports) in CIE were classified, for convenience, into four main groups:-

- Accounting reports
- Staff returns
- Traffic statistics
- Engineering statistics

Details of these reports are shown in appendix 4.3.

5.1 Accounting reports

The main accounting reports referred to in this study relate to those associated with a system of management accounting installed in 1960. With this system, a comprehensive scheme of accounts classification enabled all revenue and expenditure to be budgeted for the coming year for each area, each function (rail, road freight, road passenger, engineering, etc.), and each
location, as well as by type of revenue and expenditure. All actual transactions were coded, and revenue and expenditure collected under the above heads. Management thus had available a regular four-weekly feed back in financial terms of all operations in the company which provided information on the performance of each manager and department, by responsibility (paralleling the organisation structure) as well as by revenue-earning functions such as rail, road freight, and road passenger. These reports were assembled by the chief accountant’s department and distributed to managers about three to four weeks after the end of the period to which they referred. The whole system was integrated so that a final profit and loss account and balance sheet could be extracted. Area management were only responsible for the profitability of revenue-earning services under their commands, and therefore, in the case of railways and inter-area road freight services, they were only held responsible, on the income side, for revenue arising in their own areas. A diagram showing the integration of reporting by responsibility and function is given in appendix 4.4.

The management accounting reports showed performance by responsibility against budget and were summarised at successive levels of management. Each four-weekly period, on receipt of the performance returns, managers prepared a written commentary on the performance of their units, and these commentaries were also summarised at different levels.

Allied to management accounting, procedures existed for controlling each and capital expenditure.

Also included in the accounting group were costing returns
for all engineering work, and for road freight and road passenger operations. Engineering costs were broken down by type of track maintenance. The road freight costing scheme was referred to as 'the 953' and was produced every four weeks for each area. Costs for road passenger routes were scheduled to be produced each quarter for each area and for Dublin City Bus Services. Apart from the 953 for road freight, all accounting reports were prepared by the accountants, in head office, and in areas and engineering departments. Money was the primary unit of measurement in the accounting reports though a number of composite units were used to compile vehicle and engineering costs, e.g., cost per mile run, cost per track mile.

Though there were other accounting returns, reference is confined here to:—

• Management accounting - primarily responsibility accounting
• Capital expenditure
• Cash forecasting
• Road freight costing (the 953)
• Road passenger costing.

5.2 **Staff returns**

A four-weekly staff return was made of all staff 'on the books' at the end of the last week in the accounting period. This was summarised by the personnel department at head office and presented to the board. It compared the numbers for the current period with those in the last period and with those in the corresponding period in the previous year.
In addition, a labour report was produced weekly for each rail station and road freight depot, and summarised every four weeks. This report contained budget and actual figures for rail operations, but only actual figures for road freight.

Labour reporting applied only to the areas, and summaries were not presented to senior management or to the area managers.

The units of measurement here were hours worked, and staff numbers. Though there were weekly labour performance returns, based on work study standards, for the rail and road workshop, these have not been covered here, so that references in the text are confined to:—

- The staff return and
- Labour reporting.

5.3 Traffic statistics

Time did not permit a detailed analysis to be made of the returns that were associated with the movement of rail and road vehicles and only a brief reference is made in this case to—

- Train-timekeeping returns and
- Road freight fleet movement returns.

The units of measurement were primarily time and numbers of vehicles.

5.4 Engineering statistics

A comprehensive system of production planning and control returns existed in both the road and rail engineering workshops. For civil engineering a system of inspectors' reports on track maintenance, reports on utilisation of heavy equipment, and on track renewal were in operation. Reference will be made to:
The 'real-time' control system in operation in the rail workshops and

The weekly docking return for road fleet maintenance.

Other engineering returns are referred to only in general terms. The units of measurement were primarily time, and number of vehicles and/or parts.

5.5 Summary

From the foregoing and from appendix 4.3 it will be apparent that a large variety of controls and units of measurement (many of them composite) existed in CIE, and that in the majority of cases, some form of budgets or standards was used against which to compare actual performance. Briefly, the reports were intended to assist in measuring and controlling:

- The resources used and held by the company;
- The actual operation of the different types of services particularly timekeeping; and
- The performance and/or condition of different types of vehicles and facilities.

It is stressed that only the main performance reports used in the company have been considered. Naturally specific ones were used for specific groups; for example, road freight costing applied solely to road freight operations. However, the management accounting system, and in particular, responsibility accounting applied throughout the company (as did the staff return), and it will be apparent that greater attention and coverage of management accounting can be expected in this study.
6. Method of Approach

6.1 The pilot study

In the pilot study, 14 executives, in key positions and/or having a wide knowledge of the existing management controls, were interviewed. These interviews were for the most part unstructured and each lasted about one day.

As a result of the pilot study and an analysis of the data, various attempts were made to construct a questionnaire, but this approach was abandoned, because of the size and complexity of the company and also because of the exploratory nature of the study. Instead, a group of main themes or categories was drawn up which it was believed would yield information on how executives perceived the management controls, and thus permit an evaluation to be made of the interrelationship between these and the characteristics of the company.

The main categories identified from the pilot study and on which the views of executives were sought were:

- The use of controls
- The advantages and limitations of controls
- Budgeting
- Manipulation of the controls
- Reasons for success or failure of controls
- The operation of the organisation

6.2 The main study

It was decided to try to obtain the views of those executives at senior and 'upper middle' management levels who were directly associated with management controls. In all, 89 executives were
interviewed. A chart of the number and position of respondents in the organisation is given in appendix 4.5 and a summary of respondents is shown in appendix 4.6.

At senior management level, 16 out of a total of 19 executives were interviewed, the solicitor, information officer (PRO) and chief medical officer being excluded as they were not considered to have a direct connection with management controls.

Of the remaining 73 executives interviewed, 64 (approximately 75% of those directly concerned with management controls) were at 'upper middle' management level, reporting direct to area or central service departmental managers. The other 9 executives were at 'middle' management level and were interviewed because they commanded large units (e.g., Kingsbridge Station, the largest in Ireland), or were associated directly with the preparation and presentation of management controls for senior and 'upper middle' management.

In summary, therefore, it was considered that those inter-

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12 This includes the 14 executives in the pilot study, and although it is appreciated that it is not normal research procedure it was done for two reasons. Firstly, though the homogeneity of the population studied was confined (primarily) to senior and 'upper middle' management levels, there were many non-homogeneous features, e.g., rail, road passenger, road freight operations; three types of engineering activities; functions such as commercial accounting, personnel, development; and, of course, geographical dispersion. To exclude responses from those executives interviewed in the pilot study would have left serious gaps in the coverage of the company's activities at the levels of management being studied. Secondly, the themes included in the main study were covered by most respondents in the pilot study and those respondents in the pilot study who did not cover all the themes were interviewed again.

This, of course, raises the general question as to what is normal procedure for research at senior management level in large and complex undertakings.
viewed covered about 80% of all key executives at senior and 'upper middle' management (together with 9 members of middle management) who were directly concerned as recipients and/or producers of management controls.

Focused interviews were conducted in all cases, using the main categories referred to above as discussion points. Interviews lasted on average about 1½ hours and notes were taken. On a number of occasions, particularly in the areas, visits were also made with executives to stations, garages, and workshops.

Once the data had been collected, they were coded and transferred to main categories by hand. Thereafter most of the categories were broken down to sub-categories using content analysis and simple rating scales. In certain cases, tables were constructed. Assistance in cross-checking a number of analyses was given by a management trainee from the personnel department.

Apart from the usual limitations of obtaining views, and drawing conclusions using the methods described above,

- The study is confined to senior and middle management;
- An exhaustive analysis of all performance records was not possible;
- Not all executives received all of the reports, and specific reports were related to specific groups of executives; this has the effect of reducing the statistical population studied.

7. Summary of Findings

This section summarises the views of executives on the various categories identified from the pilot study. Because of
the large amount of data and in some cases the language used by one or two respondents a certain amount of selectivity and editing has been necessary, but it is believed that the analysis does provide sufficient evidence from which to make a reasonable evaluation of the interrelationships between the controls and the organisational and environmental characteristics.

7.1 Views of executives on how controls are used

The object here was to obtain views on how performance records are used with a view to testing for pressure and to identifying and assessing the adaptive responses of managers, and the relationships between managers and staff agencies, particularly accountants. The data were divided into a number of sub-categories, and the principal ones are presented here in the following order:

- How managers use controls
- Views of managers on accountants
- Views of accountants on managers
- Views of accountants on their own role
- Views of managers on other head office departments.

7.1.1 The use of the controls by managers - Only two (out of 55 managers) considered that excessive pressure was being applied in relation to how the controls were used.

The principal methods used by managers to follow up reports are given in table 4.1 over, in order of frequency of mention.

13 The classification developed by Argyris (1952) was particularly helpful.
TABLE 4e1 - Follow up of reports (N = 53 responses by 53 managers)

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<thead>
<tr>
<th>Method of using reports</th>
<th>No. of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meetings - area or departmental</td>
<td>20</td>
</tr>
<tr>
<td>Discussions - between superior and subordinate</td>
<td>17</td>
</tr>
<tr>
<td>Telephone calls - between superior and subordinate</td>
<td>10</td>
</tr>
<tr>
<td>Writing - between superior and subordinate</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>53</strong></td>
</tr>
</tbody>
</table>

There appeared to be a much more active use of reports where they were discussed at meetings, and one executive with varied experience in the company underlined this by stating that meetings "take the bloodless aspect out of management accounting - if there are no meetings, there is a tendency for things to be relegated."

An interesting point was put forward separately by two executives from different departments who believed that a 'good' manager will give explanations without looking up reports, while a 'weak' manager is always having to look them up.

Three district managers from different rural areas drew attention to how the rural community can impact on the company's operations. Certain bulk supplies purchased by farmers are delivered in rail wagons, carriage paid, to local rail-heads. Traditionally, many farmers use the wagons as temporary stores, often leaving the supplies for four or five weeks until they are actually going to use them. The CIE district managers are then
faced with three sources of potential pressure from within the company. The first can come from central traffic control in Dublin who are constantly urging for a rapid turn-round of wagons to meet urban requirements; the second, from the commercial department which wishes to maintain good relations with farmers, many of whom would resent being given a dead-line to collect their goods and refuse to pay demurrage; and third, from their area manager, for exceeding the planned road freight cost, should they use their local road freight services to deliver the goods free of charge.

There obviously can be no hard and fast rule for dealing with this triple dilemma, and the district managers appeared to make decisions depending on the amount of pressure exerted by different sources at particular times, on occasions being content to incur a 'bad score' on their road freight control return.

Again, local trains have been known to stop at unauthorised places on the line to allow groups of workers in rural districts to get home quicker, a case of the customer coming before time-keeping.

7.1.2 Views of managers on accountants - The chief accountant's department was looked upon without suspicion or distrust, and its staff were regarded by managers as "compilers," "recorders," "secretaries." This present role contrasted markedly with the reputation of the department "in the old days" when its staff appeared to be "smart Alec's," and "fault finders," e.g.,

"Previously there were investigations - we were subject to adjudication on their part - they sat in judgement."

The only sign of pressure on the part of the head office accountants was shown by their efforts to meet the four-weekly timetable
For the production of their reports, e.g.,

"We've no problem with the head office accountants - they worry if we're late with returns."

"There's no guy in Dublin wielding a stick."

In two or three cases, managers referred to the tendency of head office accountants to concentrate excessively on the financial aspects of budgetary control without realising that a good performance against budget in financial terms did not necessarily mean that the planned volume of work was being achieved.

The decentralisation and widening of the accounting function in the areas and in the engineering departments were welcomed by managers to whom accountants were attached, and in all cases, the accountants in the areas and departments were seen as part of the local management teams, e.g.,

"My own accountant is not just a sausage machine - he's good at analysis."

7.1.3 Views of accountants on managers - Of the 16 accountants interviewed, 10 believed that generally, management accounting was not being used and 5 believed that it was used. The majority of those who believed that it was not being used were from the chief accountant's department at head office.

The main views of this group were, that no action was taken by senior management on the reports, that they seldom got queries, and that a number of managers were intolerant of errors when they appeared in reports. Above all, there was a desire by the accountants for "more action" and for "reverberations."

It is worth stressing that many of the accountants had been actively concerned with the development and introduction of
management accounting. Now that it had been in operation with area management for some years, the involvement of the staff at head office in dealing with queries has been greatly reduced, and their role in relation to the regular accounting reports was primarily that of processors.

Outside the chief accountant's department there was evidence of a marked degree of co-operation between managers and accountants attached to them, with only a few comments on the lack of action. However, two accountants from different sections expressed views about "the need to put the whip into someone's hand," and to make people "toe the line."

7.1.4 Views of accountants on their own role - A number of accountants believed that the head office department was a "post office," that the accountants there were "book-keepers," (i.e., they had a very limited role) and that they had been "hived off." In general, good relationships had been established between accountants in head office and those in other parts of the company, and in one or two cases, specific mention was made of how helpful the chief accountant's department was now, compared to the "old days," e.g.,

"I get on well with the head office accounts department - it used to be the bane of my life."

7.1.5 Views of managers on other head office departments - Managers, particularly in the areas, received reports from other departments such as transport control and planning (train timekeeping and road fleet reports), and were also responsible for ensuring that reports were sent to the civil engineering and the commercial departments,
Generally, interaction between managers and these departments concerning the results shown on the various reports appeared to be minimal though there was daily operating contact between the areas and transport control and planning at head office. While there was occasional feuding between areas and these head office departments, there was no evidence to suggest that excessive pressure was being exerted, and the various reporting systems appeared to be operating in a way that caused little friction.

7.2 Views of executives on the advantages and limitations of existing controls

The purpose of eliciting the views of executives on the advantages and limitations of the controls in operation was to test again for pressure and to identify other factors which would throw light on the appropriateness or otherwise of the controls as perceived by executives so that this could be borne in mind in any redesign of the management information systems.

Bearing in mind that some executives were involved to a much greater degree than others in the production and/or use of performance records, and that certain reports were only appropriate to limited groups of executives, the views of executives on the various types of controls are given next.

7.2.1 Management accounting - Of the 89 executives interviewed, only 5 expressed complete dissatisfaction with the system, e.g.,

"Yer explainin' rubbish - ye get the answer to the sum and yer satisfied."

"Responsibility accounting is meaningless - it's too summarised - I'm interested in output statements, trends. Financial measures are inherently limited - they're not sufficient."

While a large majority of the remainder saw some merit in
it, their comments being mainly of the "it's all right, but . . ." type, certain important limitations were raised by 43 of them who made 56 comments in the order of frequency of mention, shown in the following table:

**TABLE 4.2 - Limitations of management accounting**

<table>
<thead>
<tr>
<th>Comment</th>
<th>No. of Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial data insufficient (other quantitative data needed)</td>
<td>10</td>
</tr>
<tr>
<td>Dislike of coded tabulations</td>
<td>10</td>
</tr>
<tr>
<td>Commentaries are only an &quot;excuse formula&quot;</td>
<td>8</td>
</tr>
<tr>
<td>Excessive detail</td>
<td>7</td>
</tr>
<tr>
<td>Reports too late in arriving</td>
<td>6</td>
</tr>
<tr>
<td>Insufficient detail</td>
<td>4</td>
</tr>
<tr>
<td>Inaccuracies in reports</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>56</strong></td>
</tr>
</tbody>
</table>

Of the number who believed that the commentaries were only an "excuse formula," four were from one section of the company.

7.2.2 Road freight costing (R53) - A revised road freight costing scheme for measuring the profitability of each journey had only been operating for a few months and it was too early to obtain a realistic assessment of the views the executives concerned had on it. However, out of the 13 executives who made specific comments, 10 (77%) expressed dissatisfaction at the amount of work involved in its preparation and questioned its value because of this. The 16%
addition to the cost of road freight journeys for fixed expenses was considered by one depot to be unfair and to have possible inhibiting effects on increasing traffic - for example, the greater the work done, the greater the burden of fixed expenses charged to it.

7.2.3 Road passenger route costing - Route costing reports were supposed to be processed quarterly but in most areas it was upwards of six months (and more, on occasions) before reports were produced. These were used for assessing route performance, and for making decisions on route alternatives. Generally route costing, its purpose, principles and methods appeared to be developing in a piecemeal way throughout the company, and although efforts were being made in the areas and Dublin city bus services to review existing systems, these efforts were unco-ordinated.

7.2.4 Staff return - The four-weekly staff return, which contained the number of people 'on the books' on the last week of each accounting period, appeared to have little impact in the areas and departments.

Of the 10 executives who made specific comments on this return, the majority of whom were attached to the personnel function, 6 considered it to be of little or no value, its major limitations being that it contained many errors and did not represent the actual situation.

7.2.5 Labour reporting - This report, which had been in operation for about two years and which was prepared weekly and four-weekly and showed numbers of rail and road freight operating employees, aroused the most controversy and heat.
Of the 28 executives concerned, 20 (71%) made specific comments, and of this number, 16 (80%) expressed strong dissatisfaction with the system. The major complaints were first, that it was unnecessary and a waste of time; and second, that it contained too many errors or 'bugs'; there were also complaints about the method of presentation (punched card tabulations).

Elaborating on the time-wasting complaints, it was claimed that there were already sufficient controls in existence for labour in the areas, e.g., management accounting; and the system of obtaining approval from one's superior before hiring men.

Some examples of the strong disapproval expressed by executives are given below:

"It's riddled with mistakes."

"It's running on parallel lines with other returns."

"As far as I can see it's not being used by anyone."

"The stationmasters only laugh at the mass of figures."

"I believe people have better on-the-spot control - it might work in larger depots but I don't think it serves a useful purpose here."

"The greatest waste of time there ever was! Nobody pays the slightest attention."

7.2.6 Capital expenditure - It was generally believed that there was little follow-up of major projects, particularly involving capital expenditure, and a number of executives remarked that the physical progress reports accompanying the financial reports were inadequate.

7.2.7 Traffic statistics - As stated previously there was insufficient time available to make a full study of the numerous statistical returns associated with different types of traffic.

Train time-keeping returns were kept by each area and by traffic
control and planning, and substantial improvements in performance in both passenger and freight trains had been achieved. The limitations of these returns as stated by some of the executives concerned were, first, that the weekly return to the areas was too late to be of use; and second, that the units used to measure lateness required to be examined. In the case of certain statistics kept of passenger train 'lates,' equal weight was given to each train that was over ten minutes late. Thus a train that was eleven minutes late and one that was two hours late were each counted as a 'late.'

In road freight operating, apart from the 953 already referred to, it appeared that the standard times available for measuring driver performance were not used in many depots. However, action was being taken in some depots to revive them.

In the case of road passenger operating, such factors as time-keeping and crew utilisation did not appear to have been properly measured.

7.2.8 Mechanical engineering (rail) - The executives in the railway workshops under the control of the mechanical engineer (rail) had made substantial changes in the performance returns and had installed a 'real-time' control system in most of the shops. This development, in their view, had improved the flow of work, relieved the foremen of much abortive paper chasing, and encouraged the booking of waiting time. This writer, having in the past spent some time in the workshops as a consultant, was struck by the enthusiasm the senior management had for their new system, e.g.,

"The system highlights short-comings - we've got waiting time being booked and the foremen have now stopped putting people on unnecessary jobs."
"We've got something that we developed ourselves after
the consultant left - mind you, they did a good job -
but we have closed all the 'escape hatches' now."

"There's less danger now of jobs being buried - they used
to lie around for months."

In addition to this innovation, developments had taken place
in the maintenance planning and control procedures for rail
vehicles, and in the scheduling of technical and drawing office
projects.

There were three points mentioned as still requiring
improvements:

- The control of capital projects where physical
  progress records were required.
- Control of indirect labour
- Budgeting of shop maintenance.

7.2.9 Civil engineering - In all cases the civil engineers
expressed general satisfaction about the returns they received.

7.2.91 Mechanical engineering (road) - Standard times were used to
measure performance in the road workshops and in the body-building
overhaul shops. Difficulties surrounding reporting systems were
repeatedly mentioned and one manager summed up the views on reports
when he stated that "the picture is meaningless to me - it's too
vague." Another executive said that "no one is satisfied with
the present system - we have to probe and dig to find out what's
going on." This executive attributed what he referred to as
"the failure of management accounting in road maintenance" to the
fact that "the garage superintendents had been given no course in
accounting and therefore, the 'gospel' had not been preached
properly."
7.2.92 'Local' reports - In every area visited, the senior managers had, in addition to the formal prescribed controls, introduced reports to suit their own particular requirements. These 'local' reports had usually been introduced to assist area executives in measuring the results of specific improvement studies, e.g., train timekeeping; increasing revenue for particular types of traffic; or to obtain a quicker feed back than that produced by the management accounting reports which were received three to four weeks after the end of the four-weekly periods, e.g.,

"We get revenue figures out ourselves by the first Friday after the end of the period - though they may not be precisely accurate, we would have to wait another two weeks for the head office if we didn't have them."

"I wanted to make an impact so I introduced a daily return of train-timekeeping - it has been so effective that I'm reluctant now to let it go."

"The district managers get a note every day of the labour numbers."

"We have an unofficial head-count system."

"I have introduced a labour control system of my own."

"We've got to personalise customer relations - so that they won't say - 'not body CIE again!'"

"I'm developing new road passenger operating statements."

The fact that these local reports existed did not appear to be known by head office departments, although the deputy general manager in charge of all area operations was certainly aware of them and was quite prepared to allow his area managers to develop and use whatever additional information they felt they needed to help them in their jobs, provided that they worked within their budgeted clerical costs.
7.3 Manipulation of reports

It is not a simple matter, unless one is a participant, to
detect the existence, prevalence and extent of distortion.
However, when the opportunity presented itself, seven of the
respondents whom the writer knew particularly well were asked outright about 'fiddling.' These replies, together with those from
two other respondents who volunteered comments, did not present
a conclusive picture. Two out of the seven respondents who were
asked outright stated that there was no deliberate fiddling; two
others stated respectively that normally people weren't fiddling,
and that there "wasn't much"; and of the remainder, one stated
that, for certain types of traffic statistical reports, it did
happen that some people adjusted mileage figures, and one indicated
that while "vehicle docking sheets told you that the vehicles were
done, in fact, there were times when they didn't have the full
dock."

Of the two executives who volunteered comments, one stated
that the staff returns were "just so much bluff"; and the other
referred to the old practice (which he considered had now been
almost completely stamped out) in some parts of the mechanical
engineering shops of "charging certain types of expenditure to
'holes,'" where, because of the general description of the expense
head, it could be lost.

Taking into account the writer's previous knowledge of CIE,
and the illustrations given above, it was felt that if there had
been a lot of deliberate manipulation, it would have come out
during the study and, therefore, it was concluded that in most
units in the company, deliberate manipulation was minimal, but that
if strong pressure had been exerted on managers, they would have been quite capable of helping to control the situation by adjusting reports, (particularly traffic statistics) and by obscuring the management accounting commentaries with a host of specious reasons for adverse performance figures.

7.4 Views of executives on budgeting

In CIB, the budgeting process started about the beginning of October and extended to about the end of February, the object being to budget for the coming financial year beginning on 1st April. Most of the managers and other executives interviewed participated, and the budgets for departments and areas were built from the "bottom up," working from physical units to financial terms, and bearing in mind future trends in wages, traffic and vehicle availability. Stationmasters in smaller stations were not involved in budgeting, this being looked after by the appropriate district managers. Strenuous efforts had been made to look clearly at future intentions and to play down any tendency to be satisfied with accepting the past, with all its peculiar features, such as extreme weather conditions, possible stoppages of work, political events affecting transport, vehicle building and availability, branch line closures, and changing movement patterns.

Of the executives interviewed, 67 (75%) made some positive comments on budgeting. Of this number, 58 (87%) stated that they were generally in favour of the present system, 7 (10%) believed it to be a waste of time and would prefer to take last year as a base, with simple adjustments. Only 2 (3%) executives of the number commenting stated that they did not participate in budgeting.

Of those (7) who believed the budgeting system to be a waste
of time, five were from one section of the company, the same
section that contained executives who believed that commentaries
on management accounting were only an "excuse formula."

Only 6 (9%) of the 65 executives who participated in budgeting
and commented on it, considered that they had difficulty in getting
their budgets approved by their super-ordinates or by head office
departments. Of this number, 3 (5%) had difficulty with the
commercial department.

17 executives expressed dissatisfaction about the amount of
work and time involved in budgeting, and again, a large proportion
of these executives - 6 out of 17 (35%) - were from the section
referred to above. One executive stated that the work involved
"paralyses the section's operations - no rest in summer, then -
bang! - right into the beet season, with budgeting on top."
Others stated that "key personnel were tied up for long stretches"
and queried "whether the benefits were worth the effort."

Apart from the general views stated above, the following are
the other salient comments that emerged in discussing budgeting:-

(a) Road freight budgeting presented the greatest
difficulties for areas because of the detail involved,
though executives in one or two areas had taken action
to simplify the methods.

(b) There were still remnants of the belief (particularly
in engineering), that underspending in one financial
year would result in cuts being made in the budget for
the next year, even though the work still had to be
done.

(c) There was a tendency in some areas to lean towards non-
involvement of junior management in budgeting and to
consider that they should be told their targets.
However, one area manager continued to encourage participation by all stationmasters and he claimed that through this and other means, he had been able to fill promotions from within his own area.

(d) The mechanical engineering workshops and particularly those road workshops had considerable difficulty in using budgets because of the changes in work mix that take place throughout the year. One engineering executive emphasised this: "... the budgets are made and then the actuals turn out to be so b...dy different."

Some of the comments given below throw light on the attitudes of executives and on the different cultures that exist in the company:

"Some executives only want budgets in detail so that they can explain variances." (area executive)

"Ye're asking me to budget for a harvest that's not even sown yet." (customer to area executive)

"Anyone who mentions 'last year' will get his b...dy head cut off." (manager)

"Budgeting is an annual examination of conscience." (manager)

"I used to be a believer in using last year only - but I've changed my mind now - we must plan ahead - there are so many new factors to be brought in." (manager)

7.5 Views of executives on the success or failure of controls

The objects in obtaining the general views (as opposed to the views on the existing controls in section 7.2) on why some reporting systems appeared to succeed while others failed were firstly, to test again for the adaptive responses of executives, and secondly, to gain additional insights into their perceptions of controls, bearing in mind the impending re-design of the company's management information systems.
Of the 89 executives interviewed, 69 (72%) made some comments and of this number, 64 (93%) had positive views. Bearing in mind that a number of executives made more than one comment, the principal responses were as follows:

(a) 27 executives (42%) stated that controls would succeed if there was **positive action** taken to follow up (and vice versa).

(b) 26 executives (41%) stated that to succeed, controls had to be **simple and appropriate** (and vice versa).

(c) 13 executives (20%) stated that controls would tend to fail if they were not properly sold, i.e., if recipients and producers were not clear at the development and implementation stage as to the purpose and benefits of the reports.

(d) 7 executives (11%) stated that controls would have little chance of succeeding if they were not properly **debugged** at an early stage once they had been introduced, i.e., if errors of content and calculation were not eliminated.

(e) 4 executives (6%) believed that controls must be **produced on time**.

Of the 27 executives who mentioned the need for follow-up action as a prerequisite for controls to succeed, 10 were accountants (36%), representing almost two-thirds of the 16 accountants interviewed; and 6 out of the 10 were from the chief accountant's department in head office.

Some other views and comments are worth mentioning:

The need "to persevere and not to be afraid to change and modify as the system was operating"
The need "to define responsibility clearly - if there is latitude, control becomes haywire"
The need "to overcome the natural resistance of people who because they are not used to change, like to see things fail"
The need "to review the systems against current reality"
The need "to concentrate more on the physical aspects and get out and look at what's going on."

One executive stated that "the more paper there is, the less likely are the chances that the system will succeed - if a man gets too much, he just folds it up and puts it away." Possibly the neatest summation up on performance returns came from a manager with many years service who said that reports would be used "if they helped managers to solve problems and to keep a grip on the job."

7.6 Views of executives on the organisation
of the company

As the present organisation structure with its strong emphasis on area decentralisation had been operating for almost four years the opportunity was taken to try to assess the views of executives on how it was working out. Extensive material was gathered, but only a few salient points are given here.

70 executives (80%) out of the total interviewed commented on organisation and of this number 42 executives (60%) stated that they were generally in favour of the present area structure. Of the remainder, 14 executives (20%) believed that major changes were required with greater power being given back to head office departments. The remaining 14 executives had no specific comments to make on area organisation.

Of the 31 area executives who commented on organisation, 26 were generally in favour of the present area structure, 2 were generally
against, and 3 had no specific comments. Many area executives believed that there was a general trend towards re-centralisation and that some of the head office departments were seeking to retrieve power: this was borne out by the fact that of the 14 executives in favour of major changes, 11 of them were from head office departments.

One executive from head office stated that "the worst thing that ever happened was that chief officers [department heads] lost power." He blamed this on the heads themselves who, he said, "must know their job and sell themselves."

An area executive made an interesting comparison of the company before and after decentralisation. "In the old days," he said, "there was a stagnating situation, but people had job security. With the advent of area management, the staff accept the process of change but there is also insecurity - this has good and bad effects on morale."

8. Interpretation of Findings

An attempt is made in this section to assess the inter-relationships between the controls operating in CIE and its organisational and environmental characteristics.

In an undertaking of this size, complexity, and geographical dispersion, with its variety of levels and types of executives, and controls, it will be appreciated that the problems in handling material and relating it to a fairly broad conceptual framework are certainly not simple for a research worker operating almost single-handed.

A selection of what appear to be the most significant features has been made and the section covers the relationships between organisational characteristics and the controls, with particular
reference to the adaptive responses of executives to the way controls were used; next, the impact of the environmental characteristics including the influences of transport services and of differing engineering technologies, on the controls; and lastly, a brief summary of additional factors, such as measurements of performance and methods of presentation, which it is believed can influence the way controls are used by managers.

8.1 Relationships between organisational characteristics and controls in CIE

8.1.1 The impact of the new chairman on CIE - This was without doubt the greatest single factor that had affected the company since its inception. Prior to his appointment, though a number of major changes, such as the dieselisation of the rail fleet, had been made, the company's staff and particularly its managers had almost given up trying to combat the problems and pressures they were living with, both from outside and inside. Services were operated reasonably punctually, but a lack of finances due, inter alia, to the economic depression of 1956 and 1957, and the inability to break-even with the attendant public odium for failure, had left its impact on the facilities and fleet, which in many cases had a neglected appearance. A depressive attitude pervaded many of the staff and this was increased by the fact that independent commissions appointed by the government, had reported on CIE on two occasions in the 1950's. The organisation structure at this time (described previously) did not help the company to run an integrated transport concern, and the planning and control techniques in operation were certainly of little value either for planning or control. 14

14 A scrutiny of the syllabus and papers for the Institute of Transport examinations at this time confirms this. As the major professional institute for transport managers, it appeared to have lagged in keeping abreast of modern techniques.
For example, annual budgets were compiled by the head office departments in broad totals of expenditure on a functional basis, and based on the previous year's results. Only a few managers were given the subsequent monthly reports, and frequent (and often abortive) post mortems, took place to trace the causes of variations.

The action taken by the new chairman has already been described in some detail (section 3), two of the major changes he drove home being area decentralisation and management accounting, both being intended to involve a much greater number of managers in taking administrative and financial responsibility. He was assisted in all of this work by his senior managers, particularly by the 'troika' composed of the general manager and his two deputies. In fact, in a comparatively short time he changed the whole culture\textsuperscript{15} of the company. This illustrates how a single-minded leader, with charismatic qualities, can affect a large public service enterprise, particularly its model of administration and its controls, and demonstrates that strong active backing from the top was of primary importance in introducing and implementing the changes in organisation and controls.

8.1.2 The controls in operation - Contrary to the general findings in the literature with their emphasis on the punitive nature of controls, it will be already clear that a much more permissive approach existed in CIS. There was little evidence of managers concentrating on obtaining a good score to the detriment of the task in hand, or of department-centredness, or of all the array of other

\textsuperscript{15} See Rice (1963, pp.235-43).
dysfunctional consequences listed by most research workers.
Again the traditionally reported pressure exerted by staff agencies (and particularly by accountants) on managers did not exist, save where the accountants, as assemblers of the management accounting controls, chased up those areas or engineering departments which were late with their basic data.

The reasons for this permissive approach, with particular reference to management were first, the realism of the general manager and his two deputies in recognising some of the environmental pressures that were operating on the company. In discussions with them, their aim, almost at any cost, was to encourage their managers. They realised that to have any chance of even identifying the problems of public transport and of changing the image of CIE there must be staff of high quality. To pressurise this type of man by continually 'jagging' him with failure to meet budget could result in his leaving the company or in adapting his behaviour and explaining any adverse deviations by drawing on the many possible reasons provided by the environment, weather being the most obvious.  

Secondly, budgets were not imposed, and though the mechanics of preparation were felt to be time-wasting by a number of executives, participation was a fact (section 7.4).

Thirdly, managers down the line were given the reports first, and they themselves reviewed their own performance by writing a

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16 It was stated by one senior executive that in the early years of CIE a small outbreak of poliomyelitis occurred in a provincial city, and that up to three years after it had been quelled, it was still being recorded as a reason when head office called for an explanation of decreases in road passenger revenue.
a commentary on the action they had taken or proposed to take, so as to capitalise on favourable, or remedy any unfavourable trends.

Fourthly, there was no attempt to purge the 'local' controls which operated in all areas.

Lastly, there was no fear of pressure from staff agencies; this last point is dealt with more fully below.

8.1.3 The role of the accountants - It is evident (sections 7.1.2 - 7.1.4) that the accountants in the company did not constitute a threat to managers, and that in fact they had lost power. From being considered some years beforehand as spies and watchdogs the accountants were generally trusted by management. Accountants in the areas and engineering departments were accepted as part of each management team, and those in head office were placed firmly in the role of assemblers of reports. As a consequence of this, the latter in particular were obviously finding it difficult to adjust, hence their nostalgia for action, for wanting people to "toe the line," for "reverberations," and (probably) for their belief that management accounting was not being used (sections 7.1.3 and 7.5).

8.2 The impact of environmental characteristics on the controls

8.2.1 Transport services - Though time-tabling is the normal method of planning public transport services, there were as has

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17One executive, who had worked as a junior clerk in the head office accountant's department, recounted how he used to scrutinise certain monthly engineering costing returns and help to interpret these for his supervisor, a particularly tough senior accounting executive. If he told this supervisor that there were no adverse variations, the latter would urge him to "check up again, man - there must be something wrong somewhere."
been pointed out, many features outside the social framework of GIE which contributed a considerable amount of 'noise' in the system, and made the control of operations difficult. Weather, road congestion, seasonal peaks, perishability, 'creaming,' the impact of the product on the public, the numbers of vehicles involved, the need for a public undertaking to comply with statutory regulations (e.g., meal breaks for drivers), and the size and complexity of the communications chain, impose a considerable strain on staff and particularly managers. All of these could impact on actual performance, and are almost impossible to reflect in management control reports, which in summarising the past, provide only a pale reflection of reality. The fact that senior management consciously recognised some of these factors and were influenced by them in dealing with management controls has already been dealt with (section 8.1.2). It is believed however, that few people who write about, or design and install management control systems, have ever considered these as important determinants.

8.2.2 Engineering technologies - While the product of GIE was transport services, the product of the engineering function was the provision of vehicles and track at a certain degree of safety and in such a condition that they would operate for a given number of hours or miles.

Though there was not sufficient time or resources to make a detailed study of the different engineering technologies in GIE, the striking feature that was disclosed from this case and from previous background knowledge gained from working in the company was the marked differences in complexity between civil engineering and mechanical engineering, with particular reference to skills,
tools, logistics (including the number of different parts), the
degree of predictability of work and resources required to
produce a given output, the degree to which the output could be
accurately measured, and the organisation required to do the
work.

The main job of the civil engineers and their staffs in CIS
was the maintenance of the permanent way. The work was simple and
required relatively unskilled men who were organised in gangs
of three men each; a gang was responsible for about three miles
of track, the task being to ensure that rails, sleepers and
packing were kept in good order, using basic tools such as spades,
picks, and large spanners. The organisation too was simple, with
groups of gangs being supervised by foremen, who in turn were
responsible to a district inspector, usually a civil engineer.
Though the work was obviously influenced by weather, geological
conditions and by the type of traffic passing over the track,
faults could be detected visually, and by ear (using a hammer to
tap the line), as well as by special equipment mounted on a rail
van which charted the state of the line by sensing the amount and
type of vibration, rather like an echo-sounder can chart the
bottom of the sea bed. The degree of predictability was, therefore,
high, and this coupled with the low obsolescence factor made track
maintenance a fairly simple task.

An extremely different situation existed in relation to
mechanical engineering. Here, in maintaining and overhauling
vehicles of different types, one is not, in fact, dealing with the
vehicles, but with major units and sub-units such as engines, gear-
boxes, chassis and bogeys, as well as fuel pumps, fuel injectors
and a host of electrical instruments. In CIS, this required a
fairly sophisticated organisation structure, thousands of parts (many of which had to be imported from Britain), many skills and precision tools. The position was further complicated by the difficulties in predicting forward work loads, especially in overhauling diesel locomotives, and by the relatively low obsolescence factor of road vehicles.

These points illustrate the differences in degree of complexity that existed between the two engineering functions in the company. These differences, it is considered, accounted in a large way for the total absence of pressure relating to controls in civil engineering (section 7.2.9), for a lot of the dissatisfaction about management accounting in the mechanical engineering (road) department (section 7.2.91), and for the enthusiasm for the highly programmed system of production planning and control in the mechanical engineering (rail) workshops (section 7.2.8), where management had moved further ahead than their road counterparts in introducing quantitative techniques of a high order of sophistication to complement the management accounting controls, the limitations of which are dealt with later in this section.

It would seem reasonable, therefore, to conclude from this examination of the relationship between technology and controls that with a complex technology and a low degree of predictability of work, a correspondingly complex organisation structure and management planning and control system are required, and vice versa.

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18. The operation of the system of production planning and control in the rail workshops was tackled as a separate project and is described in Case II.
8.2.3 Geographical dispersion and location - It is believed that the differences between rural and urban customs (section 7.1.1) can have an effect on the way controls are used, and further, that if operational units whose work is fairly complex, operate in locations that are not within easy physical reach of headquarters' departments which are responsible for assembling basic data and returning it to these units in the form of control reports, the managers of these units will tend to develop and maintain local reporting systems in addition to the prescribed controls (section 7.2.92).

8.2.4 External agencies and economic pressure - The lack of a clear governmental directive on the future of the railways, coupled with the statutory directive to break-even tended to make CIE management concentrate on eliminating the losses on the railways. As a consequence of this, other revenue-earning activities such as road passenger services, which were already profitable and in fact helped to reduce rail losses, were given less attention and this accounted in large measure for the lack of attention paid to developing controls for measuring utilisation and timekeeping of road passenger operations, and for the rather spasmodic attention given to road freight operating statistics (section 7.2.7).

One could conclude from this that management, when under economic pressure, will tend to search for and select those sectors which appear to hold the greatest potential for improving profits and eliminating losses. The fact that road passenger operations were profit-making and subsidised the rail losses, did not mean that the former were more efficient.

This raises the whole question of using conventional profit
and loss accounting as the primary method for measuring the overall performance of public services, such as CIE and British Railways, which have to provide social services. In this writer's view, a great deal of re-education is required to eliminate the adverse consequences which flow from branding large numbers of competent managers and staff as inefficient when, in reality, the blame for inefficiency lies with those who draft and approve the type of confused legislation under which CIE had to try to operate. 19

8.3 Some additional factors relating to controls

Some additional factors that should be borne in mind when designing and operating controls in large, complex and geographically dispersed undertakings, emerged from the CIE study, and are summarised below.

8.3.1 The limitations of financial accounting in measuring performance - The use of money as the primary unit to measure performance has important limitations.

For example, the scheme of management accounting in CIE was primarily concerned with showing at regular intervals, and in monetary terms, the actual resources used by each location or cost centre against the planned resources, i.e., a portion of the annual budget. This type of information, however, did not disclose whether the planned volume or quality of work was being achieved, or the actual condition of vehicles. A senior manager in one of the engineering departments forcibly underlined this by stating that "the accountants in head office think we're hellava' guys when we

19 See Lemass (1957) and Beeching (1957).
don't overspend our budget, but for all they know we could be making a 'hame' out of the diesel fleet."

Again money was of little use in the short term as a unit of measurement for monitoring major capital projects as it did not disclose the volume of work actually completed. For example, a programme to build 50 carriages might involve five or six workshops, at an estimated cost of say, £250,000, and take nine to twelve months to complete. To report budgeted cost against actual cost each four-weekly period for this project was virtually useless for the control of either the project or of the shops, most of which were involved in both maintenance and new (i.e., capital) work.

In the latter case it is possible to use critical-path techniques and work measurement to programme and control the physical progress of jobs. However, to programme and control the condition (or 'maintained state') of large mixed fleets of vehicles requires an exceedingly sophisticated system based on identifying and specifying the rates and causes of wear on many thousands of parts, building these factors into running maintenance and overhaul routines, and then building these routines into programmes for shops and depots.

At the time of the research, the rail workshops had made considerable progress in trying to control the variables involved, and this accounted for the enthusiasm of senior management there for the new production planning and control system they had developed (section 7.2.8). In contrast, the senior management in the road vehicle shops, though work measurement standards did exist, were still trying to control their operations through financial reports and as a consequence, were experiencing considerable frustration.
Again, in the traffic operating sections, monetary units were of limited value in measuring utilisation of vehicles and time-keeping, two key variables. This leads to the problem of transport statistics in general, where there are many pitfalls for those who like to construct composite indices of performance; for example, dividing all operating expenditure by miles run or tons carried; or aggregating all the tonnages of freight handled at all depots and dividing this total by the total men employed in each depot. The spuriousness of these types of ratios, many of which CIE had eliminated, makes them valueless and misleading for control purposes.

It must be made clear that in CIE only a few, mostly senior, executives were aware of these problems, which demanded a highly sophisticated steering system. Such a system cannot be installed in a few months, but requires years of refinement and development both at the social and technical level.

8.3.2 Fragmentation of controls - Undoubtedly, controls in CIE were rather fragmented, particularly in the case of labour, where there were three different systems (including management accounting) running in parallel. In the case of the labour reporting scheme for rail and road freight, the violent resistance to it (section 7.2.5) can be partially explained by the fact that the executives concerned believed they were already sufficiently in control of their labour force through management accounting, and the hiring and

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20 See Deutsch (1952, p.370).
firing regulations.

Until a thorough awareness is developed by management of perceiving information as a totality, and until professional bodies also accept this, it is highly probable that many different streams of reports, (e.g., accounting, engineering and personnel) will continue to be produced from the same basic sources.

8.3.3 The mechanics of budgeting - It is evident (section 7.4) that the actual work involved for executives in preparing the annual budgets is an important determinant which can have adverse consequences in relation to participation. If managers find themselves tied up for long stretches working on budgets because the mechanics are cumbersome, then they may gradually opt out of participating, and accept budgets that are assembled and imposed by others. Once this occurs, and the advantages of participation disappear, it is quite possible that these managers would eventually find themselves being pressurised to explain variations between actual situations and budgets about which they had little or no knowledge. The solution to such a problem is to simplify the mechanics, and not to eliminate participation, i.e., keep the end and change the means.

8.3.4 Accuracy and methods of presentation of controls - Two points merit comment here. First, was the response by executives in CII to the lack of accuracy in reports, particularly the labour reports (sections 7.2.4 and 7.2.5). It could be tentatively concluded that managers, particularly where they are dubious about the value of controls (and most managers are, in the initial stages) will take every opportunity to discredit reports when they are first produced, particularly if these reports contain inaccuracies and are
not 'debugged' as soon as possible.

The second point concerns the dislike by CIE managers for printed machine tabulations, which showed location and expense headings in numerical codes only. This was the most frequent complaint against management accounting (section 7.2.1) and was given as a further reason for the demise of the labour reporting scheme (section 7.2.5). If the primary aim is to provide managers with the 'score' to help them to do their work, then the way the information is presented is a determinant; and consequently, if managers do not know, or want to learn the codes or use keys, and thus do not even bother to read the reports, these become valueless.

8.4 In evaluation of the appropriateness of the existing controls

Looked at as a system, CIE was highly unstable, and consequently, many of its parts required highly sophisticated controls.21

As has been shown, the controls in CIE had been developed in three stages. The first involved fairly rudimentary financial controls; the second saw the introduction of management accounting and the disposal of many spurious statistics, and the gradual development of non-accounting sources for mechanical engineering variables; the third stage, which was proceeding at the time of the study, involved an 'all systems' approach to management information.

In general, the pace of these developments appeared to be in line with the capacity of the executives and it was considered that the logic of the controls, and in particular, the way they were used, was appropriate.22

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21 See Deutsch (1952) and Rowe (1960).
22 See Dalton (1959) and Roethlisberger and Dickson (1939).
CIE needed high calibre executives to develop and operate the type of controls that were demanded by its environmental characteristics. However, its image to the outside world was blurred by the constraints imposed on it by its conflicting mandate, and especially by the use of the conventional commercial profit and loss form of accounting, and this tended to inhibit the recruitment of appropriate executives and depress morale of existing staff.\(^{23}\)

There appeared to be little doubt, especially with the impact of its chairman, that the company would have been capable of handling the determinants of product, technology, geographical dispersion, weather, etc. But in relation to its government mandate, the concept of control was meaningless. CIE just could not 'win' despite the strenuous efforts made by its senior management to put its house in order and to try to force the Irish parliament to recognize the need for a coherent public transport policy.

Finally, it has been amply demonstrated (contrary to Merton's\(^{24}\) claim in relation to controls, that rigidity of behaviour sets in and tends to produce a continuing pressure to maintain techniques) that there was a continuing, rather than a decreasing search for alternatives in the behaviour of CIE's top hierarchy, due mainly it is believed, to the strength and influence of its chairman.

9. Conclusions

The possible generalisations that can be drawn from this case are given below in summary form, again bearing in mind that

\(^{23}\) Lemass (1967)

\(^{24}\) See March and Simon (1958, pp. 37-40).
CIE was the first in this exploratory study.

- Environmental characteristics can influence control requirements.
- A large undertaking may contain different technologies of varying degrees of complexity.
- Considerable uncertainty is involved in predicting the work load involved in maintaining and overhauling mixed fleets of vehicles. The greater the uncertainty, the greater the complexity and instability of the production system, and therefore, the greater the problems of control.\(^\text{25}\)
- External agencies such as governments, can impose demands for controls which are incompatible.
- Under conventional profit and loss accounting, management will tend to concentrate on improving loss-making units and to neglect the control of those which are profit-making.
- Weather, congestion, geographical dispersion, and demographic features can affect the perception of controls by managers, as well as provide many reasons for failure to meet performance.
- Leadership style is a key determinant in relation to the type and method of operation of controls. Further

\(^{25}\)See Dubin (1956) and Woodward (1965). In relation to the latter's classification of production systems, a further one relating to service industries (i.e., intangible products) should be added.
leaders possessing a high innovative capacity who are appointed to operate large undertakings will tend to refuse to accept existing organisational and control procedures, and search for alternatives, and vice versa. 26

- A permissive approach to controls can be fostered by such factors as participation in budgeting, the use of commentaries by managers, the development of local controls, the decentralisation of the accounting function, and by recognition by senior management of determinants imposed by the environment. 27

- There are limitations in using accounting, with money as the primary unit, for measuring performance. 28

- If the mechanics of budget preparation are unwieldy, there will be a tendency for junior managers to opt out of the budgeting process. In turn, this may lead to budget impositions, and thus, to junior managers failing to take responsibility for budget achievement.

- The methods of presentation and the amount of processing

26 See Beeching (1967), and the comments in the previous section of this chapter relating to Merton’s model in March and Simon (1958).

27 This is in contrast to the findings of such writers as Argyris (1952), Berliner (1957), Haier (1956) and Jasinski (1956), though in fairness to the first and last-mentioned they do suggest that the adverse consequences flowing from a punitive use of controls by accountants and senior management could be prevented by participation and by the creation of staff agencies as a service to management.

28 See Chapple and Sayles (1961) and Jasinski (1956).
errors in reports are determinants in relation to how they are valued and used by managers. The greater the complexity of presentation and the greater the amount of processing errors, the more will managers tend to devalue the reports.
Before decentralisation, each of these functions had its own unique geographical regions.
Chairman and Board

General Manager

Deputy General Manager (Operations)

- Area Manager - Dublin
- Area Manager - Waterford
- Area Manager - Limerick
- Area Manager - Cork
- Area Manager - Galway
- Manager - Dublin City Bus Services
- Transport Control & Planning

Deputy General Manager (Central Services)

- Secretary
- Purchasing Officer
- Solicitor
- Information Officer
- Chief Accountant
- Commercial Manager
- Personnel Manager
- Development Manager
- Civil Engineer
- Mechanical Engineer (Road)
- Mechanical Engineer (Rail)
- Chief Medical Officer

*Note:* Each Area Manager is responsible for all Rail and Road operations in his Area and for Track and First Line Mechanical Maintenance.
<table>
<thead>
<tr>
<th>Returns</th>
<th>Frequency</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 - Accounting *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance sheet</td>
<td>4 W</td>
<td></td>
</tr>
<tr>
<td>Profit and loss</td>
<td>4 W</td>
<td></td>
</tr>
<tr>
<td>Cash Forecast</td>
<td>4 W</td>
<td></td>
</tr>
<tr>
<td>Capital Expenditure</td>
<td>4 W</td>
<td></td>
</tr>
<tr>
<td>Forecast of Results</td>
<td>4 W</td>
<td></td>
</tr>
<tr>
<td>Stock holdings report</td>
<td>4 W</td>
<td>Road and Rail stores</td>
</tr>
<tr>
<td>Statement of debtors</td>
<td>4 W</td>
<td></td>
</tr>
<tr>
<td>Responsibility accounting</td>
<td>4 W</td>
<td></td>
</tr>
<tr>
<td>Commentaries on performance</td>
<td>4 W</td>
<td></td>
</tr>
<tr>
<td>Costing - Road freight</td>
<td>4 W</td>
<td></td>
</tr>
<tr>
<td>- Road passenger</td>
<td>13 W</td>
<td>Usually 3 months late</td>
</tr>
<tr>
<td>- Engineering</td>
<td>4 W</td>
<td></td>
</tr>
<tr>
<td>(*Most accounting reports show</td>
<td></td>
<td></td>
</tr>
<tr>
<td>budget and actual figures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 2 - Staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff return</td>
<td>4 W</td>
<td>Without budgets</td>
</tr>
<tr>
<td>Labour reporting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Rail</td>
<td>W &amp; 4 W</td>
<td>With budgets</td>
</tr>
<tr>
<td>- Road freight</td>
<td>W &amp; 4 W</td>
<td>Without budgets</td>
</tr>
<tr>
<td>Labour performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Rail shops</td>
<td>W &amp; 4 W</td>
<td>Work standards</td>
</tr>
<tr>
<td>- Road shops</td>
<td>W &amp; 4 W</td>
<td>Work standards</td>
</tr>
<tr>
<td>Group 3 - Traffic Statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rail - Train timekeeping</td>
<td>D, W &amp; 4 W</td>
<td></td>
</tr>
<tr>
<td>- Wagon utilisation</td>
<td>D, W &amp; 4 W</td>
<td></td>
</tr>
<tr>
<td>- Coaching utilisation</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>Road - Fleet movement return</td>
<td>W</td>
<td>Road passenger</td>
</tr>
<tr>
<td>- Depot return</td>
<td>W</td>
<td>Road freight</td>
</tr>
<tr>
<td>- Standard times</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>Accident returns</td>
<td>W &amp; 4 W</td>
<td></td>
</tr>
<tr>
<td>Fuel and Mileage returns</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>Group 4 - Engineering returns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil - Inspectors reports</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>- ballade track</td>
<td>26 W</td>
<td></td>
</tr>
<tr>
<td>- Heavy equipment</td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>Mechanical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Production control</td>
<td>D &amp; W</td>
<td>Rail and road</td>
</tr>
<tr>
<td>- Realtime control</td>
<td>hourly</td>
<td>Rail workshops</td>
</tr>
<tr>
<td>- Maintenance control</td>
<td>D &amp; W</td>
<td>Rail and road</td>
</tr>
</tbody>
</table>

- 99 -
CHART SHOWING NUMBER AND POSITION IN THE ORGANIZATION OF THE EXECUTIVES INTERVIEWED

NOTE: The numbers in the boxes indicate the total executives interviewed in each part of the organization.
### Analysis of Respondents by Category and Location

<table>
<thead>
<tr>
<th>Category</th>
<th>Location</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Areas (including Dublin Bus Services)</td>
<td>Central Engineering</td>
<td>Head Office</td>
</tr>
<tr>
<td>of Executive</td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line managers</td>
<td>53</td>
<td>31</td>
<td>16</td>
<td>6</td>
</tr>
<tr>
<td>Staff - Accounting</td>
<td>16</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>- Personnel</td>
<td>10</td>
<td>6</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>- Traffic Control</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>- Other</td>
<td>5</td>
<td>-</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>89</td>
<td>43</td>
<td>21</td>
<td>25</td>
</tr>
</tbody>
</table>
CHAPTER 5

CASE II: RAILSHOPS

1. Introduction

Following the CIE project (Case I), the senior management of the mechanical engineering (rail) department of CIE gave the writer permission to use the rail workshops (Railshops\(^1\)) for graduate student projects\(^2\) and for post-graduate research, the main focus of interest being the impact of the new centralised and highly programmed system of production planning and control that had been developed and introduced in the shops by senior management.

A start was made in June 1965 with a small team, working on a part-time basis, and comprising the writer and a graduate student, Mr. F. Murphy,\(^3\) the latter assisting with the interviewing.

This case presents the results of the work done during the second half of 1965, though since then continuity has been maintained by the writer, and during 1966 another graduate student completed a project on a different aspect of the same research area.

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\(^1\)This name, with variants such as "workshops," "shops," is used to describe the CIE railway workshops.

\(^2\)Students taking the graduate course in Administration for the degree of MSA awarded by Trinity College, Dublin, are required to work on a project assignment.

\(^3\)After Murphy had been awarded the MSA degree, he continued on a part-time basis as a research assistant on this case.
Apart from the overall objectives stated in chapter 1, the specific objectives in this case were to examine how a highly programmed and centralised system of production planning and control impacted on the supervisors of shops in the works, and to compare their perceptions with those of senior management, bearing in mind the decentralised nature of the previous system. Again, the study was exploratory, fitting loosely into the conceptual framework outlined in chapter 3.

2. Railshops - Organisational and Environmental Characteristics

Railshops was set up in 1846 to serve the Great Southern and Western Railways and is situated on the outskirts of Dublin. Some modernisation of the shops took place in the early 1920's following the partial rationalisation and amalgamations of the Irish railway companies, but by 1930 there were no funds available for the renewal of rolling stock, and during the 1939/45 war, when raw materials and parts were difficult to obtain, the railways survived by running down their assets.

Following the formation of CIE as the national inland transport company in 1950, its board of directors set about the rehabilitation of the railway and drew up a ten-year programme for the renewal of rolling stock. As dieselisation began, steam repairs were withdrawn from Railshops, and new machine tools and

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4See CIE (1963, sect. IV,5), and a brochure on the rail workshops prepared for the International Railway Congress held in Dublin in 1964 (CIE, 1964). The original group of buildings is still in use and possesses a certain architectural quality, the brochure (p. 3) stating: "With its ivy-covered castellated walls and tower, diamond paned windows and Gothic appearance, it would have easily passed for an old ecclesiastical or scholastic establishment."
testing equipment were installed. At this time, few European countries had experience of operating diesels, and considerable teething troubles were encountered right up till the early 1960's, in trying to keep the fleet going. With this major change in technology, it was necessary to re-train a large number of the staff and recruit others capable of handling the electrical equipment and instruments used in diesels.

The mechanical engineering (rail) department was reorganised in 1956 and divided into three main sections, each under an assistant mechanical engineer:

- The technical section - deals with design, drawing office and laboratory work
- The maintenance section - deals with the planning of maintenance, carries out first-line maintenance in depots throughout the country, and controls vehicle links in conjunction with traffic control and planning (see Case I)
- The railshops - deal primarily with the overhaul and manufacture of rail vehicles, and the manufacture of permanent way supplies. (An organisation chart and further details are provided later).

These three sections are commanded by the mechanical engineer

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5 The strain on the management of Railshops during this period was quite severe. Vehicle breakdowns, due to failure of many key units were the rule rather than the exception, and defects and modification lists swelled despite intensive efforts to contain and reduce them. The position was alleviated in the early 1960's by the purchase of well-tried locomotives from the USA.

6 In the steam days the engine-driver was usually capable of carrying out minor repairs and of keeping the vehicle running for a time even if it had major defects. With diesels, most of the equipment requires skilled attention and is not even visible to the driver, who, if he has a failure of any kind immediately sends for skilled assistance.
(rail) who at the time of the study was responsible to the deputy general manager (central services) — see Case I, Appendix 4.2.

Between 1959 and 1961, management consultants were engaged in a number of assignments in Railshops. Work study, production planning, and management accounting techniques were introduced, and an intensive training programme, mainly related to work study, was carried out. All of these efforts were made to improve productivity, and about 10% of the labour force were redeployed or left CIE, most of the latter on redundancy compensation, funds for which were provided by the government.

In 1961, changes in senior management in Railshops occurred, and the new senior executives (all of whom had served their time in the shops) began a further drive to get improvements in productivity. Dramatic changes in the physical conditions were planned and implemented, including improved toilet facilities, and the growing of grass, shrubs, and flowers in what were previously junk heaps. In fact the place was given a major face-lift, as can be seen from the illustrative photographs in Appendix 5.1.

In addition to these changes, senior management, dissatisfied with the operation of the existing system, developed and progressively introduced a new centralised system of production planning and control, with which this case is concerned.

Railshops employs about 1,400 people including 26 different

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7No financial incentive scheme was introduced. Operators were expected to attain 100 performance (on the 133 rating scale).

8The idea for the new system came from West Germany.

9Many other changes were, and are still being made; e.g., internal transport is now fitted with R/T; special passes are needed at the main gates; a tank has been constructed to serve as a swimming pool and as a fire-guard; telephone calls are restricted and monitored; and photographs of bad housekeeping in shops are taken for senior management at the week-end and circulated every Monday morning to appropriate supervisors for action.
types of skilled tradesmen and occupies about 74 acres. An organisation chart at the time of the study is shown in Appendix 5.2, an asterisk marking the three shops studied.

The main sources of work for the shops are the overhaul programmes for the rolling stock fleet, unplanned repair work (including accident damage), new construction of wagons and carriages, and civil engineering demands for parts used in track repair and renewal; on occasions, special work is undertaken for outside firms which lack the facilities of Railshops. To achieve a more rapid turnround of vehicles undergoing overhaul, the units system has been adopted, the idea being to keep spare units, sub-units, and components, in stock and in kits, and to repair these in batches in other shops not engaged in major stripping and assembling. Thus, a locomotive might go out from overhaul with a completely different set of units, including bogies, than it had when it came in. Such a system contains many complex linkages and requires a high degree of coordination, especially when the predictability of unit and component wear and failure rate is low.

Stores and material control, as well as production planning, become key factors, the stores acting as the "sales" department for many components. It will also be appreciated from the organisation chart that the feeder shops can have a mix of work ranging from manufacturing components for new carriages, to doing one-off emergency repair work for key components in short supply. In this respect, most supplies have to be purchased from overseas firms.

Apart from visitors, Railshops' staff do not come into contact with the public, though complaints on delays and heating failures
from this sector rapidly find their way to its senior executives via the operating and commercial departments, as well as from CIE top management.

Before dealing with the three shops that were studied, it will be evident from Case I that in the "absence of long term commitment by the community to the railway," the volume of maintenance and building of rail rolling stock can vary from year to year. There are also other external factors impacting on Railshops and an ambiguous situation exists in relation to the manufacture of rolling stock. The policy of the government has been to develop Irish industry, and CIE has been encouraged to continue to manufacture as much of its own equipment and rolling stock as possible. The trade unions have also exerted their influence to try to ensure the continuance and, if possible, the development of the manufacturing activities of the railways. The CIE board too, has been influenced by the possibility of providing employment for staff who become redundant due to modernisation schemes. Lastly, the senior executives of CIE believe that the primary purpose of Railshops is to carry out repair work, that the shops are not suitable for the manufacture of new equipment and vehicles and that this should be done by outside contractors.  

A brief description now follows of the work and staffing of the Smithy (blacksmith's shop), Diesel 2 (shop for overhaul of rail cars), and Machine shop, at the time of the study.

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10 See CIE (1963, sect. IV.54).
The Smithy has the following main sections:

- Bolt shop
- Forging
- Spring-making
- Welding, and oxygen cutting.

It is involved in both jobbing and batch production, with the latter predominating, and its output consists of repaired vehicle components, and of manufactured items including permanent-way fasteners.

The shop employs about 65 operators of whom 55 (65%) are skilled or semi-skilled.

Diesel 2 shop is concerned with the overhaul of diesel rail cars, bogies, and engine units and has the following sections:

- Pits - strip and assembly
- Bogies - overhaul
- Engine parlour - maintenance and repair
- Electrical testing
- Fuel injection pump-room.

It is involved in jobbing and batch repair work, the former predominating, and employs 80 operators, 57 of whom (71%) are skilled or semi-skilled.

Machine shop has four main sections:

- Capstans - capstan and centre lathes, boring and grinding machines
- Machining - drilling, milling, planning
- Bench-work - including chromium work
- Tool room - jigs and fixtures.
Like the Smithy, it does both jobbing and batch production, the latter again predominating, and its output consists of repaired vehicle components and of manufactured items, many of the latter coming to the shop via the Smithy or the Foundry.

A total of 85 operators were employed at the time of the study, 73 (86%) being skilled or semi-skilled.

Due to the shortage of time and to the great number of changes that were taking place during the study, it was not possible to examine the technical variables of each shop in any depth. However, the team did wish to grade the shops in relation to degree of complexity of technology and degree of predictability. Using common sense, experience, the data given above, and information obtained from brief discussions with senior management, it was considered that the technology in the Machine shop was the most complex of the three; and in the Smithy, the least complex. In relation to predictability, Diesel 2 was considered to have the lowest degree of predictability, with the other two shops ranking equal.

**Labour performance**

The following were the labour performance figures (based on work measurement standards) for all shops for selected periods between 1965 and 1966:

<table>
<thead>
<tr>
<th>Year</th>
<th>Period</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1965</td>
<td>Jan. to July (cum.)</td>
<td>82%</td>
</tr>
<tr>
<td>1965</td>
<td>Jan. to Nov. (cum.)</td>
<td>83%</td>
</tr>
<tr>
<td>1966</td>
<td>Jan. to July (cum.)</td>
<td>87%</td>
</tr>
</tbody>
</table>

The average performance figures of the three shops studied, for operators (excluding waiting time) and for the shop (with waiting time
included) are shown below for selected weeks during 1965 and 1966.

<table>
<thead>
<tr>
<th>Period</th>
<th>Smithy Operators Shop %</th>
<th>Diesel 2 Operators Shop %</th>
<th>Machine Shop Operators Shop %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1965: 2nd July</td>
<td>81</td>
<td>83</td>
<td>84</td>
</tr>
<tr>
<td>1965: 26th Nov.</td>
<td>86</td>
<td>87</td>
<td>87</td>
</tr>
<tr>
<td>1966: 1st July</td>
<td>92</td>
<td>93</td>
<td>90</td>
</tr>
</tbody>
</table>

It will be noted from the above that the performance of all shops has been improving gradually.

Summary

With its roots in the mid 19th century, Railshops is probably the oldest workshop in Ireland. A wide range of different skills, machine tools, plant, and hand tools is required, and both jobbing and batch manufacture and repair work exist in many shops. Preliminary analysis of the three shops studied appears to indicate that the technology (including skills) in the Machine shop is the most complex, while the degree of predictability of work is lowest in Diesel 2. Until comparatively recently, extreme difficulty existed in repairing and overhauling the diesel fleet due primarily to the fact that the units purchased by the board had not been extensively tested in operating conditions by the overseas manufacturers.

Railshops operates in an urban environment, and communication between shops is comparatively simple. Agencies such as the government and the trades unions have a decided impact on Railshops (through the board and senior executives of CIE), with particular relation to the uncertain future of the railways and the use of the shops for manufacture. Being associated with the loss-making sector of CIE, the shops have come under considerable pressure to increase productivity.
Overall, therefore, it is considered that the stability of Railshops, particularly in relation to its future existence, is low.

Though the organisation structure at senior level in the works has remained unchanged for about ten years, the intensive efforts made over the last four years to improve productivity have resulted in many changes, including the introduction of a host of modern industrial engineering techniques, with their attendant staff agencies of which the principal one is the production department, responsible for the operation of the system of production planning and control described in the next section. In fact, senior management, each of whom has had shop floor experience, are continuously occupied in thinking up and driving home schemes that they believe will increase productivity and change the old image of the shops. Much of this innovation applies to physical conditions and to the technical aspects of planning and control procedures and systems.12 As demonstrated in this section, operator and shop performance have been gradually increasing.

3. The Production Planning and Control System (PC system)13

The present PC system was developed in 1962: it was introduced first in the Smithy in 1963 and thereafter, over the next two years,

12. The organisational characteristics are further elaborated in sect. 6. This has been done in this case to avoid reducing the impact of the field work results on the reader.

13(a) For simplicity, the following abbreviations will be used from now on, as the text demands:—

(i) PC system - for the production planning and control system, including the staff in the PD (see (ii) below), paperwork and reports, communication instruments, (e.g., telephones), internal transport, materials, stores, tools.
(ii) PD - for the production planning and control department, the staff agency responsible for operating the PC system.

(b) The management controls in this case are those associated with the PC system.
in each of the other shops in turn. At the time of this research in the second half of 1965, the PC system had been running in the Smithy for nearly two years, and in Diesel 2 and the Machine Shop for about a year and a half.

Prior to the introduction of the new system, each shop was responsible for the preparation of its own paperwork, and for loading and scheduling, with shop supervisors having considerable discretion in deciding priorities and allocating jobs to operators. Though a central production control department existed, coordination of overall programmes was weak, priorities often differed, jobs got 'lost' and senior management did not have a clear picture of how work in the shops was progressing.

A description of the PC system now in operation, extracted from a hand-out prepared by the PD for staff training and organised parties of visitors, is given in Appendix 5.3 and the diagram accompanying this hand-out is reproduced in Appendix 5.4. This shows the layout of the main section of the PD, and the participants and paperwork involved in the PC system, including the shop supervisors and operators. It will be noted that the majority of work in this section of the PD is done by female clerks.

The main features of the PC system are:-

1. All work is planned, scheduled, and progressed through the PD.

2. Communication between the female shop schedulers and supervisors is by inter-phone, and considerable use is made of modern office equipment, including duplicating machinery and conveyor belts for paperwork. (See illustration of control room in Appendix 5.5).

3. The supervisors and the schedulers each hold copies of the job (instruction) cards. Supervisors must book operators on the jobs on the instruction of the schedulers, and when jobs are
completed (or stopped), must inform the schedulers, who then book the operators off, and specify to the supervisors the next job and the name of the operator who is to do it.

4. Materials, tools and drawings are procured by the progress clerks and must be available before jobs are loaded. Supervisors must not chase materials, tools, etc.

5. Feedback on performance is available to the supervisors in two main ways. First, from the job instruction cards which contain the standard times for each job, or operation, if the job has to pass through a number of shops or sections of a shop. The supervisor can calculate the actual time taken per job, insert it on the card and compute the performance. The second (and principal method) is from the TV monitors installed in each shop which show the performance and waiting time of all sections of each shop. These figures are calculated by the PD from the completed job cards held there, and are inserted on the master performance board in the PD at regular intervals each day. As the diagram in Appendix 5.4 shows, this board is scanned continuously by a TV camera, which has monitor sets linked to it in the offices of senior management as well as in the shops.

6. Jobs delayed in the shops are noted by PD, and if materials etc., are available, a post-card is sent each evening to the appropriate shop foreman and shops superintendent, asking for reasons and intended action. Each morning a brief meeting of the shop superintendents and the production superintendent is held, and the post-cards and other queries are progressed. Should a stopped job not be cleared by the next day, a second post-card is sent, a copy going this time to the AME (Works) who is responsible for Railshops. (This post-card procedure is not shown in Appendix 5.4).
7. If the performance figures of a shop show any downward trends, a note drawing attention to this is sent by the AME (Works) to the appropriate shops superintendent and shop foreman.

8. The primary task of the shop supervisors is to supervise the operators and get the planned output and quality.

In summary therefore, with the PC system as prescribed, the supervisor has little or no discretion. He must run his shop (or section), and he must get output and quality; he must take no part in planning, scheduling or allocating work, nor must he leave his shop to progress or procure materials or tools.

4. Method of approach

Following discussions with senior management of Railshops, the three shops were selected for study and a brief note on the project was prepared and circulated to supervisors and made available to all staff.

After a few days of familiarisation with the PC system, the three members of senior management most concerned with its adoption and operation, were interviewed individually. These interviews were semi-structured and each lasted about two hours, the object being to obtain their perceptions of the PC system.

It was decided to administer to the supervisors of each shop a modified version of the oral questionnaire used by Sord and Welsch (1964, Appendix B). Apart from changes in phraseology to suit the local idiom, specific questions relating to the PC system were also added, viz:—

What do you like most about the system?

What do you like least about the system?

Have you any other comments about the system?
In all, 26 supervisors\(^{14}\) were interviewed, comprising the total supervisory force in the three shops. The interviews lasted on average about one hour each, and the three shops were covered in about one month, over an elapsed period of four months.

After analysing the completed questionnaires it was apparent that the richest material in relation to the PC system was contained in the responses to the specific questions listed above, and it was decided that the purpose of this present research would be best served by analysing the responses to these specific questions. It is the results of this analysis that are presented here.\(^ {15} \)

The decision to deal only with supervisor responses to the questions on the PC system gave rise to a major problem of classification. An effort was made to apply Norton's (1957) concept of functional analysis, but this was abandoned as it tended to confine the responses to a relatively artificial classification, which would have inhibited the use of the general conceptual framework developed for the study, and restricted its exploratory nature.

Following this, a panel of judges was set up consisting of businessmen, and of academics from Trinity College and other institutions, and including engineers, economists, an accountant, a sociologist, and a psychiatrist. The data were circulated to each member and a meeting was held to obtain their views on classifying the responses. Almost as many opinions were obtained as there were members, and it became quite clear that it would be almost impossible to get any unanimity, and that in fact, there

\(^{14}\)The term covers shop foremen, assistant foremen, and charge-hands.

\(^{15}\)The Sord and Welsh questionnaires is probably more useful for its original purpose, i.e., inter-firm comparisons.
was no ready-made classification. Following this, the writer decided to classify the data into three broad groups:

- Perceptions judged as **favourable** to the system (obtained primarily from the question: "What do you like most . . .?").
- Perceptions judged as **unfavourable** (obtained primarily from the question: "What do you dislike most . . .?").
- **Adaptive responses** to the system (obtained primarily from the question: "Have you any other comments about the system?").

Thus, two sets of data were available, the first from the three members of the senior management, and the second, from the 26 supervisors in the three shops studied. After further study and experimentation, a coding frame was developed for classifying the favourable and unfavourable responses of the supervisors, and with only minor modification, this was also applied to the responses of senior management. In essence, the coding frame covers participants, procedures, material and output. A summary of the principal items is given below, in relation to the perceptions of the supervisors or senior management of the PC system:

1. The job of the supervisor, or member of senior management (this includes authority, discretion,
status, planning, control, direction)

2. The operators

3. Senior management or supervisors

4. The PC system (this includes progress men, planners, female schedulers and work study men; paperwork, reports, inter-phones and times; materials, transport, stores, tools, and machines)

5. Output (and quality)

6. Other.

The full coding frame is given in Appendix 5.6.

The anonymity of individual respondents was guaranteed, and some preliminary feedback sessions have since been held with supervisors and senior management.

The limitations of this case are that it is confined to senior and lower level management, it covers only three out of a dozen shops, and the data have been obtained mainly from interviews, and not from occupational involvement or lengthy periods of observation.

As previously mentioned, contact is being maintained with the firm and it is intended to cover other groups of participants, such as operators, the staff in the PD, and the shops superintendents; and to attempt to make a special study of the technical variables\(^\text{17}\) in a number of shops (including those dealt with in this case).

5. Summary of Findings

This section presents a summary of findings in the following order:

\(^{17}\) It is hoped to test the approach developed by Brewer, in Woodward (1965, Appendix II).
First, the views of senior management on the aims and intended consequences of the PC system using the coding framework described in the previous section.

Second, the views of the supervisors on the PC system, using the same coding frame, and also classified by 'favourable' or 'unfavourable,'

And third, the adaptive responses by the supervisors.

As would be expected, by far the largest part of the section is occupied by the material presented in the second group.

5.1 The views of senior management on the Planning and Control system

The responses of the three members of senior management have been aggregated to provide an overall view.

5.1.1 The perceived effects on the job of senior management - The system was perceived as assisting senior management - with planning, e.g.:

"We can simulate the workshop operations."

"We can continually update our plans."

"It gives us immediate reaction that allows us to modify our plans."

with control, e.g.:

"It gives us constant, continuous, tight control."

"... real-time control information"

"... order in the control of work"

"... eliminates 'escape-hatches'

with direction, e.g.:

"It gives real direction of the works by top management."
with communication, e.g.,

"There's better dissemination of information."

"There's absolute certainty of instructions."

with coordination, e.g.,

"... improved coordination of tasks."

with organisation, e.g.,

"It provides for a more equitable re-distribution of tasks and responsibilities."

5.1.2 The intended effects on the operators - The system was perceived as being advantageous in relation to the operators in that it "puts pressure on the employees," "gets after the lazy workers," and "builds up team spirit in the sections" (of the shops).

However, senior management also believed that there was "frustration and demoralisation for men on waiting time." They also perceived the system as having "little freedom for the workers" and considered that it was resented due, principally, to the lack of a financial incentive.

5.1.3 The perceived effects on the job of the supervisors - The only comments made by senior management on the effects of the system on the supervisors were that "it needed constant supervision" and that it entailed a "loss of authority by supervisors." It could be inferred that senior management associated the supervisors with a number of the perceived advantages set out in 5.1.1 above, but this was not explicitly stated by any of the three senior managers interviewed.

5.1.4 Perceptions on the FC system - Senior management made no comments on the staff of the FC. Apart from the comment that
the system was intended to obtain "a more streamlined transport-
ation of raw materials," the comments were of a general nature indicating a perception of certain (possibly) adverse features, e.g., "It's technically sound but it has human weaknesses"; "Its relatively inflexible"; "Unplanned waiting time will be necessary."

5.1.5 Perceptions on output - As expected, the fact that output had increased was warmly commented on.

5.1.6 Other comments by senior management - The comments here referred to the limitations of Railshops as a part of a state-sponsored body in that it was generally restricted as to what it could do, and to the intention of senior management to experiment with and develop and use techniques which would make outsiders, including other departments and CIE top management, take note of what could be done in Railshops. 

In summary, therefore, the FC system was perceived by senior management as directly assisting them in the planning, control and direction of Railshops, and as a way of getting more work out of the operators, and therefore of increasing output. It was clearly recognised that the pressure would be resented by many of the workers, that the supervisors' role would be restricted, that the system was fairly rigid, and that its main weakness was that human beings were involved. Developing and introducing such a system was also perceived as a means of obtaining recognition from outsiders that Railshops was in the vanguard of change, thus combating the image of the 'bankrupt Irish railways.'

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18 Great care is taken of visitors on conducted tours of the workshops, and apart from the handouts already mentioned, visiting parties are presented with a group photograph of themselves before they leave, as a memento of their visit.
5.2 The views of the supervisors on the planning and control system

The data summarised here were obtained from the specific questions on the PC system put to the 26 supervisors in the three shops studied.

TABLE 5.1 - Total number and percentage of favourable and unfavourable comments by all supervisors

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>Comments</th>
<th>Supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Favourable</td>
<td>45</td>
<td>29</td>
</tr>
<tr>
<td>Unfavourable</td>
<td>111</td>
<td>71</td>
</tr>
<tr>
<td>TOTAL</td>
<td>156</td>
<td>100</td>
</tr>
</tbody>
</table>

(i) Comments were classified as favourable when supervisors expressed approval of, or liking for, the system (either in whole or part), and/or perceived it as aiding them in their role.

(ii) Comments were classified as unfavourable when supervisors expressed disapproval of, or hostility towards, the system (either in whole or in part), and/or perceived it as reducing, or obstructing their role.

** The number in the 'total' column under supervisors represents the total number of supervisors who made the total number of comments. In this table, as in other similar tables that follow, the numbers of supervisors in each category do not represent the number of supervisors in the 'total' column.

It will be apparent from table 5.1 that out of 156 comments, the unfavourable comments exceeded the favourable by almost two and a half times.

Table 5.2 below, shows that the percentage of unfavourable comments is greater in all shops, with the Machine shop having the highest.
TABLE 5.2 - Number and percentage of favourable comments by supervisors and by each shop

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>Smithy</th>
<th>Diesel 2</th>
<th>Machine shop</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Favourable</td>
<td>16</td>
<td>39 (10)</td>
<td>18</td>
</tr>
<tr>
<td>Unfavourable</td>
<td>25</td>
<td>61 (10)</td>
<td>40</td>
</tr>
<tr>
<td>TOTAL</td>
<td>41</td>
<td>100 (10)</td>
<td>58</td>
</tr>
</tbody>
</table>

Note: C = comment
S = supervisor

In the Smithy, which has the largest number of supervisors, there was the smallest number of comments, and this shop also had the highest percentage of favourable comments.

In table 5.3 following, the Machine shop has the highest percentage of unfavourable comments.

TABLE 5.3 - Percentage by each shop of total favourable, and of total unfavourable comments

<table>
<thead>
<tr>
<th>SHOP</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>favourable</td>
</tr>
<tr>
<td>Smithy</td>
<td>36</td>
</tr>
<tr>
<td>Diesel 2</td>
<td>40</td>
</tr>
<tr>
<td>Machine shop</td>
<td>24</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 5.4 following shows the comments analysed by the categories contained in the coding frame referred to in section 4. It will be evident from this that the majority of comments (by the majority of supervisors) refer to the job of the supervisor (ref. 1) and to the PC system (ref. 4).

<table>
<thead>
<tr>
<th>Ref.</th>
<th>CATEGORY</th>
<th>Total C (S)</th>
<th>Favourable C (S)</th>
<th>Unfavourable C (S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Job of supervisor</td>
<td>55 (22)</td>
<td>24 (17)</td>
<td>31 (15)</td>
</tr>
<tr>
<td>2</td>
<td>Operators</td>
<td>19 (15)</td>
<td>7 (7)</td>
<td>12 (9)</td>
</tr>
<tr>
<td>3</td>
<td>Senior management</td>
<td>10 (10)</td>
<td>2 (2)</td>
<td>8 (8)</td>
</tr>
<tr>
<td>4</td>
<td>PC System</td>
<td>64 (24)</td>
<td>8 (7)</td>
<td>56 (22)</td>
</tr>
<tr>
<td>5</td>
<td>Output/quality</td>
<td>6 (5)</td>
<td>4 (4)</td>
<td>2 (2)</td>
</tr>
<tr>
<td>6</td>
<td>Other</td>
<td>2 (2)</td>
<td>- (—)</td>
<td>2 (2)</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>156 (26)</td>
<td>45 (25)</td>
<td>111 (26)</td>
</tr>
</tbody>
</table>

Note: C = comment  
S = supervisor

The next two tables show the comments analysed by shop and by category.

It will be seen from table 5.5 that there is a consistent trend in the order of frequency of mention of specific categories for each shop.
### TABLE 5.5 - Number and percentage of favourable comments, and number of supervisors, by category and by shop, arranged in order of frequency of mention of category

<table>
<thead>
<tr>
<th>Ref.</th>
<th>CATEGORY</th>
<th>Smithy</th>
<th></th>
<th>Diesel 2</th>
<th></th>
<th>Machine Shop</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>No. % (No)</td>
<td>Total</td>
<td>No. % (No)</td>
<td>Total</td>
<td>No. % (No)</td>
</tr>
<tr>
<td>1.</td>
<td>Job of supervisor</td>
<td>24</td>
<td>53 (17)</td>
<td>9</td>
<td>56 (6)</td>
<td>6</td>
<td>33 (5)</td>
</tr>
<tr>
<td>2.</td>
<td>Operators</td>
<td>8</td>
<td>19 (7)</td>
<td>3</td>
<td>19 (3)</td>
<td>5</td>
<td>28 (4)</td>
</tr>
<tr>
<td>3.</td>
<td>Output/Quality</td>
<td>4</td>
<td>9 (4)</td>
<td>1</td>
<td>6 (1)</td>
<td>2</td>
<td>11 (2)</td>
</tr>
<tr>
<td>4.</td>
<td>Senior management</td>
<td>2</td>
<td>4 (2)</td>
<td>-</td>
<td>- (-)</td>
<td>2</td>
<td>11 (2)</td>
</tr>
<tr>
<td>5.</td>
<td>Other</td>
<td>-</td>
<td>- (-)</td>
<td>-</td>
<td>- (-)</td>
<td>-</td>
<td>- (-)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>45</td>
<td>100 (25)</td>
<td>16</td>
<td>100 (10)</td>
<td>18</td>
<td>100 (8)</td>
</tr>
</tbody>
</table>

Note: C = comment
S = supervisor

### TABLE 5.6 - Number and percentage of unfavourable comments, and number of supervisors, by category and by shop, arranged in order of frequency of mention of category

<table>
<thead>
<tr>
<th>Ref.</th>
<th>CATEGORY</th>
<th>Smithy</th>
<th></th>
<th>Diesel 2</th>
<th></th>
<th>Machine Shop</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>No. % (No)</td>
<td>Total</td>
<td>No. % (No)</td>
<td>Total</td>
<td>No. % (No)</td>
</tr>
<tr>
<td>1.</td>
<td>Job of supervisor</td>
<td>31</td>
<td>28 (15)</td>
<td>13</td>
<td>52 (8)</td>
<td>22</td>
<td>55 (8)</td>
</tr>
<tr>
<td>2.</td>
<td>Operators</td>
<td>12</td>
<td>11 (9)</td>
<td>2</td>
<td>8 (2)</td>
<td>2</td>
<td>5 (2)</td>
</tr>
<tr>
<td>3.</td>
<td>Senior management</td>
<td>8</td>
<td>7 (8)</td>
<td>6</td>
<td>24 (6)</td>
<td>-</td>
<td>- (-)</td>
</tr>
<tr>
<td>4.</td>
<td>Output/Quality</td>
<td>2</td>
<td>2 (2)</td>
<td>-</td>
<td>- (-)</td>
<td>1</td>
<td>3 (1)</td>
</tr>
<tr>
<td>5.</td>
<td>Other</td>
<td>2</td>
<td>2 (2)</td>
<td>1</td>
<td>4 (1)</td>
<td>1</td>
<td>2 (1)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>41</td>
<td>100 (26)</td>
<td>25</td>
<td>100 (10)</td>
<td>40</td>
<td>100 (8)</td>
</tr>
</tbody>
</table>

Note: C = comment
S = supervisor

The above table (5.6) shows that there is again a consistent trend in the order of frequency of mention of specific categories.
per shop, apart from the item 'senior management' (ref.5) in the Smithy.

A study of both tables (5.5 and 5.6) shows that two of the categories - the job of the supervisor, and the PC system - account for 76% of all comments in the three shops, with the favourable comments accounting for 71% (32 out of 45) of all favourable comments, and the unfavourable for 78% (87 out of 111) of all unfavourable comments.

Having presented in the above tables a composite view of how the supervisors perceived the overall PC system, the individual categories are now dealt with in the order shown in table 5.5, with representative examples of comments. In view of the guarantee of confidentiality given to individual supervisors, the examples are not identified to specific shops.

5.2.1 The job of the supervisor - 22 of the supervisors made 55 comments in this category, 17 supervisors making 26 favourable, and 15 supervisors making 31 unfavourable comments. 10 supervisors made both favourable and unfavourable comments, 7 made favourable comments only, and 5 made unfavourable comments only.

Of the favourable comments in this category, the most frequent (13 comments by 13 supervisors drawn from all shops) referred to improvements in planning and order in the shops.

"I now know my work-load - it's planned for the week. I never knew it before."

"There's order instead of crisis. The work-load is known roughly weeks in advance. We had no idea before."

"The planning of work is a good thing - it had to come."

"It has made the shop more orderly running - now not so much depends on the supervisor's personality."

Other comments illustrated how the system was perceived as
aiding the supervisors in their task.

"We can keep our own score."

"We can get after slumps in performance."

"We're no longer pressurised by the favour system."

"You can look at a man's [job] cards and query him without fear."

"Though it takes a certain amount of control away from the supervisor, you still have it."

The bulk (30) of the unfavourable comments (31) made by 15 supervisors related to three aspects of their work. The first was concerned with the limitations in their authority and/or discretion, and 17 out of 31 comments were made by 11 supervisors. Typical examples of these were:

"We can't move the men around."

"We don't allocate work but we take the kicks."

"We're not paid to think any more."

"We're not managers, we're just 'phone boys."

"I'm just a clerk."

"I don't run the shop - I'm just tied to a desk."

"The supervisor seems to have lost caste - he's only a housekeeper now, a glorified messenger."

The second was concerned with personal strain, and here there were 9 (out of 31) comments by 6 supervisors, e.g.,

"There's general tension and pressure here."

"The system makes me a confirmed liar."

"It's nerve-racking, monotonous - we can't relax."

"It's dehumanised."

"I live with it - I don't like it."

"I go home at night too tired."

The third group related to participation and here 4 (out of 31) comments were made by 4 supervisors, e.g.,
"We weren't consulted enough when the system was put in."
"We were taken by surprise."
"No attention is paid to us."

In summary therefore, while a good proportion of the supervisors (17 out of 26) valued the system because it helped them in the planning and control of their shops, over half of them (15 out of 26) disapproved of it because it limited their role, or caused them personal strain, or because of their lack of involvement (i.e., participation).

5.2.2 The FC system - 24 supervisors made 64 comments on the FC system (as defined in the coding frame in section 4), 7 supervisors making 8 favourable comments and 22 supervisors making 56 unfavourable comments. 5 supervisors made both favourable and unfavourable comments, 2 made favourable comments only, and 17 unfavourable only.

The favourable comments were mostly of a general nature, e.g.,
"It's OK - it's an improvement on the previous system."
"It's OK if it were worked right."
"The organisation of it is good - it's difficult to get it 100%.

Other comments were that it gave "better material control," that the "standard times are reasonable"; one supervisor claimed "that there used to be years of uncompleted orders lying around, but now these are cleared."

An analysis of the unfavourable comments in this category (which contains over half of all unfavourable comments) is given below:

<table>
<thead>
<tr>
<th>Sub-category</th>
<th>No. of Supervisors</th>
<th>No. of Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>FD staff</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>Procedures etc.</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Material</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>General</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>56</td>
</tr>
</tbody>
</table>
Representative examples of each of these sub-categories are now presented. First, on the HD staff:

"The progress clerk has full control here."

"The girls should not give out jobs."

"The control girls are just not familiar with the detailed complex work on the floor."

"The planners and girls haven't a clue."

"They tell us to do a job irrespective of whether it's the wrong way or not."

"There's men planning our work who haven't a clue."

"We'd often find much simpler ways but planning doesn't allow it."

"The higher officials in planning and control sometimes don't seem to understand the floor problems. They expect things on paper to always work."

"Too many planning and control 'square pegs' come around wasting my time."

Second, on the procedures (paperwork, reports, inter-phones, times):

"The paperwork wastes time in getting small [short cycle] jobs done."

"There's too much paperwork and red tape."

"There's an abundance of paper - could it be reduced to a minimum?"

"Giving out daily performance figures is meaningless to me because no notice is taken of them. It's just unnecessary cost."

"With so many 'phones to one girl, it's impossible to get men clocked off on time."

"It's hard on him who is a bit deaf to communicate over the 'phone."

"A man's standard time is cut if he speeds up performance."

"It's kind of one man fighting against another - I never ask for a review of standard because they'd send a timer. . . ."

Third, on matériel (materials, transport, stores, tools, machines):-
"There's more delays in getting materials than in the old system."

"The stores system is bad, with frequent shortages of standard items."

"Tools and equipment should be available before special jobs are given out."

Lastly, comments of a general nature:-

"There's too little human consideration under this system."

"At times it's inclined to be too impersonal."

"It's bureaucratic - it takes a long time for details to percolate back to the planning office - it would be better if it had more elasticity."

"It would be very suitable for a production shop but not for overhauls."

"The system is not very appropriate in this section - without it, everyone would be happier."

There is little need to sum up on the supervisors' comments on the PC system itself. Most of these are unfavourable, and are directed at the competence of the planners and girl schedulers, at the communication procedures and times, at the supply position, at the impersonal nature of the system, and at its inappropriateness for repair work.

5.2.3 The operators - In this category 15 supervisors made 19 comments, 7 of which were favourable (by 7 supervisors) and 12 of which (by 9 supervisors) were unfavourable. One supervisor made both favourable and unfavourable comments, 6 had favourable comments only, and 8 had unfavourable comments only.

Examples of the favourable comments were:-

"It shares out the work and catches the dodgers."

"Some fellows - the ones who didn't work - think it's bad."

"The good operators like it."

"The majority have fallen in with it well. They feel the need for change and must comply with it."
And some examples of the unfavourable comments:

"Workers are treated like numbers - they're all the same. The system has taken the skill out of the work."

"The old skilled workers just can't adjust."

"There's tension about it all the time booming over their heads."

"Workers feel they're not getting enough time for the job so they give up caring. The system is hated by all."

"The men were promised a bonus and never got it. Performance could be 200% if there was a bonus."

"Some fellas could work much faster if motivated by a bonus."

In summary, though the majority of comments on the effect of the system on the operators were unfavourable, and related mainly to skills being devalued, and lack of a financial incentive, over 25% of all supervisors interviewed considered that it had beneficial effects, mainly due to the fact that it made each operator take his share of work.

5.2.4 Output/quality - Here, 5 supervisors made 6 comments, 4 favourable (by 4 supervisors) and 2 unfavourable (by 2 supervisors).

Favourable comments were confined to fairly general statements, e.g.,

"Output is greater due to better organisation."

"The system has increased production."

In the unfavourable group, one supervisor claimed:

"The quality of the work is gone to hell; tools and machines are smashed."

The significant factor here is the relatively few comments made on output and/or quality.

5.2.5 Senior management - Here, 10 supervisors supplied 10 comments,
2 of which were favourable.

In the favourable group, one supervisor stated:

"There is pressure to achieve standards, but that is business. You must have a certain amount of pressure. It's very hard to get a happy medium."

In the unfavourable group, typical comments were:

"There are too few management concessions made."

"Management should visit us more frequently."

"There's pressure to get good performance."

Even with the good rapport established, one would not expect a large number of comments on this category in this type of study.

In summing up the findings relating to the supervisors' comments on the PC system, it is clear that its impact cannot be seen just only in black and white terms. Though unfavourable comments greatly exceed favourable comments, the system, as perceived by the supervisors, helped them in planning and getting order in the shops, in sharing work between all operators, and in increasing output. At the same time, however, the supervisors appeared to resent the limitations placed by the system on their authority and discretion, to desire greater participation in change, and to be under a fairly high degree of strain. The greatest complaint was against the PC system itself, (particularly the PD staff and procedures), which was perceived by a number of supervisors as being impersonal, and appropriate for manufacturing work only. Some felt that it tended to devalue operators' skills, and believed that a bonus scheme should be introduced to compensate the operators for having to work under the system.

The pattern of comments on each category was pretty consistent for each shop, and a substantial proportion of them covered two items (the job of supervisor, and the PC system). The lowest number
of unfavourable comments was obtained from the 10 supervisors in the Smithy, while the Machine shop supervisors made the lowest number of favourable, and the highest number of unfavourable, comments.

5.3 Adaptive responses by the supervisors

In addition to the comments dealt with above, a few of the supervisors in the shops voluntarily disclosed in the interviews that they did not always rigidly follow the prescribed FC system. These adaptive responses can be divided into three broad groups, covering the allocation of work, the procurement of materials and spares, and lastly, a general group. Examples of each group now follow and again, for obvious reasons, these are not identified to individual shops.

It will be recalled (section 3) that supervisors were required to follow the inter-phone instructions of the girl schedulers to the letter, and thus had no say in the selection of jobs, or of operators. However, this rule was not always followed, e.g.,

"I put the best man on the hard jobs."

"The girl should put the man on the job but she never queries me. I'd have to ask to be relieved of the job if that happened."

"We rely on certain good men to get the job done."

"It's better for me to allocate jobs than the girl - she gets mixed up."

"we have one or two 'cripples.' The girl is advised by by us re which man is suitable for what job."

Again, the system prescribed that material, parts, and tools for jobs should be provided by the progress clerk; under this rule, supervisors were expected to stay in their sections and wait for materials etc., to be brought to the shop. However, this rule also appeared to be modified on occasions, e.g.,
"You still have to run around a bit, looking for materials, though you're not supposed to do it."

"To keep the work supplied, you keep an unofficial supply of parts and materials."

"If the present system was worked as they want it, nothing would get done. I often have to take short-cuts - for example, I carry in material myself."

The last group contains a number of comments on different types of adjustments made by the supervisors to the prescribed system.

In relation to the rule that a job must have paperwork before being started:-

"If I was to live up to this rigidly there'd be big delays; but I don't. I do rush jobs for people without paperwork. It depends on the girls - some of them keep rigidly to the rules."

To the rule that jobs must be booked on and off in chronological order:-

"We get lots of short jobs and lump them together."

To the rule that supervisors must remain at their stations:-

"We don't be at the table /control desk in each section of each shop/ all the time; we're supposed to be. We assist the men all we can."

To adhering to machine speeds and feeds, and standard times:-

"The boys reduced the feeds and speeds as soon as the planners went away because they /the boys/knew best."

"I wouldn't let my men do the jobs in the allowed times. They 'go over' and I use up waiting time."

Some other adjustments made by the supervisors are illustrated by the last two comments given below:-

"I work occasionally to the planning office programme."

"A man's standard time would be cut if he speeds up performance due to alterations /in methods/: so we don't make any alterations."

It will be apparent that in general these comments indicate that the supervisors adjusted the system to keep the work moving, and
(probably) keep performance up.

5.5 Summary

In this section, analyses of three sets of data relating to the PC system have been presented: the first dealt with the views of senior management on the aims and intended consequences of the system; the second, with the views of supervisors on the system as a whole; and the third, with some of the adaptive responses made by the supervisors to the system.

6. Interpretation of Findings

In this section, an attempt is made to assess the influence of the environmental characteristics on senior management and in turn, to assess senior management's influence on the controls. Thereafter, the perceptions of the system by senior management and supervisors are compared, and this is followed by commentaries on the possible reasons for the differences in perception of the system by the supervisors in each of the three shops studied, and on the adaptive responses of the supervisors. The section concludes with comments on the role of the PD, and on the relevance of the PC system.

6.1 Environmental characteristics, senior management and the controls

Though the senior management were not old men, each had spent all of his working life in and around the shops. They well knew about the history of the railways, the public image of GIE, and the pressures from the government, the unions, and the GIE board and senior executives; and they had lived through a difficult period with diesel locomotives. On getting the opportunity through promotion, they began immediately to make changes. They perceived
Railshops as a place where tremendous improvements could still be made, and they set about this with determination. By improving the physical conditions, by getting the place under tight control, by increasing productivity, those outside (including the CIR board and senior executives) would see that Railshops, at least, was capable of combating the image. So, consciously and deliberately, senior management adopted a highly authoritarian and bureaucratic model of administering the workshops - a model that has traces of Max Weber, of the 'Classical school,' and of Royal Naval establishments through which the writer passed during the last war. This 'industrial engineering' model of administration was, it is repeated, consciously adopted by senior management; there was no equivocation.

The centralised PC system with its rules, procedures, measurements, rigidity, and rapid feedback fitted the model ideally. All 'escape hatches' would indeed be closed, and getting the system working became a primary goal. "Resistance must be overcome," said one senior manager, "and putting it bluntly, they do what they’re told!"

It must also be pointed out that the different techniques and work mix in the shops, and the varying degrees of predictability of repair work demanded a fairly rigid and centralised planning and control system that would be based on appropriate units of measurement and recognise the limitations of schemes based on money, such as job costing and management accounting techniques.

There is also no doubt that the centralised nature of the shops enabled senior management to install the PC system more easily than they would have if the shops had been dispersed throughout the country.
6.2 The perceptions of the FC system by senior management and supervisors

Certain major differences occurred between senior management and supervisors in relation to the way each group perceived the FC system.

Senior management saw it as a great help to them in doing their work and getting output up. They recognised that some operators would have to work harder, and that the restriction in freedom, without a financial incentive, would cause some resentment and frustration. They also recognised that the system would tend to reduce the authority of the supervisors, but believed that generally, the system was technically sound and would suffer from human weakness.

The supervisors, on the other hand, while they appreciated the order that it brought to their job, strongly resented the encroachment on their authority and status, and also protested at the personal strain, and lack of opportunities for participating in developing new ideas. Their most frequent unfavourable comments related to the competence of the PD staff, excessive paperwork, delays in materials etc., and to the impersonal nature of the system.

Two points emerge from this. First, both groups perceived that the system had both favourable and unfavourable consequences. From senior management's viewpoint, the system's advantages were considered to outweigh any unfavourable ones - these latter would just have to be accepted. And from the supervisors' point of view, while they strongly resented the PD system's staff and procedures, as well as the reduction in their discretion, status, etc., they did welcome a number of its features and benefits.
Though this may be an obvious point to labour, there does exist a tendency in much of the literature to highlight only adverse consequences.

The second point concerns items or categories perceived. While the supervisors complained most frequently about the PC system itself (staff, paperwork, etc.), senior management, apart from a couple of minor comments, took this as given, probably because the PD staff and procedures did not impact on them directly.

6.3 The comments from the three shops - a brief comparison

It is not proposed to deal in depth with the possible reasons for differences between the number and type of comments made by supervisors from each shop. However, it is possible that the relatively low degree of complexity of technology in the Smithy\(^{19}\) could be the reason for the small number of unfavourable comments in relation to the FC system and its effects, the reverse situation occurring with the Machine shop. From this it might be possible to suggest that a highly programmed system of planning and control, which limits the discretion etc., of supervisors, is likely to be resented to a greater extent in units or departments which tend to require a large number of skilled people.

6.4 Adaptive responses by supervisors

There is no doubt that pressure was exerted on the supervisors by the system, but there are only limited data to gauge its

\(^{19}\)Of course, the FC system had been operating longest in the Smithy.
extent, and how it was dealt with. Certainly, the supervisors modified the prescribed system in a number of different ways such as personally allocating the work and marshalling stores. Most of the examples given in section 5.3 indicate that while rules were broken (i.e., were dysfunctional in relation to senior management's prescriptions) they appeared to have a favourable effect on output, one of senior management's primary goals. Of course, this could have been due to the fact that the supervisors themselves wanted to get a good 'score' and avoid pressure from senior management; and manipulating the system in a positive direction might well have evoked less pressure than having a low performance figure.

No evidence was found to suggest that 'department-centredness' as reported by Argyris (1952) existed, and although little scope existed for deliberately adjusting figures, this had happened on occasions in the past, when certain work study men and supervisors in one shop (not one of the three studied) had treated untimed work as timed work by inserting the actual time taken for the job in the standard time column on the job card. By this means, both the work study men and supervisors had helped to improve their own score, the former, by increasing the percentage of the shop applied i.e., jobs covered by standards; and the latter, by increasing the operator and shop performance. Before this was stamped out it prompted one manager to remark:-

"We're getting a hellava' good performance on paper - but there's no b---dy work comin' out of the shop."

Again, it may be useful to stress that adaptive responses to control systems need not all be dysfunctional in relation to the goals of the undertaking.
6.5 The role of the PD

Though the competence of the PD staff was challenged by the supervisors, there was little trace of pressure being exerted by the PD on the supervisors, in the way accountants for example, are conventionally supposed to pressurise managers. All the pressure in Railshops came from senior management, and the majority of the PD staff were really just an extension of a technical system. In fact, it is probable, if sufficiently sophisticated control equipment had been available, that senior management would have eliminated the "human weaknesses" by dispensing with the human beings.

In general the PD system was considered to be technically appropriate for Railshops - it reported on key items, in the proper units, at frequent intervals. Certainly, it satisfied senior management by helping to increase output, by giving them something which fitted in with their attitude to change, and with their desire for control.

However, most of the other participants were taken for granted by the system, and were viewed as instruments - albeit human and weak. In fact, one could detect two main cultures in Railshops. On one side, the senior management, on the other, the rest (including supervisors). In the former group were the innovators, continually thinking up new ideas; and in the latter, the doers, on the receiving end of the new ideas.

"Resistance must be overcome ... putting it bluntly, they do what they're told."

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20 It is interesting to note that the accountants impinged minimally on control at supervisory level in Railshops.

21 See March and Simon (1958, sect. 3.2), especially in relation to their interpretation of Merton's proposition relating to the demand for control and the effect it has on increasing the emphasis on the reliability of human behaviour (p.38).
Possible generalisations that can be drawn from this case are summarised below:

- Environmental characteristics can influence control requirements.
- Within an undertaking, (and even within its sub-units) there can be different technologies of varying degrees of complexity.
- The greater the uncertainty, the greater the complexity and instability of the production system, and therefore, the greater the problems of control. Following from this, the greater is the need for sophisticated controls.
- There appears to be a possible relationship between complexity of technology and the reaction of supervisors to the imposition of a rigid system of planning and control. The greater the degree of complexity of the technology, the greater the resistance of supervisors to rigid controls.
- Pressures from, and conflicts among external agencies in relation to the future of a public service undertaking (or one of its main units) can affect the attitudes of its management and in turn, the type of controls.
- Centralised location of units facilitates the introduction of controls.
- The industrial engineering model of administration, as a modern bureaucratic form, will tend to be imposed to stabilise a highly unstable system, and it is probable that this model has the greatest chance of achieving

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22 See Dubin (1955), Rowe (1960) and Woodward (1965), as well as the propositions relating to the division of work in March and Simon (1958, p.159).
stability in the shortest possible time. Following from this, management's reaction to stabilising an unstable system can be an over-reaction.23

- The selection of management controls and the way they are operated tend to mirror the model of administration adopted by senior management.

- The apparatus of controls (rather then the results) will tend to assume greater significance for those participants on whom the controls impact. Thus, there will tend to be differences in perception of controls at different hierarchical levels.

- Senior management may be quite well aware of, and willing to accept certain adverse consequences that may result from the introduction of controls.

- Although controls may be rigid, impersonal and associated with pressure, the benefits they bring in stabilising an unstable system can be appreciated by participants on whom the controls are imposed.24

- Where a loose system of controls is replaced by a rigid system, it is probable that the unfavourable reactions of participants on whom it impacts will outweigh favourable reactions. But the reverse may not follow, i.e., favourable reactions may not outweigh unfavourable when rigidity is

23See March and Simon (1958, sect. 3.2).

24It is probable that participants will have a greater propensity to accept rigid controls where the survival of the undertaking is at stake and where the choice of opportunities outside the undertaking is limited. See March and Simon (1958, sect. 4.6).
• Adaptive responses to rigid controls need not all be dysfunctional.
• There are limitations in using accounting, with money as the primary unit, for measuring performance.

25 A friend of the writer was appointed as director of a mental hospital. He decided almost immediately on taking up his post to remove all rules and procedures relating to visiting hours and the locking of doors and gates: in fact, to 'de-bureaucratize' the hospital. The result was that the staff, particularly those with a number of years service, found it extremely difficult to handle the new situation. This is an example where individuals, having been conditioned to operating in a highly structured situation find it really difficult to cope with a relatively unstructured one.
CASE II: RAILSHOPS

ILLUSTRATIONS OF RAILSHOPS

A. BEFORE CLEAN-UP:

B. AFTER CLEAN-UP:
**Simplified Organisation Chart**

Mechanical Engineer (Rail)

- Asst. M.E. (Technical)
- Asst. M.E. (Works) "Railshops"
- Asst. M.E. (Maintenance)

Production Superintendent

- Production Planning and Control
- Material Control
- Internal Transport
- Work Study

Superintendent (Diesels)

- Diesel 1 (Locos)
- Diesel 2 (Railcars)

Superintendent (Carriages and Wagon)

- Carriage Shop
- Wagon Shop
- Lifting Shop
- Timber Fab' n.
- Paint Shop

Superintendent (Feeder Shops)

- "Smithy"
- "Machine Shop"
- Foundry
- Plate Shop
- Sheet Metal Shop

*Note - Shops Studied*
PRODUCTION PLANNING AND CONTROL*

Production planning and control covers all the activities necessary to predetermine the methods, quantities and dates of production and to coordinate and control the successive stages of production in such a way that the final product is available on time to the required quality at the lowest cost.

The economic justification for a production planning and control section in an organisation can be based on a number of factors, some of which are:

1. Time saving: waiting time reduced by ensuring sufficient jobs are ready to start as soon as machines are available.
2. Helps remove wasteful "bottlenecks."
3. Enables realistic delivery dates to be predicted and achieved.
4. Facilitates financial budgetary control and cost analysis.
5. Higher productivity by ensuring that work is done on the most appropriate machines and in the best sequence.
6. Reduces waste by specifying the most economic sizes of raw materials.

To be effective, production control systems of necessity require a considerable amount of documentation. It is important, therefore, that the required paper work can be produced as efficiently as possible. The following is an outline of a comprehensive production system using the attached set of forms.**

*This description of the FC system at Railshops has been extracted without modification from a hand-out prepared by the PCD for training, and for visitors to the shops.

**These forms are not attached here.
How the system works

An appreciation of how this control system operates may best be obtained by following the progress of an order for the manufacture of a component.

Registrar

A requisition made out in triplicate is presented to the registrar in the production control office. This requisition is entered in a register and a works order number is assigned to it for reference purposes. One copy is returned to the section requesting the component and the remaining two are passed on to the process planning clerk.

Process planning

The process planning clerk selects from a numerical reference file the appropriate process planning sheet and passes the two copies of the requisition and the process planning sheet to the masters heading section. If a similar component has not been previously manufactured, the work requisition is returned to the registrar who forwards it to the process planning section, who prepare the necessary process planning sheets.

Master heading

At the masters heading station, information is taken from the process planning sheet and the work requisition and transferred to master sheets for duplicating. The process planning sheet is returned for filing and the master sheets and work requisition are passed to the loading board station.

Loading boards

The loading boards are arranged with workshops and workshop
divisions on the vertical scale, and time indicated on the horizontal scale. Work load per operation is transferred to this scheduling board in the correct order of sequence and a planned completion date calculated. Scheduling details are entered on the headed masters, the work requisition and advice note. The work requisition is returned to the registrar for entry of planned completion week in the register, the advice note is returned to the customer advising him of planned completion week, the heading master is forwarded to the banda room.

**Banda room**

Upon receipt of the heading master, the operators of the banda duplex line selector systems machines in the banda room select the appropriate constant master by reference to the process planning sheet number and their numerical reference files. From these they automatically produce a complete set of works orders consisting of: Materials allocation card; job time card; job instruction card; material requisition; job identity label; delivery docket; and route card.

The Benda Duplex machines produce all these forms in a matter of seconds, and providing the masters are correct, each document must be absolutely correct. With the utmost ease, the operator can select the information that is to be copied on to each document.

**Stock controller**

The material allocation card passes to the stock controller who ensures that the raw materials required are available to commence production.
Control clerk

One copy of the route card together with a delivery docket, job identity label and material requisition now passes to the Shop control clerk who submits the requisitions to stores. On receipt of materials and the necessary drawings he advises the shop scheduler that manufacture can be initiated.

Shop scheduler

For the purpose of production control, each workshop is divided into a number of sections each headed by a control charge-hand.

On advice that materials etc., are available job instruction cards are despatched to control charge-hand, who, on receiving instructions from the shop scheduler, assigns the work to the various operators.

The job instruction card advises the operator of the operations required for the manufacture of the component and the time allowed. The time card also shows the time allowed for manufacture and is retained for booking-on and off purposes by production control.

The shop scheduler decides when the various stages of manufacture should commence and communicates this information to the control charge-hand by means of inter-phonc. The time at which the operator commences work on the component is 'clocked on' the job time card. When the shop scheduler is informed of the completion of the job, the operator is 'clocked off.'

A feature of this control system is that the control charge-hand is kept informed of the work pending for each operator under his control. As one job is completed, the operator is given fresh instructions thus eliminating delay and ensuring a smooth
Production flow.

Upon completion of each component, the control clerk arranges for its despatch according to the instructions on the route card.

Closed-circuit television

Job time cards for completed components are passed on to the comptometer operator who calculates operator and shop efficiency from the data supplied. (These figures are displayed on an information board which is scanned by a closed-circuit television camera. This information may be read off monitor screens in the offices of the departmental heads.) Machine downtime is also transmitted in the same manner.

Costing

Finally, the actual cost of production is determined by the accounts section from information contained on job time cards and material requisitions.
ILLUSTRATION OF CONTROL ROOM
Coding Frame used in Classifying Comments of Supervisors and Senior Management

1.0 The Effects of the PC System on their Job - as perceived by senior management or supervisors

   (Authority, discretion, status, planning, controlling, directing, communicating; participation, personal strain)

2.0 The Effects of the PC System on the Operators - as perceived by senior management or supervisors

3.0 The Effects of the PC System on Supervisors - as perceived by senior management; or

   The Views of the Supervisors on Senior Management - in relation to the PC System

4.0 The Planning and Control System (PC System) - as perceived by senior management or supervisors

   4.1 Participants in PD
      4.1.1 Progress clerks
      4.1.2 Planners
      4.1.3 Female schedulers (the girls)
      4.1.4 Work study men

   4.2 Procedures etc.
      4.2.1 Paperwork
      4.2.2 Reports
      4.2.3 Inter-phones
      4.2.4 Standard times

   4.3 Material
      4.3.1 Material/transport/stores
      4.3.2 Tools
      4.3.3 Machines

   4.4 General

5.0 The Effects of the PC System on Output and/or Quality - as perceived by senior management or supervisors

6.0 Other

*The head of this department was treated as a member of senior management in analysing comments.
CHAPTER 6

CASE III: RADIO TELEFIS ÉIRÉANN (RTE)

1. Introduction

This case is concerned with Radio Telefís Éiréann (RTE), the Irish national broadcasting authority.

At the request of the director-general, the writer made a general survey of the organisation and operation of RTE, and the following is a summary of the terms of reference:

- To review the organisation structure and its operation, and the methods, procedures and information used for planning and controlling resources.

- To assess the suitability of these in relation to the present and future objectives of RTE.

- To identify, where appropriate, specific sectors where improvements are required.

It should be stressed that the writer was not involved in investigating the content of programmes, or the competence of artists, producers etc.

An average of four days per week was spent on this project.

1 The original official name for the Authority up to the middle of 1966 was Radio Éireann; it was then changed to Radio Telefís Éireann (RTE), and though the field work for this case was completed during 1965, the latter abbreviation will be used throughout.

2 Although it has been (rightly) contended that "the only thing that really matters in broadcasting is program content; all the rest is housekeeping" (Report of the (Special) Committee on Canadian Broadcasting, 1965, p.3), the 'housekeeping' must still be done.
which started in January and finished in April, 1965, when a comprehensive report was submitted which set out findings and key areas for improvements, and recommended changes in the organisation structure and in the information and procedures for planning and control. Formal presentations of the findings and recommendations were made to senior executives and to the members of the authority, and assistance was given in implementing the recommendations, the writer spending an average of two days per week on this between April and November 1965.

It was made quite clear to the director-general that the writer was engaged on research into management controls and though the project, as a piece of action research, involved investigation, diagnosis, prescription and implementation, the purpose here is to concentrate on presenting and interpreting the findings in relation to the broad conceptual framework of the whole study. This case and the next, differ significantly from the first two in that the writer had no previous inside knowledge of RTE, whereas considerable knowledge of the organisation and operation of CIE had been acquired from working there over a period of years before the research was started. Thus, in RTE it was necessary to spend time in learning about broadcasting and about the

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A description of the organisation and activities of RTE is given in the next section.

For general background information on broadcasting, see Naurola (1964) and Briggs (1961 and 1965); the annual handbooks issued by the BBC and ITV companies, and reports conducted by various committees set up by the British Government (principally the Report of the Pilkinson Committee, 1960); the Report of the (Irish) Television Commission, 1959; and three articles in the Irish Times on Irish Television (1965). Little, however, has been published in relation to the planning and control of resources in broadcasting; see McEwen (1964); Bernstein (1962); and the Report of the (Fowler) Committee on Canadian Broadcasting (1965). The latter which became available in September, 1965, some months after the general survey of RTE had been completed, is a hard-hitting informative document and in the view of this writer, gives the best available picture of the problems of managing the housekeeping activities of broadcasting companies.
operations of RTE so as to be able to relate the controls to the organisational and environmental characteristics. In fact, (it may be timely to anticipate final conclusions) the writer considers that in any undertaking a thorough appraisal of its characteristics is essential for a real understanding of its controls and how they operate.

Following this introduction, a general background summary is given of RTE, including its history, relationships with the government, market and product characteristics, and organisation. This is followed by a description of the method of approach, and then the key findings are presented, including a summary of the organisation and environmental characteristics, and of the formal controls. Finally, the findings are interpreted and conclusions drawn.

Before proceeding, it only remains to underline two major points: first, the greater part of the case deals with the problems of controlling the television service ("a monster with an insatiable appetite," as it has been called more than once); and second, the restrictions on confidentiality apply more than ever, which means that a lot of data collected on the project cannot be released. We are dealing with a rapidly growing, obtrusive phenomenon of the twentieth century in Ireland and naturally, this brings many problems for participants, both inside and outside the undertaking.

2. Background

2.1 History

Radio Telefís Éireann, the Irish national broadcasting undertaking, was set up as a statutory corporation under the Broadcasting Authority Act, 1960. The government appoints the governing
body, known as the authority, which has nine members (all part-time) and whose primary function is to "establish and maintain a national television and sound broadcasting service" (section 16, Broadcasting Authority Act, 1960).

Prior to the setting up of the authority, the radio broadcasting service which was originated on 1st January, 1926 and known as Radio Éireann, was operated as a direct State service under the Minister for Posts and Telegraphs. In 1930, the programming and administrative staffs were moved to the General Post Office in Dublin, from where they still operate in historical, if rather cramped surroundings. Regional studios were opened in Cork in 1956.

With the development of television in Europe, a government commission was set up in 1958 and following its report in 1959, the government decided that a television service should be established by an authority which would also take over and operate the sound broadcasting services. It was also decided that while broadcasting was to be primarily a public service, the authority should be permitted to accept advertisements.

Under the Broadcasting Act 1960, the authority is responsible for operating the sound and television services, subject to certain powers reserved to the Minister or the government. The main

5 For a more detailed history and description of the activities of RTE, see Radio Telefís Éireann (1966), a booklet published by the authority from which certain parts of this section have been drawn, and Gorham (1966) whose official history of Irish Broadcasting was published after the major part of this research had been completed.

reserved powers relate to the appointment and removal of members
of the authority and the director-general; to the licensing of
broadcasting stations; to periods of broadcasting; to the amount
of advertising time in programmes; to the payment of licence fees;
to capital advances (Minister for Finance). The Act also states
that the authority "shall bear constantly in mind the national
aims of restoring the Irish language and preserving and developing
the national culture and shall endeavour to promote the attainment
of those aims" (section 17).

The authority came into existence 1st June 1960, and virtually
all the state-employed staff of the radio service accepted transfer.
Work was already in hand in building a high-power television
transmitter, and during the second half of 1960 and throughout
1961, staff were recruited and trained, studios and supporting
facilities designed and erected, and equipment purchased and
installed in a modern building on a 23 acre site in almost rural
surroundings at Donnybrook, a Dublin suburb. The new television
service was brought on the air on 31st December, 1961, just over a
year and a half after the establishment of the authority, and within
a short time was broadcasting an average of almost 40 hours of
programmes per week, 45% of which were home-originated, and the
balance, imported.

7 The studios, and programme and engineering operations
staff offices for radio are still housed in the GPO, pending the
construction and equipping of a radio building at Donnybrook.

8 As the terms imply, home-originated programmes are those
which are produced with a station's own resources; imported
programmes are those purchased or rented from other stations,
the USA usually being the main supplier.
2.2 The primary goals of RTÉ

While the 1960 Act does not elaborate on what is meant by a "national broadcasting service" the director-general stated in a talk to senior staff in 1965 that

... our programmes must be designed to inform, educate, and entertain our public - the men, women and children throughout this country and from all types of homes. Our programmes must complement and support, and in some cases compete with, other agencies in our community engaged in providing information, education and entertainment. Because of their quality, both in content and technical merit, our programmes must be capable of deserving audiences." (italics in original)

In addition, RTÉ has a statutory obligation to pay its way, and it was the declared aim of the members of the authority and the director-general that this should be achieved so as to preserve its financial independence.

2.3 Scope of RTÉ

Broadcasting is today the most powerful agent of mass communication in the world - but the business of a national broadcasting service is a highly complex affair and a great number of people and a large amount of technical resources are needed to plan, produce and transmit programmes, and to supply supporting services.

RTÉ operates in the national environment and probably impacts on the public-at-large more than any other undertaking in the State, which, having only achieved independence in the last 45 years, (followed by a short but cruel civil war), probably contains more than the usual number of strong pressure groups, found in a democratic society. A simple diagram showing the link between the public and RTÉ is shown in Appendix 6.1.

Apart from the varied formal and informal groups that exist
in the State, and the fact that many individuals belong to a number of groups, many different cultures exist in the authority itself. These include actors, musicians, churchmen, journalists, producers, artists, photographers, designers, electronic engineers, and a host of supporting technical and administrative staff. Differences in attitudes exist even within these groups; for example, between radio and television personnel, between operating and development engineers, between those administrators from the civil service and those who had been recruited from private business and between a number of people of different nationalities.

It could then be fairly claimed that RTÉ is a highly complex system, and that apart from maintaining some balance between the often conflicting audience groups (the Irish language, sport, and politics are the principal subjects of conflict), the authority has within itself many potential sources of conflict which it cannot ignore but must use as best it can to help it in achieving its goals.

The diagram in Appendix 6 shows the occupations of some of the 1095 people employed in 1965, the operational pattern of the services (covering a period of 18 hours per day, every day in the year), the number of buildings, including main transmitter sites, and the total finance involved.

2.4 Product characteristics

RTÉ can determine its own products, and can decide whether to produce its own programmes or purchase (or hire) from outside;

9This term is used in its widest sense to refer to the attitudes and behaviour that groups of individuals adopt due to common experiences, interests, technical training, environment, etc.
it can, if required, store the products on tape or film. Both media cover a comprehensive range of output both in Irish and English, including news, talks and features, music, variety, drama, sport, children's, women's and school's programmes. In 1965, radio output averaged 82 hours per week, of which 25% was sponsored programmes; and the television service broadcast an average of 46 hours, 52% of which were home-originated. For most audiences, and in particular, for viewers, programmes 'perish' immediately they have been transmitted and though they can be re-run by the station, they cannot be re-run by the listeners or viewers when they choose to do so, without fairly expensive equipment.  

2.5 Market and finance

Though RTÉ has a monopoly in broadcasting in the State, many in its audiences are capable of receiving radio programmes from other nations, and it has competition from the UK for television audiences in multi-channel homes in the North and East of Ireland where ITV and BBC signals can be received.

The authority obtains its income from licence fees and advertising, and in the financial year to March 31st, 1965, of the total income of £3.27 million, advertising revenue constituted £1.82 million (55%). Television advertising accounted for over 90% (£1.64 million) of this sum and has proved to be buoyant, having doubled between 1962/63 and 1964/65.  

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10. Tape recorders are, of course, used, particularly by musical enthusiasts, for replaying sound programmes, but the writer has no knowledge of viewers who store television programmes.

11. As will be discussed later, this buoyancy created problems in controlling expenditure.
Since the end of 1963/64 financial year, the authority has absorbed increasing deficits in the radio service from surpluses in television. Apart from small losses in the first and third years of its operations, the authority made profits of £270,000 in 1963/64 and £373,000 in 1964/65.\(^2\)

Since the introduction of the television service, there has been an appreciable drop in the number of sound broadcasting licence fees, with a substantial increase in the number of combined TV and sound licences. It has been estimated by senior management that the total of about 420,000 sound licence fees issued in 1962 will shrink to about half that number (233,000) by 1968; and at the time of the study it had already been reduced by one third. On the other hand, combined licences increased from 93,000 to 270,000 and were estimated to reach a saturation of 345,000 by 1968.\(^3\)

With its market solely in Ireland, there are definite limits to RTÉ's potential for expansion, and the income it can expect from licence fees and advertising is limited.

\(^2\) An amount of £\(\frac{1}{2}\) million was paid in subsidy by the government over the initial years of existence (from 1960) but this sum was taken up by the end of the 1963/64 financial year, all of the money having been applied to making good deficits on the radio service. The Exchequer has been the main source of funds for capital expenditure, these being by way of repayable advances. In effect, therefore, RTÉ from 1963/64 has had to be completely self-financing and at the end of 31st March, 1966, it had financed just under half of its assets, the balance mainly representing repayable capital advances.

\(^3\) In fact, according to surveys by Television Audience Measurement Ltd., there were over 350,000 homes in the country with television sets at the end of 1965, representing more than 50\% of all homes in the country (see the Radio Telefís Éireann handbook, 1966, p.21). Of course, the potential audience for radio has increased because of the combined licence fee, which permits the holder to operate both TV and radio sets.
2.6 **Organisation and activities**

The general organisation of RTE at the time of the study is shown in Appendix 6.3. The first director-general, appointed in June 1960, when the new authority was started, resigned and was succeeded in January 1963 by an experienced international Irish business executive.

The programmes, news and engineering divisions form the 'spine' of any broadcasting organisation and a brief summary now follows of the principal activities for which each division in RTE was responsible in the early part of 1965.

The news division served both sound and television and is located in the main buildings at Donnybrook. Its staff of 54, consisted in the main of sub-editors and reporters; four cameramen were employed for outside filming, regional news being usually supplied by 'stringers,' the trade name for freelance journalists and film cameramen.

The chart in Appendix 6.4 shows the outline organisation of the TV programmes division, which employed a total of 212

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14. It will be appreciated that only a brief summary can be given of the organisation and activities of RTE, and, as stated earlier, the emphasis is primarily on television.

15. The organisation of the TV programme production departments is not discussed here because it does not materially concern the research area. However, the work on this case provided a considerable amount of material on this area against which organisation theories can be tested. For those interested the key question is: "What criteria can be used to assist in deciding on the type of programme production organisation to set up?" RTE has tried three types of structures for producing TV programmes: the conventional type, by programme category, where a senior executive is placed in command of a general category such as drama, or children's programmes; the group system, where groups of producers are allowed to produce different categories of programmes, each group working to a senior executive; and the host system, where each group is responsible for a specific day (or days) in the week, each day having a main theme. During the study, the first two types of organisation existed side by side (see Appendix 6.4).
full-time staff, excluding performers, who are only hired on contract by RTÉ for a particular show or series. The staff on programme production, under the assistant controller, included six executive producers and three editors who headed up the main departments, 20 producers, and 26 female production assistants (P.A.'s). Though there was a costing assistant under the manager in charge of programme administration, programme costing had only just begun at the time of the study. Only three of the executive producers, and none of the other senior executives or department heads had previously worked in the radio service.

The sound broadcasting programmes division had a staff of 222, but this included 145 performers in 'standing' groups, comprising a symphony and a light orchestra, a choral group, and a drama group. Because of the nature of the product, radio does not demand such a complex of facilities as television. In RTÉ many of the staff in sound broadcasting had been 'bled off' to television, and the average age of senior executives in the radio service was certainly higher than in its younger, more virile and less staid younger 'brother.' All of the senior staff, except the director of music (an eminent conductor) had worked under the control of the civil service.

The outline organisation of the engineering division is shown in Appendix 6.5. The staff of 382 was divided into three broad groups: TV operations, radio operations, with the third group being responsible for technical development, interference detection, maintenance, and certain TV facilities relating to processing, dubbing, and screening film. In addition, a small control section had been set up which was responsible for stores, technical training and processing paperwork. The TV transmitters,
(with a total staff of 83) are located on the top of mountains in each main sector of the country. Of importance for this case is the position in the organisation of the TV studios and OB (outside broadcasting) sections and the TV recording facilities, as well as the role of the control section. Apart from the assistant director, and the heads of radio and TV operations, few of the other senior staff under the three principal heads had worked in the radio service.

The administration division, a chart of which is shown in Appendix 6.6, had a staff of 186, comprising, in the main, clerk secretaries/typists, clerks, attendants and security men, and messenger/drivers. Its principal functions were personnel, legal and contracts (mainly TV), accounting, and a variety of services including purchasing, printing, buildings, heating plants, grounds, transport and security. New construction, vehicle maintenance, and major building repairs were carried out by outside labour. Apart from the accountant and the economic planning officer (a new post filled by a young graduate), the five other senior posts were held by ex civil servants who had previously worked either in the radio service and/or in the department of Posts and Telegraphs.

The two remaining divisions - sales and publications - require little comment, the former with a staff of 30 being responsible for procuring revenue from advertising for both TV and radio, and the latter for publishing, with a staff of 11, the RTB Guide, the equivalent of the BBC's Radio Times.

2.7 Summary

This completes what has been a brief review of the history

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16. The planning and control of booking advertising 'slots' ('traffic' as it is termed in broadcasting) is no easy task. It is not dealt with here, but it could form a separate case.
goals, scope, product and market characteristics, financing, organisation structure and principal activities (including staffing) of RTÉ. Attention has been drawn to the creation of the new authority at the start of Irish television; the complex nature of broadcasting, both socially and technically, in a developing country; the fact that though it has a monopoly, RTÉ has to compete with other broadcasting stations from Britain and Northern Ireland, and the buoyancy of television advertising in the past, coupled with the ultimate saturation of the market. In the brief commentary on organisation, the greater degree of complexity of television in contrast to radio has been noted, as have the organisation of TV studio and filming facilities under the TV and engineering divisions, the control section in engineering, and the activities of the administration division, including the civil service background of the majority of its senior executives.

3. Method of Approach

A consultancy approach was adopted during the general survey. In essence, this involved getting a comprehensive picture, as quickly as possible, of the organisation and its operation in order to be able to assess the strengths and weaknesses and identify problem areas. Internal and external publications, reports etc., were studied, and visits were made to studios and to the principal radio and television transmitters. A series of lengthy sessions was spent in the television gallery and operational areas, watching rehearsals and 'live' shows, and similar sessions were spent in the radio studios, watching programmes being produced, and taped or broadcast. At the end of the general survey, the writer also visited three other broadcasting undertakings in Britain (including the BBC) and two in West Germany, spending at least one day in each studying
and discussing organisational and management control problems.

In RTÉ, interviews were held with 99 separate members of the staff, including all divisional heads, and with only a few exceptions, all members of middle management, and those executives in sections providing specific services, and TV executive producers. In the main, these interviews were semi-structured, and also involved an exchange of views, the object being to establish a rapport between each staff member, to obtain information on his (or her) job, his perception of the role of his division or unit, of intra and inter-divisional relationships, of the relevant procedures used for planning and control, and of the problems met in RTÉ.

Apart from these interviews, a number of separate representative groups was also interviewed, covering five producers, five production assistants, three TV operational engineers, and two development engineers. In addition, at least three separate sessions were held with each divisional head, (ten with the head of administration, five with the controller of programmes, TV) and a weekly progress session was held with the director-general. Thus, over 10% of the total staff (excluding standing groups) was interviewed formally, though in the course of the general survey contact was established with over a quarter of the staff. A summary of the members formally interviewed, and of the total staff is given in Appendix 6.7.

To assist in fact-finding, and in particular the analysis of work-flow and clerical procedures, two young RTÉ executives

Because of limitations on time, it was only possible to visit one out of the five TV transmitters; the Cork sound broadcasting studio was not visited.

Subsequently, these executives formed the nucleus of an RTÉ management services unit set up in December 1965.
(an accountant and an economist) were seconded to the writer.

Apart from flow-charting, simple descriptive models were built for television, using the 'systems' approach. This helped to identify the interrelationships between each of the numerous sub-systems in the service, and permitted a clearer assessment to be made of the organisation, planning and control of TV resources.

Thus, from a combination of background reading, visits, interviews, discussions and analysis work, a good general picture emerged of the characteristics, planning and control procedures, and problems of RTE.

4. Principal Findings

In this section, certain key findings are presented, including, inter alia, the impact of television, the planning and control of TV facilities, the role of the administration division, and the type of financial controls in operation, and these are followed by a summary of the characteristics of RTE, and of its controls.

The findings must be seen against the backdrop of the rapid growth of Irish television, and relate, in the main, to the three largest and fastest growth divisions, viz., TV programmes, engineering and administration.

4.1 The impact of television - general

The Irish Television Commission stated in its report (1959, para. 46) that the maximum estimate of the employment potential of television (excluding artists) given to the Commission was 220, and while it noted that programme hours would be limited by economic considerations, (para. 108), it envisaged a minimum of 21 programme hours per week, with a gradual stepping up to 50 per week (para. 109). The Commission also stated that bearing in mind financial considerations
and the availability of talent and subject, no effort should be spared to have the number of home-produced programmes built up to the maximum with as little delay as possible. By 31st March, 1965, the programme output averaged 46 hours per week, 53% of which was home-originated, using two main studios, a studio for talks and small productions, a news and presentation studio, and an outside broadcast (OB) van.

However, these achievements were not made without considerable additions in staffing, and from a total of 380 early in 1960, the authority's staff grew rapidly until by the end of March, 1965 it employed (as has been already noted) 1095 people, the increase of 715 being due entirely to television. One of the main tasks faced by the writer was to investigate this staggering growth, and assist in identifying its causes so that action could be taken to help the authority in planning and controlling its resources. This problem was acute in RTÉ, it being best summed up by a remark by the director-general: "The elastic's twanging - we've got to get in command of our affairs."

4.2 The importance of programme mix in television

A detailed breakdown of the staff growth was first made and this is shown in Appendices 6.8 and 6.9. The diagram in Appendix 6.8 gives the total staff position from 1st June 1960 to 31st December 1965. However, as the television service was only building up during 1961, and went on the air on 31st December of that year, it was considered more realistic to use the financial year ended 31st March 1963 (1962/63) as a reference point; thus Appendix 6.9 gives the staff growth by division between 1962/63 and 1964/65.  

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19 An analysis was also made of staff increases by grade, etc.
Bearing in mind that prior to television (1960) the staff numbered 380, the position in relation to growth due to television alone between 1962/63 and 1964/65 was as follows:

<table>
<thead>
<tr>
<th>STAFF</th>
<th>31st March 1963</th>
<th>31st March 1965</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total staff (per Appendix 6.8)</td>
<td>855</td>
<td>1095</td>
<td>240</td>
</tr>
<tr>
<td>less</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total applicable to sound broadcasting</td>
<td>380</td>
<td>380</td>
<td>-</td>
</tr>
<tr>
<td>Total applicable to television</td>
<td>475</td>
<td>715</td>
<td>240</td>
</tr>
</tbody>
</table>

This increase of 240 (51%) in two years was due entirely to television.

Attention was next directed at the output of the television service, and table 6.1 below summarises the TV programme output for the years 1962/63 and 1964/65. This table shows that though total output increased by 8%, home-originated output increased by 28%, and the share of home-originated programmes increased over the two years from 49% to 53%.

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The total staff of 380 involved in sound broadcasting (including administration etc.), had not changed for some years prior to television, and despite changes made in organisation structure when television did arrive, the staff numbers applicable to sound broadcasting did not increase between 1960 and 1965.
TABLE 6.1 - Summary of hours of TV programme output for years 1962/63 and 1964/65 (ending 31st March)

<table>
<thead>
<tr>
<th>OUTPUT</th>
<th>Year 1962/63</th>
<th>Year 1964/65</th>
<th>Increase/Decrease (-)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours</td>
<td>%</td>
<td>Hours</td>
</tr>
<tr>
<td>Total - Home-originated</td>
<td>990</td>
<td>45</td>
<td>1265</td>
</tr>
<tr>
<td>(weekly average)</td>
<td>(19)</td>
<td></td>
<td>(24)</td>
</tr>
<tr>
<td>Total - Imported</td>
<td>1210</td>
<td>55</td>
<td>1104</td>
</tr>
<tr>
<td>(weekly average)</td>
<td>(23)</td>
<td></td>
<td>(21)</td>
</tr>
<tr>
<td>Total - all output</td>
<td>2200</td>
<td>100</td>
<td>2369</td>
</tr>
<tr>
<td>(weekly average)</td>
<td>(42)</td>
<td></td>
<td>(45)</td>
</tr>
</tbody>
</table>

Note: Figures have been rounded off.

Of greater significance however, was the change in home-originated programme categories (or mix) that had taken place in this period, and this is shown in table 6.2 below.

This table, (the key part of which is also presented in diagram form in Appendix 6.10) shows that though the home-originated output had increased by 28%, substantial increases in drama (180%) and light entertainment (102%) had occurred. This raised an important doubt in relation to the use of home-originated hours as a unit of measurement, and following this, the writer decided to try to identify the resources (people and facilities) absorbed by each category.

21 At the time of the general survey, home-originated hours was the unit used by management in describing and measuring output, and indeed was also used (and probably still is) by the other broadcasting undertakings visited by the writer.
TABLE 6.2 - TV home-originated output in total and by category, for years 1962/63 and 1964/65 (ending 31st March)

<table>
<thead>
<tr>
<th>CATEGORIES</th>
<th>Year 1962/63 Hours</th>
<th>Year 1964/65 Hours</th>
<th>Increase/Decrease(-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>News</td>
<td>260</td>
<td>188</td>
<td>-72</td>
</tr>
<tr>
<td>Public affairs</td>
<td>250</td>
<td>390</td>
<td>140</td>
</tr>
<tr>
<td>(including religion)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports</td>
<td>160</td>
<td>136</td>
<td>-24</td>
</tr>
<tr>
<td>Light entertainment</td>
<td>140</td>
<td>283</td>
<td>143</td>
</tr>
<tr>
<td>Children's</td>
<td>120</td>
<td>111</td>
<td>-9</td>
</tr>
<tr>
<td>Women's</td>
<td>40</td>
<td>34</td>
<td>-6</td>
</tr>
<tr>
<td>Drama</td>
<td>20</td>
<td>56</td>
<td>36</td>
</tr>
<tr>
<td>Schools</td>
<td>-</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td>Total</td>
<td>990</td>
<td>1,265</td>
<td>275</td>
</tr>
</tbody>
</table>

A resource allocation study was then begun, and using a combination of TV programme and production schedules relating to studio occupancy and use of other production facilities, a picture of the absorption of resources was gradually built up, and amended where necessary after discussion with experienced executives in the TV programmes and engineering divisions.

Briefly, individual facilities (or cost centres) impinging on the production of TV programmes were studied and their outputs and/or occupancy ascertained; these were then allocated to samples of different programme categories, and a series of indices was built up for each. There was insufficient data or time to be able to be absolutely precise, but for the purpose involved, the analysis was considered to be realistic.
From this exercise, it was then possible, taking one hour of news programmes as unity, to develop indices for each of the other programme categories, each of these representing the estimated amount of facilities used in one programme hour. For example, in the case of news, light entertainment, and drama, the indices were:

- **News**: 1
- **Light entertainment**: 20
- **Drama**: 30

The exercise was then concluded by using these indices to obtain a measure, all-be-it crude, of the 'productivity' of the TV service for the reference years. This was calculated by multiplying the programme categories shown in table 6.2 by the appropriate indices, to obtain, for each of the two years, what were termed 'normalised' home-originated hours.

For each year, totals of ordinary and of normalised home-originated hours were each divided by the total staff employed in television, and the results are shown in table 6.3 below. The main feature of this table is that whereas using ordinary hours, (the conventional unit of expressing TV output, i.e., x hours per week), the staff increase of 51% had far outrun the 28% increase in programme output, and productivity had, therefore, decreased by 15%. However, using normalised hours, the total increase in these hours between 1962/63 and 1964/65 was 62%.

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Index for the other programme categories fell between one and ten.
amounting to an increase of over 7% in productivity\(^2\). These points are summarised in diagram form in Appendix 6.11.

**TABLE 6.3 - Provisional comparison of TV productivity using both ordinary and normalised home-originated programmes hours**

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Staff, output and productivity</th>
<th>1962/63</th>
<th>1964/65</th>
<th>Increase/Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TV staff - numbers</td>
<td>475</td>
<td>715</td>
<td>51</td>
</tr>
<tr>
<td>2</td>
<td>Home-originated hours</td>
<td>990</td>
<td>1,265</td>
<td>28</td>
</tr>
<tr>
<td>3</td>
<td>Home-originated hours per TV employee ((2 \div 1))</td>
<td>2.06</td>
<td>1.77</td>
<td>-15</td>
</tr>
<tr>
<td>4</td>
<td>Normalised home-originated hours</td>
<td>7,680</td>
<td>12,412</td>
<td>62</td>
</tr>
<tr>
<td>5</td>
<td>Normalised Home-originated hours per TV employee ((4 \div 1))</td>
<td>16.17</td>
<td>17.36</td>
<td>7.4</td>
</tr>
</tbody>
</table>

The implications of this in relation to planning and controlling the resources of the TV service, are that ordinary home-originated hours as a unit for measuring output is spurious.

\(^2\)It should be appreciated that the productivity calculations were made primarily to illustrate the spuriousness of using ordinary hours as a unit of measurement, and to highlight to the members of the authority and senior management that though RTÉ might restrict (and was trying to do so) its average weekly output to 21 ordinary hours, this in no way guaranteed that it was in command of its resources, especially if various external groups demanded and obtained more sophisticated programmes.

It should also be appreciated that there can be differences within programme categories; e.g., an historical play will usually require a great deal of facilities, including extensive rehearsals, and outside filming; whereas a simple one-act play, with one or two characters, will absorb a lot less facilities. Nonetheless, both would be classed as 'drama.'
and can be dangerously misleading; and second, the importance of programme-mix: the more sophisticated the mix (e.g., more drama and light entertainment and outside filming) the greater will be the resources used, and the larger the staff required both at back and in front of the TV cameras.

4.3 Buoyancy of TV advertising revenue

In a previous section (2.5) it was noted that advertising had doubled in the two-year period from 1st April 1963 to 31st March 1965, and that in 1964/65 TV advertising amounted to over 90% (£1,64 million) of total advertising revenue. The total revenue applicable to television amounted in 1964/65 to £2.55 million, of which advertising represented 65%, the balance coming from TV's share of licence fees. In radio, nothing like this buoyancy occurred; the total income for 1964/65 was £0.75 million with advertising accounting for only 24% (£0.18 million), the balance of 76% (£0.57 million) again being from licence fee income. In fact, advertising revenue from radio had remained almost static over the two years to 31st March 1965. Thus, in the one undertaking, two services existed side by side; the first, a dignified and tested veteran of almost forty years old, accustomed to frugality and the discipline that usually goes with it, but running into debt; and the second, a brash, lusty, wealthy, and voracious five-year old infant, able to produce substantial surpluses. Under these circumstances, therefore, and particularly as it was still finding its feet, the buoyant revenue position created problems of control in television. No sooner had senior management decided to try to get tighter control (e.g., clamping down temporarily on staff recruitment, limiting 'output')
than revenue from advertising and increased set-counts produced surpluses, and as soon as surpluses appeared, there were demands from all sides (internal and external) to have more and better programmes. Consequently, the discipline of planning and control was no easy task in face of such munificence.  

4.4. Planning and controlling the production of TV programmes

Having identified the importance of programme mix and the consequences of the continuing buoyancy of advertising revenue in relation to the control of resources, attention was next directed to the organisation, methods and procedures for planning and controlling the production of TV programmes. The main findings of this part of the general survey are now presented under the following headings:-

- Timing of the annual budget
- Phasing of TV transmission and production schedules
- Organisation of TV production facilities
- Ordering and control of TV facilities
- Costing of TV programmes

4.4.1 Timing of the annual budget — In RTE, as with the other larger broadcasting stations visited, the determining factor in planning TV programmes was the Autumn schedule, which covers the quarter from October to December, a period that provides the greatest potential audiences. Into this schedule is built the station's best efforts to capture viewers, not only from other stations but from other forms of leisure activities. However, as

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25 See March and Simon (1958, p.120).
RTE's financial year approximates to the fiscal year and begins on 1st April, a start had to be made on the annual budget early in January. Estimates of staffing and other expenditure were built up, based on previous experience and on broad programme categories and hours, with the Autumn schedule as the pivot. Thus, programme staff had to try to commit themselves as to the type of programmes and events that they would be producing and covering at least seven months from the expected dates of transmission or recording. This created problems, because the type of programme or series as originally conceived, might change radically in scale and in use of resources over this period, until the Autumn schedule became firmed up around September; then the management of the programmes division might be legitimately so convinced of a programme's potential that 'housekeeping' would become secondary. Problems in organisation and the absence of methods for reviewing the implications of such changes (which were frequent, and in terms of content, probably highly justified) on the television system as a whole will be discussed below. The point here is that the position of the financial year, and therefore, the timing of the annual budget, were additional factors which contributed to the problem of controlling resources.

4.4.2 Phasing of transmission and production schedules - The operations of the television service were based on two main streams of activity viz., the transmission of programmes, and the production of programmes. Separate schedules for each had to be prepared because of the problems of utilising studios and the OB van, the need for rehearsals for certain shows, the availability of performers, pre-production of special shows for national holidays, (e.g., St.
Patrick's day). Thus, in any day, what is actually transmitted is a combination of live and taped programmes, with part of the latter being home-originated. The sources of home-originated production are the studios (and OB van) which may be utilised for producing live programmes, for recording programmes on video tape (VTR), and for rehearsals and auditions, or left free for maintenance.

![Diagram of inputs to TV master control]

Fig. 6.1 Inputs to TV master control

It will be appreciated that under these circumstances, transmission and production are usually out of phase, except in the case of programmes going out 'live' which can be home-originated and/or imported.
of live shows. The transmission schedule was prepared about 10 - 12 weeks in advance of the next quarter's transmissions. For example, the Autumn schedule would be prepared around the middle of July - at least a start was made on it, though on occasions it might not be completed until about the beginning of October. Thereafter, a weekly transmission schedule would be prepared about 2 - 3 weeks in advance of a specific transmission week, and this formed the basis for the RTE Guide's published programmes. Two or three days prior to a specific day's transmission, a daily running order was prepared which contained a detailed listing and timing of all programmes including advertisements. Apart from changes (e.g., caused by special news items or breakdowns) it was the job of the duty presentation officer to try to ensure that this order was kept to the second.

The sequence for the production of programmes started with a quarterly ('course') production schedule, covering mainly studio and OB van occupancy, cameras, lighting and sound crews and equipment. This schedule was expected to be ready about 10 - 12 weeks before the next quarter, though it was usually about 4 - 5 weeks late. Thereafter, a weekly ('fine') operations schedule was prepared about two weeks prior to the specific production

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27 Most live shows go out in the evening. Thus, if a tour is made of RTE studios in the day-time, one would find them being used for taping shows, for rehearsals, for rigging or de-rigging (including lighting), or for maintenance. Around the studios in the operational areas, there would be a lot of activity, e.g., viewing and dubbing films, running through the evening's taped programmes, producing captions, developing still photographs. As would be expected, the amount of tension felt by the production team and cast with a live show is much greater than with rehearsals.
week. This listed the planned activities in each studio (and in the OB van) for each day, and specified the camera, lighting and sound crews, as well as the times for rehearsals, taping, and maintenance. Invariably, therefore, about 50% of the home-originated programmes appearing on the production (and operations) schedules would be taped, and only live shows would appear on both transmission and production schedules.

This difference in phasing, involving as it did, constant interaction between the transmission and production of programmes, added to the complexity of the system, and in turn, to the problem of organizing and controlling production facilities.

4.4.3 The organisation of TV production facilities — Reference has been made to some of the facilities used in actually producing a TV programme and getting it to the stage for transmission. At least 50 different types of facilities existed, and a diagram showing the main facilities is given in Appendix 6.12. This illustrates their range and highlights the importance of the producer, and of the studios and presentation.

26 The phasing of transmission and production is analogous to a large restaurant working primarily on a table d'hote menu which changes daily and consists of a mixture of fresh, frozen and tinned foods, with all of the fresh food and part of the frozen, being prepared by its own kitchen staff, some of whom operate from a field kitchen which can despatch seasonal dishes to the restaurant for immediate consumption or for storage. The chef and his staff often spend days preparing the recipes and ingredients for certain dishes; some of these when cooked, have to be served immediately, and others can be put in the cold store. Each day the chef knows that he will be receiving a quantity of fresh perishable produce which has to be prepared and served straight away and he is also prepared to try to change the menu at a moment's notice. (This analogy holds up fairly well, except that in broadcasting, programmes can be repeated intact, while in restaurants the same food is not (usually) served up again; and, of course, meals cannot be rented.)
It will be evident from the charts of the TV programmes, engineering and administration divisions (Appendices 6.4 - 6.6) that each division was responsible for certain facilities, and that within each, responsibility was again dispersed.

In the programme division, separate executives were responsible for:

(i) Casting
(ii) Design, graphics, stills
(iii) Design workshops
(iv) Presentation
(v) Studios, including stage hands, wardrobe, make-up, props, floor managers, and vision mixers
(vi) Film (and tape) library, including cine film cameramen, editors and cutters.

In the engineering division, separate executives were responsible for:

(i) Cameras, lighting, sound, OB's, master control
(ii) Telecine, VTR, cine film processing and dubbing.

It will also be noted from the organisation chart (Appendix 6.5) that in this division the executive in charge of (i) above was also responsible for TV transmitters; and that the executive in charge of (ii) above was also responsible for maintenance of mechanical and electrical equipment, and reported to the head of central engineering, who also commanded the planning and equipment department (primarily technical development).

Attention is also drawn to the fact that the responsibility for the production of outside (cine) films for programmes was divided between programmes and engineering, the main sequence of operations and responsibilities being as follows:
Shooting - programmes
Processing - engineering
Editing - programmes
Dubbing - engineering

In the administration division, separate executives were responsible for:-

(i) Contracts
(ii) Transport, and security

Thus in the prescribed organisation, 10 separate executives (6 from programmes, 2 from engineering, and 2 from administration) were responsible for the facilities used in TV productions. This in itself was not necessarily material, but, as will be seen below, there was in fact constant interaction between the staffs of these facilities and the producers responsible for each show which indicated that the prescribed organisational structure did not fit the flow of work and actual interaction pattern. This evidence then led to an examination of the methods of ordering and controlling facilities.

4.4.4 The ordering and control of TV production facilities - In broadcasting, the producer is responsible for the detailed planning and execution of the programme: it is his (or her) task to work it up, decide on performers, and order and use facilities. He is the person on whom the creative task primarily rests and he is in total command when the programme is being rehearsed and

29 For a forthright discussion on the producer's role, and on the elements of television production, see the Report by the (Fowler) Committee on Canadian Broadcasting (1965, pp. 166-77).
produced. In RTV, out of the 20 producers, 3 editors and 6 executive producers, there were usually about 18-20 (out of 29) engaged in producing home-originated programmes each week, some of them on a regular weekly series, e.g., agriculture; one or two were on daily topical programmes, and the rest on special shows or series. In working on his current programme, a producer could be engaged on outside filming or editing, or in discussions with designers, and camera, lighting, and sound staff, as well as being in the studio 'producing.' Thus, in any one week, (and sometimes on any one day) there would be up to 20 producers (and/or their PA's) seeking for a share of all or a large number of the 30 or so facilities, each of which was provided as a common service.

In summary therefore, this particular stage of the examination showed that the formal organisation prescribed that 10 executives (from three divisions) were responsible between them for allocating (and controlling) 30 different types of common service facilities or units (each separately connected by a supervisor or departmental head), between upwards of 20 producers in any one week.

From a study of the communication pattern (primarily the routing of requisitions for facilities originated by the producers and their PA's), it was found that the actual organisation differed significantly from that prescribed, and that there were at least 12 different ways of ordering facilities. The main differences in organisation were that the head of TV operations from the

30 Apart from his current programme, a producer could be working on a future show, reading scripts and musical scores, appraising his last programme with the controller, attending departmental or group meetings, auditioning, etc. Certain of these activities also require production facilities.
engineering division had set up a technical operations office, not only for the scheduling and allocation of those facilities under his command, but for those relating to recording (VTR and telecine). He had also attempted, with partial success, to rationalise the whole of outside filming by 'arranging' that the engineer in charge of processing and dubbing should coordinate the activities of those facilities (shooting, editing, transport, etc.) that were under the formal command of other divisions. On the other hand, in the case of most of the facilities under the command of executives in the programmes division, there was no coordination for ordering facilities so that each producer had free access in presenting his demands.

All in all, an extremely fragmented situation existed, and only in the case of a limited number of facilities (e.g., TV studios, cameras) had even the most rudimentary production planning and control procedures been developed for scheduling and loading. A diagram illustrating the method of ordering and scheduling is given in Appendix 6.13. This only shows the situation for one producer. Some idea of the actual interaction pattern that existed when a number of producers was seeking facilities can be obtained from the study of the highly simplified diagram below:

![Diagram](image)

**Fig. 6.2** Interaction pattern between TV producers and TV production facilities
With the almost general absence of procedures for loading, added to the fact that there were few data for assessing utilisation and no performance standards, feedback was negligible and no formal reports were available for measuring performance, or for assisting in evaluating the effect on the total system of programme plans before they were implemented.31

A further major consequence of this fragmented approach to ordering facilities was that there was no co-ordinated two-way communications between the producers and those in charge of facilities. Because of this, demands for facilities (usually through requisitions prepared by PA's) were often late, the aggregate demand on a number of facilities in any week or day was not known, pressure built up between different producers competing for resources, and between producers and executives in charge of certain facilities, and this in turn led to the 'favour system' whereby producers and their PA's went hunting and begging for specific facilities.

4.4.5 Costing of TV programmes - At the time of the study a scheme of programme costing had just been introduced. Briefly, the costs that were involved only covered what, in RTE, was termed 'above the line' (or direct) costs, and these included artistes' and performing rights' fees, direct materials used on special set construction, special props and costumes, travel and subsistence, and still photography and filming done by private agencies. All other expenditure relating to the television service was classified

31It must be emphasized that these problems were encountered in other stations; secondly, that the findings are only presented here in this form for the purpose of this research; and thirdly, that production planning and control of TV facilities is no easy task.
as 'below-the-line' costs and the composition of total costs was as follows:

<table>
<thead>
<tr>
<th>'Above-the-line' (direct) costs</th>
<th>2</th>
<th>2</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>(of which artistes' fees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>accounted for 60%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'Below-the-line' costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production facilities</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV programme staff</td>
<td>13</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>Engineering (including</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>transmitters and maintenance)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (including administration,</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>premises, depreciation, interest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total costs of TV service</td>
<td>35</td>
<td>65</td>
<td></td>
</tr>
</tbody>
</table>

It will be noted that 'below-the-line' costs accounted for 84% of the total costs of the television service.

During the preparation of the annual budget, estimates were made of the 'direct' costs per programme category and once the relevant quarterly production schedule was produced, executive producers and producers were informed of the budgeted 'direct' costs for each programme which they were allocated to produce. Thereafter, each PA processed most of the documents relating to expenditure actually incurred, and the actual costs for each programme were then assembled by the accounts department (under the head of administration) on a cost report, copies of which were sent to TV programmes division, on average about four weeks after the programme had been produced. This scheme had not yet been fully integrated with RTÉ's system of financial control, and the latter, which is discussed later, did not provide information on the expenditure incurred by each department.
or cost centre, but only on a divisional basis. Consequently, the
management associated with the television service, and particularly
those in charge of producing programmes and providing facilities,
were unaware of the cost of the greater part of the resources used in
programme production, and also of the implications of changes, both
in programme mix and in specific programmes, on each of the
facilities, and on the system as a whole. Because of this, almost
all facilities provided by RTE were looked on by producers as being
‘free,’ though an anomalous situation existed with certain
facilities. For example, the costs of outside filming were shown
on the cost report only when it was carried out by private agencies,
who were often employed by RTE to “relieve pressure.” This type
of situation left the way open for an astute producer, if he cared,
to avoid using external agencies for filming, and to get in first
with his demands on the station’s own film facilities.

It will be appreciated that a costing scheme that was only
capable of monitoring a small part of the resources of the TV service
was of little value in assisting in evaluating the effects of
different programme mixes or changes in programmes both before

\[32\text{ It is not suggested that TV producers should necessarily be}
given the costs of facilities etc., but it was considered vital}
that certain executives in the television service should be aware
of where the resources were going, of the interrelationships
between different sub-systems, and of the effects on resources of
programme decisions. Again, some balance needs to be adopted between,
on one hand, treating the producer as a creative person with
absolutely no sense of cost, and on the other, fettering him so
completely that his creativity is stifled. Quite a number of
executives (including producers) in the TV programmes division talked
about programme budgets and costs without having any awareness of the
effects of their programming activities on the production
facilities.

\[33\text{ Few data were obtained to show whether or not this occurred.}\]
and after decisions were taken. Because of this, and other factors discussed in this section, changes in programmes almost invariably created a 'ripple' effect which was non-linear through many parts of the TV service. Unanticipated pressures would build up almost at random among the various clusters of sub-systems (facilities) depending on the type of programme, the nature of the facility, its load, and in some cases on the energy and sensitivity of individual section heads in those facilities which were primarily men, as opposed to men/machine, machine/men or machine, as well as on trades union regulations.

4.4.6 Summary — The earlier parts of this section (4.1 to 4.3) dealt with the growth of television, indicated the importance of programme mix, pointed out the spuriousness of using ordinary hours as a unit for measuring output, and commented on the possible adverse consequences for control because of the buoyancy of advertising revenue. The latter part (4.4) was concerned with specific features that affected planning and controlling the production of TV programmes, and highlighted the problems created by the timing of the financial year, the difference in phasing between the production and transmission of programmes, and the inadequacy of the organisation and procedures (including costing) for ordering and controlling TV facilities.

Overall, the senior management had no appropriate mechanism to assist them in evaluating the prior effects on resources of their decisions on programmes. Consequently, the lack of such a mechanism placed RTS in a position whereby the television system itself, and not

3For example: design (man); TV cameras (man/machine); master control (machine/man); standards signal convertor (machine).
management, was in command.

Certain other factors which also contributed to the problems of planning and control are dealt with next, and the section is then concluded by a brief summary of the characteristics of RTE and its controls.

4.5 The absence of a managerial culture in RTE

In RTE, a striking feature, which had a direct bearing on the lack of appropriate mechanisms for planning and controlling resources, was the almost total absence of a managerial culture. Less than 10% of the 99 people interviewed individually had any knowledge and experience of business management, and only two of this number (including the director-general) were at senior management level. The other executives interviewed had a variety of different backgrounds, including the civil service, the sound broadcasting service (which for years had been under the direct control of a government department), British and foreign broadcasting stations, the film industry, newspapers, advertising agencies,

35 The existence among executives (particularly at senior and middle management levels) in the undertaking, of a repertoire of skills, knowledge and experience of management processes and techniques, which with regular updating through training etc., can be used to assist managers in identifying problems, arraying alternatives, taking and implementing decisions and controlling resources.

Of course, the existence of a managerial culture will not guarantee the achievement of objectives; neither, in certain circumstances will its absence necessarily inhibit their achievement. But in RTE, and particularly with the introduction of television, the latter deficiency seriously impeded it from commanding its own growth.

36 For the flavour of the characteristics of planning and control in the film industry, see Jeffrey Bell's Nobody Ordered Wolves, (London: Heinemann, 1939). Apart from the implications in the title, the following quotation at the start of the book provides the prospective reader with further stimulation:

"'Red ants, 20,000 at one halfpenny each - for a torture scene.' - expense item."

Though this was published almost 30 years ago, the film industry does not appear to have changed much since then in its methods of approach to 'housekeeping' e.g., the making of the film "Cleopatra" described in the Observer (1963).
and technical development departments of electronics firms. There
were also a number of young engineering graduates who had received
no training in industrial engineering or administration. Thus,
though in terms of competence at their operating work many of
these executives appeared to the writer to be highly valued by
their colleagues, (especially in their approval of the way the
television service had been successfully launched), the repertoire
the majority possessed for doing their management work was
extremely limited, and in some cases, dysfunctional for the
problems facing RTE. This applied particularly to the model of
management employed by the administration division, whose role
and impact is dealt with next.

4.6 The role of the administration division

The organisation structure of the administrative division
has already been presented in the chart in Appendix 6.6, and in
section 2.6 it was noted that five of the seven senior executives
in this division had been civil servants. In fact, about 20% of
all staff (primarily executives, and those aged thirty and over)
had previously been connected with the civil service, mainly through
working in Radio Eireann, and represented the hard core of the
division.

Three of the five senior executives of this group had played
a major part in helping to start the television service. They
were in at the grass roots level in 1959, even before the appoint-
ment of the first director-general, and had weathered many troubles
in handling the multifarious problems involved in setting up the

37See Allen (1964, ch. VII) for an elaboration of operating
and management work.
national TV station, including dealing with architects and contractors, engaging staff and developing accounting and other clerical procedures. Having to operate under pressure in the fast-moving and continually changing situation that must have existed during this period, their contribution was immense, considering that none of them combined a "professional education with a managerial personality and practice."  

By the time of the general survey, (when a qualified accountant was also employed) this hard core of executives (including the three senior) still remained in the administration division, and it was possible from the field work and previous experience of other public service undertakings in Ireland, Britain and abroad, to identify the main characteristics of the management model used as the frame of reference by the civil service senior executives and their junior counterparts in the divisions.

Firstly, it was manifestly assumed that 'administration' was synonymous with 'management' and that, therefore, the only managers in RTE were in the administration division. This, of course, was a carry-over from the traditional conflict in public and local government in Ireland (and in Britain) between the administrators and the professionals. As an executive from another division in RTE put it:— "The ones who keep hold of the file win — and it's usually those from administration."

It is stressed that this view of their role as the only managers in RTE was sincerely and firmly held by these senior executives of

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38 See Etsioni (1964, p.85)

39 Sometimes referred to as "'Gentlemen v Players'"
the administration division, whose head (just before the arrival of the present director-general) had ordered a sign for his own office door inscribed with the title 'Head of Management.' In recalling this incident, the director-general stated to this writer that he had made it quite clear to the head of administration that the sign was not to be put up, and that there was only one head of management, i.e., the director-general himself.

Secondly, the division itself was highly centralised, and though one section operated in the GPO, it too was still directly controlled from Donnybrook, there being no "attached specialists" from administration in any other division.

Thirdly, as is depicted in the example in Fig. 6.3 below, the organisation structure in the division tended to have many levels, and a proliferation of 'assistants,' so that in certain departments it was difficult to identify what functions were actually being performed.

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40 The sign was not put up.

44 See Brown (1960, ch. 8).
Fig. 6.3—Organisation structure of one of the two sections of the personnel department* 

* This is an extract from an organisation chart prepared by the administration division for the writer at the start of the general survey; it shows that, excluding the head of administration, there were six management levels in this section which dealt with staff records and recruitment.

A further example of the number of levels and of the tendency to 'bury' functions relates to purchasing, where the buyer was located at the end of a chain of command stretching from the head of administration, the assistant head of administration, the services manager, and the assistant services manager.

This type of structure had been encountered by the writer in government departments where executives usually have titles (in descending order of seniority) such as secretary, assistant secretary, principal officer, assistant principal officer, admn-
Administrative officer, higher executive officer, executive officer, staff officer, clerical officer, and clerk/typist; and the purpose or function of the various sections is frequently not identified. 42

Fourthly, the clerical procedures in operation involved many executives and other staff, in all divisions, in a considerable amount of checking and countersigning. Because of this, communications became clogged between divisions and departments, and indeed, as one executive outside the administration division put it: "It's now got to the stage where there's more emphasis on getting things signed, than on checking."

A flow chart of the procedure for ordering, invoicing and paying for engineering goods is given in Appendix 6.14; the main points to note are the duplication of lists and books for deliveries, and the part played by the services department, which in effect was acting as a 'post box' handling paper which it need never handle at all, the purchasing being really done by the control section in engineering. The effects of this system of ordering (apart from cost and internal irritation), were that invoices piled up; suppliers were continually looking for payment, and expenditure on supplies had to be 'guessed' for the monthly financial accounts.

A fifth characteristic of the management model in use was the emphasis on the importance of the annual audit, which was carried out

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42 It is often a difficult task in the public service to describe a unit by the name of the purpose or function for which it exists. On one occasion, while working in a government agency abroad, the writer came across a unit entitled the 'TM' section. Preliminary enquiries among staff in the unit yielded no information as to the meaning of these letters, but eventually the head of the department recalled that they were the initials of the person who had headed up the section when it had been first started, but who had been in retirement for a number of years.
by the government audit bureau, members of whose staff had never encountered anything like RTB.

Sixthly, there was a tendency of senior executives to base their decisions and actions on 'the Act' (i.e., the Broadcasting Act of 1960) and to interpret this literally. For example, the head of the division resisted the introduction of programme costing by the TV programmes division because, he stated, "It's not in the Act." Indeed, executives from another division considered that "administration is more destructive than constructive."

Seventhly, there was strong resistance (due primarily to lack of knowledge and experience), to introducing appropriate modern management techniques, and this was paralleled by a persistently held view that it was only possible to control a small percentage of total expenditure, the rest (including staff costs) being considered as 'indirect' despite the fact that even in the two years since 1962/63 staff increases due to television amounted to 51% (section 4.2). To illustrate the fallacy and the dangers of applying a conventional marginal accounting approach the 'iceberg' diagram in Appendix 6.15 was included in the presentation made by the writer to the members of the authority, and shows that in 1965 'indirect' expenditure including salaries, amounted to 79% of total expenditure in RTB. The fact that the majority of senior executives in the administration division believed that these 'indirect' costs were uncontrollable also added to the problems of planning and controlling the growth of the television service.

Finally, the division was responsible for the formal system of financial controls that was in operation, and the main features of this are discussed in section 4.7 below.
However, before proceeding with this, it will be useful to consent on certain historical factors that had influenced the perpetuation of this model. From the brief visits made to other broadcasting services, and a study of their literature, it was apparent that the position and role of the administration division in the organisation structure of RBB, were almost identical in the BBC and in the German stations, where there are still many traces of the public administration model as described here, and where, though the chief executive of each is a professionally oriented administrator, the administration division is in a dominant line position, and its staff, apart from professional accountants, are usually "lay" administrators. 43 Historical, it is believed that the BBC's general organisation model was copied by these (and probably by many others) national broadcasting stations because it led the field in sound broadcasting and because of the emphasis which it placed on the quality of its programmes.

However, one of the crucial problems faced by RBB and other similar broadcasting undertakings, (and indeed the BBC) whose revenue comes from both licence fees and advertising, but which are ultimately controlled by governments, is the appropriateness of this model for coping with present and future problems, 44 particularly those associated with the planning and control of

43. See Stasiomi (1964, ch.8) for a discussion on administrative and professional authority.

44. There appears to be scope for fruitful research into tracing the international impact of large specialised pioneering undertakings, with particular reference to the consequences for imitative undertakings in other countries, of replicating the prototype management model.

In this context, see Dalton's exciting analogy of how early biologists, "without thoroughly studying the Antillean 'web of nature,' introduced the mongoose, enemy of the cobra in India, to destroy a different snake in a new environment. Unexpectedly the mongoose found much easier game in the Antillean balance of life and altered the existing 'web' by itself becoming a 'pest.'" (Dalton, 1954, p.249).
resources used in television. Certainly, in terms of this major part of 'housekeeping,' the BBC and the German stations appeared to be under great financial pressure.

4.7 The financial controls

Briefly, the formal system of financial controls in the BBC had been adopted from the civil service 'vote' system. Budgets and actual expenditure were built up in large blocks by division (and not from the bottom up) though this is as far as the system went in relation to responsibility. The accounts classification was a mixture of expense items (often aggregates of different items) and operating units; there was no cost centre classification to provide information on the units which originally incurred the expenditure; staff costs were completely separated from other costs; apart from divisional heads, few executives participated in the preparation of the annual budget, which was discussed unilaterally between the heads of each division and the director-general; and only divisional heads received the monthly financial reports which were prepared by the accounts department and presented about four weeks after the end of each month, money being the sole unit of measurement. These reports showed the actual expenditure (per month and cumulative) against the total annual budget which was not broken down into months.

One of the consequences of this system was that after about six months of the financial year had elapsed, the actual expenditure on a number of items (e.g., overtime in the engineering division) would be equal to, or in excess of the annual budget, and would involve the particular divisional head in what the director-general described as 'distressing and painful confrena-
tations." In turn, this led to post-mortems by divisional heads with their departmental heads and thence to special investigations which, because of the lack of reports based on responsibility accounting and on other appropriate performance data, took so long that by the time they were finished, they were either 'cured killers' or had been replaced by a fresh problem that had arisen in the meantime.

The last three parts (4.5 to 4.7) of this section on findings in RTE have highlighted the absence of a managerial culture, described the role of the administration division, including the principal characteristics of the management model used by its senior executives, and summarised the characteristics of the formal system of financial controls.

The final part (prior to summarising all of the findings) deals with the impact of this public administration model of management, and of the financial controls in RTE.

4.6 The impact of the administration division and of the financial controls

Prior to illustrating how the administration division impacted on the other divisions (particularly the two largest - TV programmes and engineering) it should be stressed that these other divisions were not by any means without their organisational and operating problems. For example, it was freely admitted by many of those interviewed that the TV programmes division was in a state varying

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4.5 The model presented here differs significantly from the general public administration model described by Pfiffner and Sherwood (1960, pp.63-65) who deal with general features recommended for governmental reorganisation: the model in RTE is of reality. Again, it differs in important respects from Weber's 'ideal-type' bureaucratic model particularly in relation to technical competence and technical qualifications. Concise summaries of the Weber model are presented by Blau (1963, pp.1-2) and by Pfiffner and Sherwood (1960, pp.55-58). For translations of Weber's works, see Gerth and Mills (1946), Henderson and Parsons (1947).
from "disorganised, to organised chaos" and that in the engineering division there were too many bosses, that the organisation was not satisfactory, and as one senior executive put it, had been "set up on a 'carve-up' based on personalities." It can also be appreciated, with the variety of different 'creative' persons and personalities, that there would be a tendency in many to manifest a rather less stringent attitude to costs;\(^4\) this when challenged, was shrugged off with the phrase: "That's show business."

Notwithstanding this, there was a strong feeling of resentment by many executives, particularly in TV programmes and in engineering, of the approach adopted by administration. This is illustrated by some examples from the comments made by executives from other divisions:—

"Administration have the authority here - we have none."

"They wouldn't trust us - they kept us out of the building side."

"We don't have a programme of administration that really works - they're out of sympathy with the rest of the organisation."

\(^4\) However, from experience in this case it would be fallacious to generalise that all 'creative' people are not cost-conscious, and evidence was obtained indicating that there was a continuum in relation to this even among executive producers and producers, ranging from a hard, tough approach towards costs, to open disregard. The following extract from the Report on the British Newspaper Industry prepared by the Economist Intelligence Unit (1967) underlines this point:—

"Nevertheless budgetary and cost-control are introduced into a new activity it is invariably stated by the traditionalists that it is impossible to operate. Yet it is very rare indeed that, with careful planning, and consideration for the real needs of the application, it is not successful... we suggest that some managements are doing their editorial executives an injustice by suggesting that they are incapable of using the normal tools of modern management without lowering the quality of their work." (Economist Intelligence Unit, 1967, part 1, pp.61-63).
"They're up in a heap - administration is feeding on itself - it's too big for our size."

"A lot of it has to do with history - they needed to do it at the start - it's a sort of 'mandarin' attitude - they get feelings about protecting the set-up. I put my foot right down on it when they try anything on me."

"Our side is losing out - we're the only professionals."

"Services department - anything else but services."

Particular resentment was felt about the fact that certain clerical procedures relating to divisional staffs (e.g., overtime and leave) were routed through the personnel department 'for approval,' after divisional and/or departmental heads had already signified their approval.

Evidence was also obtained of the views of executives on the formal financial controls, and of certain adaptive responses made in other divisions to the administration division and to these controls, e.g.,

"The sheet means nothing to us - what we want is what's been committed."

"We cannot, in making decisions, assess their full financial aspects - the system is inadequate - we're working a bit in the dark."

"I don't know if we know where we're going - there's a lack of planning from the top down."

"I don't think the report means a lot to most of them."

"The people in engineering and TV programmes didn't get together - they tend to talk in isolation - I don't know how they came up with the figures - then things rebounded because budgets were exceeded."

"Budgeting and costing are over-used words around this place - it's a lot of pious boloney."

"The administration division is not geared to circulate useful information - accounting here is historical and for the audit."

47 see Roget's Thesaurus under "kaiser" e.g., "crowned head, caesar, kaiser, sultan, caliph, the authorities, the man in office,"
"An historical system of accounting? - I'd call it a hysterical system."

In the TV programmes division, the controller, despite the protests about costing not being required by 'the Act' had persuaded the accounts department to introduce a system of programme costing (described in section 4.4.5), though this did not give him "a full costing of facilities" or anything like it. He had also detailed a junior executive to work as a costing assistant, though the costing system was not fully integrated with the financial controls.48

The engineering division responded to the financial controls (and to the services department in administration) by setting up its own control section, and by developing a separate system of financial control which tried to include expenditure committed, as opposed to the formal system which accounted only for payments. This resulted in two sets of financial reporting schemes, neither based on responsibility, and each containing different figures, and it is not difficult to imagine the type of situation that arose when both sides had to get together to investigate budget excesses as a result of confrontations with the director-general.

Some evidence was also obtained that certain expenditures were switched (e.g., capital items obtained out of revenue) especially towards the end of the financial year, and that in such cases any deviations from the rules set up by administration that

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48 There were three sets of figures relating to TV programme costs, viz:— the total figures for expense items in the financial ledger; the programme cost reports prepared by the accounts department; and estimated (actual v. budget) programme cost reports emanating from the TV programme division. The last two reports seldom agreed, and it was virtually impossible to reconcile the first set of figures with the others.
were detected by this division, usually resulted in additional rules (in the form of further checking and paperwork) being introduced. 49

The director-general who, as has been previously stated, was an experienced international business executive (having been employed in senior positions with several large US and European firms) and had strong views about management, particularly in relation to responsibility and delegation, often expressed his philosophy by stating, with not a little feeling, that "managers must manage!"

5. Summary of the Characteristics of RTE and its Controls

Due, principally to the rather broad scope of this case, and (at the outset), the writer's lack of knowledge and experience of broadcasting, it will be useful to draw together what has been discussed to date in this chapter and to relate it to the conceptual framework of the research. What follows, therefore, is a summary of the environmental and organisational characteristics of RTE, and of the type of controls and their impact, again bearing in mind that the problems of planning and controlling resources were most critical in the television service.

49 A further characteristic of the public administration model as described here is the response evoked by its practitioners to the breaking of rules - namely, the introduction of further rules. This 'watch-dog' approach is usually single-tracked and assumes that those on the receiving end do not possess the integrity of the rule-makers. The point is further illustrated by an incident at a seminar in Ireland attended by businessmen and public service officials (and the writer). During one of the group discussions when the question of expenses arose, it was claimed by a public servant that they (the public servants) had more integrity than businessmen in this matter and that this was so because there were people employed in the public service who checked up on them.
5.1 Environmental characteristics

RTÉ originated as the state sound broadcasting service in 1926, and remained relatively unchanged until the arrival of television in 1961, following the setting up of the broadcasting authority. It still operates as a public service, but has the right to accept advertisements.

Emphasis has been placed on the rapid build-up and voraciousness of the television service, which in 5 years had acquired a staff of over 700, despite the fact that the Irish Television Commission had been given a maximum estimate of employment of 220. Indeed, even in the two years between 1962/63 and 1964/65, the staff in the television service had increased by 51%, and one of the principal tasks facing the writer was to try to identify the causes of the relatively unplanned growth that had, (and was still) taken place due to television.

As nearly everybody has views on broadcasting, particularly television, RTÉ has an exceedingly strong potential and immediate impact on the public—at-large of all ages and classes, and it is subject to pressures from many often-conflicting groups, a microcosm of which exists in RTÉ itself. Though ultimate control rests with the government, which has certain reserved powers, the authority has a fairly high degree of autonomy and is reasonably free to interpret what is meant by "a national broadcasting service," like other national broadcasting undertakings, particularly those in Europe, RTÉ has been influenced by the BBC's pioneering efforts to provide high quality programmes, and by its general model of management.

RTÉ transmits a wide range of programmes, and in television,
over half are home-produced. The character of its products necessitates the use of both aural and visual senses, and it is obviously no guarantee that anyone is viewing and/or listening if sets are switched on; and even if programmes do have audiences it is highly probable that a large variety of meanings and reactions can be found among a 'representative' group. Normally, for the audience, a programme 'perishes' whenever it is transmitted, though unlike transport services, programmes can be stored and re-run by those who produce and/or transmit them.

A wide range of skills and facilities is required in RTE, and much of the equipment is highly complex, some of it of the 'black box' type. This applies particularly to television, where the life-cycle of equipment is short; and there is still further innovation under way (e.g., colour). In RTE, the technical impact of TV as an entirely new medium was certainly traumatic, for in just 18 months, a completely new and vastly more complex technology had to be absorbed. It will also be appreciated (despite the conventional image of many 'show-biz' people as being arty and erratic) that many programmes are highly structured, that scripts (including those for cameras, in the case of TV) have to be rigidly followed, and that split-second timing is essential for most programmes.

Although it has a monopoly of broadcasting in the State, RTE has competition in all homes from radio programmes from other countries, and in many homes, from TV programmes from Northern Ireland and Britain. In fact, before the introduction of BBC 2, many viewers

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50 The influence of programmes, particularly at the semantics and pragmatics levels (Cherry, 1957, p.221) was beyond the scope of this research.
in Ireland had a choice of viewing from three channels (RTÉ, BBC and ITV) — one more than most people in Britain. In relation to its market, RTÉ is nearing saturation point, and when this is reached, it will only be capable of meeting its costs by increasing prices; thus, in an economic recession or credit squeeze its revenue could be frozen. Attention has been drawn to the buoyancy of advertising (90% of it being from TV) which in 1964/65 formed 55% of the total revenue of the authority; to the deficits of the radio service and the large overall surpluses the authority had in 1963/64 and 1964/65.

Because of the need to record certain programmes, production and transmission schedules are out of phase, and this in itself creates planning and control problems particularly for TV, as does the fact that peak viewing occurs in the winter and early spring.

Though weather can effect audience ratings, (and therefore, ultimately advertising revenue), isolate transmitter staff on mountains, and interrupt or interfere with signals, it does not appear to have much effect on planning and controlling resources, except in the case of outside filming, where a prolonged bad spell can interfere with shooting.

5.2 Organisational characteristics

RTÉ's primary goals were to produce and/or transmit programmes which would inform, educate, and entertain, and be of such quality

51 In 1966, the government introduced a price freeze on a number of products and services, and proposals by RTÉ to increase its advertising rates were deferred; eventually only a part of the proposed increase was permitted.
(both in content and technical merit) that they would deserve audiences. It also aimed to try to keep 'out of the red' so as to avoid asking the government for money.

The director-general being an experienced professional businessmen, naturally wished to make, and was making, an impact in his new role. He wanted RTS to be in command of its growth; understood the need to identify the causes, as opposed to the symptoms and results, of this growth; and above all, demanded that "managers must manage."

Stress has been laid on the absence of a managerial culture in the authority; on the civil service background of many of its staff, particularly in the administration division; on the differences between the prescribed and extent organisation in the TV programmes and engineering divisions; and on the fragmented nature of the organisation for planning and controlling TV facilities, for which there were at least a dozen methods of ordering.

The characteristics of (what has been termed) the public administration model of management adopted by the administration division have been identified, including its centralised nature, the number of hierarchical levels; the emphasis placed on the annual audit and other statutory regulations, and on checking; and the belief of its senior members that administrators were the only managers. At the same time, the contribution made under great stress, by senior members to getting the TV service on the air has also been noted, as have the resentment felt by executives in other divisions to the administration division, and

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52 See Brown (1960, p.24).
the low level of participation by HTB executives in budgeting.

5.3 The characteristics of the controls

The main features of HTB's system of financial control were that it was based on the civil service 'vote' system: budgets were built up in large totals, and not from the bottom up based on responsibility; few cost centres existed in the accounting classification for use in accounting for expenditure where it was originally incurred, and consequently no mechanism existed for identifying where facilities were being used. Apart from the low level of participation in budgeting, the monthly financial reports, with money as the unit of measurement, were available only to divisional heads. The budget figures in these reports were not broken down into months or quarters, and the actual figures were mainly payments, adjusted by the accounts department, which did not have an up-to-date picture of actual expenditure primarily because of the cumbersome nature of the clerical procedures, particularly invoicing. It has been shown how the position of the authority's financial year, and its consequent impingement on the budgeting cycle, created additional difficulties, as the TV programmes division had to try to estimate expenditure for its peak Autumn schedule at least eight months in advance of production. Lastly, in relation to the formal financial control system, was the evidence provided of the fallaciousness and resulting problems of using conventional marginal costing concepts as a means of controlling the rapid growth of television.

A considerable amount of attention was given to investigating the problems of planning and controlling the production of TV
programmes, and in this context, the erroneous nature of using ordinary hours as a unit for measuring output, and the importance of programme mix, were shown to be crucial. As far as controls in this area were concerned, there were virtually none. A brief description was provided of the system of TV programme costing that was being developed and again, attention was directed at the dangers of using the concept of 'above-the-line' and 'below-the-line' costs, and of only reporting on the former, which represented less than one sixth of the total costs of the television service.

Certain adaptive responses to the existing controls were noted; these included the creation of a separate independent control section in the engineering division which had a parallel financial control system, based on commitments; the introduction of programme costing by the TV programmes division; the existence of three sets of figures for programme costs, none of which agreed with the other; the frequent and usually abortive post-mortems that followed when budgets were exceeded; the 'adjustments' made in relation to certain items of expenditure; the tendency of the administration division to react to deviations made by executives in other divisions from the rules, by introducing additional rules; and the 'ripple' effect created right through the television service due to the lack of mechanisms for the prior evaluation of the probable effects that alternative programme plans and changes in programmes would have on TV resources, and for monitoring the actual use of resources against the plan that was selected and implemented.

Finally, though the quality of programmes was generally agreed
to be reasonably good, the stability of the TV system in relation to 'housekeeping' was extremely low. In fact, the system - and not management - was virtually in command.

6. Interpretation of Findings

It will now be obvious that it would have been impossible to make a coherent evaluation of the operation and appropriateness of the management controls in RTE (and following this, to assist in developing and implementing solutions) without first acquiring a clear picture of its characteristics and problems through systematic exploration and analysis, and in certain instances, through using a heuristic approach. The task was made more difficult than usual due to the rather unique nature of the undertaking, paucity of published material, and the writer's lack of experience of the organisation and operation of broadcasting undertakings. These points are emphasised here, first to demonstrate the necessity in any study of formal undertakings of carrying out a systematic appraisal of their characteristics, particularly where problems in organisation and control are being encountered; and second, (because of the unique nature of RTE) to justify the rather lengthy exposition in this case.

53 In the past, the writer has seen many instances (and indeed has participated) of management consultants producing and implementing recommendations on 'top organisation' and planning and control systems, based on only the sketchiest analysis, and heavily larded with intuition. While some of these solutions have worked out in practice, it is believed that the quality and end results of consultancy assignments would probably be improved by using a more extensive analytical framework which includes both environmental and organisational variables of the type (all-be-they-crude) considered here.

Again, limited experience of the earnest 'questionnaire-waving' research worker who dashes in and out of firms (like a tourist doing Europe in ten days) leads this writer to question the reality of much of the findings where these purport to 'explain' what is actually happening. Of course, reality (and knowledge) can be further confused by the equally earnest armchair research worker who builds on these findings.
Using the conceptual framework set out in chapter 3, the rest of this section covers the influence of the environmental characteristics on control requirements, and on the organisational characteristics; the influence of the organisational characteristics on the existing management controls; the effects and responses to these controls; and is concluded by an assessment of the appropriateness of the existing controls.

6.1 The influence of the environmental characteristics on control requirements in RTE

The purpose here is to try to assess the extent to which certain environmental characteristics influence the demand for control, irrespective of the social system.

Without doubt, the greatest single factor that affected control in RTE was the introduction of the television service, which, with its complex and sophisticated technology was literally thrust into the system and made to work in just eighteen months. Apart from the extremely 'soft' nature of its final product in relation to measurement, television broadcasting demands a variety of skills and facilities, of which many are creative, a wide range of equipment which is continually changing, and an operational pattern that requires continuous coordination. (See sections 2.1, 2.7, 4.1, 4.4.3 and 4.4.4).

Again it has been demonstrated that the public-at-large, and in particular, pressure groups, were continually attempting to influence the quantity and control of output of broadcasting (section 2.5) and that the government could limit advertising rates and licence fees (section 2.1). Thus these external agencies impacted on the resources of RTE and added to the control requirements.
Other important environmental factors in this context were the possibility of eventual market saturation, (section 2.5); the influence on audiences of competition from BBC and ITV programmes (section 2.5); and the seasonality of programme planning, including the effect of the position of the financial year on the annual budget (section 4.4.1). Neither geographical dispersion nor climatic factors appeared to have much impact, though the latter could interfere with outside filming.

To sum up, the environmental factors discussed above, and in particular, the addition of a completely new product with its attendant complex technology, in themselves demanded a correspondingly sophisticated management control system, the absence of which left RTE extremely unstable.

6.2 The influence of the environmental characteristics on the organisational characteristics

Apart from their influence on control requirements, certain environmental characteristics also impacted on the social system.

Certainly, the historical associations of RTE with the civil service, (which extended for over 30 years) had a decided influence on the management model adopted by the administration division (section 2.1), as had the technology associated with television, which implanted many new people, many of whom had little management experience, not a few coming from sectors such as the film industry where traditionally, there appears to be a lack of attention to planning and control (section 4.5).

The controller of programmes TV was heard to remark that this problem could only be solved for television by towing Ireland another 200 miles west.
References have also been made (sections 2.4 and 4.3) to the buoyancy of advertising and to how this marketing characteristic tended to encourage in the TV service, munificence, a lack of discipline, and a relatively loose attitude to control that contrasted sharply with the impecuniosity and conditioned restraint of the "second-class citizens" (as many of the executives bitterly described themselves) in sound broadcasting which, of course, was not all functional, especially in relation to programme quality and variety.

Lastly, it is considered that there is reasonable evidence to indicate that RTÉ was also influenced by the organisation structure, (and particularly, the role of administration) that operated in the BBC (section 4.6).

6.3 The influence of the organisational characteristics on the management controls in RTÉ

The management controls actually operating in RTÉ were influenced by the absence of a managerial culture (section 4.5); second by the public administration model of management adopted by the administration division, and the assumptions made by its senior members (section 4.6); third, by the low degree to which executives participated in budgeting and decision-making (section 4.7); fourth, by the existence of conflict (traditional in the civil service) between 'administrators' and 'professionals'.

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55 See March and Simon (1958, p.123).

56 For example, while a large number of executives in TV programmes division had personal secretaries, (one executive had two), in addition to the use of a typing pool, the majority of executives in sound broadcasting personally handled most of the paperwork associated with their own programmes.
fifth, through differences between the prescribed, extent, and requisite organisation structure in the TV service (section 4.4.3); and sixth, by the fragmented system that existed for ordering TV facilities (section 4.4.4).  

Thus, the management controls in operation in RTE reflected the characteristics of the progenitorial social system whose influences were noted in the formal financial controls, (which were based on the public administration model – section 4.6 to 4.8); by the almost complete absence of feedback in the key sector of TV facilities (section 4.4.4), by the existence of misleading units of measurement (section 4.2), and by the concepts relating to ‘indirect’ and ‘above-the-line’ costs (sections 4.4.5 and 4.6).

6.4 The existing controls – effects and adaptive responses

Not unexpectedly, overspending occurred, and the director-general, who wanted RTE to be in command of its operations, attempted to achieve this by using the financial controls as a basis for taking corrective action, and by limiting staff intake and output. However, due to the inadequacy of the controls, and to the pressures resulting from the minuscule of the revenue position etc., these measures were only temporarily successful (sections 4.1, 4.3 and 4.6) and the system itself and not management soon reassumed control. The resentment of the administration division’s role, and the inadequacy of the financial controls to assist (and indeed, ‘protect’) other divisional heads, caused them to develop their own parallel controls and

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57 See Brown, (1960, p.24)

58 The director-general’s impact was only gradually being felt, this study being one of the means he was using to get RTE ‘under control’.
in certain cases, 'switch' expenditure (section 4.8). These responses however, had the effect of aggravating the problem, and tended to accentuate rather than minimize conflict, as well as failing to provide a mechanism that would help to anticipate and control the oscillations which R2E was experiencing.

6.5 An evaluation of the appropriateness of the existing controls

Certain environmental characteristics placed demands on the social system for control mechanisms which would be of a sufficiently sophisticated character to enable management to command R2E's growth. However, the social system was able to respond to these demands only in so far as its capabilities and repertoire allowed, with the result that the controls which it evolved for the television service were completely incompatible with those environmental characteristics (e.g., technology, external agencies, marketing, seasonality) impacting on it. In fact, the TV service had all the features of a 'run-away' system that was only kept in balance, as it grew, by the "homeostatic mechanism" \(^{59}\) of revenue from advertising. The 'elastic' was certainly 'twanging,' and could only be prevented from snapping by adding another piece, although each additional piece tended to create further tension and oscillation. Therefore, it was of crucial importance to the director-general for management to get in command of the system before R2E found itself in a position where the 'stock of elastic' ran out.

In this situation, the steering system in R2E at this time was "blind to the consequences of its own behavior." (Deutsch, \(^{59}\)Wiener, (1961, p. 115)
1952, p. 370), and only the director-general and one or two other executives had any grasp of its problems. Certainly, the symptoms of pressure were manifest but the causes had not been identified.  

It will also be appreciated, however, that the development and installation of control mechanisms that would be compatible with the environmental characteristics is not in itself a simple task, and that an inflexible approach to programme planning and production, while it would probably bring resources under tight control, would tend to have dysfunctional consequences for BBC's programmes. Thus, to achieve programme goals, and command growth and resources, (many of which had a creative content), the control mechanisms required by BBC had to be extremely sensitive and flexible, and of a much higher degree of sophistication than offered by conventional management accounting and production planning techniques. Further, the introduction of such a sophisticated control system would also necessitate the corresponding development of an appropriate managerial culture within the social system.

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60 This underlines the need for an inter-disciplinary approach to studying organisational and control problems. In this case, the technical characteristics of the system created pressure, which in turn, showed up as symptoms in participants. It is considered probable by this writer that an analysis of these symptoms alone by a behavioural scientist, through, for example, an attitude survey, would not have disclosed the causes. And, of course, in other types of undertakings, a study only of the technical aspects would not disclose the real causes of problems which were being encountered.

61 Simulation techniques were required for identifying the probable effects of different programme mixes and programme changes on the whole system, and which would have a complementary feedback on the loading and utilisation of each sub-system. This is not too difficult in a machine/sten system conventionally found in many industries, but in a national broadcasting service, where the range of sub-systems includes many different types of human beings engaged in a variety of creative tasks, the job of estimating the input and output of sub-systems becomes much more complex.
including the reshaping of the administration division and of the organisation for planning, producing and controlling programmes (especially in television). These are by no means easy tasks.

7. Conclusions

Possible generalizations from this case are listed below:

- To assess the appropriateness of controls in any undertaking it is essential to identify its characteristics,
- Environmental characteristics can create demands for control irrespective of the social system, and can also influence the social system.  
  62
- The greater the complexity of the technology, the greater the problems of control, and therefore, the greater is the need for sophisticated controls.
- In the case of technology it is possible that its influence on control requirements and on the social system can be in conflict.  
  63
- The management system may contain a number of management models which operate concurrently, and which may be in conflict.
- The public administration model of management is not capable of handling the problems of control endemic in a highly complex and changing open system.  
  64

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62 Dubin (1958) and Woodward (1965), and also the propositions relating to interdependence among sub-units in March and Simon (1958, p.159).

63 The sophisticated technology of TV created demands for sophisticated controls. However, it also brought into RTB executives from the film industry who had the technical, but not the management skills.

64 Interesting possibilities for sharpening insights into the operation of different undertakings are provided by medical science. For example, in RTB, though staff were transferred from the civil service and sound broadcasting to TV, this had dysfunctional consequences for control in the television service. In medical terms, this would be described as an "incompatible transfusion with allergic manifestations."
following from this, there is no guarantee that a particular model of management which has achieved results will be automatically capable of handling the problems created by a new and complex product, or those of a completely different undertaking.

Little attention appears to have been given by contemporary writers on administrative theory to what Weber referred to as "a specified sphere of competence" including "technical qualifications" which, he claimed, were conducive to efficient administration. While this may be taken for granted, it appears that competence is a prerequisite, if management is to be able to understand and control complex systems. It is important, therefore, to recognise that in any undertaking, the management system can be organic or mechanistic (Burns and Stalker, 1961); "expansive authoritative" or "participative" (Likert, 1961), or have any intervening variants, and yet the undertaking itself can be out of control because its management lack the competence to identify their problems and develop the technical controls.

It is probable that the longer the munificence of the environment continues, the greater will be the difficulty of achieving command; though should there be a sudden downward shift in munificence (e.g., if cigarette advert-

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66 It is stressed that comments made about the competence of those who use the public administration model of management in ME are not directed at their intelligence or character, but at the conditions in which the model breeds.

67 See March and Simon (1958, p. 120).
ising on TV was prohibited in Ireland) there would be an accelerated demand for control, and probably, more rigidity (e.g., in programme planning in RTÉ).

- There are serious limitations in using accounting, with money as the primary unit, for measuring performance. 68

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68 See Campbell (1963), Chapple and Sayles (1961) and Jasinski (1956).
LINK BETWEEN PUBLIC & STAFF OF RTÉ
PUBLIC AT LARGE

LICENCE HOLDERS

VIEWERS & LISTENERS

DÁIL ÉIREANN

GOVERNMENT

MINISTER FOR POSTS & TELEGRAPHS

CHAIRMAN & AUTHORITY

DIRECTOR-GENERAL

STAFF

MINISTER FOR FINANCE

ADVERTISERS

PROGRAMMES
Scope of RTE

ARTISTS
ACTORS
SCRIPTWRITERS
PRODUCERS
PRODUCTION ASSTS.
DESIGNERS
GRAPHIC ARTISTS
STAGE HANDS
RELIGIOUS ADVISERS

ADMINISTRATORS
ACCOUNTANTS
CLERICAL
SECURITY
DRIVERS
CLEANERS
GROUNDSMEN
ENGINEERS
DRAUGHTSMEN
STOREKEEPER
VISION MIXERS
FLOOR MANAGERS

SALES EXECUTIVES
EDITOR (RTV)
JOURNALISTS
CIRCULATION MANAGERS

MUSICIANS
SINGERS
CARPENTERS
CAMERAMEN
OPERATORS

TECHNICIANS
RIGGERS
ELECTRICIANS
SOUND OPERATORS
O.B. TECHNICIANS
VTR OPERATORS

ATTENDANTS
CARPENTERS
PLUMBERS
LABOURERS
SECRETARIAL STAFF
T/CINE OPERATORS

TOTAL STAFF
1095

OPERATIONAL PATTERN
18 hrs. per Day
7 days per Week
52 weeks per Year

BUILDINGS
Provinces 23
Dublin 8
Total 31

1964/65
Income £3.27m
Expenditure £2.90m
Capital Employed £2.68m
The numbers in boxes show the total staff in each division.

* A separate organisation chart is shown for each of these divisions.

** This includes 145 staff in 'standing' groups (two orchestras, a drama group, and a choral group)

March 1965
OUTLINE OF ORGANISATION OF TV PROGRAMMES DIVISION

Controller of
Programmes

TV

Assistant
Controller

Programmes
Casting
Planning
Drama
*PRO
Children's
Religious
Information
office
Sport
Agricultural
Irish
Group A
Group B
Group C

* Serving both radio and TV

Manager -
programme - administration

Programmes
Design
Graphics
Still
Work-
shops

Studios
Stagehands
Wardrobe
Make up
Property
Floor managers
Vision mixers

March 1965.
OUTLINE OF ORGANISATION OF ENGINEERING DIVISION

Director of Engineering

Deputy Head

Head of TV operations

Control section
- Stores
- Training
- Clerical

Transmitters
- East
- South East
- South West
- West
- North West

Studios and outside broadcasts (OB's)
- Cameras
- Lighting
- Sound
- OB
- Master control

Planning and Equipment
- Development
- Transmitters
- Studios etc.

Recording (TV) and Maintenance
- VTR
- Telecine
- Film (cine)
- Processing
- Dubbing

Head of central Engineering

Head of radio operations

Studios
- Lines and Mobile operations

Transmitters
- Dublin
- Cork
- Athlone

* Not manned

March 1965.
OUTLINE OF ORGANISATION OF ADMINISTRATION DIVISION

Head of administration

- Legal and Contracts officer
- Personnel manager
  - Labour relations
  - Welfare
  - Typing pool
- Accountant
  - Billing
  - Payments
  - Budgets
- Purchases
  - House services
  - Printing
  - Travel
  - Admin. (radio)*
- Buildings
  - Plant (boilers etc.)
  - Transport
  - Attendants
  - Security

* Based in the GEO

March 1966
### CASE III: RTE

**NUMBERS OF STAFF INTERVIEWED INDIVIDUALLY, AND IN GROUPS AND TOTAL NUMBER OF STAFF IN RTE, BY DIVISION**

<table>
<thead>
<tr>
<th>DIVISION</th>
<th>Persons Interviewed Individually</th>
<th>Persons Interviewed in Groups</th>
<th>Total Staff in RTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>News</td>
<td>3</td>
<td>-</td>
<td>54</td>
</tr>
<tr>
<td>Programmes - TV</td>
<td>33</td>
<td>13</td>
<td>212</td>
</tr>
<tr>
<td>Programmes - SB</td>
<td>12</td>
<td>-</td>
<td>222</td>
</tr>
<tr>
<td>Engineering</td>
<td>21</td>
<td>5</td>
<td>302</td>
</tr>
<tr>
<td>Administration (including director-general’s office)</td>
<td>22</td>
<td>-</td>
<td>184</td>
</tr>
<tr>
<td>Sales</td>
<td>5</td>
<td>-</td>
<td>30</td>
</tr>
<tr>
<td>Publications</td>
<td>3</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>99</strong></td>
<td><strong>18</strong></td>
<td><strong>1,095</strong></td>
</tr>
</tbody>
</table>

* Includes 145 musicians etc., in standing groups

**Note:**

It is impossible to be precise about levels of management in this type of undertaking, but those interviewed individually included 70 out of about 75 'key' executives, i.e., all divisional and departmental heads, those in charge of specific services or units, and TV executive producers. The 5 'key' executives not interviewed comprised the engineers in charge of four (out of five) TV transmitters, and the head of the Cork SB studio.
STAFF GROWTH BY DIVISION: 1962/63 and 1964/65 (at 31 March)

<table>
<thead>
<tr>
<th>Division</th>
<th>1962/63</th>
<th>1964/65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Programmes TV</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Programmes SB</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Engineering TV</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Engineering SB</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>News</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Publications and Sales</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

VARIATION
STAFF +34%
% +23

VARIATION
STAFF +73%
% +53

VARIATION
STAFF +4%
% +4

VARIATION
STAFF +122%
% +78

VARIATION
STAFF -16%
% -17

VARIATION
STAFF +4%
% +8

VARIATION
STAFF +5%
% +14

1962/63

1964/65
TV: CHANGES IN HOME ORIGINATED PROGRAMME CATEGORIES (OR PROGRAMME "MIX") BETWEEN 1962/63 AND 1964/65

- Drama: +180%
- News: -28%
- Public Affairs: +56%
- Sports: -15%
- Light Entertainment: +102%
- Children's: -7%
- Women's: -15%
- Schools 1964/65 (only): 20 56 67

HOURS
266 188   250 390   250 390   160 136   140 283   120 111   40 34   20 56   67
TV PRODUCTIVITY: IMPORTANCE OF PROGRAMME MIX

1962/63  

Home Originated Hours per Employee  
Normalised Home Originated Hours per Employee

1964/65  

PRODUCTIVITY

<table>
<thead>
<tr>
<th></th>
<th>1962/63</th>
<th>1964/65</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODUCTIVITY</td>
<td>2.08</td>
<td>1.77</td>
</tr>
<tr>
<td>PRODUCTIVITY</td>
<td>16.17</td>
<td>17.36</td>
</tr>
</tbody>
</table>
DIAGRAM SHOWING MAIN FACILITIES AND SERVICES USED IN PRODUCTION AND PRESENTATION OF TELEVISION PROGRAMMES.
Vision Mixers, Stagehands and Floor Managers are crewed according to the Production Schedule which is sent by Technical Operations to the Studios Manager.
FLOW CHART SHOWING ORDERING, INVOICING, PAYMENT OF ENGINEERING GOODS
(under £25 value) OTHER THAN STOCK ITEMS OR MAJOR CAPITAL CONTRACT WORK.

1. Requisition
2. Request for Quotation Form
3. Quotation
4. Local Order
5. Instruction to Stores
6. Local Order Last
7. Goods Delivery Note
8. Invoice Ledger
9. Invoice
10. Photo Invoice
11. Goods Inwards Point & Book
12. Invoice Register
13. Goods Received Note
14. Stores Log
15. Cheque Jnl & Analysis Book
16. Gen. Ledger
17. Plant Register

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Movement of Paper
Transfer of Information
Checking
Filing

For Signature
RELATION BETWEEN DIRECT AND INDIRECT COSTS IN RTE.
(THE TWO PARTS OF AN "ICEBERG")

"Direct" Expenditure  £0.7m
Other Indirect Costs  £1.2m
Salaries  £1.5m

21%  35%  44%
CHAPTER 7

CASE IV: PJR LTD

1. Introduction

This case deals with a large Irish firm, PJR Ltd,\(^1\) engaged in supplying materials to the building and road construction industries.

The writer, having discussed his research interests with the two executive directors, and other members of senior management, was invited to appraise the management controls in PJR, working on a contract research basis with the following terms of reference:

- To review the planning and control systems in operation with particular reference to those used for budgeting and for cost and production control
- To assess the strengths and possible weaknesses of the existing controls
- To assist in the design of a suitable system of management information capable of meeting the company's longer term needs.

It was also agreed that the writer would take the opportunity of appraising its organisation and general operations and would make recommendations on organisation which he considered might benefit the company.

About three days per week were spent on this project which began in February 1966 and was completed by the end of May, when a

\(^1\)This is a pseudonym. The initials PJR represent three of the four principal types of production units, viz: pits, quarries, ready-mix concrete, the fourth being macadam. From now on, PJR (or the company, the firm) is used in the text.
report containing *inter alia,* recommendations on organisation structure and a blueprint for a revised management information system, was submitted to the executive directors. Thereafter formal presentations of the recommendations were made to senior management, and to a group of about forty executives mainly at middle management level. Subsequently, the writer assisted in implementing the recommendations spending on average, one day per week on this between July and December.

As with ESE, the writer had no inside knowledge of the company, (though he had some previous experience of some aspects of quarrying and road construction), and it was, therefore, necessary to start from scratch and learn about the firm and its activities.

This introduction is followed by a brief summary of the background of PQR and then by a section on methodology. Thereafter, the principal findings relating to the characteristics of PQR and its controls are presented, and the chapter is concluded by an interpretation of these findings in relation to the conceptual framework outlined in chapter 3.

2. Background

 Basically, PQR is in materials extraction, processing and distribution, and is one of the major suppliers of road materials, concrete aggregates and ready mix products which are used in road

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2 A summary of the recommendations was also published in the company's monthly staff magazine.

3 Arising from the recommendations, a firm of management consultants was employed to carry out specific assignments.
construction and maintenance, and by the building industry. It had its origin in a one-man haulage business started by its present managing director in the early 1930's and was incorporated as a public company in 1933.

Between 1959 and 1965, its profits increased by nearly 8 times, its total investment by over 7 times, its investment in fixed assets by over 5 times and its employees by about 4 times, from 400 to approximately 1,600 people.

The company has a large number of production units located throughout the state, and these include 13 quarries (most of which also have macadam plants), 8 principal sand and aggregate pits, over a dozen ready-mix concrete plants centred in and around the principal cities, two of these plants being of much greater capacity than the others. In addition to supplying primary and processed materials, PQR has an extensive contracts department which lays macadam drives, tennis courts, etc. To deliver its products, the company also operates a large fleet of tipper and ready-mix trucks. Its headquarters are in Dublin, and include central engineering workshops which carry out major overhauls on fixed and mobile plant, and vehicles.

Details of technology and organisation structure etc., will be provided in section 4.1 and 4.2 which deal with PQR's environmental and organisational characteristics.

\*\*\*\*

Details of finances are not given here, and certain minor changes in other background details have been made to avoid immediate identification. However, the size of the profits, capital, etc., was not small.
3. Method of Approach

As with RTE, a consultancy approach was adopted and this involved making a general survey of the company's organisation and operations.

After spending the first two weeks in getting a general background, a study team, consisting of three young graduates from P&R (two engineers and an accountant) and a research assistant from the Administrative Research Bureau of Trinity College, was set up, and a work programme prepared. Briefly, the company's organisation and operations were broken down into a series of activities (including cost centres and identifiable tasks) such as marketing, sales, production, delivery, procurement, maintenance of equipment and buildings, personnel (recruitment, training etc.), and accounting. Each member of the team, with the writer as team leader, was assigned specific projects which were primarily designed to elicit and record information about organisation, planning and control procedures, and cost structure. In addition, a ten-year financial analysis was made to ascertain trends in return on investment etc.; printed material was studied, production units, engineering shops and administrative units visited, flow diagrams and descriptive models prepared, meetings and management conferences attended, and a comprehensive analysis compiled of all departmental formal reporting systems, showing originator and recipients.

Apart from this work, two formal interview programmes were set up.

The first series of interviews involved the 20 senior executives (including the two executive directors), all of whom
were interviewed by the writer at least once. The interviews were semi-structured, and were designed to elicit information and views from each executive on:-

- The history of the company
- His background and job
- The organisation structure and how it operated
- Planning and control, including management reports and paperwork; and
- Problems that had, and still existed in P&I.

These interviews lasted about a half-day each and in all cases it was possible to develop an open relationship with respondents.5

The second series was primarily designed to elicit the views of managers in the 23 main production units located around the country on the monthly costing report which they received from headquarters. The research assistant, Mr. R. Cadwell, was given responsibility for this project, and with assistance from the writer, a schedule with nearly 50 questions was constructed: this was designed not only with the object of obtaining the production managers' views on the costing report, but also to build up a body of data relating to their value systems, including role perceptions and attitudes to headquarters. All of the 23 managers in the 23 principal production units were interviewed, 18 of them by Cadwell6 and 5 of them by the writer, each session lasting an average of two hours.

5The writer also interviewed another 16 executives at middle management level at headquarters, as well as the chairman (a part-time director), primarily to establish contact and get their general views on how they perceived the company, past, present and future.

6Cadwell, a sociologist, is at present engaged on research into organisational change, using P&I as a pilot case.
Both sets of interview data were analysed and checked, it being possible with the second set to construct a large number of tables, because of the homogeneous nature of the population being studied, and the large number of questions asked.

The findings now presented are a combination of the desk and field research carried out by the writer and the study team. They include evidence relating to the views of the 20 senior executives interviewed by the writer, and a few tables etc., relevant to this research selected from the large amount of data collected from the structured interviews of the 23 production managers by Cadwell and the writer.

4. Principal Findings

This section deals with the environmental and organisational characteristics, the characteristics of the controls, and with the perceptions of senior executives and production managers of the controls.

4.1 Environmental characteristics

4.1.1 History - The history of the company (to which brief reference has already been made) has been one of growth and by many standards, including those of the commercial world, it has been successful. The reasons for this success are due primarily

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7 Miss T. O'Donoghue, of the Administrative Research Bureau, TCD, and secretary/assistant to the writer, also helped in analysing and cross-checking some of the data.

8 The questionnaire administered to the production managers is not presented here, as many of the questions and responses do not have a direct bearing on this research.
to the managing director who, supported by his younger brother (and deputy), and by the family auditors, had built it up starting from a small yard and model 'T', one ton truck when he had been forced to leave school owing to his father's early death. The business developed slowly during the 1930's, and when the war years intervened the main activity was hauling turf (peat) and keeping the small transport fleet of four trucks on the move by ingenious methods, using gas balloons filled from producers fired by anthracite or charcoal.

As the time went on, considerable experience was gained of various types of sand and aggregate used in manufacturing concrete products, and of the building industry generally. At the end of the war, perceiving the growing demand for more accurately graded aggregate, the firm went into the sand and gravel business. A washing and crushing plant was acquired and the transport fleet was augmented by purchasing ex-US army trucks; further pits were then started, an engineering shop was set up for overhaul and construction of certain equipment, and by 1950 the company had entered the quarrying business, mainly to supply road-working materials to county councils. Thereafter, despite a serious recession in 1957, POH's growth has been accelerating, and as previously stated, it is one of the leading suppliers of road materials, aggregates and ready-mix products in Ireland. The company thus has a comparatively short history - its founding fathers are still fairly young men who at an early age came out of a good middle-class home and made a success of what one senior manager in the firm has called a "rough, tough old" business. However, to quote the deputy managing director:-
"As with any new expanding business there were plenty of headaches, but the biggest was the lack of capital. A heavy basic industry such as this had an insatiable appetite for capital. The original backers faced up manfully to the ever-increasing demands, and the bank manager succeeded in pushing through his board several audacious proposals for overdraft accommodation."

4.1.2 Technical and product characteristics - It will be noted from Appendix 7.1 that PQR is made up of two main types of technologies, viz:

- **Pits and quarries** - which are extractive and elemental in character, and operate on a continuous production basis to supply sand and aggregates, and stone chippings, direct to customers and to the company's own processing plants. These products can, of course, be stock-piled.

- **Ready-mix concrete and tarmacadam plants** - which are processing units, operating on a batch production basis, supplying direct to customers, and also, in the case of tarmacadam, to contracts. The products from these plants must be used within a few hours.

In quarrying, skill is required in drilling and placing explosive charges and in operating large excavators, and there is considerable danger involved in blasting; while in pits, the variations in the degree of consistency of sand and gravel deposits can create problems for customers (including PQR's ready-mix plants) and in predicting and controlling output. Generally, however, the technology in both pits and quarries is of a relatively low degree of complexity and demands a large amount of energy which is supplied by a combination of heavy fixed and mobile plant, explosives (in the case of quarries) and men. A variety of sub-systems is involved before the final product is ready.
for despatch, including, in the case of quarries, drilling, blasting, digging, trucking, crushing and screening. Noise, dirt, dust and mud abound, and both machines and men have to be pretty tough to stand up to the general atmosphere of pulverisation and variations in weather conditions inherent in winning materials from the earth.

The processing plants, on the other hand, are more compact and, particularly in the case of ready-mix plants, are highly automated, though a high degree of skill is not required to operate them.

Few technological problems exist in the bulk of the contracts work carried out by P&O, as most of the jobs are small and the skills, tools and equipment required are of a rudimentary character e.g., small rollers, picks and shovels; and technology again has little impact on haulage work, most of which was done by the company's own fleet.

However, as with CIE, technology made its greatest impact in the central workshops which were mainly responsible for the overhaul of mobile plant and vehicles; in the latter case, the 'units' system was used to facilitate rapid turn-round, but in the former case, because of the cost and variety of engines and other units used in excavators and dumpers etc., these often spent lengthy periods in the shops. Predictability of overhaul requirements for mobile plant was low, and the skills, machines and tools used in the shops were of a much higher order of complexity than in any other part of the company. A summary of the responses of the 25 production managers to the question: "Of all the departments at headquarters, could you name three which you think influence you most?" is given below, and inter alia, this
illustrates the influence of central engineering on the production units, whose managers did not have the facilities to carry out heavy overhauls.

**TABLE 7.1 - Extent of influence of headquarters' functions on production units as indicated by responses of 23 production managers from 23 production units (N=69)**

<table>
<thead>
<tr>
<th>H.Q. FUNCTION*</th>
<th>Responses No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering (including plant shop, machine shop, stores)</td>
<td>41</td>
<td>59</td>
</tr>
<tr>
<td>Sales (including contracts and traffic)</td>
<td>18</td>
<td>26</td>
</tr>
<tr>
<td>Production</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Accounts and control</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Personnel</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>No answer</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>69</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Note: Percentages have been rounded off.

* An organisation chart is displayed in Appendix 7.3.

The greatest number of comments on any one headquarters' department was made in relation to the plant shop, which was mentioned in 17 out of a possible 69 comments (25%), stores coming second in frequency of mention with 14 comments (20%), both therefore, accounting for over 75% of all comments made in relation to the engineering function at headquarters (31 out of 41).
4.1.3 Markets and competition - In the past, PQR had grown by a combination of innovation and take-over, and though at the time of this research it had a good share of all markets, competition from a number of large firms was beginning to make itself felt.

4.1.4 Seasonality and climate - Because of weather and annual holidays in the building industry, trading was usually slack in December, January, February and August, though a prolonged spell of good or bad weather could have a strong influence on the buoyancy of the construction industry generally, and on occasion, with flooding or frost, could halt PQR's production and despatches. Weather also had a direct effect on the day-to-day pattern of activity - for example, if it rained in the early morning, building work might be cancelled for that day - this would immobilise PQR's processing plants (and ready-mix trucks) whose products could not be stored. The general rhythm of trade also appeared to affect the pace of work at primary production units, and though no firm evidence was obtained to support this, one senior quarry manager remarked:

"It's a queer thing that the day we appear to be selling very little, the production appears to be down - and vice versa. It's a strange psychological thing. When the lorries are queuing up at the door for loads, when the weighbridge is busy, it seems to affect the boys on the plant - an air of urgency permeates the place."

4.1.5 Geographical and demographic factors - As most of PQR's extractive plants and a large number of its processing plants were located in isolated and rural parts of the country this created
problems in communications. In addition, it affected the company’s staff which was composed of urban and rural groups, with varying degrees of sophistication and education in relation to such aspects as management, trades unions, and paperwork.

4.1.6 External agencies - The construction industry, and the building industry in particular, is extremely sensitive to government fiscal policy both in Ireland and in Britain, and as the majority of P&G’s output was absorbed in construction as opposed to maintenance, the company’s trading and finances, including credit for financing debtors and capital expenditure, were linked in no small way to the general economic climate, which affected the capital programmes in the public and private sector and the attitude of banks and other financial institutions. There is no need to labour this point further except to state that it is less difficult in a recession for government and industry to delay or cancel new building programmes than to cut down on revenue expenditure.

Also, in this context, was the level of technological development and the behaviour pattern of the building industry. An indication of the level of technological development (and in particular, the use of well-established management techniques) in this industry has been provided by the OECD survey team in its report: *Science and Irish Economic Development* (1966, vol.i, p. 47, and vol. ii, Appendix 9). Here, from replies received from different firms, the building industry had by far the lowest rating, scoring an average (mean) of 32%, compared with the highest rating of 66% obtained by the drink and tobacco industrial group,
and with the second lowest rating of 43% obtained by the wood and furniture group. The mining and quarrying industry (with a small number of replies) had a rating of 57%.

In terms of behaviour pattern, it is this writer's view, from limited observation and experience, that the building industry tends to oscillate in activity more than most other industries, and that many of the small firms tend to mushroom in boom times, and collapse completely when there is an economic squeeze. The impression has also been formed that most firms in this industry tend to over-extend their capital investment when credit facilities are easy and to run into serious financial difficulties in recessions. Little attention seems to be paid to financial control, and long-term business planning; there appears to be a preoccupation with job costing, and though intensive effort is put into measurement for price-fixing and payment, the basic data used in bills of quantities etc., are seldom used for measuring performance. One has the impression that most participants (owners and/or managers) had, until

9Out of a total of ten "technical management procedures," applied to 12 industrial groups, the building industry came bottom in four (NWI, quality control, market research and technical sales); joint bottom in one (work study); joint second bottom in one (budgetary control); and third from the bottom in the rest (plant layout, technical aspects and new plant). And though the report stresses that: "too much reliance cannot be placed upon these results without further detailed studies," nevertheless the OECD team "believe they are indicative of the strength and deficiencies of these activities in the various industries" (Science and Irish Economic Development, 1966, p.47).

10Apart from consulting experience, the writer spent a year with the Royal Institution of Chartered Surveyors, and has also lectured to groups of senior executives at courses designed for the building industry by the Irish Management Institute. See also Catherwood (1965).
comparatively recently, became conditioned to living with their problems.

At any rate, a substantial amount of PQR's trading was carried out with this industry, which certainly has not been in the avant garde of those which have experimented with and contributed to the advance of modern management techniques.

These points, including government policy, were of importance to PQR's own management approach and especially in relation to financial planning and control, for the company was at the end of the chain in relation to payment, its customers being impacted on by its 'customers' customers, who in turn were affected by government policy and the general economic climate, the overall position, in relation to financing stocks and debtors being aggravated by the fact that there was only one cement manufacturing firm which insisted on giving only one month's credit.

The position of PQR in relation to the construction industry and the national economy is shown in Appendix 7.2 and this highlights the fact that PQR is at the tail-end of a rather unstable and unsophisticated industrial infra-structure.

4.2 Organisational characteristics

4.2.1 Goals of PQR - The goals of PQR, as far as they could be elicited from senior executives and printed material, were to continue to grow and to achieve a reasonable return on total capital employed; to serve the construction industry and to avoid competing with the building industry; to encourage innovation and to act as product leaders and not followers; to continue to hold a large share of the market, and to try, in growing, to preserve the good public image it possessed; and as far as possible, to
retain the dynamism, spirit and personal approach which had contributed to past success.

All of these aims appeared to the writer to be compatible, though the last would certainly be the most difficult to achieve. This point was appreciated by the deputy managing director who said in an address to a conference of Irish sales managers:

"The business is becoming much more formalised and less personal, but unfortunately, this is one of the disadvantages of growth."

A.2.2 Leadership style - Reference has already been made to how the company grew and to the part played by the two brothers, particularly the elder, who had been the chief executive since its inception. In what follows, the elder brother (the managing director) will on occasions, be referred to as 'Mr. A' or the boss, and the younger as 'Mr. B.'

The evidence given below, which was extracted primarily from interviews with senior executives, and augmented by the writer's own observations, should demonstrate clearly the personal qualities and operating methods of Mr. A, and indicate his enormous influence on the company and its staff.

In terms of personal qualities:

"The boss is a great person - a wonderful man."

"He's got drive and guts and dynamism - he's been lucky too."

"He's an untrained genius."

"He's compulsive - he trusts people and expects them to trust him."

"He's got drive and courage - he's fearless. He likes guys who make a b---s of things and admit it."

"When we were smaller, he knew everybody."
In terms of operating methods and interests:

"The boss is a doer - he gets mortally upset with planning."

"He doesn't like meetings - he suffers them. The whole momentum in the past was the boss - 'show the profits and get the money afterwards'."

"He values energetic people."

"He gets things going - he takes chances - he's expansion-minded."

"He's not interested in figures - he gets more out of looking at things than at sheets of paper. He works more by contact and sight."

"When the boss comes in there's always changes."

"His philosophy is to get things out the gate."

"He's not interested in 'management'."

"He interferes - he's only told what's good for him to hear."

"Basically he's an engineer - professional engineers came and went - he gets away with the unconventional."

"He's a great man for shovels and diggers - he's a great 'Caterpillar' man."

The writer, from his own contacts and interviews would endorse all of the comments given above, adding only to the personal qualities the fact that Mr. A. was a quiet, cultured, and non-bombastic man, subject to occasional moods. These sometimes forced him to 'blow his top' but on coming out of them he would always go out of his way to apologise even to the most junior clerk whom he felt he had slanged unjustly.

Certainly, he did not value 'management' as an end in itself and questioned, with a lot of reason, the cult of management training: "I wonder does it help men to produce and sell stone?"

Neither did he value formal planning nor the statistical controls he was receiving, though he appeared to do little else, even in his spare time, but think up new ideas for expanding the firm and for developing and modifying existing plant and machinery. Apart
from this interest in mechanical things, he was not concerned with the trading operations of the existing business, for once he had made the decision, he expected his staff to get results. He valued expansion, not consolidation; the doer, rather than the conceptualiser or the bureaucrat; the unorthodox to the orthodox; the commercial world rather than the classroom or meeting hall; the physical, and not the procedural; and above all, action, and not talk.

In essence, PCF's managing director was an entrepreneur with highly charismatic qualities.

On the other hand, Mr. B was regarded as "a balancing factor" who acted as a "backstop" to his brother. Collectively, both were seen by some of the senior executives, as businessmen who had gone out of their way to produce satisfied customers. As one long-serving executive remarked: "They were 'toppers' - they always gave good service - the trade has a good opinion of them."

4.2.3 Organisation structure - Before dealing with the structure that was operating at the time of this research it will be useful as a lead-in to present a selection of comments from interviews with the senior executives on how they perceived the organisation when they first joined the company.

"There was no management structure, there was no organisation."

"No one was sure who was doing what."

"Things now are more rigid."

11Ten of the twenty senior executives had been with the company for 15 years or more; two for more than 10, but less than 15 years, and the remaining eight had served an average of six years each.
"If I came in now I wouldn't get the job I'm doing."

"I did everything except make the tea."

"All the time we had to improvise."

"There is no sentiment in the company like there was in the old days - we just don't have the sentiment."

"There was over-departmentalism - you were just no good unless you were in production."

"It took me ages to work it out - I had a dozen bosses - people were tremendously busy."

Of importance here is the fact that the company had grown and prospered without a formalised, highly structured organisation.

The organisation structure that existed (on paper, at any rate) at the time of this research is shown in Appendix 7.3, as is the location of the 20 senior executives interviewed by the writer. It will be seen that the organisation was functional in character, and that the functions were divided into two broad groups: sales, accounting and personnel; and production and engineering; each function being referred to as a division. However, although the chart looks tidy the comments of the executives revealed that some confusion and discrepancies existed, and that while this appeared to worry some, others were quite at ease with the situation that they assumed was operating.

Examples of those who appeared to be quite content with the inconsistencies between the manifest and assumed situation:

"I look after that division, but I don't really look after that department." 

12 See Brown (1960, p. 24).

13 It was not possible, for reasons of confidentiality, to identify specific individuals and divisions.
"Up the line I work direct to Mr. A and Mr. B."

"I don't report to him - I work straight to the boss."

"I report direct to Mr. X and Mr. Y as well as to Mr. A and to Mr. B."

Examples of those who were apparently disturbed with the inconsistencies:

"It's very ad hoc - it does take a pattern but I don't know what the hell I do."

"The organisation was suitable for the past."

"I don't really know what my title is."

"Two of the area managers have been half-appointed."

(This was a reference to tentative plans for regionalisation made just before the arrival of the writer.)

"I told the boss that we have no organisation, that there is no definition of authorities and responsibilities, no support for authority. Anyway, he threw me out." (This was said without acrimony.)

Further evidence of the apparent confusion relating to the prescribed organisation was obtained from the interviews with the 23 production managers, one of the scheduled questions being: "Who is your boss?" Out of 23 respondents, 15 identified their supervisors as prescribed, and of those remaining (8), three did not know who their supervisors were, three stated that they reported to all of the divisional heads, and one that he reported to "the boss."

4.2.4 The management system in POR - From the interview data and from observation, it was possible to identify two types of management models comprising the company's management system.

The first, was the 'actionist' or non-bureaucratic model adopted primarily by the majority of longer serving senior executives who had participated in the firm's growth and success,
and who were the unswerving disciples of the managing director. The main characteristics of this actionist model were a minimum of formal rules and procedures, a strong interest in physical objects such as plant, a minimum of rationality, a strong desire to move around and observe what was going on, and above all, an extremely rapid response to any stimuli relating to production or to signals from the managing director.\textsuperscript{14}

The second was categorised as the \textit{industrial engineering} model, and was adopted by nearly all of the professionals, comprised mainly of engineers and accountants who had entered the company in the last six years from the army, local authorities, professional accounting firms, and direct from the universities. This model was characterised by the strong interest in systems, rules, procedures, organisation charts, meetings, committees, and indeed, contained many of the features of the Weber model of bureaucracy and of the classical school of administration.

Illustrations of some of the features of the actionist and the industrial engineering models of administration are now given, bearing in mind that the frame of reference and training of followers of the latter model enabled them to verbalise more fully than their actionist colleagues, none of whom had any formal training.

"The reactionists have a great response to any breakdown."

"They want things 'next week' even when the delivery dates are four months."

\textsuperscript{14}Illustrations will be provided after dealing with the other model.
"We take over a new place, and people are not considered to be pulling their weight if they're not digging up the earth the next day."

"All our production people are great reactors."

"Basically, we're chased where the business is."

"Everyone must make a contribution – one must get definite and tangible results e.g., increased tonnage at lower cost. Ideas are not expected, but results are."

"Many of the older people don't feel they can impress the boss unless they're working with a hellavat lot of noise."

From the writer's own observations of PQR, there was also direct evidence of the "reactionist" tendencies referred to above. For example, during the general survey, the study team identified a number of weaknesses in material control – and even before these could be discussed and evaluated, the writer learned that independent action was under way to "get things sorted out."

In concluding this brief presentation of the management system, a number of points require to be stressed. First, the entrepreneurial/charismatic leadership style of the managing director directly influenced the actionist model; secondly, there was no

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15 The writer is still searching for a suitable all-embracing term other than "reactionist" (or 'non-bureaucratic') to describe the features of the management model adopted by the managing director's followers. The nearest the writer has yet come to one really meaningful word that describes this model involves the use of the rather indecorous word 'exlaxionists.' The idea for this came from a newspaper article by Kiely (1967), describing slogans spelt out and chanted by students at inter-collegiate American football matches to encourage their teams. It appears that "F-I-A-Y-T-E-X - Playtex" aptly summarise the characteristics of the two main management models in PQR.
serious conflict between the actionists, and the professionals who adopted the industrial engineering model, and though the latter group did long for order and rules as the norm, they had considerable respect and admiration for the managing director's entrepreneurial flair; thirdly, though the dichotomy between these models is presented here as being fairly sharp, it was gradually becoming blurred due to the firm's growth and the problems this brought with it; fourthly, because of the charisma of the managing director, the actionist model was still the dominant one; and finally, it was clear that size and increasing competition posed for the company crucial and difficult questions vis-à-vis: How appropriate was the organisation (and its attendant procedures, controls etc.) for the future? How much, and what type of order? How many, and what type of rules?

4.2.5 Other organisational characteristics - Two other organisational characteristics merit comment. The first relates to the accounts and control division which was centralised and located at headquarters. Briefly, it too was growing and undergoing change, was equipped with modern data processing machinery, was (as will be described later) responsible for assembling and presenting monthly financial and costing reports, and had a young, enthusiastic and comparatively inexperienced professional staff who, with a committee composed of executives from each division, had been struggling for at least two years, with little success, to introduce a system of budgetary control. Certainly, the accountants were not perceived by anyone encountered in P&G as a threat, nor did they exert any pressure. This lack of pressure is underlined by the views of the 25 production managers on the influence of head-
quarter's divisions in table 7.1 (displayed previously in section 4.1.2) which shows that out of 69 responses, only 2 (3%) referred to the accounts and control division. 16

The second relates to participation. In general, most of the major decisions in PQR were taken by the managing director, who usually asked selected senior executives for their views sometimes before, and often after he had taken action. In relation to budgetary control, the system was, as has just been stated, still only embryonic, and though a system of sales forecasting had been introduced a few months prior to the start of this research, this too was embryonic, and few of the senior executives, and only 4 out of the 23 production managers, had seen the sales forecasts, though the majority of the latter group were ostensibly, though not in fact, responsible for the sales and profitability of their units.

4.3 The management controls in PQR

4.3.1 Scope of the reporting systems - As stated in section 3, one of the tasks of the study team was to prepare a comprehensive analysis of the formal reporting systems in PQR. Reports were classified by originating and receiving division and department, and by frequency, and their contents etc., noted so that it was possible to build up a summary (in matrix form by report frequency, source and recipient) which contained over 130 separate reports. However, for this research, the number of reports was reduced to 63

16 It will be recalled that production managers were asked to name the three HQ departments which influenced them most. In fact, the accounts and control division was not mentioned in the first responses made by all managers.
by selecting, in a fairly arbitrary manner, those which appeared to relate primarily to sales and resource flows, and to product quality, and accidents.\textsuperscript{17}

A summary of the numbers of these reports is given in table 7.2 below, which is supported by detailed schedules etc., in Appendices 7.4.1 - 7.4.6.

<table>
<thead>
<tr>
<th>ORIGINATOR</th>
<th>Top Mgmt.</th>
<th>Sales</th>
<th>Prod.</th>
<th>Engineering</th>
<th>Accounts &amp; Control</th>
<th>Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Mgmt.</td>
<td>(Nil)</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
</tr>
<tr>
<td>Sales</td>
<td>M1</td>
<td>(9)</td>
<td>1</td>
<td>M1</td>
<td>M1</td>
<td>1</td>
</tr>
<tr>
<td>Prod.</td>
<td>M1</td>
<td>M1</td>
<td>(3)</td>
<td>M1</td>
<td>M1</td>
<td>1</td>
</tr>
<tr>
<td>Engineering</td>
<td>M1</td>
<td>M1</td>
<td>M1</td>
<td>(23)</td>
<td>M1</td>
<td>1</td>
</tr>
<tr>
<td>Accounts &amp; Control</td>
<td>12</td>
<td>14</td>
<td>12</td>
<td>14</td>
<td>(27)</td>
<td>1</td>
</tr>
<tr>
<td>Personnel</td>
<td>M1</td>
<td>M1</td>
<td>1</td>
<td>1</td>
<td>M1</td>
<td>(1)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>12</td>
<td>23</td>
<td>17</td>
<td>38</td>
<td>27</td>
<td>5</td>
</tr>
</tbody>
</table>

**Note:** The figures in brackets indicate those reports originated by a particular division. Thus the total of these bracketed figures (63) gives the total number of reports originated by all divisions, including top management.

The main features of the above table and of the data given in the Appendices are:-

\begin{itemize}
  \item Of the 9 reports originated by the sales division, all save one were-
\end{itemize}

\textsuperscript{17}Examples of reports not included were:- drivers' daily log sheets and site visit reports, and all reports which were only used as documents of original entry for assembling reports issued to management.
2 were for internal use.

- The small number of reports originated by production and (from Appendix 7.4.3) the absence of production planning and control reports showing stocks etc.

- Only one out of 23 reports originated by engineering was circulated outside the division, which handled the largest number of reports (39), counting those originated and received.

- The fact that the accounts and control division originated the largest number of reports (27), issued all of these, was responsible for sending out 85% of the total reports issued by all divisions, and was the only supplier of reports to top management.

- Finally, as will be now elaborated, most of these reports were of little use for management control, though it should again be stressed that the company had been trying to introduce budgetary control, and that this research was intended to assist management to improve the existing information systems.

4.3.2 Features of the management reports in P&R - The main features of the management reports were:

First, the almost complete absence of standards, targets, or budgets;

second, the emphasis on historical and unit costing and the absence of responsibility accounting;

18 See Brown and Jaques (1964, ch. IV) for a critique of the dysfunctional effects of unit costing, and Peckham-Walsh (1964, pp. 266-267).
third, the absence of a general framework (or blueprint) as a focal point for identifying criteria and for assisting in maintaining and developing management information for planning and control, leading inter alia, to fragmentation and duplication particularly between the accounting, engineering and personnel divisions;

fourth, the lack of data relating to certain key links in resource flows between sub-systems e.g., material inputs, outputs, and sales, and to plant and vehicle utilisation and performance;

fifth, the use of misleading units of measurement (particularly tons) for reporting output;

sixth, the lateness and irregular production of the financial and cost reports;

seventh, the amount of (primarily unintended) distortion in reports.

Specifically, relating to sales, difficulties were experienced in extracting data on customers because an inter-company transfer price system had been created. This transfer price system also enabled the traffic department to adjust its rates to production units whenever it saw its 'profits' declining. In addition, there was no feedback on sales variances (price, volume, mix) though actual prices, for example, varied considerably for the same product, and often from month to month in the same location.

In the engineering workshops, there were, as has been noted (Appendix 7.4.4) many reports, but these, apart from one, contained no standards nor was it possible to identify the expenditure by shop or even by the division, as all costs were charged out to production units and individual items of mobile plant, etc., when incurred.
In the accounts and control division, due primarily to the rapid growth of the company, and the lack of a blueprint, the accounts classification had grown without a clear logic, and all documentation had to be coded with 13 digits. Apart from creating confusion in production units (particularly in relation to repairs and capital expenditure) this also involved a battery of clerical staff in screening and re-screening all basic data before it was fed to the electronic data-processing equipment. However, the primary cost report produced by this division was the monthly production cost statement, and as this was circulated to most production managers, and (usually in summary form) to all divisional managers, except personnel, and to top management, it merits special attention and is dealt with separately below.

4.3.3 The production cost statement (PCS) - An illustration of the PCS for a quarry is shown in Appendix 7.5. It will be noted that the PCS was not confined to production costs, but also included sales value and profit. Apart from its historical, unit cost features, it should also be noted that all expenditure incurred in the location, together with a charge for overheads, is shown monthly and cumulatively, but that the unit costs are based on the tonnages sold. Thus, profit is computed on the basis that stocks were the same at the beginning and end of the month. In effect, stocks were ignored. Thus, in periods of stock build-up, when sales were usually slack, the unit costs (of sales) would be high, and vice versa. Again, the mix of stone being produced (and sold) might vary from month to month, and between different quarries and pits, yet the unit of measurement employed was tons.

The plant repairs costs usually contained expenditure on work
done by the local staff and by headquarters' engineering shops, there being no breakdown available to production managers. As has been previously inferred, the PCS was usually late, and was often not produced for a particular month because of pressure of work in the accounts and control division.

A similar report was prepared for all production units, though in the case of macadam and ready-mix plants, the problems of finished stocks did not arise. Other features such as the absence of utilisation and key link point measurements, referred to in the preceding section (4.3.2) were also present, but it is considered unnecessary to give further evidence to illustrate the type of formal reports and particularly, the main type of cost reports used in PQR.

4.4 How senior executives perceived the controls

This section deals with the views of senior executives on planning (including budgeting), on management reports, and on paperwork, and is concluded by some illustrations of adaptive responses by senior executives to the reports.

4.4.1 Views of senior executives on planning - Out of the 20 senior executives, 14 had positive and generally unfavourable views in relation to the approach and methods used for planning and budgeting in PQR, and 5 of the remaining executives, who all belonged to the actionist group, were unable to verbalise to any extent on this area.

Examples of some unfavourable comments, which, as will be seen, emanated from the professionals, were:

"There's no planning, no anticipation - we start things before we are ready."
"There is never, or very little, planning for new plant."

"We really are very weak in our planning in relation to putting up plants and buildings."

"We don't plan - anyone can spend money - in a way we're working from hand to mouth."

"As far as budgeting is concerned, the sales people made up the budgets and the quarry managers agreed with them."

However, one executive considered that the company had located its plants "reasonably well," and another with many years' service made the following comment:

"If the firm had had all the steps laid out for it, then it would only have been half as successful. If there is to be a fully-fledged planning system, it would have to be very simple."

**4.4.2 Views of senior executives on the existing management reports**

- Only two of the senior executives (both actionists) appeared to use and value the reports (primarily the monthly costing reports).

**Ex.:**

"I use the production costs though usually there is a problem about stocks of stone. The things I look for are: Did we make money? What were the drilling and blasting costs? These are things you can do something about. I carry all the figures around with me and each manager sees what his neighbour is doing. I bring good and bad news. Mind you, reports can be a guide but there are other things. You've got to have good staff relations, you've got to have ability to get on with customers, and also with your neighbour, particularly when you're blasting."

And by the other executive who favoured the costing reports:

"I find them useful. You wouldn't know where you were going if you didn't have them. It keeps things in line - provided you can believe in the figures."

The remaining 18 all expressed various degrees of dissatisfaction about the reports and particularly about the cost statements and 9 expressed strong dissatisfaction about the lack
of controls, e.g.,

"Previously we didn't have the right system and any old system did. These aren't controls - I don't use them at all during the year. We have now moved into the stage where financial control is needed more and more . . . it must be a routine. We're looking forward to better controls."

"It's really been guess-work . . . we've been like farmers."

"There has been so much talk about management controls - no one at any stage has said what's what and who's going to do it - we must set some standards."

"We really haven't got any proper cost reports and quite honestly I've been promising my lads that they will get 'good' costs."

"That report \( \text{FCO} \) is a terrible bone of contention."

"They measure things \( \text{in quarries} \) as follows: (a) by the sales; and (b) by the throughput of the primary crusher. This certainly could be wrong, without a doubt."

Apart from those above who felt strong dissatisfaction about the reports, the most frequent unfavourable comments related to

- **lateness** (by 7 executives), to **inaccuracies** (by 7 executives) and to **methods of recovering transport costs** (by 4 executives) e.g.,

  "This \( \text{FCO} \) comes far too late - it's a dead loss as far as we're concerned."

"The last one \( \text{FCO} \) we got was September - it's now February - we haven't got October, November or December."

"This business of traffic trucks making a profit is all wrong. We made a 'loss' last year and the trucks made a 'profit.'"

"We find a lot of errors in them \( \text{FCO's} \) - the maintenance costs were all wrong - I kicked up a row."

"We've given up hope of anyone \( \text{in the production locations} \) writing down the right things."

"There are so many errors in reports that I don't send them out."

The managing director indicated that he had little time for formal reports of any kind, e.g.,

"Figures and percentages leave me cold - I'm not a report man."
The impression given was of fairly general dissatisfaction with the present controls, and of a desire to see improvements though there was little evidence available to indicate that senior executives really knew specifically what they wanted. It was also evident that the small minority of senior executives who stated that they valued and used the existing reports were not really aware of many of the deficiencies in them. Certainly, reports were not a source of pressure in PQR.

4.1.3 Views of senior executives on the paperwork in PQR - The comments of 17 of the senior executives (out of 20) who were asked for their views on the clerical procedures (paperwork) in PQR indicated that a rather ambivalent and uncertain attitude existed, and, incidentally, helped to convince the writer that respondents were not just reacting in a way that would please the questioner. It was difficult to classify the responses, but the following examples are considered to be representative of how senior executives felt about paperwork:

"I'm not a believer in paperwork ... Is all of it necessary? We are trying to cut it down ... I'd like to know how much we spend on statistics."

"There's an unholy lot of paper! For example, we had a first-class fitter up in X's production unit and he gets a note from here [italics added] on a piece of paper telling him how to do it - they're really making an idiot out of the man."

"I'm not really sure whether the paperwork is being overdone - I don't get time to look at all."

"I hate paper - b----y bits of paper flying around. In the old days it was simple."

"There's a story going around the quarries that you could keep a quarry going for six months on the paperwork. Really I'm not competent to judge it."

"Are we crushin' stone, or are we crushin' paper?"
"They paperwork system used to operate out of Dublin and then the company grew bigger — trucks and repairs grew, but the quality and type of paperwork didn't follow — that is, it didn't improve with our growth."

"I'm not too familiar with it — it's got grim in the last few years. Some people say there's too much and that the managers don't have time to run the quarries. We have to have a certain amount."

4.3.b. Adaptive responses by senior executives — There was no evidence of manipulation or 'window-dressing' of reports by senior executives, probably because of the almost total absence of performance standards. However, one executive did refer to deliberate distortion of data by a member of the office staff:

"When that report [not the PSS] was introduced first, they had a lad in the office who 'cooked' the figures so that no one would get into trouble." 19

Though this is an isolated example in this context, it did indicate that if there had been performance standards in all of the main reports, these may have been used punitively. It also indicated that staff responsible for assembling reports may have other values than finding and reporting adverse performance i.e., some may prefer to protect the managers whose control reports they prepare, rather than be looked upon as informers. 20

Two other senior executives indicated that they were developing new controls — the first, so that he would get the figures

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19 This report was one of the few with standards, and the 'cooking' was done by making the actual input agree with the standard input, and by adjusting the actual closing stock figure. No defalcations were involved.

20 Until comparatively recently, the bulk of the Irish people were struggling against English rule, and though it is beyond the scope of this research, it is possible that a strong aversion to 'reporting' on anyone still persists.
"in a week," and the second because "we used to get the blame for things that weren't our fault, and an independent assessment provided by 'X' department will give us a better service."

However, this executive, who wanted departmental performance identified unambiguously, and thus remove unjustified criticism from his own department believed that "we'll probably still get the blame for palming off the blame to other departments." (Italics added).

4.5 How production managers perceived the controls

As stated in section 3 on methodology, one of the projects carried out by Cadwell and the writer related to the production managers, the primary aim being to obtain their views on how they perceived their jobs and on how they used the PCS (which the majority of them received), so as to provide research material and to assist the study team in formulating its recommendations on the future type of management controls required in PQR. In other words, this project was another probe designed to assist the firm, and the research of the writer and his assistant.

Brief comments are made in this section on certain key findings relating to this research, supporting evidence being presented in the appendices. 22

21 It is not possible to elaborate on this comment save to suggest that 'department-centredness' (Argyris, 1952) existed between certain sections in PQR, to underline the lack of clarity in the reports, and to speculate again on the possibility of a punitive approach being adopted if technically appropriate controls were introduced.

22 The tables presented in the appendices were prepared initially by Cadwell and checked and adapted, where appropriate, by the writer for this case. They represent only a small part of the data obtained from the structured questionnaire, which, it will be recalled, contained nearly 50 separate questions. Cadwell himself is still writing up this part of his own research.
In Table 7.3 below it will be seen that out of the 23 production managers interviewed, only the two ready-mix plant managers and one quarry manager did not receive a PCS.

**Table 7.3 - Numbers of production managers interviewed, and numbers receiving monthly production cost statements (PCS), by type of production unit**

<table>
<thead>
<tr>
<th>Production Unit</th>
<th>Respondents No.</th>
<th>Respondents who received PCS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sites</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Quarries</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Ready-mix</td>
<td>2</td>
<td>Nil</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>23</strong></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>

The key figures in relation to the views of production managers on control and controls are given below:

First, in relation to the job of the production managers (and its constituent elements) as perceived by themselves, 35 out of the 68 comments made (by 23 respondents) related to production, and in particular to plant and machinery (see appendix 7.6.1), e.g.,

"Don’t overfeed the plant - change the screens daily - watch the bearings on the machines."

"The managing director always impressed on us that the plant must be kept moving at all times - watch the water pumps, the pump must never go out - it has to be kept going."

"Keep the plant moving at all costs - the stuff must be got out no matter what it costs. Keep the shifts going and plant fully fed."

The next most frequently mentioned comment, of which there were 19, related to staff (relations and subordinates) and the following gives a flavour of the attitude of one of PQR's many old-
"Anyone taking over should know something about the
temperament of the staff he has - those he can trust
and those he has to watch. The better ye know staff
in modern times, the better the job. I know every
capsule of blood that flows through my men's veins."

Second, in relation to frequency of use of the PCS, there appeared
to be wide variations (see appendix 7.6.3), one quarter (5) of
the 20 respondents who received a PCS stating that they used it
annually or never used it.

Third, the production managers were asked how the PCS helped
them in their job. Again there was a scatter of responses (see
appendix 7.6.5) with 8 (out of 20) stating that it gave them a
knowledge of costs, and 5 stating that it did not help them in
their job at all.

Fourth, in relation to the criteria used by production managers
in evaluating their performance when using the PCS (for which, it
will be recalled, there were no standards or budgets), there was
again a scatter of responses (see appendix 7.6.6) including
comparisons with "own standards," "previous month," "other years,"
3 respondents stating that they did not really know, e.g.,

"we don't know whether they're the figures on the PCS
good or bad - they could be good or they could be
bad."

Fifth, the managers were asked which functions they would find
difficult to carry out if the PCS were discontinued. 12 (out of the
19 asked) stated "none," and 3 indicated that they would not be
assisted in pricing and selling (see Appendix 7.6.7).

Sixth, in relation to perceptions of the differences in unit
costs based on tons sold and on tons produced, it was only possible
to assess this in the case of 12 of the managers, 6 of whom did
not perceive any difference (see Appendix 7.6.8).
Seventh, the managers were asked for their views on how their performance was measured by their superiors. Of the 23 managers, 4 stated that they really did not know, and of the 41 responses made by the remaining 19 managers, "sales" was mentioned 9 times, personal "visits" 8 times, and "coats" 7 times (see Appendix 7.6.7). Examples of the responses are given below and these provide interesting insights into the attitudes of the production managers, and of the influence of the managing director ("the boss");

"When the boss comes down and sees the machines bangin' and goin', it's great."

"By the general appearance of the place. The boss looked for tidiness."

"That's a good question - I often wonder do they measure performance. I suppose they look at the volume of sales."

"They wouldn't keep me in the job if I wasn't running the place well."

Finally, in relation to action taken by superiors on 'bad' performance, as shown in the FGs, it will be seen from Appendix 7.6.8 that 9 out of the 20 managers who received the FGs considered that nothing happened, 3 of this number stating that these figures were always good, e.g.,

"Nothin' occurs - we are in a good position because we have good prices."

Certainly, there was little sign of pressure being exerted on the managers because of the figures on the FGs, and in fact, from the responses to this question, 2 of the managers stated that they took action by getting on to sales division at headquarters.

While there was a lot of scope for intentional and unintent-
ional distortion of the basic data sent to the accounts and control division, which assembled and circulated the PCS, little evidence was encountered of deliberate manipulation by the production managers, though there were a few instances of complaints by them about certain practices that had emanated from the accounts and control division, e.g.,

"If they were too pushed, they often went back to the previous year's report and put in those figures on this year's report."

"Up to three years ago we used to get details of plant repairs - sometimes you'd see things you didn't want this accountant didn't want to be asked questions so he stopped sending them out."

Though the first example was not checked, it is considered that it had occurred due to the pressure on the accounts and control division resulting from the firm's rapid growth, and the introduction of advanced data-processing equipment.

To sum up, it appeared that the PCS was not greatly valued or used by the production managers, nor was it used as a pressure instrument by their superiors. From the writer's experience in PQR, which is supported by the evidence just provided, the really important thing for most production managers was to keep the plant "bangin' and goin'."

4.6 Summary

This section (4) has dealt with the environmental and organisational characteristics of PQR, the management controls, and the perceptions of senior executives and production managers of these controls.

For example, managers could, if they wished, 'swing' expenditure on plant repairs into 'new work,' expenditure on which was never measured by location. Again the central workshops could 'swing' expenditure on to unsuspecting managers.
Following the general conceptual framework of the research, stress has been put on the successful growth of the firm; the relatively low level complexity of its technologies, apart from the central engineering workshops; the "rough and tough" nature of the extractive business; the increasing competition; the effect of seasonality and climate on operations; the geographical spread of units in relation to communications and mix of staff; the influence of government fiscal policy on the construction industry; the low level of sophistication of the building industry, including its response to boom and squeeze conditions and the position of FDI in relation to both fixed and working capital requirements.

In dealing with the organisational characteristics, the compatibility of the company's goals was discussed, and considerable attention given to the entrepreneurial/charismatic leadership style of the chief executive and of his dominant role. Evidence was provided of the loose, unstructured nature of the organisation, and two models of administration were identified and described - the actionist model, whose practitioners had grown up with the company, and had been directly influenced by the managing director's method of operating; and the industrial engineering model adopted in the main by the professionals who had not grown up with the firm and who desired rules and order. The lack of pressure from the main staff agency associated with formal management reports was noted, as was the relative absence of participation.

In relation to formal controls, the evidence showed that though the company desired change, there were virtually no controls due to the general absence of performance standards. Details
were provided of the features of the main reporting systems, and various other weaknesses in these were noted (e.g., historical unit costing, wrong units of measurement, fragmentation) as was the absence of a blueprint and of measurements for key link-points in the firm's pattern of resource flows. Emphasis was given to cost controls and in particular to the format of and anomalies in the monthly production cost statements (PCS) circulated to most senior executives and production managers.

Generally, the senior executives expressed dissatisfaction about the planning and control procedures in PQR though they were not at all clear as to what was required to improve them. Traces of department-centredness were encountered and there was some evidence indicating the possibility of a punitive approach being adopted should improved reporting systems be introduced. It was apparent that the production managers placed little value on, and made little use of the PCS, that they were not subjected to pressure because of it, and that the general norm appeared to be to keep the plant moving and get the 'stuff' out.

Stress was laid on the company's past success without formal management controls and on the key problem that faced the company and the study team in particular, viz: How much control and what type of controls?

5. Interpretation of Findings

This section deals with the influence of the environmental characteristics on control requirements, and on the organisational characteristics of PQR, and with the influence of the latter on the existing controls. An attempt is then made to interpret the effects of, and the adjutative responses to the
existing reports, and the section is concluded by an evaluation of their appropriateness.

It will again be appreciated that the whole research is exploratory and that this interpretation is based on the broad conceptual framework set out in chapter 3.

5.1 The influence of environmental characteristics on control requirements in PQR

The characteristics of PQR's products and production technologies, working conditions, its cost pattern (section 4.1.2), and the influence of seasonality, climate and geographical dispersion (sections 4.1.4 and 4.1.5) demanded that any control system at ground level should be unsophisticated, unambiguous, speedy and of use for 'on the spot' action. Utilisation and performance of plant and equipment, control of materials (in processing plants) and of labour, plant hire and repairs (in extractive plants), and control of quality, both of products and of customer service, were all key factors. But simplicity at ground level was vital in the conditions in which the company's operations are carried on. In addition, in the extractive plants, the potentially misleading effects of tons as the unit of measurement needed to be carefully watched and the measurement of stocks demanded attention. The relative isolation of production units also required that communications between units and headquarters should be simple and direct, and that authority should be perceived 'in the flesh' through regular visits, rather than solely through paperwork.

24 Plant performance could be based on equivalent tons, or on hours, though the former concept is probably unnecessarily sophisticated for extractive industries of PQR's type.
At senior management level, increasing competition, government fiscal policy, seasonal variations and the behaviour of the building industry were the major determinants (sections 4.1.3 - 4.1.6) and created the need for a fairly sophisticated approach, using marketing analysis, managerial economics and financial control techniques for both long and short term planning, and for measuring performance. Specifically, feedback (against plan) was required on market share, on trends in demand and competition, and on sales variables (price, volume, and mix).

5.2 The influence of the environmental characteristics on the organisational characteristics

Certain of the environmental characteristics also impacted on the social system in PQR.

In the first place, PQR's successful history (section 4.1.1) had the effect of creating an atmosphere of confidence and dynamism that was conducive to further growth. The staff and management (including the professionals) appeared to enjoy working for the company, and though it was experiencing greater competition, their buoyancy was not affected.

Secondly, the nature of the production technologies and working conditions, including weather (sections 4.1.2 and 4.1.4), and of the construction industry (section 4.1.5) created a demand for tough, hardy, optimistic and resilient staff who would be capable of standing up to physical hardships, of recovering from economic recessions, of dealing with customers most of whom were down-to-earth, hard-bargaining characters.

Thirdly, the location of the plants (section 4.1.5) left the company with little choice in selecting the type of staff, and most of those in production locations had rural backgrounds.
Naturally, the man who had used his hands and "been out in the cold" suited the industry a lot better than his comparatively sheltered city cousin, though at the same time, the former, while not necessarily less intelligent, was usually less sophisticated in relation to paperwork and to planning and controls. Again, the geographical dispersion of units also affected the attitudes of production management to headquarters, this being evidenced in relation to the central workshops, where the technological problems were greatest, and in the value placed by certain senior executives (the actionists) and by production managers on personal visits.

Fourthly, the low level of sophistication of the building industry in relation to scientific management techniques (section 4.1.6) must have affected the attitudes of many of the longer-serving executives in PQR who had grown up in contact with an industry which, as in Britain, "scarcely had annual accounts, let alone cost accounts." 25

Lastly, it is probable that seasonality and climate (section 4.1.4) would have provided executives with "excuses" for failure to perform, if a control system based on responsibility accounting and including standards and budgets had existed, and had been used punitively.

5.3 The influence of the organisational characteristics on the management controls in PQR.

The main organisational features influencing the type of

25 See Catherwood (1965). One senior executive in PQR described how one large firm of Dublin builders used to pay for its aggregate supplies every Saturday morning - "No books were kept then."
reporting systems in POU are summarised below.

The strongest influence came from the managing director who had built up the business on the basis of entrepreneurial action, innovation, and contact with people and machines (section 4.2.2). He had done things his way since the business started, and formalism involving rules, procedures for measuring results and appraising new projects were not in his book. Not being interested in figures, he exerted no influence on the type of reports that existed in the company except to transmit to his followers his own values, particularly in relation to keeping the plant moving and getting the "stuff out the door."

Second, the actionists, both at senior executive and production manager level, (section 4.2.4) taking their cue from their leader, placed little value on reports. In addition, most of these executives had grown up in the firm and were close to an industry which did not get excited about reports.

Third, the lack of clarity in the organisation structure (section 4.2.3) was in itself a reflection of the leadership style and of the way the business had been built up. Such a structure did not lend itself to clear performance measurements by responsibility. The company had been successful without rules and unambiguous job descriptions - and reports.

Fourth, the professionals (section 4.2.4) had introduced different types of reports, primarily engineering and accounting (section 4.2.4) and attempts had also been made to introduce budgetary control (section 4.2.5). However, lacking power, adequate knowledge and experience, and a blueprint with which to develop a coherent system, the management reports grew in a fragmented piecemeal fashion, having little impact on the business, and
doing nothing to inhibit the managing director's desire for action and growth.

5.4  The existing controls - effects and adaptive responses

Generally the existing reports, and particularly the cost and financial statements were not used by the senior executives (section 4.4), nor was much value placed on the PCS by the production managers (section 4.5).

With the actionist group, statistical reports counted for little. What was important was to keep things moving, to see and act, and not to be sitting around talking and analysing. Some of them were among those senior executives who were aware of deficiencies, such as inaccuracies and lateness (section 4.4.2) but it appeared to the writer that for the actionists, reports belonged to another world and were perceived as rather meaningless symbols, and therefore, for the most part, ignored.

The professionals, too, placed little value on the existing reports, but for different reasons. They wanted planning and control, rules and order (section 4.4) - and the existing reports, were virtually useless for helping to regulate performance, though neither this group, nor any one else in the company were able to specify what was needed. Certainly, an attempt had been made to introduce budgetary control (section 4.3) but this had proved abortive due to the managing director's lack of interest, to the comparative lack of experience and expertise on the part of the professionals, to the fact that it was being introduced by a committee whose members were also engaged in their own executive work, and to the pressure of company growth on the accounts and control division.
Apart from this attempt to introduce budgetary control, there was some evidence of 'special' and 'local' controls developing, (section 4.4.4), and though in general the evidence showed that the formal reports were not used as pressure instruments either by the senior executives or by the accountants (sections 4.4.4 and 4.5), there were indications of 'department-centredness,' and of the existence of a latent punitive approach (section 4.4.4) that might well manifest itself if a control system, based on standards, responsibility accounting etc., were developed and thrust into the company.

Finally, the evidence that the accountants in PQR had, on occasions, 'adjusted' the reports (section 4.5) should be noted by the many writers who tend to view this practice as the sole province of managers, supervisors and operators, who are forced through pressure, to protect themselves.

5.5 An evaluation of the appropriateness of the existing controls

In relation to the company's successful growth and profit performance it could be said that the formal controls were certainly appropriate - in that there were not any controls. Looked at negatively, the existing reporting systems had not hindered the managing director and his followers who had got on with enlarging the company, and with the business of producing and selling. Measured against any of the numerous texts on scientific management the reports had many deficiencies, e.g., unit costing, the almost complete absence of budgets or standards, confusion of units of measurement, inaccuracies and lateness. And yet despite these, the company had prospered.

At another level of evaluation, the PCS received by the
production managers was inappropriate to the technology and cost pattern, and to the conditions, weather and relative isolation in which they worked. Certainly, their operating norms appeared to the writer to be appropriate to the situational determinants - but the FCS was not.

From the point of view of senior management, their's was the responsibility of handling problems of growing competition and seasonality, and keeping the company's financial position in balance in relation to government fiscal policy, the behaviour of the building industry, and to increasing needs for working and fixed capital. This required a much more sophisticated type of management information system than the one they had.

The company was faced with a number of crucial and difficult problems. It had managed in the past, using a highly personalised approach, to do without formalism and controls, mainly due to the charisma, entrepreneurial flair and dynamism of its managing director. The main problem that had to be solved was how to preserve the action-oriented spirit, and at the same time complement this with an organisation and management information system that would enable it to cope with increasing growth, both in size and competition, and with increasing financial pressures brought on by growth.

It was to solving these problems that the action research project was directed, and some of the guidelines that were used in formulating recommendations are given below.

• Everything possible should be done to preserve the action-oriented commercial approach which had been successful in the past. And conversely, any tendencies to adopt an
excessively bureaucratic approach, involving scientific management for its own sake, should be firmly resisted.

- While a blueprint for management controls should be developed, a clear distinction should be made between the requirements of location (production) managers and those of senior management.

- At location manager level, controls should be suited to the conditions and norms of the managers. Feedback should be simple, unambiguous and speedy. It should focus on plant utilisation and performance and on material control (where appropriate); it should be concerned with measuring key link-points; and as far as possible, quantitative units other than money should be used. Above all, the controls should be prepared and used on the spot.

- At senior management level, much more emphasis should be given to collecting and using management information for marketing, pricing, and financial control, and to complementing the managing director's skills with appropriate project evaluation techniques. Marketing and sale trends, sales variances, profit contributions by product and regions, should be monitored.26

- In relation to organisation, the objective should be to try, as far as possible, to replicate, at regional level,27 the type of on-going, profit-motivated, service

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26. The writer completely endorses Catherwood's claim (1965, p. 131) that "the major problem of the construction industry . . . was a marketing problem, an entrepreneurial problem and not a production problem." Indeed it is compounded for firms like P&H which supply the construction industry.

27. A number of area managers was appointed, each with responsibility for all operations in his own area.
and action-oriented approach that had been used in building up PQR; to encourage senior executives to visit area and location managers; to set up a clear open line of communications between locations, regions and headquarters for all major services; to strengthen the company's central planning and accounting resources; to initiate discussions on top management succession; and to attempt, in management development and recruitment programmes, to identify and encourage the business-oriented person.

It was also realised that the implementation of any programme based on the above would not be an easy task. The managing director would judge its success on results, i.e., in overall profit and availability of surplus capital for new enterprises. In the case of the professionals, the problem would be to convince them of the limitations of formalism, of the need to be watchful of being over-zealous of planning and control, and of the merits of 'go, men, go,' things that generally run counter to their training and background, and are certainly difficult, if not impossible to put over convincingly in a lecture room.

In brief, what was required in PQR was balance - to continue to move ahead without swamping it with all the paraphernalia of modern management techniques.

6. Conclusions

Possible generalizations from PQR are summarised below:

- To assess the appropriateness of controls in any undertaking it is essential to identify its characteristics.
- Environmental characteristics of themselves can create
demands for control irrespective of the social system, and can also influence the social system and the way controls are used.

- The less complex the technology, the simpler the problems of control, and therefore, the less need for sophisticated controls.28

- In a large undertaking, the management system may contain a number of management models which operate concurrently.29

- Management controls are a product of the management system.

- In certain circumstances it appears possible to operate a large undertaking successfully (in terms of growth, profits, return on capital and morale) without formal controls and even with primitive and misleading reports. Some of these circumstances are:

  - The type of industry and customers (including its technological and managerial sophistication)
  - The extent of competition or monopoly
  - The existence of an entrepreneurial and charismatic leader and an action-oriented group of followers.

- Certain types of entrepreneurial and charismatic leaders will strive to maintain an unstructured situation in relation to organisation, planning and control so as to preserve their freedom to act unilaterally. In such a situation they will not actively seek to introduce techniques such as budgetary control, and will tend to ignore

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28 Again, see Dubin (1959), March and Simon (1958), Rowe (1960) and Woodward (1965).

formal reports. Professional training staff will usually adopt a rational, bureaucratic approach to organization, control and decision-making, though their experience and expertise may not be capable of developing even technically appropriate controls.

- The way controls or reports are used and valued will tend to be directly influenced by the attitudes of the leader and/or those who are members of the predominant model of administration. In particular, it is possible for reporting systems and staff agency (such as accountants) to have minimal influences.

- There is a tendency in scientific management, and with professionals, to over-emphasize intellectual analysis rather than leadership. Again, professionals tend to have a limited perception of reality.

- As the size and complexity of a successful undertaking grows, it is faced with increasing competition and with finding substantial finances (both from inside

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30 It would appear that further dimensions need to be added to the concepts of mechanistic and organic management systems developed by Burns and Stalker (1961). In P/R, the systems of management and the leadership style of the managing director, featured both mechanistic and organic characteristics. For example, while the spread of commitment to the concern went beyond technical definitions, omniscience was undoubtedly imputed to the leader; again, control of communications consisted of instructions and decisions, rather than information and advice. Indeed, it was the managing director who contributed largely to "changing conditions" (see Burns and Stalker, 1961, p.121).

31 This counterbalance as the claims made by behavioralists such as Edwards (1966, p.212).

and outside) so too does the demand for controls.

Following from this, where an undertaking has had a successful history, control requirements should be carefully studied to identify the characteristics which have directly contributed to success, and to preserve and foster those which will be of future value (and vice versa).

There are limitations in using conventional accounting techniques, with money as the primary unit of measurement, for measuring performance. 33

33 Again, see Campbell (1963), Chapple and Sayles (1961), and Jasinski (1956).
RELATIONSHIP BETWEEN DEMAND AND P&Rs OUTPUT

National Economy

Economic Climate

Government Policy

National Income

Public Investment Programme

Private Investment Programme

Demand

Houses, Factories, Schools, Churches, Hospitals, etc.
Roads, Harbours, etc.

Construction Industry
Private and Public

Cement
Stone Aggregates Ready-mix
Other Materials

P&Rs
Simplified Organization Chart

Managing Director

Deputy Managing Director

- Accounts and Control
- Sales
- Personnel

- Selling
- Contracts
- Traffic

Production

- Plants
- Ready-mix
- Quarries
- Research and Development

Engineering

- Central Workshops
- Inspection
- Stores and Purchasing
- Drawing Office

Location and no. of senior executives interviewed by writer

<table>
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<th>Category</th>
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<td>Personnel</td>
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</tbody>
</table>
### Summary of Number and Percentage of Reports by Division (including Top Management) During Total Originated and Received: Total Originated; Total Received from Other Divisions; and Total Issued to Other Divisions

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<th>Division (etc.)</th>
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<th>Total Originated</th>
<th>Total Received (from other divisions)</th>
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<td>10 (14)</td>
<td>14 (21)</td>
<td>2 (6)</td>
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<tr>
<td>Production</td>
<td>17 (14)</td>
<td>3 (5)</td>
<td>14 (21)</td>
<td>1 (3)</td>
</tr>
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<td>Engineering</td>
<td>38 (31)</td>
<td>23 (36)</td>
<td>15 (25)</td>
<td>1 (3)</td>
</tr>
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<td>27 (22)</td>
<td>27 (33)</td>
<td>11 (17)</td>
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<td>1 (2)</td>
<td>4 (7)</td>
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<td>63 (100)</td>
<td>59 (100)</td>
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</tr>
<tr>
<td>Frequency</td>
<td>Title</td>
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<td>Export Sales</td>
<td>Personnel</td>
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<tr>
<td>-----------</td>
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<tr>
<td>Daily</td>
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<tr>
<td>Weekly</td>
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<tr>
<td>TOTAL</td>
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Management reports originated by - Sales Division

APPENDIX 7(sheets)
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<th>Title</th>
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<th>Aggregate analysis (AS)</th>
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<td>x (Red)</td>
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Note: Red = research and development department

* Standards available

Management reports originated by the production division
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<td>Transport repairs</td>
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<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekly</td>
<td>Weekly wages</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unit repair costs</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Labour hours per Job</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Repair costs</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Equipment repair costs</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Programme variance</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plant hire costs</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personnel nos.</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overtime and late (6's and hours)</td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-totals carried forward</td>
<td>MIL</td>
<td>MIL</td>
<td>MIL</td>
<td>(15)</td>
<td>MIL</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>Title</td>
<td>Top management</td>
<td>Sales</td>
<td>Production (Engineering)</td>
<td>Accounts &amp; control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------------------------</td>
<td>----------------</td>
<td>-------</td>
<td>--------------------------</td>
<td>-------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-total brought forward</td>
<td>Mil</td>
<td>Mil</td>
<td>Mil</td>
<td>(15)</td>
<td>Mil</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekly</td>
<td>Overtime and lateness (graph)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Detailed lateness</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spares (costs and nos.)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contracts machinery</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Steel stock (tons)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Steel usage (tons)</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monthly Inventory (€'s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scrap</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>Mil</td>
<td>Mil</td>
<td>Mil</td>
<td>(23)</td>
<td>Mil</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>Title</td>
<td>Weekly</td>
<td>Summary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------</td>
<td>-------</td>
<td>--------</td>
<td>---------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stone costs per</td>
<td>Location</td>
<td>Sale costs, operating costs and mobile plant - mobile plant - operating costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Data</th>
<th>Accounting</th>
<th>Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPORT</td>
<td>Frequency</td>
<td>Title</td>
</tr>
<tr>
<td>--------</td>
<td>-----------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Sub-total brought fwd:</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>A-weekly Vehicular fleet costs</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Staff car costs</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Van costs</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Monthly **Contract job costs</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>**Contract costs summary</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Sales analysis</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Sales summary</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Capital expenditure summary</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Estimated net profit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash forecast</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Overheads</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>12</td>
<td>14</td>
</tr>
</tbody>
</table>

* Covered only certain plants - standards available

** Budgets per job usually available
<table>
<thead>
<tr>
<th>REPORT</th>
<th>RECIPIENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Top</td>
</tr>
<tr>
<td></td>
<td>management</td>
</tr>
<tr>
<td>Title</td>
<td>Sales</td>
</tr>
<tr>
<td></td>
<td>Production</td>
</tr>
<tr>
<td></td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td>Accounts</td>
</tr>
<tr>
<td></td>
<td>&amp; Control</td>
</tr>
<tr>
<td>( \frac{1}{2} ) Yearly</td>
<td>x</td>
</tr>
<tr>
<td>Accidents</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>x</td>
</tr>
<tr>
<td>TOTAL</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>N\text{il} (1)</td>
</tr>
</tbody>
</table>
**ILLUSTRATION OF PRODUCTION COST STATEMENT (PCS)**

<table>
<thead>
<tr>
<th>COST STATEMENT</th>
<th>LOCATION: 'ABC' quarry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales this month = ___ tons</td>
<td>Cum sales = ___ tons</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Value (£) per ton sold this month</th>
<th>Value (£) per ton sold (cum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-processing costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amortisation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royalties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drilling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explosives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>(A)</td>
<td></td>
</tr>
</tbody>
</table>

| Processing costs              |                                  |                              |
| Wages                         |                                  |                              |
| Equip't hire                  |                                  |                              |
| Depreciation                  |                                  |                              |
| Plant repairs                 |                                  |                              |
| Power                         |                                  |                              |
| Sundry                        |                                  |                              |
| Total                         | (B)                              |                              |

| Total sales value             |                                  |                              |
| Less prime cost (A+B)         |                                  |                              |
| Contribution                  |                                  |                              |
| Less overheads                |                                  |                              |
| Net profit/loss               |                                  |                              |
### THE MAIN ELEMENTS IN THE JOB OF THE PRODUCTION MANAGERS AS PERCEIVED BY THEM, IN ORDER OF FREQUENCY OF RESPONSE (n = 68 RESPONSES, BY 23 PRODUCTION MANAGERS)

<table>
<thead>
<tr>
<th>Element</th>
<th>Responses No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Production</strong></td>
<td></td>
</tr>
<tr>
<td>Plant and machinery</td>
<td>22</td>
</tr>
<tr>
<td>Output</td>
<td>8</td>
</tr>
<tr>
<td>Quality</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>35</td>
</tr>
<tr>
<td><strong>Staff</strong></td>
<td></td>
</tr>
<tr>
<td>Good relations</td>
<td>9</td>
</tr>
<tr>
<td>Rely on subordinates</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>19</td>
</tr>
<tr>
<td><strong>Sales</strong></td>
<td>7</td>
</tr>
<tr>
<td><strong>Safety</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>68</td>
</tr>
</tbody>
</table>

**Interview question** - If you were going on two weeks' holiday and a new man who knew very little about quarries/pits/ready-mix, was going to look after the place while you were away, what would be the most important things that you would advise him to see so?
FREQUENCY OF USE OF PCS AS REPORTED BY PRODUCTION MANAGERS
(N = 23)

<table>
<thead>
<tr>
<th>Frequency of use of PCS</th>
<th>Respondents No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>-</td>
</tr>
<tr>
<td>Weekly</td>
<td>1</td>
</tr>
<tr>
<td>Thrice monthly</td>
<td>2</td>
</tr>
<tr>
<td>Twice monthly</td>
<td>5</td>
</tr>
<tr>
<td>Monthly</td>
<td>7</td>
</tr>
<tr>
<td>Annually</td>
<td>3</td>
</tr>
<tr>
<td>Never</td>
<td>2</td>
</tr>
<tr>
<td>(Not applicable)</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>23</strong></td>
</tr>
</tbody>
</table>

Interview question - How often do you use the figures on the costings (i.e., PCS)?
### Views of Production Managers on How the PCS Helps Them in Their Job, in Order of Frequency of Response (N = 23)

<table>
<thead>
<tr>
<th>Item</th>
<th>Respondents No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of costs of unit</td>
<td>8</td>
</tr>
<tr>
<td>Do not help at all</td>
<td>5</td>
</tr>
<tr>
<td>Knowledge of profit of plant</td>
<td>4</td>
</tr>
<tr>
<td>Pricing</td>
<td>2</td>
</tr>
<tr>
<td>Gives incentive to improve</td>
<td>1</td>
</tr>
<tr>
<td>(Not applicable)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23</strong></td>
</tr>
</tbody>
</table>

**Interview questions** - How do those costings (PCS) help you in your job? Could you give me an example?
MAIN CRITERIA BY WHICH PRODUCTION MANAGERS EVALUATE THEIR PERFORMANCE WHEN USING THE FCS (N = 23)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Respondents No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compare with own standards</td>
<td>6</td>
</tr>
<tr>
<td>Compare with the previous month</td>
<td>5</td>
</tr>
<tr>
<td>Compare with other years</td>
<td>3</td>
</tr>
<tr>
<td>Compare with previous months</td>
<td>2</td>
</tr>
<tr>
<td>Compare with cumulative</td>
<td>1</td>
</tr>
<tr>
<td>Do not really know</td>
<td>3</td>
</tr>
<tr>
<td>(Not applicable)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23</strong></td>
</tr>
</tbody>
</table>

Interview question - When you look at the figures (on the FCS), how do you know whether they are good or bad?
ELEMENTS OF JOB THE PRODUCTION MANAGERS CONSIDERED WOULD BE DIFFICULT TO CARRY OUT IF PCS WERE DISCONTINUED
(N = 23)

<table>
<thead>
<tr>
<th>ELEMENT/etc.</th>
<th>Respondents No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pricing/selling</td>
<td>3</td>
</tr>
<tr>
<td>Decisions re overtime</td>
<td>1</td>
</tr>
<tr>
<td>Machine utilisation</td>
<td>1</td>
</tr>
<tr>
<td>No incentive to improve</td>
<td>1</td>
</tr>
<tr>
<td>Do not really know</td>
<td>1</td>
</tr>
<tr>
<td>None</td>
<td>12</td>
</tr>
<tr>
<td>(Not asked)</td>
<td>4</td>
</tr>
<tr>
<td>(Not applicable)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23</strong></td>
</tr>
</tbody>
</table>

* Machine utilisation was not shown on the PCS

Interview question - If they (the PCS) never came, which of your functions would you find it difficult to carry out?
### Extent to Which Production Managers Perceived the Difference Between Unit Costs Based on Tons Sold (as Shown on the PCS in Operation at the Staff of BTR Research) and Unit Costs Based on Tons Produced (as Shown on the PCS Being Introduced During the Research) (N = 23)

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Respondents No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Could tell difference</td>
<td>6</td>
</tr>
<tr>
<td>Saw no difference</td>
<td>6</td>
</tr>
<tr>
<td>(No opportunity to assess)</td>
<td>8</td>
</tr>
<tr>
<td>(Not applicable)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23</strong></td>
</tr>
</tbody>
</table>

Note: A revised PCS based on tons produced has been developed and sent to managers during the general survey, and 12 managers when interviewed, had two reports, the original based on tons sold and the new, based on tons produced. The other 8 who received reports were interviewed prior to the introduction of the second PCS. Managers were invited to produce the PCS and asked a number of questions about the figures etc., therein. The above analysis was obtained by observing the reports actually produced and discussed by the managers.
# VIEWS OF PRODUCTION MANAGERS ON HOW THEIR SUPERIORS MEASURED THE PERFORMANCE OF PRODUCTION MANAGERS, IN ORDER OF FREQUENCY OF MENTION OF RESPONSES (N = 45 RESPONSES, BY 23 PRODUCTION MANAGERS)

<table>
<thead>
<tr>
<th>Item</th>
<th>Responses No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>9</td>
</tr>
<tr>
<td>Personal visits</td>
<td>8</td>
</tr>
<tr>
<td>Costs</td>
<td>7</td>
</tr>
<tr>
<td>Downtime</td>
<td>4</td>
</tr>
<tr>
<td>Absence of customer complaints</td>
<td>4</td>
</tr>
<tr>
<td>*Did not really know</td>
<td>4</td>
</tr>
<tr>
<td>Reports</td>
<td>3</td>
</tr>
<tr>
<td>Profit</td>
<td>2</td>
</tr>
<tr>
<td>High selling price</td>
<td>1</td>
</tr>
<tr>
<td>Annual increase in production</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
</tr>
</tbody>
</table>

* i.e., did not know how their performance was measured by superior.

**Interview questions**—How do your bosses know that you are running the place well? What other ways would they know?
VIEWS OF PRODUCTION MANAGERS ON ACTION TAKEN WHEN FIGURES ON FCS ARE NOT AS 'GOOD' AS PRODUCTION MANAGERS EXPECTED THEM TO BE. IN ORDER OF FREQUENCY OF MENTION (N = 23)

<table>
<thead>
<tr>
<th>Action/response</th>
<th>Respondents No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Nothing happens</td>
<td>6</td>
</tr>
<tr>
<td>*The figures are always good</td>
<td>3</td>
</tr>
<tr>
<td>Telephone-from Sales</td>
<td>3</td>
</tr>
<tr>
<td>Telephone-to Sales</td>
<td>2</td>
</tr>
<tr>
<td>Telephone-from Production</td>
<td>2</td>
</tr>
<tr>
<td>Telephone-from Accounts and Control</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
</tr>
<tr>
<td>(Not asked)</td>
<td>1</td>
</tr>
<tr>
<td>(Not applicable)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>23</strong></td>
</tr>
</tbody>
</table>

*In fact, 'nothing happens' in the case of 9 respondents

Interview question - When the figures (on the FCS) show that you are not doing as well as you expected, what generally occurs?
"Scientific and technical progress, economic development and the betterment of living conditions, are certainly valuable elements in a civilization. But we must realise that they are essentially instrumental in character. They are not supreme values in themselves."

Pope John XXIII
(Mater et Magistra)
CHAPTER 8

SYNTHESIS AND GENERALIZATIONS

1. Introduction

The aim in this chapter is to synthesise the findings and present the principal generalisations that can be drawn from the four cases, and though an exploratory study such as this can only lead to insights and/or hypotheses - not demonstrate or test them - the opportunity has also been taken to compare certain of the resulting conclusions with those of other research workers. Naturally, extensive further investigation would be needed to test whether the hypotheses that emerge have general applicability.¹

It is considered appropriate at this stage to comment on certain important points relating to the scope, methodology and results of the research.

In the first place, the evolutionary nature of the conceptual framework requires to be stressed. As stated in chapter 1 (section 2) the initial interest was in the operation of formal management controls, and this was stimulated by the work of Argyris (1952). However, as the research proceeded, and particularly, at the end of the field work in the first case (CII), it became clear that

¹ See Sallis et al. (1959, ch. 3) on the design of exploratory and descriptive studies. While texts such as this are valuable to those embarking on research, the illustrations are almost invariably confined to community studies, and there is an obvious need for a comparable work covering research methods in administration. At present, this area is relatively barren, except for the reports of field work procedures supplied by Blau (1963, Part 4) and Gouldner (1954, Appendix).
there were other dimensions in relation to management controls which, though not anticipated at the outset, had, it is believed, important consequences for those who design and operate control systems. Thus, from the influence of controls on people with controls as the independent variable, the research swung round almost full circle to exploring and examining the influences of people and environment on controls. As Blau, (1963, p. 267) has put it, "the pre-field work conception typically underwent fundamental changes as a result of the research experience."

Second, it will be appreciated that the cases concern different undertakings possessing completely different products and problems, and non-homogeneous populations, other than the obvious fact that they had some form of managerial hierarchy from which respondents were selected.

Third, the method of approach had to be adopted to the particular situation, to the role of the writer, to the opportunities presented to him for research, to previous experience of the particular industry and firm, and to the literature. Thus, in relation to role, all save the Railshops study were action-research oriented; and as for experience, he had previously worked closely with CIE and Railshops and had some prior knowledge etc., of quarrying and road construction with which PQR was connected.

Fourth, there were the usual limitations in the resources that could be deployed on the research, and in the absence in Ireland of any core of experienced research workers in the field of admin-

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2Adapted from Argyris' title 'The Impact of Budgets on People.' (1952).

3Of course, Railshops had to face many of CIE's external pressures.
administration. Certainly, this study has not been inhibited by any conflicts with members of any 'school(s)' of Irish management.

Finally, there should be no need to catalogue the limitations in methodology, etc. The writer is indeed aware of many of these. However, in dealing with the complexities inherent in the management and control of any large undertaking, it is hoped that the objectives will have been, at least, partly achieved.

Following this introduction, the main sections of this chapter deal, in turn, with the influences of environmental characteristics on control requirements, on organisational characteristics, and on the operation of controls; with the influence of organisational characteristics on controls; with the appropriateness of the controls in the four cases; and with certain additional comments and conclusions relating to the design and operation of controls. The concluding section presents the principal constituents of the model that has emerged from this work and indicates some areas for future research.

As a basic reference point, summaries of the principal features of each undertaking (products, size etc.) and of the type and number of respondents are provided in Appendices 6.1 and 8.2.

2. Environmental Characteristics and Their Influences

This section summarises the environmental characteristics encountered in the research, particular attention being given to technology. Thereafter, treating these characteristics as independent variables, an attempt is made to show their influence on control requirements and on organisational characteristics, and their actual or potential influence on the operation of existing formal management controls.
2.1 Summary of environmental characteristics

In what follows, it is realised that the term 'environmental' as used in the research embraces a host of features and that those mentioned here do not, and could not, cover all possibilities. Further, no attention has been given to examining their interrelationships. These tasks must await future research.

One other point which needs stressing relates to the concept of a socio-technical system. This is certainly of use in counter-balancing any excessively behaviouralist-oriented approach adopted in studying administrative systems, but it is of limited value as a predictive tool and indeed, can have restrictive effects in that it tends to confine examination of forces interacting on the social system to 'technology.'

The environmental features identified in this research are:

1. History - background, growth
2. Technology - this is given separate treatment in the next section (2.2)
3. Markets; competition; financial sources
4. Geographical features - climate; seasonality; dispersion of units; demography (specifically urban and rural communities)
5. External agencies, including the public-at-large; government.

For ease of reference, summaries have been provided of each of the above features (or groups of features) in Appendices 8.3.1 - 8.3.5. It will be noted that an attempt has been made to rate technological and geographical features for each case, and, as stated above, technology is now dealt with separately.

2.2 Technology

It will be seen from Appendix 8.3.2 that technology has been categorised into thirteen different components

\footnote{See Woodward (1965; p.37).}
and features, and though this is not claimed to be a comprehensive listing, these headings have been used in the table below to obtain a crude measure of the technological complexity of each firm. 5

TABLE 8.1 - Measure of technological complexity

<table>
<thead>
<tr>
<th>No.</th>
<th>Feature</th>
<th>CIE</th>
<th>Railshops</th>
<th>RTE</th>
<th>PQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Type of production</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>2.</td>
<td>Mix of work</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>Tolerances</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>4.</td>
<td>Predictability</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>5.</td>
<td>Perishability</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>Tangibility</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>7.</td>
<td>Skills, tools, etc.</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>8.</td>
<td>Capital cost of plant</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>9.</td>
<td>Reliability of plant</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>10.</td>
<td>Common facilities</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>11.</td>
<td>Operating pattern</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>12.</td>
<td>Variety of sub-systems</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>13.</td>
<td>Coupling of sub-systems</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>52</td>
<td>53</td>
<td>58</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Technological rating</td>
<td>8</td>
<td>8.2</td>
<td>8.9</td>
<td>4.3</td>
</tr>
</tbody>
</table>

The main point to be noted from this table is that PQR has by far the lowest rating.

Before proceeding to deal with the influences of environmental

5The descriptive ratings in Appendix 8.3.2 and in the table were given numerical values on a five-point scale. A score of 5 is high and indicates that a particular feature tends to increase the technological complexity, and vice-versa. The final rating is calculated by taking each score and multiplying by 45, 65 being the 'maximum' complexity.
characteristics it should be appreciated that this approach to
classifying technology emerged from the research. Certainly, its
validity and potential use requires much more rigorous testing and
evaluation. However, it does highlight the fact that in large
undertakings, there are probably many 'technologies,' and that to
classify technology without analysing its components can be a gross
over-simplification and possibly misleading if the resulting 'spot'
classification is used to predict relationships with other groups
of variables. 6

2.3 The influence of environmental characteristics
on control

The specific concern here is with the influence of environmental
characteristics on the design of management controls.

(E/1) 7 Environmental characteristics can influence the
control requirements of a system, irrespective of
its social components. 8

(E/1.1) The greater the influence of environmental character¬
istics, the greater the degree of complexity
of the system.

(E/1.2) The greater the complexity of the system, the greater

6 Indeed, it would be possible in a firm like CIB to build up
a large number of tables of the type shown in table 6.1, not only
for the different departments, but for individual cost centres within
departments. For example, an attempt is being made at present, under
the supervision of this writer, to measure the technology in one shop
in Railshops.

7 Hypotheses are inset and prefixed by an alpha/numerical
reference in brackets. 'E' stands for environment; 'O' for organisation;
and 'A' for appropriateness.

8 In this research, only part of the social components of a system,
namely organisational characteristics, was studied.
its potential instability.

(E/1.3) The greater the potential instability of a system, the greater the problems of control.

(E/1.4) The greater the problems of control, the greater the need for meaningful information.

(E/1.5) The quantity of meaningful information required for control varies inversely with the stability of the system.\(^9\)

(E/1.6) External agencies can impose control demands on a system which are mutually incompatible.

A brief review of some of the main lines of supporting evidence now follows, taking each environmental feature separately.

Only in the CIB case was there evidence to adduce that historical developments influenced control requirements. Here, due to the speculative manner in which railways were developed, and their gradual consolidation into a public transport system, a demand was imposed on the company to analyze its rail services so as to assist in highlighting the social costs of operating different lines and services, and thus reduce the confusion (and public odium) resulting from measuring the company’s overall performance by conventional profit and loss accounting.

In relation to technology, it is considered that there is ample evidence to indicate that it is one of the key characteristics that can influence the sub-processes of planning, measurement and regulation involved in control. This applies particularly to

\(^9\) See Deutsch (1952) and Rowe (1960). The latter assumes that the quantity of information required for control varies inversely with the stability of the system (p.8). In other words, a firm’s steering system can be affected by environmental stimuli, and the greater the complexity of these stimuli, the more sensitive is the steering system that is required.
the CIE, Railshops and RTE cases, where, as has been summarised above, the complexity of the technology was of a high order and consequently created demands for a compatible system of management controls. For example, sophisticated predictive and feedback mechanisms are required for controlling the availability, movement, utilisation and timekeeping of large transport fleets (CIE); for maintaining and overhauling mixed road and rail vehicles and units (Railshops) and for producing and transmitting television programmes and handling the wide variety of complex facilities, many of them with a large creative content (RTE). Again, the ability to monitor a system is made more difficult where the predictability of work (Railshops overhauls, and RTE), the product's tangibility (e.g., the 'maintained state' of a vehicle in CIE; a TV programme), and the reliability of the primary equipment (power units in CIE overhauled by Railshops) are low. The reverse is the case where, as in PUR, the technology is relatively simple.

The evidence produced relating to the influence of markets, competition and sources of finance is rather sketchy, but it is considered adequate to demonstrate that these features have a potential impact on control requirements. For example, in the CIE and Railshops cases, the continual decline of the railways and the growth in private car ownership necessitated that these aspects should be regularly monitored to assist management in deciding on the type of services, vehicles and facilities that should be provided, and the type of fare and rate structures that should be set, in relation to anticipated users. In the RTE case, the dependence on advertising revenue, the near-saturation of the market, and competition from other stations all created demands for a planning and control system that would assist in regulating the growth of the
television service. In PQR, increased competition and expansion into new markets brought with them the need for closer attention to controlling sales volume, mix and prices.

In relation to geographical features, climatic variations strongly affected the operations of CIS and PQR; seasonality affected operations in all four cases; and the dispersal of units from headquarters with their subsequent mix of rural and urban communities again affected CIS and PQR. For example, variations in weather are difficult to forecast, and cannot in fact be regulated; seasonality creates peaks and troughs in demand, and increases the need to plan and control utilisation; highly dispersed units involve an extended communications chain with many channels, and these increase the amount of potential uncertainty of directives and feedback.

Finally, external agencies such as the government (all four cases), the public-at-large (CIE and RTE), pressure groups (RTE) and the building industry, created demands for control. Here special mention must again be made of the conflicting government mandate which set CIS tasks that were virtually impossible to achieve, and thus impossible to control.

To sum up, it would seem reasonable to suggest that an undertaking must identify and review at regular intervals, those

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10 No attention has been given in this research to statutory requirements such as income-tax and census of production returns. In all cases, there were no specific procedures laid down as to the form of annual accounts, the usual conventional accounting form being all that was required. It is also of interest to note, in this context, the contrast between the directive planning in Soviet Russia, where production targets are set for the firm by state officials who attempt to ensure that these are achieved (Berliner, 1957), and the more laissez-faire approach adopted (until comparatively recently, at any rate) in Ireland and Britain.

11 This refers particularly to large and complex undertakings.
environmental characteristics which impinge on its operations, and ensure, after assessing the extent to which specific characteristics create demands for control, that its steering system is so designed that it is capable of dealing with these demands. Any undertaking whose steering system remains blind to its environment cannot hope to be in control - it can be likened to steering an ocean-going liner in a fog without any navigation instruments. Further, it would also be reasonable to suggest that certain environmental characteristics create demands for control which, are mutually incompatible and therefore make control, under these impositions, impossible.12

2.4. The influence of environmental characteristics on organisational characteristics

In this section, environmental characteristics are again treated as the independent variable, with organisational characteristics as the dependent variable.

(E/2) Environmental characteristics can influence the social components of a system.

(E/2.1) Where major changes in environmental characteristics (particularly in technology) occur which increase the complexity of a system, the absence of a managerial culture will tend to increase the instability of the system.

Examples as evidence for these conclusions are given below, again taking each environmental feature in turn.

12 See Deutsch (1952, p.369), and Wagner (1954). The CH government mandate is an example of 'Catch 22,' (Heller, 1965) mentioned in ch. 2 of this present research.
In relation to historical developments, the most pertinent example is the RTE case. Here, the long association of the original broadcasting service with the public service placed civil servants in a strong position when the new Authority was formed and thus had the effect of injecting (what was termed) the public administration model into RTE. In FGR, the storybook success of the company had the effect of reinforcing the managing director's charisma, while in CIE and Railshops, the history of loss-making on the railways, and their gradual decline, created problems in relation to the attitudes of its staff, and particularly in recruiting and retaining competent executives. Of course, this rather depressed state of the railways also presented a challenge to its new chairman, and to the new management of Railshops.

It is self-evident that technology must affect the type of production skills required by an undertaking, and further, that some form of organisation structure is required to produce its final output, whether it be goods or services. Certainly CIE, Railshops and RTE required an organisation structure capable of handling the complex problems of communication and coordination and by and large, the first two had evolved an appropriate structure. However, in RTE, the coming of television with its attendant sophistication in relation to planning and control, drew into the Authority executives from the film and entertainment industry, and from the development departments of manufacturers of electronic equipment, all of whom, though generally skilled in their operating work, had little experience of management. With the type of mixture of executives (including those who adopted the public administration model), and a comparatively new director-general, it
is not surprising that there were discrepancies in the prescribed and manifest organisation, and stresses involved in the way it operated. Again, while the technical aspects received great attention as the TV service was being launched and built up, the problems of organising, planning and controlling were almost neglected, it being assumed that the level of managerial competence of the 'public administrators' and of those from other industries would be sufficient to handle the new technology. However, as has been shown, this resulted in the absence of a managerial culture and created a situation where a highly sophisticated technology was not matched by an equivalent management system. Further evidence of the influence of technology on the social system was provided in P&O, where the working conditions and abrasiveness associated with pits and quarries demanded (and obtained) production managers capable of standing up to these conditions and of keeping their plants fed.

The influence of markets, competition and finance was demonstrated in the RTE case, where the continual buoyancy of advertising revenue from television tended to encourage munificence, and a lack of discipline in relation to planning and control.

In relation to geographical features, the location of P&O's production units was a determinant in relation to the type and level of sophistication of staff employed by the company, and to the value its production managers placed on visits from HQ.

The influence of external agencies was evidenced in CIE where the chairman was determined to demonstrate to the public

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and the Government that CIE was not a moribund company, and in Railshops, whose new senior management were equally determined to show the CIE board and top management, as well as any other outsiders, that their workshops were as well, if not better managed, than any other large undertaking in Ireland. Thus, the challenge to combat the image acted as a spur. The influence of external agencies on organisation structure was also illustrated in RTE where the general organisation and particularly the role of the administration division as a line function, appear to have been borrowed directly from the BBC. Finally, it is considered that the erratic and unsophisticated behaviour of the building industry also affected the attitudes of the 'actionists' in PQR to formal organisation.

2.5 The influence of environmental characteristics on the operation of controls

Apart from the influence of environmental characteristics on control requirements, and on the social components of a system, there was some evidence to indicate that environment, particularly geographical features, can also affect the way in which management controls operate.

(E/3) Environmental characteristics can influence the way in which controls are operated.

(E/3.1) In a system which is strongly affected by geographical features, including weather, there will be a tendency for managers to respond to the use of controls by using these geographical features as excuses to protect themselves from pressure, even though these features are not, in fact, the reasons for failure to meet performance.
(E/3.2) The greater the tendency towards a punitive use of controls, the greater will be the tendency by subordinates to use geographical features as defence mechanisms (and vice versa).

In essence, where weather, seasonality, geographical dispersion, and demographic features strongly impinge on the operations of a large undertaking, the resultant complexity of the system makes it more difficult to monitor operations with statistical records of performance. Thus, if strong pressure is applied to subordinates, they can readily select a defence from a repertoire of excuses and reasons provided by the environment in which they operate. The CLE case best illustrates these points, especially in relation to weather, regional customs (e.g., the use of rail wagons as stores by customers), while in PQR, it was predicted that seasonality and climate certainly would have provided excuses for failure to meet performance if a management control system (with standards and budgets etc.), had been introduced. The opposite situation existed in Railshops with its centralised, relatively unexposed operating conditions.\(^1\)

2.6 **Summary**

The object has been to demonstrate that environmental characteristics can influence control requirements, organisational character-

\(^1\)It cannot, of course, be inferred from this that weather never affects performance, or is never spuriously adduced by managers as a reason for failure to meet performance, where production takes place indoors. The writer recalls the catch-phrase "snow on the roof" used by managers in a Scottish floor-covering works to 'explain' adverse material usage variations. Eventually this type of excuse becomes an open joke especially if the determinant is removed, or if it is seriously advanced by a manager when it is manifestly mythical.
istics and the manner in which management control requirements operate. An attempt has been made to rate technological complexity and attention has been directed to the fact that in a large firm there can be many technologies, to the many-sided facets of technology, and to the consequent dangers of oversimplification in studying the influence of technology as a single variable in large undertakings. Hypotheses have been put forward dealing with system complexity, stability and control; with the influence of external agencies; with the relationship between major environmental changes and managerial culture; and with the use by managers of geographical features as defence mechanisms where controls are operated punitively.

3. Organisational Characteristics and their Influence on Management Controls

This section summarises the organisational characteristics, and the characteristics of the management controls in the four cases. Thereafter, treating the former as independent, and the latter as dependent variables, the section deals with the influence of the organisational characteristics on both the type of management controls and the way in which they operate.

3.1 Summary of organisational characteristics

The organisational characteristics dealt with are:

(1) The goals of the undertaking
(2) Leadership style
(3) Organisation structure
(4) The management system (models of administration)
(5) Staff agencies
(6) Participation
Again, for ease of reference, summaries of each of the above have been provided (Appendix 8.4).

The key features from each case are:-

- In CIE - the adoption of break-even goals by the chairman; his strong impact; the formalised decentralised organisation built around area managers; the realism of the general manager and the two deputy general managers; the restricted role of the head office accountants, and the participation of the majority of managers in budgeting.

- In Railshops - the unequivocal approach adopted by senior management to clear up the works and improve productivity, and win approval from their seniors, their peers, and the outside world; the industrial engineering model adopted by them; the highly formalised organisation structure; the role of the planning department; the lack of participation and discretion in relation to supervisors; and the differences in perception between supervisors and senior management.

- In RTE - the change in leadership; the discrepancies between prescribed and extant organisation; the absence of a managerial culture; the public administration model; the build-up of separate 'control' sections, particularly in the engineering division; and the limited amount of participation in budgeting.

- In PR - the compulsion to grow profitably; the dominance of the highly charismatic entrepreneurial leader; the relatively unstructured organisation; the actionist and professional models of administration, with those in the former following the leader without question.
Before dealing with the controls, it is necessary to underline certain points. First, as has already been stated, organisational characteristics form only a part of the social components of any undertaking; secondly, the characteristics listed above do not purport to be comprehensive; and lastly, little attempt has been made to deal with relationships between individual organisational characteristics.  

3.2 Summary of the characteristics of the management controls

The main characteristics of the management controls in each case are listed in Appendix 8.5 under the following headings:

(1) Accounting - including budgetary control and costing
(2) Production planning and control
(3) Staff reports
(4) Other - e.g. statistical reports relating to traffic.

In the CIE case, a comprehensive system of controls was in operation, covering all of the four groups noted above, though particular attention in the research was given to management accounting, which operated throughout the company. Attention was directed at the highly programmed system of production planning and control in Railshops, at the financial controls and TV programme costing in RTE, and at the production cost statement in P&R.

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It is self-evident that there are relationships between individual organisational features. For example, goals and organisation structure can be influenced by leadership style as well as by different models of administration. Again, the latter can influence the organisation structure, and so on. To attempt to show these relationships explicitly is beyond the scope of this research.
3.3 Influence of organisational characteristics on the design of controls

The object here is to indicate the relationships between organisational characteristics (independent variable) and the type of management controls that exist in an undertaking.

(0/1) The type of formal management controls that are installed in a system are primarily a function of the leadership style, the model(s) of administration, and the staff agencies whose members have been allocated or have assumed the task of designing and maintaining the controls.

(0/1.1) Designers of controls may consciously anticipate certain adverse consequences which will result from the introduction of controls.

This generalisation is supported by evidence from the four cases. For example, in CIB, the chairman actively pressed for the introduction of management accounting. As an experienced administrator with charismatic and benevolent authoritarian qualities, he valued techniques, and management accounting was a vital complement to his policy of decentralisation and his insistence that managers down the line must accept administrative and financial responsibilities. Improvements were required, and there was no questioning, no backpedalling.

With RTE and PQR there was little or no positive direction from the leader, for different reasons. In the former case, being an

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17Although there is an obvious distinction between the type of controls that are designed and installed, and the way the controls are actually operated, the point does not appear to be sufficiently brought out in the published field-work research. See Rowe (1960, pp. 7-12) on control system design considerations based on computer simulation.
experienced professional businessman, he valued management techniques but he had not yet made his influence felt on the controls in RTE, though from his own philosophy that "managers must manage" and his awareness of the stress on the system's resources, it was evident that he would eventually extend strong influence on the type of controls used in regulating RTE's performance. In PQR, the chief executive was certainly not interested in statistical reports, and his influence on controls was of a negative variety. Any form of formal reports or controls might do as long as they did not restrict him.

The main reporting system in RTE emanated from the public administration model of management and was a direct reflection of this model, while the reports in PQR were the product of the various professional groups, principally the accountants.

However, the connection between leadership style, model of administration and type of controls is best illustrated in the Railshops study. The leaders adopted the industrial engineering model. Rules, order and measurements were demanded, and escape hatches had to be closed; thus, the highly programmed system of controls suited the requirements. Senior management anticipated that the authority of the supervisors would be weakened, that operators would be frustrated — but these were human weaknesses which would just have to be accepted as part of the price for better planning, control, direction and communications. The fact that management consciously anticipated adverse consequences that would result from the introduction of controls has received no attention in the literature, which tends to concentrate on, and identify with, lower level supervisors and operators, and to assume that senior managements in general are not capable of perceiving what might be termed
manifest dysfunctional consequences. Though Merton, in his paradigm for functional analysis, touches on what he terms "a net balance of an aggregate of consequences," his followers appear to take it for granted that what they perceive to be dysfunctional has not even been anticipated by senior management.

This comment, it should be added, does not mean that this writer supports the introduction of mechanical controls, or claims that senior managers always anticipate adverse consequences. However, it should alert behavioural scientists to the possibility that some do, and more important, it may encourage more of them to try to see the problems of organisation and control from more than one perspective, and to be prepared to assist managements to identify and evaluate the possible consequences of change on the social system before changes are implemented.

3.4 Influence of organisational characteristics on the operation of controls

Certain generalisations regarding the operation of controls are now presented, this being the area on which most of the literature has tended to concentrate.

(0/2) The extent to which formal management controls are valued and used will tend to be a function of the degree of support given by the leader.\textsuperscript{19}

\begin{itemize}
  \item[1. Functions - manifest and/or latent]
  \item[2. Dysfunctions - manifest and/or latent]
\end{itemize}

He does not make explicit the possibility of manifest dysfunctions, which could be defined as those observed consequences which lessen the adaptation or adjustment of the system and which are intended and recognised by the participants in the system.

\textsuperscript{18}Merton (1957, p.51). It is considered that Merton's model would have been clearer if it had been set out as follows:

\textsuperscript{19}See Perrin (1958).
Bureaucratic models of administration tend to employ formal controls to exert pressure to make subordinates conform.

In a large and complex system, there can be variations in the way controls are used by managers in different sub-systems. 20

Different management levels will tend to have differing perceptions of controls. Following from this, the apparatus of controls rather than the results, will tend to assume greater significance for those participants on whom the controls impact most.

Although controls may be rigid, impersonal and associated with pressure, the benefits they may bring in stabilising an unstable system may be appreciated by participants on whom the controls are imposed.

Adaptive responses to controls need not all be dysfunctional.

Undoubtedly, support from the chief executive is one of the main determinants in relation to whether attention is given to formal controls by participants. This is evidenced by the CIE and Railshops cases, where there was direct interest in ensuring that

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20 In considering variations in the use of controls, there are really two dimensions:-

(a) Ranging from non-use to active use, and

(b) In relation to active use, ranging from highly permissive to highly punitive.
controls were installed and actively used, and in PQR, where the active disinterest of the managing director directly contributed to the negligible attention paid to the reports, particularly by the 'actionists.' Indeed, it is probable that even had a system involving realistic standards, budgets, and responsibility accounting etc., actually existed in PQR, little attention would have been given to it by many managers unless it had been actively supported by the managing director.

The Railshops and RTE studios provided evidence to support the above hypothesis (0/2.1) relating to bureaucratic models and pressure. The industrial engineering and public administration models encountered (respectively) in each undertaking possessed most of the characteristics of Weber's 'ideal type' bureaucracy. In fact, in RTE the administrators believed that they were the management. In both cases, though there were significant differences in the technical qualities of the controls, pressure was exerted on participants to conform. Railshop's senior management demanded and got "constant, continuous tight control"; RTE's administrative division built up a web of checking procedures, and responded to deviations by strengthening these, acting, in effect, both as line managers and auditors.

Some further comments and conclusions in relation to the use of, and adaptive responses to controls now follow, taking each case in turn.

In CIE, it was noted that a permissive attitude existed, due, inter alia, to the realism of the general manager and his deputies in recognising the consequences that would flow from pressurising subordinates; to the involvement of the latter in budgeting and
to the fact that they were the first to see the reports; to the use of written commentaries; and above all, to the decentralisation of the accounting function, involving the attachment of accountants to areas and engineering departments. That the permissive approach encountered in a large and complex undertaking possessing a fairly extensive system of management controls does not conform to the findings of such writers as Argyris, Jasinski, and Haire, is probably due to the fact that the climate for using controls that was actively fostered in CIE, did not exist in the firms they studied. For example, Haire (1956, p.212) claims that controls are used almost entirely as a punitive weapon to chastise groups which have fallen below the work; Jasinski (1956, p.111) flays accountants and asserts that they become a dominant voice in the firm; while Argyris (1952) in more reasoned terms, reports that accountants and their reports are generally misunderstood and mistrusted, that budgets are unrealistic, and that controls are used as pressure instruments.

The Railshops study illustrates a number of significant points. First, though a part of CIE, there were marked differences in the way senior management used controls - certainly, the production control system in Railshops was used anything but permissively. Second, the fact that there were differences in the perceptions of the control system between senior management and the supervisors may well have general application, it being recalled

21 Argyris, (1952) was probably one of the first to advocate that accountants should be directly attached to assist managers of large sub-units.
that the former tended to perceive it primarily as a means of increasing productivity, while the supervisors who had to operate the system were mainly preoccupied by the apparatus (e.g., phones, planning staff) of the system. Third, it is evident that even under a highly directive system of controls, the perceptions of the supervisors were not all unfavourable. Emphasis is placed on this to alert research workers to the dangers of over-preoccupation with the pathological, and to prevent managers, in a remorse of conscience, from hastily modifying what might well be an appropriate technical system, rather than giving serious thought as to how its unfavourable effects on the social system might be modified. Fourth, the adaptive responses by the supervisors, such as fetching materials and matching the operator to the job, though contravening the prescribed rules, were generally functional for the goals of Railshops.

Of importance in the RTE case was the search by the director-general to get the whole system under control, the adaptive responses by the engineering and TV programmes divisions in introducing further controls, and the abortive post-mortems that followed over-spending. All of these features are symptoms that one might expect of a system that is out of control.

Finally, in FQR, though there were many reports, there were, with minor exceptions, no formal controls. The 'actionists,' following the managing director's lead, virtually ignored the reports; the 'professionals' longed for the power, but lacked

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22 An evaluation of the appropriateness of controls in relation to this concept, and the four cases, follows in the next section of this chapter.

23 This accords with some of the findings of Blau (1963).
experience and expertise to introduce a comprehensive system of controls, and the accountants had minimal influence. All power resided in the leader, and as stated earlier in this section, there would be no attempt to regulate performance through paperwork reports unless he approved.

3.5 Summary

The primary concern in this section has been the influences of organisational characteristics on the management controls, distinguishing between the type of controls and the way they are actually used.

In the generalisations relating to the type of controls, special attention was given to leadership style, model(s) of administration and staff agencies as key influences. In relation to the way controls were used and valued, the influence of the leader was again advanced as being crucial, and further hypotheses were formulated dealing with bureaucratic models, variations in the way controls can be used, the perceptions of different levels of management, reactions of participants, and the consequences of adaptive responses.

4. An Evaluation of the Appropriateness of Management Controls

Before discussing the appropriateness of formal management controls in relation to situational determinants, it should again be stressed that this type of control forms only one part of the control mechanisms operating in any undertaking. It also requires stressing that the symbols contained in management

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\(^{24}\) See ch. 1, sect. 6.
controls can only be reflections of reality - in many cases pale and flaccid reflections.

The first part of what follows is an attempt to probe the meaning and significance of the concept of appropriateness. This is then followed by an evaluation of the appropriateness of the management controls in each of the cases.

4.1 The concept of appropriateness in relation to management controls

Management controls can be said to be appropriate if they directly assist in regulating the performance of a system.

This 'ideal type' generalization implies that organizational and environmental determinants have been identified and met, and that there is little or no disparity between, on the one hand, the logic and assumptions on which the controls are based, and on the other, the actual situation.25

To achieve this in a large and complex undertaking requires that there should be harmonisation between the environmental and organisational characteristics. In turn, this implies that the undertaking has, or acquires, the capability first, to recognise and define its characteristics, including its goals; second, to design the required controls; and lastly to operate them successfully. It may well be that although the controls are 'technically' appropriate (i.e., appropriate to the demands placed on the undertaking by the environment), they are inappropriate to the organisational characteristics because, inter alia, participants do not have the capacity to understand and use them, actively resist

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25 Roethlisberger and Dickson (1939, p.581).
them, or ignore them completely. In such situations, some modifications would be required of the controls and/or the organisational characteristics. However, if the controls are modified, then this may have the effect of changing the goals of the firm, and may even threaten its survival. And further, any modification of the social components of a system will tend to be a lengthy process. On the other hand, the controls may be 'technically' inappropriate, and be valued or resisted, or ignored. In this case, there may be no option but to modify both environmental and organisational features.

The simple table below shows the various situations that may exist in assessing the appropriateness of controls, bearing in mind that there can be degrees of appropriateness. 26

<table>
<thead>
<tr>
<th>CHARACTERISTICS</th>
<th>Environmental</th>
<th>Organisational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate</td>
<td></td>
<td>Appropriate</td>
</tr>
<tr>
<td>Appropriate</td>
<td></td>
<td>Inappropriate</td>
</tr>
<tr>
<td>Inappropriate</td>
<td></td>
<td>Appropriate</td>
</tr>
<tr>
<td>Inappropriate</td>
<td></td>
<td>Inappropriate</td>
</tr>
</tbody>
</table>

In practice, however, the writer generally supports March and Simon's assertion that the key point is one of balance and that radical simplifications must be developed by the undertaking if "its model of reality is not to be so complicated as to paralyse

26. For example, appropriate procedures may exist for measuring and regulating the performance of certain inputs or sub-systems, while other parts of the system are either neglected or have controls based on erroneous criteria.
it.  

There can obviously be no perfect control system, as long as man is finite. The only reservation relating to March and Simon's plea for simplification and standardisation is where the complexity of the environmental characteristics is an integral part of the undertaking's raison d'être - in such cases, simplification could result in radical changes in both product and goals.  

Before relating the above conclusions to the individual cases, certain further general points merit comment.  

The first relates to the tendency of field workers to focus almost exclusively on the operation and effects of controls and to treat the controls as independent variables. This certainly makes the model of reality unreal. Secondly, it is probable that an undertaking whose main goals (including survival) may be seriously threatened, will tend to accelerate its efforts to introduce controls, probably at the expense of the social system. Thirdly, the regular monitoring of the characteristics of the undertaking and of its controls to ensure compatibility should be a part of the control system. Fourthly, any evaluation of the suitability of controls must involve judgements which naturally will tend to be based on the experiences and disciplines of the judges.  

March and Simon (1958, pp.163-164). Their concept of "satisficing" (pp.140-141) is also of direct application here, though what might be perceived as minimally satisfactory alternatives by one firm in the same industry, or by one management group, or one chief executive, may be substantially different from those perceived by others.  

For example, in MSE, radical simplifications would result in programme rigidity.  

See the section on theories of bureaucracy in March and Simon (1958, sect. 3.2).  

See McGuire (1962).
Fifthly, it should be borne in mind that an undertaking like the human body, may have the capacity to tolerate certain disorders which do not upset its 'physiological' balance, and that to tinker with these disorders without studying its overall physiology may result in greater and more serious instability. And finally, at the level of individual industries and nations, these usually possess their own characteristics. Again care should be taken, both by representatives from the more advanced countries and by leaders in developing and underdeveloped countries, to ensure that the industrial and national characteristics of these latter countries are highlighted before proceeding to install control systems. It appears to this writer that too often assumptions are made by many institutional and industrial leaders that the management control techniques which have worked well in, for example, large firms in the United States or Germany, must automatically be appropriate for a developing country such as Ireland.

4.2 The appropriateness of the controls in CLS

Here was a large system, struggling for survival, and under great stress. The management controls had been developed in three broad stages, moving from the rudimentary financial and spurious statistical, to management accounting and the development of appropriate non-accounting data, and thence eventually to an 'all systems' approach. The pace of these changes had to be matched to the pace of the social system, where changes were also made through training, the introduction of new executives, and the involvement of managers in planning. The determinants imposed by the environment appear to have been perceived by senior management who fostered the adoption of a permissive approach in relation to the use of controls. Certainly there were weaknesses in the technical aspects
of the controls, but overall, the controls were appropriate to the determinants, with the major exceptions of the government mandate which, with its imprecision and conflicts, placed the company in a position where it just could not "win."

4.3 The appropriateness of the controls in Railshops

There is no doubt that the control system in Railshops was specially suitable for the environmental features, with particular reference to the requirements imposed by technology. However, a deep gulf separated the innovators (senior management and planners) from the doers (all others, including the supervisors), and the social system, as in the conventional 'machine' model, was taken as given. Senior management obtained satisfaction from their innovative activity, from increases in productivity, and from the production planning and control system itself which was tending to become an object of deification. Certainly, at the level of analysis employed in the research, the aggregate net balance of supervisors' perceptions of the controls was unfavourable and it is probable, in the longer term, unless positive attempts were made to cater for the social system, that serious difficulties would be encountered in recruiting supervisors to work in the shops. Of course, as the variability and uncertainty of the work was gradually reduced, through the introduction of improved motive power and the controls, senior management (assuming the railways survived in some form) had another choice — they could so extend

March and Simon's propositions relating to variability and coordination (1958, p.159) are supported by the findings in Railshops and RTS.
the machine model by computerising and automating the work, thus eliminating or minimising "human weaknesses" which were perceived by them as reducing the technical soundness of the controls.

One last observation relating to Railshops deserves mention for its possible general application in studying the organisation, operation and control of different undertakings. This concerns the tendency in 'change agents', whether they be research workers, consultants, or new senior executives, to impute their own values to the members of the social system of the undertaking on which they are impacting, and to recommend and/or implement changes based on an incomplete or partial analysis of the consequences of the changes on the undertaking as a whole. For example, if it is assumed that in the shorter term, few changes in the social system occurred, that Railshops continued to operate as if it were a relatively closed system, and that the supervisors gradually became conditioned to operating the controls, then any precipitate attempt to loosen these would probably result in what one executive called "disorganised chaos."

4.4. The appropriateness of the controls in NRT

In this study, the existing controls were completely inadequate in relation to those demanded as a result of the introduction of television, the social system only being able to respond to these demands as far as its capabilities and repertoire allowed. Assumptions had been made that the public administration model would be compatible with the new technology, but this proved to be false.

32 In the writer's experience, it is rare for management consultants, once they have contact with a firm, to leave it alone: nor do many try to understand the firm that operates in a way that does not fit in with their own rationale.
and as has been pointed out, the TV service possessed all the categories of a 'runaway' system, homeostasis only being achieved through increased revenue from advertising. The Authority was faced with two choices. The first involved accepting existing goals (including flexibility of programming), creating a managerial culture, and developing a sophisticated planning and control system that would assist in goal achievement and place management in command. The alternative was to modify programme goals by drastically reducing programme flexibility, i.e., specifying the exact type of programmes and resources well in advance, and strictly adhering to these through a rigid control system. The probable consequences of the latter would be the reinforcement of the bureaucratic model, the dampening of creativity and innovation and the failure to attract audiences, which would lead, in turn, to a reduction in advertising revenue. Certainly, all of these phenomena characterised the sound broadcasting service, where expenditure had been rigidly controlled. The dilemma for a chief executive in this type of situation hinges on the continuation of munificence for a sufficient period to enable a managerial culture to be developed to handle the system's complexity, or to accept standardisation and formalism as the primary end.

Finally, it is important to underscore two further findings that emerged from this study.

First, the public administration model (as described in RTE) is not capable of handling the problems of control endemic in a highly complex and changing open system. This is an important point in relation to management training, particularly at the
post-graduate level and the present trend in Ireland and Britain to continue to foster the dichotomy between public and business administration by setting up 'Business' schools. One of the most serious problems in Irish national planning concerns communications between the public and private sectors and unless public administrators and business are given the same type of management training (alongside each other, in the same institutions) for handling problems at both the macro and micro level, this communications problem will not be improved.\(^{33}\)

The second point is linked to the above, and concerns the general tendency in much of the literature, in criticizing Weber's bureaucratic model, to ignore his criterion that administrators should possess a specified sphere of competence.

4.5 The appropriateness of the controls in PQR

This case illustrates how a company can grow and prosper without formal management controls, and in fact, with a formal reporting system that had a host of deficiencies and anomalies. This system was certainly inappropriate in meeting organisational and environmental determinants, but in general, it had little influence either in assisting or retarding PQR's goals, because most participants ignored it. However, the company was being forced to adapt to the problems of increasing size and competition, and it was clear that it could no longer rely wholly on the highly successful personalised approach used in the past.

\(^{33}\) The extension of the State's influence in Britain is evidenced by the (Rowen) report on Control of Public Expenditure (1961, p.6) and in the USA by Galbraith (1966).
What was required was an information system that would assist managers at different levels in their tasks; preserve, and encourage as far as possible, the dynamism that had made for its previous success, and allow it to continue to prosper. This obviously called for some form of balance. On the one hand, an indiscriminate scientific management approach, (even if it were encouraged by the chief executive) would strangle it; and on the other, to ignore the need to monitor key result areas would leave it vulnerable to environmental pressures. It certainly appeared to the writer that the criteria used by the production managers in measuring performance needed little modification and were of much more use in helping them in their task than the costing reports.33 As far as senior executives were concerned, a much more sophisticated steering system was required, particularly for marketing, sales and general financial control.

The findings in these cases highlight the need to ensure that the development of controls should be based on intimate knowledge of the characteristics of the undertaking.35

5. Some Additional Comments and Conclusions Relating to the Design and Operation of Management Controls

The opportunity is taken here, to present, in summarised form, some additional comments and conclusions arising from the research

33 It cannot be assumed however, that 'informal' controls are necessarily appropriate. Thus, a firm may have both inappropriate formal and informal controls.

35 See Dalton (1959) and Greaves (1960). From experience, the writer would predict that most accountants, engineers, economists, sociologists and operations research specialists would, if working individually in these firms, develop different solutions in relation to controls based on their separate disciplines and with only partial knowledge of the firms' characteristics. See also the comments on the limitations of specialist logics in Koethlisberger and Dickson (1939, pp. 584–585).
which have a bearing on the design and operation of management controls.

5.1 **Limitations of accounting in measuring performance**

There are serious limitations in using accounting and accounting techniques (and particularly money) for measuring performance. This has been amply illustrated in the cases and it is only necessary to recall one or two examples.

- Timekeeping, capital expenditure control and conventional profit and loss accounting in CIE
- The maintained state of the fleet, and shop performance in Railshops
- Variants on the concept of marginal costing (indirect and 'above the line' costs) in RTE
- Historical unit costing in POR.

One of the principal reasons for the failure of accounting techniques in the past has been the lack of clarity used in identifying the linkage between each part of the system, and failure to develop criteria to select variables that should be measured, and units of measurement that adequately reflect what is being measured. Assumptions are made that monetary units can reflect the value, quality and quantity of inputs and outputs, and there have been failures to appreciate the value of on-the-spot control, and, more important, to perceive the ubiquity of information. In the future, the accounting profession, if it wants to survive as an agency for assisting management in developing and operating control systems, will require to take a much more catholic view of communications.  

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36 The above observations generally support the views of Campbell (1963), Chapple and Sayles (1961), Jasinski (1956) and Simon (1954). See Also Murray (1962).
5.2 **Units of measurement**

Apart from the limitations of money as a unit of measurement, there was also evidence to indicate that, again, only superficial attention appears to be given to identifying appropriate units for measuring performance. *Examples include the use of tons in PQR to express quarry outputs of varying sizes each of which absorbs a different amount of capacity and facilities, and of ordinary programme hours in RITE to control output. In the latter example, reliance on this misleading unit of measurement had the effect of increasing the instability of the system.*

5.3 **Accuracy of controls**

From the PQR case, and particularly from the CIE case, there is some evidence to suggest that managers will tend to devalue control reports should these contain inaccuracies, and it would appear essential when installing controls to ensure that sufficient attention is given to 'debugging' feedback data, and to allow recipients to become familiar with the methods of reporting, before allowing the controls to become fully operational. This applies particularly to geographically dispersed undertakings such as CIE and PQR where a great deal of discretion and influence is exercised by those who originate and assemble basic data.

5.4 **Methods of presentation of controls**

It is impossible to be dogmatic about the best way in which to present control information - so much depends on the participants

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37 See Ridgway (1956)

38 In this connection, see March and Simon's concept of "uncertainty absorption" (1958, pp.164-165).
in particular undertakings. Certainly, the resistance encountered in CIE to punched card tabulations containing a mass of numerical codes should alert zealous designers of control systems to the fact that the primary purpose of their task is to assist managers to see the results of their performance, and not to develop procedures which solely reflect their own culture. There is a vast difference in sophistication between local station and quarry managers in firms such as CIE and PQR, and the type of personnel who design, monitor, and operate spacecraft, and there are dangers that the wholesale transfer of advanced techniques into what are essentially simple operational units will result in nothing but confusion and waste. These comments especially apply to computerised 'real-time' controls. There are obviously activities in each of the four cases for which this concept might be usefully adopted, e.g., continuous monitoring of resources in TV programmes and of vehicle movements in CIE and PQR; but the character of the variables, (including the time-span before feedback becomes meaningful), the level of sophistication of the personnel, and the cost and benefit of such systems, all require to be evaluated.

5.5 Fragmentation of controls

Other than in Railshops, an extremely fragmented situation existed in relation to reports (leaving aside their appropriateness) and from experience both from this research and from working in other undertakings in different industries and countries, the main causes are the lack of general awareness by managers and specialist staff of what was referred to in section 5.1 above as the ubiquity of information, as well as the parochialism of
different professional groups who operate in large undertakings and tend to push their own brand of techniques. Nor is this helped by educational and training institutions which continue to organise separate courses in budgetary control, production control, sales control, etc.

5.6 Negative feedback and management 'by exception'

By way of a final comment in this section, it appears to the writer that unconsciously, our society has built into its approach to performance measurements the concept of negative feedback, and that this, together with the 'principle' of management 'by exception' tends to make management focus excessively on what went wrong, and to dampen innovation. Some rethinking appears necessary here - starting possibly with the school report card - if we are to achieve "the human use of human beings."39

6. Conclusion

A summary of the principal constituents of the model that has emerged from this research is given below:

- An undertaking is perceived as an open, changing system, comprising two main groups of characteristics, environmental and organisational, the latter being part of the social components of the system, i.e., the social system.
- Environmental characteristics can affect the system by creating demands for control, irrespective of the social system; by influencing its organisational characteristics and the way controls are operated.
- Organisational characteristics are the primary influence on

the design and operation of controls.

- Ideally, for management controls to be appropriate, a system must monitor its environmental and organisational characteristics, identify those which are key determinants in relation to goal achievement, and design and operate its controls to meet these determinants.

- In practice however, disparities may exist between the system's organisational characteristics; the demands for control imposed on it by the environment; and the existing formal controls. In such cases, some form of balance is required, the achievement of which will be dependent on such factors as the extent to which the goals of the system are being threatened (and in particular, its survival); the capacity of the social system to perceive the situational determinants and the competence and willingness of participants to develop and operate appropriate controls. A diagram showing the main constituents of this model is given in Appendix 6.6.

The research has also underlined the need for identifying the characteristics of the firm when appraising, developing and operating management controls. In relation to future research there is a pressing requirement for inter-disciplinary studies and for the adoption of a more open-minded approach which will focus not only on the pathological effects of control and controls, but on the various forces that are acting on different types of undertakings. Specifically, apart from testing the hypotheses presented here, the characteristics of different types of undertakings require to be

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40 The most promising base for inter-disciplinary studies would appear to be General Systems Theory, a critical review of which is provided in von Bertalanffy (1962, pp. 1-20).
further identified, more precisely defined, and where possible, measured. The interrelationships between different types of organisational and of environmental characteristics should be explored, as should the influence of organisational on the environmental characteristics. In addition, there appears to be scope for developing mathematical models using topology and set theory to show the relationships between environmental and organisational characteristics on the design and operation of controls in different types of undertakings, and possibly, to measure the appropriateness of the existing controls.

To conclude this exploration, it appears to this writer that society is faced with an important choice. On one hand, man can be so conditioned that he will fit machines and machine models of administration, thus minimising or eliminating his humanity. On the other, he can resist this attempted dominance by actively pursuing the study of different types of institutional forms and by developing the ability to select from a much larger repertoire the type which will best meet the requirements of society and of the particular institution, and at the same time foster his humanity.

As in our hospital practice, we can either build the patient round the bed, or the bed round the patient. If society is serious about opting for the latter course, greater efforts are required from the social sciences for it would appear that the accelerating pace of technical change is not being matched by an equivalent input from the field of administrative research, particularly from sociology.

Instead of only carrying out post mortems on the smudged vapour trails left by technological change, instead of sticking solely to problems of the "middle range" while waiting, like Mr.
Micawber, for the equivalent of a Kepler or an Einstein to turn up, a more adventurous and urgent approach is required which will assist society to predict and anticipate the consequences of different alternatives, and provide tomorrow's managers (if not today's) with some tangible help in organizing and controlling their work. There will be no need for the prophet if the machines take over.

41 See Merton's remarks on "theories of the middle range" (1957, pp. 5-10).
<table>
<thead>
<tr>
<th>FEATURE</th>
<th>CIE</th>
<th>Railshops</th>
<th>KEE</th>
<th>PQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of industry</td>
<td>Transport - inland surface</td>
<td>Engineering - batch, jobbing</td>
<td>Broadcasting</td>
<td>Quarrying Processing</td>
</tr>
<tr>
<td>Main products</td>
<td>Transport services - rail and road</td>
<td>Overhaul and manufacture of rail vehicles and components for railways</td>
<td>Radio and TV programmes</td>
<td>Stone; sand and gravel; ready-mix concrete</td>
</tr>
<tr>
<td>No. of employees (approx.)</td>
<td>20,000</td>
<td>1,400</td>
<td>1,100</td>
<td>1,600</td>
</tr>
<tr>
<td>Ownership</td>
<td>State-sponsored</td>
<td>State-sponsored</td>
<td>State-sponsored</td>
<td>Public company</td>
</tr>
</tbody>
</table>
### Summary of Type and No. of Respondents in Each Case

<table>
<thead>
<tr>
<th>C&amp;E</th>
<th>F.R.</th>
<th>N.E.</th>
<th>R.D.</th>
<th>Other Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. interviewed</td>
<td>Coverage</td>
<td>No. interviewed</td>
<td>Coverage</td>
<td>No. interviewed</td>
</tr>
<tr>
<td>Principal respondents</td>
<td>Senior management</td>
<td>Supervisors in three shops</td>
<td>Senior management</td>
<td>Middle management</td>
</tr>
<tr>
<td>80</td>
<td>100%</td>
<td>99</td>
<td>95%</td>
<td>9</td>
</tr>
<tr>
<td>20</td>
<td>100%</td>
<td>26</td>
<td>100%</td>
<td>3</td>
</tr>
<tr>
<td>39</td>
<td>100%</td>
<td>18</td>
<td>100%</td>
<td>9</td>
</tr>
<tr>
<td>80</td>
<td>95%</td>
<td>99</td>
<td>95%</td>
<td>39</td>
</tr>
</tbody>
</table>

- **CIE**
- **F.R.**
- **N.E.**
- **R.D.**

- **Senior and upper middle management**
- **Senior management**
- **Groups of executives in programmes and engineering**

- **Principal respondents**
  - No. interviewed: 80, Coverage: 100%
  - No. interviewed: 39, Coverage: 100%

- **Other respondents**
  - No. interviewed: 20, Coverage: 100%
  - No. interviewed: 9, Coverage: 100%
SUMMARY OF ENVIRONMENTAL CHARACTERISTICS - BY CASE

1: HISTORY

CIE
Formed in 1950 following mergers of various inland transport companies etc., dating as far back as middle of 19th century. Plagued by continuous problems of loss-making of inherited rail network

Railshops
Set up in 1846. (See above re formation of CIE) Modernised in early 1920's; run down before and during 1939-45 war; some modernisation in 1950's with formation of CIE and dieselisation

RTÉ
Originated from radio service set up in 1926. Under some measure of direct government control which was considerably lessened on introduction of television in 1961 following report of (Irish) Television Commission in 1959, and Broadcasting Act of 1960

FGR
Successful growth from one-man business in 1930's to large public company. Continuity of managing director
<table>
<thead>
<tr>
<th>Technological Feature</th>
<th>CIE</th>
<th>Railshops</th>
<th>RTE (TV)</th>
<th>FQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Type of production</td>
<td>Multi-type (5)</td>
<td>Unit and batch (5)</td>
<td>Unit (5)</td>
<td>Continuous flow; batch (processing)</td>
</tr>
<tr>
<td>2. Mix of work</td>
<td>Wide variety(5)</td>
<td>Wide variety (5)</td>
<td>Wide variety (5)</td>
<td>Small variety</td>
</tr>
<tr>
<td>3. Tolerances</td>
<td>Varied (3)</td>
<td>Varied - tendency to be low</td>
<td>Generally(4) low for timing of programmes</td>
<td>Relatively (2) high</td>
</tr>
<tr>
<td>4. Predictability</td>
<td>High for timetable services: low for mechanical engineering overhauls</td>
<td>Low for overhaul shops: otherwise relatively high</td>
<td>Varied: tendency to be low</td>
<td>Relatively (2) high</td>
</tr>
<tr>
<td>5. Perishability</td>
<td>Extremely high (5)</td>
<td>Varied: tending to be low</td>
<td>High for (4) audiences can be stored by RTE</td>
<td>Low for extractive materials. Fairly high for processed materials</td>
</tr>
<tr>
<td>6. Tangibility (in relation to measurement)</td>
<td>Varied (5)</td>
<td>Varied: tending to be intangible</td>
<td>Intangible(5)</td>
<td>Tangible (1)</td>
</tr>
</tbody>
</table>

(Note: The figures in brackets represent a crude attempt to rate the influence of each feature - see section 2.2 in text.)
### SUMMARY OF ENVIRONMENTAL CHARACTERISTICS - BY CASE

#### 2: TECHNOLOGY (cont'd.)

<table>
<thead>
<tr>
<th>Skill in/Out</th>
<th>Workshops</th>
<th>Raw Materials</th>
<th>Facilities</th>
<th>Operating Pattern</th>
<th>Sub-systems</th>
<th>Coupling of sub-systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extremely sophisticated (5)</td>
<td>High (5)</td>
<td>High (5)</td>
<td>High (5)</td>
<td>Extremely close (5)</td>
<td>Fairly large (5)</td>
<td>Fairly close (5)</td>
</tr>
<tr>
<td>Very sophisticated (4)</td>
<td>High (5)</td>
<td>High (5)</td>
<td>High (5)</td>
<td>High (5)</td>
<td>Large (4)</td>
<td>Close (5)</td>
</tr>
<tr>
<td>Fairly sophisticated (3)</td>
<td>High (5)</td>
<td>High (5)</td>
<td>High (5)</td>
<td>High (5)</td>
<td>Large (4)</td>
<td>Close (5)</td>
</tr>
<tr>
<td>Fairly low sophistication (2)</td>
<td>Low (5)</td>
<td>Very low (3)</td>
<td>Fairly high (3)</td>
<td>Fairly close (5)</td>
<td>Fairly large (5)</td>
<td>Close (5)</td>
</tr>
<tr>
<td>Fairly unsophisticated (1)</td>
<td>Low (5)</td>
<td>Very low (3)</td>
<td>Low (5)</td>
<td>Close (5)</td>
<td>Close (5)</td>
<td>Close (5)</td>
</tr>
</tbody>
</table>

#### Notes:
- High: High sophistication.
- Low: Low sophistication.
- Extreme: Extreme sophistication.
- Fairly: Fairly sophisticated.
- Low for certain: Low for certain equipment.
- Very low: Very low sophistication.
- Extremely: Extremely sophisticated.
- Close: Close coupling of sub-systems.
SUMMARY OF ENVIRONMENTAL CHARACTERISTICS - BY CASE

3: MARKETS, COMPETITION AND SOURCES OF FINANCE

<table>
<thead>
<tr>
<th>Case</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE</td>
<td>Continually changing market with growth of private motoring and firms operating own transport. Double obligation to cater for the 'Need' and 'Demand' sectors. Also affected by 'creaming'. Road passenger services - affected by urban congestion. Road freight - relatively flexible. Railways - the key problem in relation to users and finances. Subsidy provided by government to meet railway deficits. Uncertain future of railways, results in difficulties in obtaining finance from government for capital programmes.</td>
</tr>
<tr>
<td>Railshops</td>
<td>A declining market, concerned almost exclusively with CIE railway system which has been reduced with closure of many branch lines. Has identical problem in relation to finance as CIE above.</td>
</tr>
<tr>
<td>RTE</td>
<td>Monopoly of broadcasting in State, with competition from other countries' TV and radio programmes. Growth restricted in relation to total audience unless dramatic changes take place in population and pattern of emigration. Largely self-financing; largely dependent on advertising revenue.</td>
</tr>
<tr>
<td>FGR</td>
<td>Large share of road and building construction markets. Encountering greater and stiffer competition. Normal methods of financing growth, i.e., internal, shareholders, banks and other financial institutions.</td>
</tr>
<tr>
<td>GEOGRAPHICAL FEATURE</td>
<td>GIE</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----</td>
</tr>
<tr>
<td>North-west European</td>
<td>strongly affected</td>
</tr>
<tr>
<td>or cool temperate</td>
<td>little</td>
</tr>
<tr>
<td>oceanic type.</td>
<td></td>
</tr>
<tr>
<td>Mild winters, moder-</td>
<td></td>
</tr>
<tr>
<td>ately warm summers,</td>
<td></td>
</tr>
<tr>
<td>rainfall heaviest in</td>
<td></td>
</tr>
<tr>
<td>autumn and winter</td>
<td></td>
</tr>
<tr>
<td>2. Seasonality</td>
<td>Operations</td>
</tr>
<tr>
<td></td>
<td>strongly affected</td>
</tr>
<tr>
<td></td>
<td>(passenger peaks, peaks)</td>
</tr>
<tr>
<td>3. Dispersal of units</td>
<td>Highly dispersed</td>
</tr>
<tr>
<td>4. Demographic</td>
<td>Urban and rural</td>
</tr>
<tr>
<td>(urban v. rural</td>
<td></td>
</tr>
<tr>
<td>regions)</td>
<td></td>
</tr>
</tbody>
</table>
SUMMARY OF ENVIRONMENTAL CHARACTERISTICS - BY CASE

5: EXTERNAL AGENCIES

Case

CIE  Strong impact on, and by, public-at-large; by government; by trade unions. Government mandate to CIE contains many conflicting requirements.

Rail-shops  Affected by government mandate (as for CIE). In relation to future purpose in the State, affected by government, trade unions, CIE board and CIE senior management.

RTE  Strong impact on and by, public-at-large and by various pressure groups in relation to programmes.

Government influence relatively minor except in relation to licensing fees, and to advertising rates.

Influences from civil service, film industry and BBC.

PGR  Strongly impacted on by government's capital programmes and by behaviour of construction (particularly building) industry.
<table>
<thead>
<tr>
<th>ORGANISATIONAL CHARACTERISTICS</th>
<th>CIE</th>
<th>Railshops</th>
<th>RDE</th>
<th>PQR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Goals</strong></td>
<td></td>
<td></td>
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<tr>
<td>Change the image of CIE</td>
<td></td>
<td>Produce and transmit programmes that would deserve advances</td>
<td></td>
<td></td>
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<tr>
<td>relevant</td>
<td></td>
<td>result</td>
<td></td>
<td></td>
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<tr>
<td>Go over to the offensive</td>
<td></td>
<td>Preserve financial independence</td>
<td></td>
<td></td>
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<tr>
<td>appearance; increase</td>
<td></td>
<td>result</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cut costs, improve productivity; develop tight controls and a system of planning and management</td>
<td></td>
<td>result</td>
<td></td>
<td></td>
</tr>
<tr>
<td>labour relations</td>
<td></td>
<td>result</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignore most of the government's conflicting mandates, and try to break even</td>
<td></td>
<td>result</td>
<td></td>
<td></td>
</tr>
<tr>
<td>control that would make those outside (including CIE senior management) appreciate that Railshops was in the vanguard of modern management techniques</td>
<td></td>
<td>result</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2. Leadership style</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charismatic, benevolent, authoritarian; task-oriented; believer(s) in process of change</td>
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</tr>
<tr>
<td>Authoritarian; task-oriented</td>
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</tr>
<tr>
<td>Believer also in modern management</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>delegation and decentralisation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highly experienced in administration and believer in modern management techniques</td>
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<td></td>
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<tr>
<td>Highly charismatic and entrepreneurial</td>
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<tr>
<td>Benevolent, authoritarian; interest in action, acquisitions and mechanical plant etc.</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Authoritarian; interest in action, acquisitions and mechanical plant etc.</td>
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<td></td>
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<tr>
<td>Director-general</td>
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<tr>
<td>BELIEVER IN MODERN MANAGEMENT</td>
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<td></td>
</tr>
<tr>
<td>and delegation</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Anxious to have RDE under control</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>management' formal planning and control</td>
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</tr>
<tr>
<td>ORGANISATIONAL CHARACTERISTICS</td>
<td>CRE</td>
<td>Railshops</td>
<td>IMR</td>
<td>PNR</td>
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<tr>
<td>--------------------------------</td>
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</tr>
<tr>
<td>3. Organisation structure</td>
<td>Regionalised, with all transport services under control of area managers (including Dublin Bus service)</td>
<td>By process and task function of over-centralised staff and manufacture functions</td>
<td>Primarily on a task (functions) basis</td>
<td>Workshops, stores, accounting personnel centralised. Most production units carry sub-stores have garages for docking vehicles</td>
</tr>
<tr>
<td></td>
<td>Mainly departments decentralised, except staff functions formalised, with prescribed in line with extent; centralised and extent organisation in IV</td>
<td>Many differences between prescribed and extent</td>
<td>relatively unstructured</td>
<td>Many differences between prescribed and extent</td>
</tr>
<tr>
<td>4. Principal model(s) of administration</td>
<td>Due to many different industrial engineering activities and department emphasis on methods, models are not measurement and specifically identified rules supervisors given no discretion to Railshops Technical system, including physical conditions; participative approach adopted by general manager and his two deputies 'doers'</td>
<td>Principally public administration model; emphasis on administrators being the sole managers, with others only for operating, as opposed to management, work; No managerial culture with professional</td>
<td>Actionists and professionals</td>
<td>Former - simple norms, little emphasis on formalism. Letter - primarily industrial engineering type; oriented towards measurement and rules and formalism.</td>
</tr>
<tr>
<td>ORGANISATIONAL CHARACTERISTICS</td>
<td>CIE</td>
<td>Railshops</td>
<td>ETE</td>
<td>PSR</td>
</tr>
<tr>
<td>--------------------------------</td>
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<td>-----</td>
</tr>
<tr>
<td>4. Principal model(s) of administration (cont'd.)</td>
<td>Accounting - decentralised, accounting department centralised.</td>
<td>Production planning and control, department centralised.</td>
<td>Only emerging, centralised.</td>
<td>Accounting - centralised.</td>
</tr>
<tr>
<td></td>
<td>Responsibility for assembly and presentation of reports.</td>
<td>as service to Railshops' senior management.</td>
<td>Administration division as a service.</td>
<td>Responsible for assembling cost and financial reports.</td>
</tr>
<tr>
<td>5. Staff agencies (in relation to management controls)</td>
<td>Traffic control - centralised primarily for railways and coordination of fleet planning, movements, and timekeeping. Many traffic control functions performed by areas. Personnel - decentralised units.</td>
<td>Personnel responsible for assembling staff return. Staff agencies seen as services to company.</td>
<td>Control section set up by engineering division, independent of administration division.</td>
<td>Staff report produced independently by Personnel division.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>孵化 cost section being developed by TV programmes division.</td>
<td></td>
</tr>
<tr>
<td>ORGANISATIONAL CHARACTERISTICS</td>
<td>CIE</td>
<td>Railshops</td>
<td>NIE</td>
<td>FOR</td>
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<td>-------------------------------</td>
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</tr>
<tr>
<td>6. Participation (in budgeting etc.)</td>
<td>General participation in budgeting; participation at senior and middle management level in design of reporting system</td>
<td>Minimal participation in design of production planning and control system</td>
<td>Participation in budgeting only at senior management level, and on a unilateral basis</td>
<td>Not really applicable as budgeting almost non-existent, and organisation structure obscure</td>
</tr>
<tr>
<td>TYPE OF FORMAL MANAGEMENT REPORT</td>
<td>CIE</td>
<td>Railshops</td>
<td>RME</td>
<td>PQR</td>
</tr>
<tr>
<td>----------------------------------</td>
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<td>-----------</td>
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<td>-----</td>
</tr>
<tr>
<td>1. Accounting - budgetary control, costing, financial accounting</td>
<td>Full system of responsibility accounting, financial control and costing throughout company based on budgets etc. Built from 'bottom up' Primarily 4-weekly reports in monetary terms - many on punched card tabulations</td>
<td>As for CIE but not the primary control system</td>
<td>Civil service vote system. Budgets in large totals - largely based on payments rather than on expenditure. No responsibility accounting. Programme costing based on 'above the line' costs - many anomalies</td>
<td>Historical costing system, based on unit costs with no standards or budgets, and many anomalies and errors Invariably late</td>
</tr>
<tr>
<td>2. Production planning and control</td>
<td>Installed where required - usually based on work measurement standards In various units including number of products, docks, standard hours</td>
<td>Highly programmed system with centralised control; based on work study standards, and using modern office and communications equipment, including TV cameras, on real-time basis. Primarily in number of products, overhauls, standard hours</td>
<td>Primitive systems with almost non-existent standards and no reports</td>
<td>A number of ad hoc reports produced by central engineering shops in hours No work study standards</td>
</tr>
<tr>
<td>TYPE OF FORMAL MANAGEMENT REPORT</td>
<td>CIE</td>
<td>Railshops</td>
<td>FTE</td>
<td>PQR</td>
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<tr>
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</tr>
<tr>
<td>6. Other</td>
<td>Traffic statistics, including Timekeeping reports. Fleet management reports. Fuel and mileage returns. Mileage track report. (see CIB Appendix 4.3)</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>See PQR Appendix 7.4.4.1</td>
</tr>
</tbody>
</table>
Main constituents of model showing influences of environmental and organisational characteristics

Environmental characteristics
- History
- Technology
- Geographical features
- Markets, competition, finance
- External agencies

Organisational characteristics
- Goals
- Leadership style
- Management models
- Organisation structure
- Staff agencies

Determinants

Adaptive responses

Adequateness

Formal controls
REFERENCES


GERTH, H.H. and MILLIS, C.W. - See MAX WEBER, 1946.


