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THE SYSTEMATIC ALLOCATION OF TEACHER TO TASK
IN EDUCATION SYSTEMS

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Allen Walter Muscio
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ABSTRACT

This study examines the issues associated with the systematic allocation of instructional personnel resources to tasks within education systems and develops a conceptual framework to organize knowledge and direct research in this area of enquiry. An evaluation of the current status of the field of enquiry concludes that existing mechanisms for the matching of teacher to task on a system-wide basis are manifestly inefficient, educationalists have paid scant attention to the problem and there is no recognizable body of knowledge relating to it. The basic elements of a rational system, the reward structure, selection criteria, and selection procedures are examined and a rational system, based on a consideration of the issues raised in that examination, is outlined. An approach to the analysis and comparison of systems is discussed and some suggestions on the modification of staffing arrangements to bring them more into accord with the 'realities' of the situation are made.

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INTRODUCTION

This study examines the issues associated with the systematic allocation of instructional personnel resources to tasks within education systems and develops a conceptual framework to organize knowledge and direct research in this area of enquiry. Justification for such a study is twofold: the issues are both important and neglected. The ability of those persons attracted to teaching and the way in which their ability is distributed within an education system will exert a profound influence on the extent to which the system achieves the objectives entrusted to it by the society it serves. Existing mechanisms for the matching of teacher to task on a system-wide basis are manifestly inefficient. Examination of relevant literature reveals that educationalists have paid scant attention to the topic and that there is no recognizable body of knowledge relating to it.

The present study was precipitated by my involvement in the implementation of the Teaching Service Act of Papua New Guinea. I was seconded to the Teaching Service Commission (April 1972) to assist in the development of the procedures and criteria for making appointments to positions within the teaching service. While engaged in this task I became acutely aware of the lack of readily accessible guidelines. When full-time study provided the opportunity for a more thorough search I discovered that no such guidelines were available. The data assembled for analysis and organization is derived from an examination of the relevant aspects of a number of education systems, particular attention being given to the education systems of Papua New Guinea, New Zealand and the Australian state systems. This examination was aided by the unusual opportunity to study a system (Papua New Guinea) from the inside, first as one subject to the operation of the mechanisms which allocate teacher to task and later as one assisting in the development of such mechanisms.

The first two chapters are basically concerned with an evaluation of the current status of the field of enquiry. Chapter one indicates the scope of the search for relevant literature, examines the findings of relevant studies and assesses the value of available information. Chapter two evaluates three major facets of the field of enquiry: substantive issues, theoretical background, and the conception of the problem. It then discusses the implication of current inadequacies for the development of an effective approach to the investigation of the field of concern. The next two chapters (three and four) are concerned with theoretical issues. They are intended to provide a firm foundation for the remainder of the study and an explicit statement of the author's position with regard to a number of fundamental and controversial questions.

The basic objectives of a rational system for the allocation of teacher to task on a system-wide basis, and the constraints they impose are discussed in chapter five. The basic elements of such a system, the reward structure, selection criteria, and selection procedures, are examined in chapters six, seven, and eight, respectively. Chapter nine outlines a rational system based on a consideration of the issues raised in those chapters, which it attempts to intergrate and complete. Appointments procedures are outlined and variations discussed. It is important to note that where a specific procedure or approach is recommended the details have been thought out, even if they have not been included in the text: there will be at least one way in which it could be implemented. The final chapter (ten) discusses an approach to the analysis and comparison of systems and looks at a number of improvements that could be made to bring staffing arrangements more into accord with what might be called the realities of the situation.

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CHAPTER ONE

REVIEW

A brief comment on the scope of the review is followed by a look at the studies which relate to the movement of teachers into, out of, and within education systems. Recruitment, resignation, the imbalance between supply and demand for particular categories of teachers, the relationship between level of training, occupational commitment and the notion of equity are discussed. This is followed by an examination of a study by Becker which focuses on horizontal movement within an education system and another by Griffiths which focuses on vertical movement. Comments are made on Dreeben's review of occupational careers in teaching and Matthews and Radford's description of the career and salary structures of teachers in Australia. A consideration of the nature of official documents and their value as a source of information is followed by some concluding remarks on the literature and research relating to the topic under review.

The search for literature relating to the systematic allocation of instructional personnel resources to tasks within education systems began with a survey of ERIC DESCRIPTORS. The titles listed under all descriptors which appeared even remotely relevant were examined. Use was also made of the Encyclopedia of Educational Research and the Review of Educational Research. Other indices were consulted but added nothing of importance.

None of the descriptors described precisely what was sought. Some which looked promising led to articles that were disappointing because of their marginal relevance. 'Teacher Promotion' for example leads one to 'Developing Administrative Leadership' and 'Career Planning' refers to student rather than teacher career planning. Indeed the review revealed nothing in the literature that addressed itself directly to the topic under consideration. Extensive studies of a number of related issues have been reported and do have an important bearing on the topic.

Considerable attention has been given to discovering the motivation and characteristics of those who enter, or intend to enter, teaching. The high proportion of a community's well educated people engaged in teaching has implications for recruitment to teaching that are frequently overlooked. In New Zealand, for example, less than five percent of the national workforce have tertiary qualifications: of these more than forty percent are teachers. There are practical limitations on the level of salary that can be offered to such a large group and the numbers required prevent recruitment being confined to the same narrowly defined group upon which other professions draw.

Nevertheless teaching does attract a high proportion of the most able. A study of the table Dreeben (1970) has adapted from Davis (1964) reveals that although a much greater proportion (42.1%) of those who enter medicine are likely to come from the top fifth of college graduates than those who enter education (13.6%) the proportion of the top fifth that enter education (18.8%) is greater than the proportion that enter medicine (7.2%). Clearly, a modest increase in the proportion of teachers drawn from this group would result in a substantial reduction in the proportion that other occupations could draw from this group. This strongly suggests that measures designed to retain talented recruits in teaching are more likely to succeed than measures designed to increase the total number.

Indeed, perhaps for this reason, the movement of teachers out of teaching has been a major area of study. The proportion of teachers who leave teaching is very high in comparison with the proportion of doctors who leave medicine or lawyers who leave law. A small, but significant, part of this difference is probably due to the difference between what is meant by 'remaining in' medicine or law and what is meant by 'remaining in' teaching. A medical consultant may teach medicine or carry out research into medicine and still be counted as remaining in medicine. To remain in teaching is to remain in the classroom which, because of current conceptions of teacher role and the career structure of the profession, generally precludes the teaching of teaching or research into teaching.

Even so the number of teachers who leave teaching is very high and this is a source of serious concern to educationists. This has prompted many researchers to try and discover the reasons for which teachers leave the profession. Foster's review of Teacher Supply and Demand in the Review of Educational Research (June 1967) considers some of these effort under the

heading of 'teacher withdrawals'. Many reasons have been listed: some by those who have gone, others by those who observed their going. Nelson and Thompson (1963) listed nineteen factors. The list emphasised money, discriminatory loads on new teachers, extra-duty assignments and inadequate supervision. Thomas (1964) reported that administrators felt that teacher retention could be increased by raising salaries, lowering pupil/teacher ratios, obtaining classroom help and placing teachers in major teaching fields or preferred grade levels.

For men the most common reasons for leaving teaching are economic, whereas for women they relate to family responsibilities (Metz 1962, Stewart 1963, Blaser 1965). A substantial number of the relatively high proportion of teachers leaving teaching is explained by the relatively high proportion of women in the profession. It is therefore important to note that many women who leave teaching do so, not because they are dissatisfied, but to fulfil a culturally defined role. A high proportion of teachers who leave teaching do so before their fifth year of service (Charters 1970). Included among them will be women who leave teaching to bear children. Measures designed to retain these teachers in the profession would clearly have to be quite different to those measures designed to retain those who leave because they are dissatisfied and any such attempt would have wider social implications. Difficulties faced by beginning teachers are widely acknowledged. White (1966) notes the effect of negative pupil attitudes on the turnover of beginning teachers and suggests that socioeconomic differences are important in the assignment of beginning teachers. The literature suggests that far from receiving support in these vulnerable years, the beginning teacher is subjected to a number of unpleasant discriminatory practices including assignment to difficult classes and unpopular locations.

Teacher shortages may be acute for some categories of teacher while there may be more than enough teachers available in other categories. This problem of selective teacher shortage is dealt with in a number of NEA reports (1964a, 1965a, 1966e). There is considerable specialization within teaching. Elementary and secondary teachers frequently form two distinct groups. Among secondary teachers further specialization is usually in terms of subject area taught whereas among elementary teachers it is more often in terms of grade level taught. Foster (1967) noted a tendency toward an oversupply of teachers in the secondary area and an undersupply in the elementary. Bartels (1964, 1966) reported an imbalance of supply and demand

according to grade level. Despite the great influx of younger men reported in 1963 (NEA 1963) both Earp and Peterson in 1966 noted that there was a limited supply of male teachers for the elementary area. In the secondary area there appears to be a more or less continual imbalance in supply and demand in relation to the various subject areas. Missassignment, the assignment of teachers to tasks other than those for which they were prepared is seen as one of the consequences of selective teacher shortages (Ford & Allen 1966).

In most professional occupations there is a positive correlation between the level of training and commitment to the occupation. Becker (1960) has proposed an investment process explanation for the development of occupational commitment. However a number of investigators have found that for men there is an inverse relationship between level of training and commitment to teaching (Mason 1959, Walker 1961, Wyllie 1966) and Selby Smith reports a higher resignation rate among graduates than non-graduates. Apparently better educated teachers tend to regard themselves as scholars rather than teachers (Kob 1961). Charters (1964) observes that it may be the potentially best teachers who leave, a view that is consistent with Hunter's observation that men who left teaching increased their earnings almost twice as much as those who remained.

Failure to receive what is seen as an equitable reward for personal investment (which includes education) appears to lead to dissatisfaction (Planz & Gibson 1971). Kirkpatrick (1964) reports a relationship between job satisfaction and the perception of promotional opportunity. It appears that promotional opportunity is seen as part of current reward. In teaching the basic qualifications required for entry are commonly considered sufficient for appointment to higher level positions: qualifications do not confer the protection from unqualified competition in teaching that they do in other professions. This reduces the promotional opportunities of well qualified teachers in comparison with similarly qualified persons in other professions. The nature of any relationship between job satisfaction and teacher effectiveness remains unclear, however it does appear that dissatisfaction can provide a motive for leaving teaching while good qualifications provide the opportunity.

Attempts to differentiate between salaries of individual teachers on the basis of quality of service, as opposed to qualifications, have met with

little success (Wilson, Kerr & Wilson). The North Carolina State Department of Public Instruction (1965) concluded that a statewide merit plan was neither practical or feasible. Link (1965) concluded that most rating systems tend to have adverse effects on the teacher-supervisor relationships and were of little value in improving instruction. The lack of an acceptable method of evaluating teacher effectiveness is seen as the crucial difficulty. There has been a vast amount of attention given to discovering the relationship between teacher characteristics and teacher effectiveness but the result has been disappointingly inconclusive. Flanders (1969) claims that research permits cautious optimism and indicates that the tools long needed for the analysis of the teaching-learning process are gradually being developed.

A number of interesting insights into how and why teachers move from one position to another within an education system are to be found in a paper by Becker (1951) 'The Career of the Chicago Public School Teacher'. His analysis is based on interviews with sixty teachers (probably all women) in the Chicago system. The movement examined was horizontal, that is at one level of a hierarchy. The motivation for movement appears to be the search for the position in which the configuration of basic work problems presented are least aggravated and most susceptible of solution. The most difficult problems were seen to arise from teacher/pupil interaction and to be related to the social-class background of the students.

The same study reports that teacher movement is accomplished under the Chicago Board of Education rules governing transfer, which allow a teacher, after serving in a position for more than one year, to request a transfer to one of as many as ten other positions. Movement to one of these positions is possible when an opening occurs for which there is no applicant whose request is of longer standing, and transfer takes place on the approval of the principal of the new school. Knowledge as to which schools are 'good' is typically acquired through the 'grapevine'. The wise teacher is patient enough to wait for transfer to the right school and careful enough not to cause the principal to use his power of rejection. Becker's study makes it abundantly clear that in 1951 the mechanism for the allocation of teacher to task used by the Chicago Board of Education showed no evidence of being designed to place teachers in the most appropriate position having regard to the teacher's skills and the requirements of the particular position. In fact there would be a tendency for the most competent teachers to occupy the least demanding positions.

A more recent study 'Teacher Mobility in New York City' (Griffiths et al 1963) suggests that once a teacher begins seeking vertical mobility (promotion) one kind of personalistic behaviour is vital - gaining the attention of superiors, or as they call it GASing. The essence of GASing is doing a particular job to the satisfaction of one's superior. The job need not be difficult to do, but will be a job that few can do successfully, or one that few would be prepared to undertake. It will be non-teaching, time consuming, rateable by the superior and important to him. The study also refers to the examinations that must be passed at every stage of advancement in the New York City system and the system of coaching that has developed in association with it. It stresses the importance of being coached by one's principal or chairman (especially if that person has been an assistant examiner) and the importance of developing contacts with those who have passed the examinations and those who are assisting or have assisted in writing the examinations.

Griffiths and his colleagues give considerable attention to the problems of recruitment of teachers to the New York City system. They discuss the advantages and disadvantages for both the school and the teacher of the employment of substitute (casual) teachers. Some principals favour employing teachers as substitutes in the first instance in order to assess them for future regular employment. In 1962 substitute teachers comprised about 75% of teachers entering secondary and about 33% of teachers entering elementary school positions in New York City. Although the Griffiths study focuses on vertical mobility rather than the horizontal mobility that was studied by Becker, again there is little evidence to suggest the existence of a mechanism for effectively matching teachers with particular skills to tasks which require the exercise of those skills.

Under the heading 'Occupational Careers in Teaching', Dreeben (1970) reviewed the literature relating to: the characteristics of teachers, recruitment to the occupation, stages of the work career, problems of promotion, commitment to teaching, and the problems of professionalism. In those areas with which this present review is concerned he relies heavily on the Griffiths study referred to above. Dreeben provides considerable opinion, which appears to be very well informed, but nothing to dispel the impression that there is little in the way of hard data and nothing in the way of major recent studies in the area under review.

The publication 'Career and Salary Structures of Teachers in Government Schools in the Australian States' (Matthews & Radford 1972) provides a useful illustration of progress and problems in this area of investigation. It shows the positions available, some of the qualifications required to occupy them, the method by which suitability is assessed and the ways in which the positions are filled. The authors do not claim to compare the structures, only to have set them down in as parallel a way as possible. They point out that it was not possible to provide for all states, information on all the same points as procedures differ from state to state and a procedure, position, or organization applying in one state may have no place or relevance in another. It is a very useful document in its own right but it also indicates how far we are from being able to make proper comparisons between systems.

Official documents relating to a particular education system can provide a source of information concerning the operation of that system. Such documents fall into two main categories. The first are those intended to ensure that the system operates in a particular way and include legislative acts, regulations made and delegations exercised under such acts and directives issued by system executives who have the authority or power to do so. They indicate what is intended to happen rather than what does happen, are not always consistent one with the other and can be difficult to obtain.

The second category includes those documents designed to monitor the functioning of the system and consist of various types of report required by legislation. Most systems are required to prepare an annual report which deals with the operation of the entire system. They can provide a useful introduction to a system but tend to superficiality. Less common, but more useful, are the special reports some systems require to be made on the functioning of a particular aspect of the system. The report of the Central Advisory Committee on the Appointment and Promotion of Teachers which must be submitted to the New Zealand minister of education every five years is a good example of such reports and is one which relates to the topic under review. Difficulties in obtaining such reports lead one to suspect that they are only printed in small numbers, or distributed only within the system concerned, or both.

From time to time circumstances arise that precipitate, even compel, a major review of the organization and practice of an education system. Documents resulting from such reviews can provide valuable descriptions of the system concerned and give useful insights into the kind of research on which decisions to modify systems are based. The report of the Advisory Committee on Education in Papua New Guinea (1969) and 'Teachers for Commonwealth Schools (1973) are good examples. The investigations on which such reports are based are usually carried out in haste by a small group of eminent people nominated for the task by the authority concerned. They typically review relevant published material, visit other education systems which they examine by consulting key personnel, and consult with representatives of the major interests concerned with the effects of the proposed changes. They also comment on the inadequate time and statistics available to them for their investigation. Sometimes special reference material is compiled for the investigation such as the description of career and salary structures by Matthews and Radford discussed above. Modifications to the system are then based on the opinions formed by the committee during the course of the investigation.

This current review revealed no recognisable body of knowledge relating to the systematic allocation of instructional personnel to tasks within education systems. A feature of the literature is the prevalence of opinion rather than research. Furthermore, much of what passes for research consists of little more than the collection of opinions and intentions. The field of study lacks an appropriate theoretical orientation: studies have been topical rather than systematic, with findings related to narrow hypotheses rather than a broad theoretical framework. There is also a lack of adequate statistical data. The hard data that does exist has been obtained in an almost random manner from different systems at different times; thus inferences resting on comparisons are tentative at best. What little evidence there is suggests that the mechanisms currently used to match teacher to task are primitive, highly inefficient and have many unintended and undesirable consequences. What the field of study lacks above all is a proper conception of the problem and an adequate conceptual framework to organize knowledge and direct research.

CHAPTER TWO

ORIENTATION

The review reported in chapter one revealed that educationalists have paid scant attention to the allocation of teacher to task on a system wide basis. The present chapter evaluates three major facets of the field of enquiry: substantive issues, theoretical background, and the conception of the problem. In each case the implication of current inadequacies, for the development of an effective approach to the investigation of the area of concern, is suggested and linked to the structure of this thesis. Having thus established what appears to be an appropriate context within which a specific conceptual framework to organize knowledge and direct research in the particular area of concern may be developed, the notion of a rational model for the allocation of teacher to task is presented as such a framework.

SUBSTANTIVE ISSUES

The issues dealt with in this section are organized into two groups: those that relate to teacher movement and those that relate to structural changes in education systems. They are seen as key issues for the present study. What we know about them points to areas that have been overlooked and not given the attention they appear to deserve. Where the evidence becomes thinner the discussion becomes more speculative.

The issues associated with teacher movement are discussed in two groups: those relating to the reward structure of an education system, and those relating to the access to a reward structure. There are a number of characteristics of teaching as an occupational group which should be borne in mind during a discussion of this kind. They are listed below:

- i) No other occupational group involves such a large number of well educated people.

- ii) There is a high ratio of teachers in preparation to those actively engaged in teaching
- iii) The preparation and payment of teachers account for a substantial proportion of national expenditure.
- iv) There is a limit to the number of teachers who will be able to find alternative employment at a comparable level.
- v) Teaching generally employs a high proportion of women compared with other professions.

The proportion of women employed in a profession is significant because their career choices are generally influenced by factors different from those that influence men. A higher proportion of women than men leave teaching but a lower proportion of women leave for other paid employment. Systems that employ a high proportion of women may have a pool of unemployed teachers equal to as much as one fifth of the number of teachers employed and some of these will re-enter teaching as circumstances change. The existence of this pool has a marked effect on the response of teaching, in comparison to other occupational groups, to changes in salary levels and general economic conditions.

The literature relating to the movement of teachers deals mainly with the movement into and out of teaching rather than movement from one position to another within teaching but it does provide clues for the understanding of teacher movement in general. There is considerable evidence to support the assumption that the rewards received by those who perform particular tasks will have a profound influence on the type of person who will be attracted to the task. It is therefore important that rewards be allocated to the various teaching tasks within an education system in such a manner as to attract to these tasks those men and women with the performance capabilities required for the achievement of the objectives of the system.

While it is recognized that money is not the only reward people seek, there is no doubt about the central role it plays in the kind of situation under examination. Money is the most negotiable of rewards in today's society. Even for those commodities that cannot be bought and sold it is possible to gain some idea of their market value by observing what will be forgone to retain them. For these reasons economic rewards are the focus of attention in the present study. An examination of the kinds of choices teachers make suggests that their behaviour is motivated by a desire to maximize long term

economic returns rather than short term advantage. The reward associated with each position is determined by the salary structure, but to assess long term economic return, typical career structures must also be considered.

Where alternative employment is available to those with the qualifications, skills and experience required for a particular position the rewards offered must be competitive with those offered by the alternative employment. If this is not the case the situation will generally be seen as inequitable and the position relatively unattractive. Salary scales in education systems typically fail to take into account the rewards offered by alternative employment with the expected result: a continual shortage of teachers in those subject areas requiring people whose services are in high demand outside teaching. It does not appear economically feasible to raise the salaries of teachers in general to a sufficiently high level to retain these teachers. A rational approach would be to raise only the salaries of teachers in high demand categories to the level required to retain them. There would be difficulties in such an approach but the alternative is a continuation of the current unsatisfactory situation.

The problem of selective teacher shortages alone suggests that contemporary education systems need more sophisticated reward structures than they have at present and that these structures should be designed to meet the needs of the system concerned. Instead, many contemporary salary and career structures in teaching are the product of the conflict between teachers and their employing authority, and their respective interests, power and negotiating skill. Not only do these structures have aspects which appear to be working in the opposite direction to that required but also some which result in self-exacerbating problems. It is difficult to see how some of these inadequacies will be corrected in the absence of rational guidelines based on a thorough understanding of the issues concerned, and substantial changes to the manner in which salary and career structures are determined.

We turn now to those issues that relate to the access to reward structures. A reward structure will not only attract those for whom it was designed. It must be complemented by a set of criteria by which to determine the suitability of an applicant for assignment to a particular position and a set of procedures that will ensure that only those who meet the criteria will be placed in a position and receive the rewards resulting from the performance of the duties associated with that position. The criteria and

procedures should also provide for the selection of the most suitable applicant in those cases where there is more than one suitable applicant.

Although procedures and criteria are conceptually quite distinct it is usual, in practice, to consider them together. The procedures used will have a profound effect on the actual criteria by which a decision is made and the actual may be very different from the ostensible. Because they regulate access to a reward structure, procedures and criteria will influence the attractiveness of the structure concerned to different types of people. Little attention has been given to the analysis and comparison of procedures and criteria and even less to any attempt to discover the consequences of using one set rather than another. Indeed little has even been done to develop a suitable language in which to discuss these matters.

A cursory inspection suggests that centralized systems tend to neglect the needs of particular positions while local authorities emphasise local needs at the expense of system needs. Efforts to correct both tendencies appear to be more in the nature of temporary expedients rather than fundamental changes. Much is suspected but little is known about the effects of assigning responsibility for the application of criteria to one person or authority, or another. Discussions concerning the choice of criteria and the assignment of responsibility for their application are notable for the heat they generate rather than the light they shed. Teachers in the United Kingdom have complained that principals have too much power in the selection of staff and that academic qualifications are overemphasised as compared to professional skill. Many Australian teachers claim the assessment of professional skills by inspectors is degrading and unprofessional and suggest that principals have more power and inspectors less, or none. Rational discussion of these matters demands acceptance of the fact that reduced reliance on some criteria necessarily involves increased reliance on others: a fact that is often ignored.

Assuming that our objective is an effective system, the qualities required for the effective performance of the tasks associated with a particular position should be the basis of important criteria for selection to that position. Mention has already been made of the inconclusive results of research aimed at discovering the relationship between teacher characteristics and teacher effectiveness, however it must be stressed that the immediate problems are so gross that this is of little concern at this stage. If we

examine the studies reported in chapter one, we find that one (Becker) suggests that in fact patience and inoffensiveness are important qualities, and the other (Griffiths), that social skills are in fact more important than professional skills. Surely we can do better than that.

Selection procedures may, for very good reasons, vary from place to place; but to be effective they will have to meet a basic standard of rationality, and in particular to allow for the achievement of system as well as local objectives. The respective merits of formal as opposed to informal procedures has been the subject of considerable debate. Formality cannot guarantee rationality but it appears that without the consistency that formality makes possible it is unlikely that the co-ordination required for the effective operation of a system as a whole can be achieved.

The consequences of fundamental structural changes in education systems are extremely complex. A vast network of relations connect the elements of the system, many of which perform multiple functions. While it may not be difficult to make changes that will result in specific desired outcomes, it is not so easy to achieve this sort of result without bringing about a host of unintended consequences, some of which may be even less desirable than the situation it was originally intended to remedy. Hasty, piecemeal, and illadvised structural changes in education systems have done much to bring the whole question of such changes into disrepute.

Despite the apparent need for structural changes in education systems and the very limited success of the changes that are made, little attention has been given to discovering the principles on which such changes could be based. One reason why the study of structural changes and their possible consequences have not received the attention that more 'positive' innovations have, is that their effect is frequently to enable rather than to induce or coerce a desirable change to take place. This feature appears, for some psychological reason, to make structural changes less attractive. It makes them no less necessary.

Another factor that militates against the attempt to discover effective structural solutions to educational problems is the widespread view that rules and procedures ignore the individual and for this reason are neither feasible or desirable as a solution to an educational problem. This view is tragically naive because it fails to take into account the unavoidable

problem of deciding between the relative claims of two or more persons. This view is often associated with another that rejects formality because it confuses formality with a popular and inaccurate conception of bureaucracy. Rules designed to protect the interests of unrepresented persons are often, ironically, branded as impersonal. Rules and procedures may be inappropriate and even unjust, but the solution is better rules, not no rules at all. Justice is not found in arbitrary decisions.

In relation to substantive issues, inadequacies in the field of study take the form of omissions - the failure to focus attention on topics which appear to be particularly significant. The implication of such omissions for the development of an effective approach to the area concerned is that such an approach must encompass the investigation of these topics. In relation to the structure of the thesis there is no particular chapter which deals with them since they are the subject matter of all.

THEORETICAL BACKGROUND

The lack of an adequate theoretical background is an important factor contributing to the unsatisfactory status of the field of enquiry. Theories organize knowledge: organization gives knowledge a meaning and potency it would otherwise lack. An adequate theoretical background would locate a study or field of enquiry in the contemporary structure of knowledge thus enabling the mobilization of this knowledge for the purpose at hand and the utilization of findings from other fields of enquiry. In addition a theoretical base would provide a guide to the kind of research that might prove most profitable. In the absence of such a background a field of study will be fragmented and research in the area aimless.

In the course of the attempt to discover an appropriate theoretical background for the present study it became obvious that no suitable well established and generally accepted theoretical basis was to be found. Unresolved issues pervade and confuse social science and the failure to come to grips with these, often central, issues appears to be the cause of much confusion and much wasted effort. The desire for a sound foundation on which to develop this study led to the philosophy of enquiry itself.

There are a number of important reasons for the inclusion of an explicit statement of the results of the search for an appropriate theoretical background in the present study. Such a statement clearly reveals the position taken by the author and saves the reader from having to infer what this position might be in order to gauge what is actually being said (those who prefer an alternative position would say the author was exposing his prejudices). The most important reason for making an explicit statement is related to the advancement of knowledge. Advancement of knowledge often takes place through the attack and defence of positions. Skirmishes that cannot affect the outcome of the conflict are common but of little value. Advancement is likely to be most rapid when knowledge is so organized that the positions under attack are those which are crucial for the outcome of the conflict. The consequences of the successful defence, or the loss, of a position will thus be readily apparent and counter the common tendency to refuse to confront and resolve conflicts over basic or central issues. The facilitation of this process seems particularly important for studies like the current one which attempt to develop a new approach to a field of enquiry and serve as a foundation for further studies in the field.

An explicit statement of the results of the search for an appropriate theoretical background to the present study appears as chapter three of this thesis. It looks at assumptions about the nature of the world and the problems of observation and discourse and discusses a number of critical issues in social science. Although these topics may appear to be far removed from the essentially practical matters with which the thesis is concerned they do in fact continually emerge as significant issues in the discussion of the most practical of problems.

CONCEPTION OF THE PROBLEM

A major inadequacy in the current status of the field is the tendency for investigations to be confined to relatively isolated fragments of the whole problem. The conventional boundaries which exist between the various parts of the system being examined appear to have determined the scope of many studies. Failure to cross these boundaries and examine what lies beyond has probably prevented the discovery of significant influences on the way the system operates. The failure to identify a system as such, makes it no less a system nor its effects any less systematic, but it could very easily make

it more difficult to comprehend or control. The urgent need for greater knowledge of those effects that take place as a consequence of the normal operation of a system is clearly illustrated by the following examples.

A number of education systems rely on a device called the special service salary bar to ensure the performance of tasks, such as teaching in a particular kind of school, which they consider unlikely to be performed without compulsion of this kind. It operates by making further salary increases contingent upon the performance of the task concerned. Quite apart from the fact that attraction has generally been found more effective than compulsion, there is evidence which suggests that the most significant consequence of this mechanism is the loss to the system of those teachers whose services are in high demand elsewhere. These teachers are usually particularly talented or well qualified and will often come from categories of teachers that are already in short supply.

The second example is of a kind of problem referred to by Selby Smith as self-exacerbating. Maruyama describes the processes involved as deviation amplifying. The problem is the progressive increase in the proportion of youthful teachers and teachers who are merely passing through to some other occupation. In Australia, teachers tend to be paid similar salaries to men in other occupations with similar formal qualifications early in their careers but their income rises substantially less rapidly with age. Teaching is thus less attractive as a career, has a higher resignation rate and consequentially a higher ratio of those in preparation to those actually engaged in the occupation. Many teachers in preparation have no intention of making teaching a life-time career. The increasing proportion of youthful and transient teachers is reflected in the salary negotiations of teachers' organizations which place increasing emphasis on higher starting salaries as opposed to long term career prospects. Teaching therefore becomes even less attractive as a long term career but more attractive to the youthful and transient. The self-sustaining nature of the trend is obvious.

Another interesting example concerns the fact that the children of teachers are more likely to enter teaching than the children of those with similar formal qualifications in other occupations. This may prove to be related to the large disparity between their salaries in mid-career. With their parents unable to give sufficient financial assistance for them to obtain tertiary education without outside assistance, preparation for teaching,

which is accompanied by such assistance, becomes the main avenue by which the children of teachers obtain tertiary education and retain membership of the professional class. It is not suggested that this is likely to be the sole explanation of the phenomenon, only that it may make an important contribution.

These problems clearly arise from the way in which the systems concerned operate. The solution, perhaps even the detection, of such problems depends on a willingness to examine these systems from a systems point of view, and a greater knowledge of how such systems operate. Problems like the one described in the second example will clearly be as difficult to solve as they are urgent. The reversal of such trends will take time, require a great deal of knowledge, and involve fundamental and far reaching changes. Not only have current approaches been largely unsuccessful but there seems little reason to expect that further work along the same lines will result in any significant advance. The present study, in marked contrast to most previous studies in the same general area of enquiry, emphasises the system as a whole, rather than its parts, and education systems in general rather than particular systems. There is a considerable body of knowledge relating to the structure and functioning of systems which is loosely referred to as 'systems theory'. Material from this area of study is highly relevant to the task at hand. Chapter four of this thesis is devoted to an examination of this material.

A RATIONAL MODEL

The development of a particular conceptual framework to organize knowledge and direct research in the specific area of concern is the central task of this thesis. After considering the implications of current inadequacies for the development of an effective approach, the development of a model, based on the rational requirements for the effective systematic allocation of instructional personnel to tasks within education systems, was seen as an appropriate approach. The development of such a model will be beneficial in two main ways. The first relates to the development of the model, the second to the use of the completed model. The development of the model requires the assembling of relevant data, the analysis of principles involved, and forces the organization of the knowledge gained into a more manageable form than it is at present. The completed model will serve as a standard,

or canonical form, in which actual systems may be described, thus facilitating analysis and comparison. It will also provide the basis for simulation as a tool for system enhancement.

The data assembled for analysis and organization is derived from an examination of the relevant aspects of a number of education systems, particular attention being given to the education systems of Papua New Guinea, New Zealand, and the Australian state systems. This examination was aided by the unusual opportunity to study a system (Papua New Guinea) from the inside, first as one subject to the operation of the mechanisms which allocate teacher to task, and later as one assisting in the development of such mechanisms. The principles for the organization of this data arose from a consideration of the theoretical background developed for the purpose and the relevant aspects of systems theory.

CHAPTER THREE

THEORETICAL CONSIDERATIONS

This chapter begins by looking at assumptions about the nature of the world and the problems of observation and discourse, and goes on to discuss causation, determinism, prediction, the relationship between parts and wholes, and the problem of reduction. It then considers a number of issues of particular interest to the social scientist: the relationship between social and natural science, the relationship between understanding and explanation, the problem of free-will or autonomy, and the distinction between problems of theory and problems of policy.

Human beings characteristically have expectations concerning the future occurrence of certain events, based on apparent regularities which they perceive in the flow of past events. These expectations will be either confirmed by subsequent events or shown to have been unwarranted, thus providing evidence that will tend to confirm or deny the existence of the apparent regularity on which the expectation was based. As Ryan has observed, man is concerned with the production of stories about how one event follows another (causal narratives), either in terms of a familiar sequence or some other controlled process. They are based on causal generalizations which are not statements of de facto regularities but recipes for constructing causal histories from which we can construct an indefinitely large number of actual and hypothetical histories. Explanation and prediction can both be seen as the construction of a causal narrative, the only difference being that a prediction is a narrative about events which have not yet taken place. Human behaviour indicates that men believe that they may influence the course of events by their own action. Indeed, the prospect of accurate prediction and successful intervention appear to be the mainspring of human enquiry.

The existence of an objective world that exists independently of any observer and which consists of particular objects involved in a sequence of unique and non-recurrent events is a basic assumption of science. Despite this assumed

objectivity it is obvious that each man's view of it must be a subjective one. Evidence about the nature of the world comes to us through the senses, often with the aid of instruments such as the telescope. There is at least one important limitation concerning the observations we can make. Heisenburg's principle of indeterminacy or uncertainty, states a limitation of the measurability of simultaneous values of complementary parameters. It is, for example, impossible to make an absolutely precise determination of the position and the momentum of a sub-atomic particle at precisely the same time. All science deals with the same events: the experience or the perceptions of the scientist himself, and there is little doubt that these may be influenced by a variety of psychological, social, and cultural factors. The natural scientist simply assumes that fundamental problems relating to intersubjectivity, intercommunion, interaction, and language have been solved and begins his enquiry on this unclarified foundation.

All particular objects and events are unique. They do, however, exhibit common features, which enables us to speak of kinds of objects and kinds of events. It is these kinds of objects and events and the relations between them that we are concerned with. Indeed we cannot even talk about an individual except in terms of universals or abstractions.

Explanations involve chains of reasoning designed to show why one state of affairs should occur rather than some other. Whatever explanation or argument we are presented with there are always two different kinds of question we can sensibly ask about it: the first concerns the logical structure of the argument and relates to its internal validity, the second concerns the factual truth of either the premisses, the conclusion, or both; and relates to its external relationship with the facts. The terms formal and material are sometimes used to refer to the distinction between the logical and factual aspects of an argument. The distinction between analytic and synthetic propositions also relate to this issue. The truth of an analytic proposition can be determined by an analysis of the meaning of the words in which it is expressed whereas the truth or falsity of a synthetic statement is determined by reference to an external world.

There are some principles of logic that appear to be presupposed by everything we say or even think. These principles are sometimes referred to as the laws of logic. Three of these laws in particular, the law of identity, the law

of non-contradiction, and the law of the excluded middle, seem to be fundamental presuppositions in the sense that to deny them rules out rational discourse and even thinking. There is however, no way of guaranteeing the truth of these laws. We cannot establish them by means other than themselves as they are our starting point, and we cannot establish them by means of themselves as this would be to assume the very thing we wished to establish. The best we can do is to show why we should assume them to be true. Hospers advances a pragmatic justification for the assumption of the truth of these principles: where there is a choice between possible success and certain failure we are justified in opting for the alternative that may lead to success.

Formal logic is based on deductive inference; that is it is concerned with movement from universal to particular, from 'all' to 'some'. We may invent or stipulate universals from which to proceed and so create an axiomatic system which makes no claim about the world in an objective sense. As the objective world consists of particulars, if we wish to use the apparatus of formal logic to establish claims about the external or 'real' world we must find some way of moving from the particular 'some' to the universal 'all': this is the problem of induction. Inductive support, however, can only make the truth of a universal proposition more probable, it can never make it certain. Uncertainty is the inevitable consequence of the inductive leap from 'some' to 'all'. We cannot obtain certain knowledge about the 'real' world. Universal propositions or 'laws' may be tested and we can speak of degrees of confirmation. Experience cannot guarantee the truth of an hypothesis but it may refute it, a fact which has important implications for the way in which enquiries should be conducted.

We turn now to a consideration of causation. Perhaps the first point that should be made is that causation is a relationship between kinds of events, not particular events. Therefore it is never necessary that all the features of a given cause be duplicated in order to produce the same kind of effect; there is a degree of 'looseness' in any causal relationship. Causes are never more than antecedent conditions universally linked to their consequents. The tendency to think of causation as other than constant conjunction appears to result in a great many difficulties and create barriers to the progress of rational enquiry. The apparent intelligibility of certain kinds of causal relationships (say the transmission of motion from one billiard-ball to another) is an illusion created by familiarity and there have been substantial

changes from one period to another as to what is considered intelligible. Causes it should be noted, do not compel their effects any more than effects compel their causes: there is a mutual relation, so that either can be inferred from the other. Russell claims that the difference we feel between cause and effect is a confusion due to the fact that we remember past events but do not happen to have a memory of the future. Another important point is that just because some events, perhaps a great many, have 'causes' we cannot conclude that all events necessarily have causes. Indeed, as the question is an empirical one, we can never be certain.

There has been a great deal of philosophic debate over the question as to whether or not the universe in which we exist, or any part of it, is a deterministic system. A system is deterministic if it is possible to infer events at any time from events at certain assigned times. While we cannot make the past other than it was nor the future other than it will be, this does not prevent us making the future other than it might have been in the same way that we might have made the past other than it was. The point is that even if the universe were a deterministic system there does not appear to be any way in which we could know this with certainty, as any attempt to show that this was the case could only be based on inductive inference. Even the matter of inductive support is subject to the limitations described by Heisenburg which imply that we cannot provide an exhaustive description of some events. Without such a description we cannot possibly demonstrate a deterministic relationship between the events concerned.

However, we do detect regularities in the flow of events, and we are able to formulate useful generalizations about these regularities. It is reasonable to suppose that this is partly due to the nature of the external world itself, as it shows that at least the world is not totally chaotic. Popper rejects as unsatisfactory, the view that the world is a closed physical system; whether a strictly deterministic system, or a system in which whatever is not determined is simply due to chance. He contends that the universe is an open physical system that may best be explained in terms of 'plastic control'. The soap bubble, for example, consists of two subsystems which control each other: without the air the soap film would collapse; without the soap film the uncontrolled air would diffuse and cease to exist as a system. Thus the control is mutual, it is plastic, and it involves feedback. It appears that all we can confidently say about the nature of the universe in this regard is that it exhibits sufficient organization for us to make useful generalizations.

It has been claimed that there are two distinctly different types of sciences: the nomothetic, which seek to establish abstract general laws for indefinitely repeatable processes; and the idiographic, which aim to understand the unique and non-recurrent. However, as Nagel has commented, no science is exclusively nomothetic or purely idiographic. What we have to distinguish between is two different kinds of prediction: one relating to the unvaried continuance of a regularity, the other to the occurrence of a particular kind of event. The important point is that to be able to predict the occurrence of a particular kind of event requires both an invariable regularity and the occurrence of some other specified particular kind of event and is therefore the more complex activity. Failure to distinguish between them often results in confusion. All predictions are subject to varying degrees of both inaccuracy and uncertainty. Inaccuracy because, as no two events are identical, we must speak of kinds of events, and uncertainty as we have no way of showing that something must occur, only that it is probable.

We speak of the world in terms of generalizations which we have formulated as a result of the detection of apparent regularities in the flow of past events. We do not operate at a single level of generalization or analysis, nor does there appear to be an exclusive level of analysis associated with a particular set of phenomena. It is obvious that the parts of one whole may themselves be seen as wholes, with parts of their own, and the whole as part of some larger whole. The decision as to what to consider as a whole is the decision to operate at a particular level of analysis. Nagel speaks of the traits of gross objects (wholes) as macro-states and the traits of its elements (parts) as micro-states, and comments that for a given macro-state there corresponds a large number of possible micro-states. For example, a given state of temperature of a gas corresponds to the mean kinetic energy of the molecules of the gas: the given macro-state thus corresponds to any one of a large number of alternative distributions in the molecular velocities, these alternatives being subject only to the condition that the mean kinetic energy be the same for each. He further comments that though the laws connecting micro-states may be statistical, the laws connecting the macro-states that correspond to them may be deterministic.

The question of reduction is concerned with the relationship between macro-states and the laws that connect them, and the corresponding micro-states and the laws that connect them. When micro-laws fully explain the connections between macro-states, reduction has taken place. There seems little to support

the contention that reduction must always be possible. Even if it were it would not answer the question as to which states or level of analysis would be the most appropriate for the purpose of any given enquiry. As Wigner has pointed out, only an unusual intellect could guess on the basis of the principles of ordinary quantum theory that there are solids and that they consist of regular lattice-like arrangements of the atoms. There is no reason to believe that different levels of analysis correspond to what could be referred to as levels of reality. The level at which we commence an enquiry is largely a matter of convenience and is usually the level at which we first detect significant regularities.

The claim that there are some essential differences between natural and social science is made with such force and frequency that it warrants careful consideration. We may begin by dismissing those claims which arise as a consequence of a false conception of natural science. The writings of many social scientists reveal that they conceive of natural science as the investigation of a strictly deterministic system with the aid of precise measurement rendering certain knowledge. From the time of the Newtonian revolution until the 1920's physical determinism was the ruling faith of the natural scientist, but with the downfall of classical physics and the rise of quantum theory indeterminism became the ruling fashion. There was what Kuhn has called a paradigm shift; a change in world view. A change which appears to have escaped the notice of some social scientists, who compare social science with an outmoded view of natural science and conclude that they are essentially different.

Some writers select aspects of social and natural science for comparison which emphasise the differences between them and claim these differences as evidence of a fundamental dichotomy. When the aim is to find similarities as well as differences the dichotomy dissolves to reveal a constellation. Meteorology, for example, is as much a natural science as physics but bears a closer resemblance to some of the social sciences in a number of respects. Not all natural sciences are highly developed and the fact that some are, is no guarantee that all natural sciences have the potential for such development. There is a tendency among social scientists to attribute difficulties they encounter to the nature of the social phenomena they are investigating which are more properly attributed to the nature of phenomena in general. There is also a tendency to overlook the fact that natural scientists simply bypass some fundamental problems and begin their enquiry on this unclarified base.

The pursuit of illusory and unattainable standards can result in unwarranted pessimism. The danger is that social scientist might conclude, on the basis of their inaccurate notion of what natural science is about, that the aims and methods of natural science are of little relevance to the investigation of social life.

The claim has been made (by Winch, for example) that the phenomena of human behaviour differ essentially from those of inert matter in that they have a dimension of meaningfulness which the latter do not and that the explanation of social life must involve concepts of purpose and intention. This claim appears to rest on a wrong conception of the relationship between understanding and explanation. The following discussion owes much to a paper by Strike.

There appear to be two major kinds of understanding in the sense of understanding in which understandability is a unique property of man. They are rational understanding and empathetic understanding. To understand an action rationally is to see it as falling under rules which specify what counts as an adequate performance in a given area, and which lend that kind of activity a sort of intelligibility which the behaviour of most objects do not appear to possess. Empathetic understanding is appropriate where rational understanding cannot be had. The objects of empathetic understanding seem to be subjective states and the connection between these states and behaviour. The method of empathetic understanding seems to involve an individual imaginatively putting himself in someone else's place.

When we speak of understanding in this sense, the opposite of understandable is not inexplicable for it is not used in the sense in which to explain something is to understand it. There are two separate judgements to be made concerning any action; one concerning its meaningfulness (understandability), and the second concerning its explanation. To see an action as warranted by acceptable reasons is to understand it, while to subsume it under some empirical law is to explain it. Reasons both justify and explain actions but whether they justify, and whether they explain are different questions. The crucial point is that there is no contradiction or inconsistency in holding at the same time that human beings can be understood in a manner that other objects cannot and that human behaviour can be explained in the same manner as the behaviour of other objects.

We now turn to what has been called the problem of free-will or perhaps more commonly these days the problem of autonomy. As Russell has shown the question as to whether human actions are predictable is entirely distinct from the question as to whether these actions are subject to external compulsion. Knowledge does not compel the happening of what is known, We do not think we were not free in the past merely because we can remember our past volitions so why should we think that we would not be free if we were able to know what our future volitions were going to be. The question of how far human volitions are subject to causal laws is a purely empirical one. We have a subjective sense of freedom but it is only a sense that we can choose which we please from a number of alternatives: it does not show us that there is no causal connection between what we please to choose and our previous history. Russell concludes that freedom in any valuable sense demands only that our volitions shall be the result of our own desires, not of an outside force compelling us to will what we would rather not will. Free-will, he says, is true in the only form in which it is important and the desire for other forms is a mere effect of insufficient analysis.

Krimerman claims that the full sense of human choice involves the avoidability of actions men in fact perform: to choose one must have been able to have acted otherwise. He provides criteria for identifying autonomous belief and criteria for identifying autonomous desire and claims that if an agent's desires and beliefs satisfy all criteria we can judge his act to be unequivocally or ideally autonomous. It is mistaken to believe that we could ever be certain that a particular act was entirely autonomous. Any claim that a particular act is autonomous is an hypothesis about the nature of the act; hypotheses may be refuted but not verified. The attempt to develop criteria by which we might judge an act as more or less autonomous appears to be analogous to the task of attempting to develop criteria by which we might judge a proposition as more or less in correspondence with the 'facts' (the logic of confirmation) and to be a valuable enterprise for similar reasons.

The problem, as Popper sees it, is to understand how such non-physical things as purposes, deliberations, plans, decisions, theories, intentions, and values, can play a part in bringing about physical changes in the physical world. His explanation is based on a view of evolution as a growing hierarchical system of plastic controls with organisms incorporating, or in the case of man, evolving extrasomatically, this system of controls.

Higher functions and dimensions do not replace the lower ones but establish a kind of plastic control, with feed-back, over them. We are not forced to submit ourselves to the control of our theories, for example, the control is not one-sided as we can reject them if we think they fall short of our regulative standards. The same is true of our regulative standards themselves in that we are free to reject them. Despite the considerable conflict in the points of view of Russell, Krimerman, and Popper, they do to some extent complement each other. Russell makes an important distinction, Krimerman offers some useful suggestions as to how we might assess the relative autonomy of certain acts, and Popper provides a model of how the universe of abstract meanings may influence human behaviour and thus the physical world.

Passmore makes a distinction between theoretical problems and problems of policy. Theoretical problems, he says, can be settled by finding out what happens but problems of policy cannot be solved in this way. Policy is determined in the light of facts but it is not deduced from them. He makes a further point that a positive social science must be value-free in the sense that it is not social advocacy in disguise, but not in the sense that it has nothing to say about values. Such theory will have the limitations characteristic of the physical sciences. It will not tell us what we ought to do, any more than physics tells us whether to build a bridge or be content with a ferry. It will not tell us, any more than physics, when a particular event is going to occur, but it will not be trivial, any more than physics is trivial.

This inspection of the foundations upon which theoretical structures are erected reveals areas of concern or potential weakness. Great confusion is the common result of insufficient analysis. The writings of many theorists are replete with illustrations of the failure to take cognizance of well established distinctions (even those made by themselves) which if not unassailable are at least unassailed. The claim that our world view may well change dramatically in the future as it has in the past is no reason to refrain from seeking and using the firmest foundation currently available.

CHAPTER FOUR

SYSTEMS THEORY

The tendency for investigations to be confined to relatively isolated fragments of the whole problem was advanced, in chapter two, as a major inadequacy in the current status of the field of enquiry under consideration. The need to examine the problems concerned from a systems point of view and for a greater knowledge of how systems operate was also discussed and attention was drawn to the relevance of systems theory. This chapter seeks to clarify what is meant by a systems approach, systems theory, organization, and mechanism. It examines the fundamental aspects of organized systems (development, structure, and function) and basic concepts used in systems theory. It looks at the problems of 'good' organization and the investigation and modification of systems.

A whole which functions as a whole by virtue of the interdependence of its parts is called a system, and the method which aims at discovering how this is brought about in the widest variety of systems has been called general systems theory. General systems theory seeks to classify systems by the way their components are organized, and to derive the 'laws', or typical patterns of behaviour, for the different classes of systems singled out by the taxonomy. The crucial difference between a systems approach and other approaches is not, as many appear to hold, that it assumes neither determinism nor materialism. The difference lies in methodology, not world view. As Rapoport has pointed out, a basic assumption underlying the empirical study of physical phenomena has been that we can eliminate all disturbing phenomena and study the relation under consideration alone. Pairs of such relationships can be established and combined into an equation in which all the contributing factors appear as variables. This is called the analytic method and has been phenomenally successful in the physical sciences.

There is no evidence that the determining events of life and what we call social events are not physical events. The one good reason why the study of

life phenomena is not subsumed under physical science is that the applicability of the analytic methods of physical science to the study of life processes is limited. The essence of the systems approach is a turning away from these analytic methods. Science threatened to become an avalanche of 'findings' which no more adds up to knowledge than a pile of bricks adds up to a cathedral. The modern systems point of view is a response to this threat. It is built on recent developments which show promise of re-establishing holistic approaches to knowledge without abandoning scientific rigor.

Scientific and technological advances influence the way in which man sees his world and himself. The appearance of complex information-processing machines suggested a new concept of the living organism; an extension to the legacy of earlier advances. In addition to being a device for transforming energy from one form to another (an engine) and a device for transforming matter from one form to another (a chemical plant) it was also a device for processing, storing, and retrieving information (a decision making system). Furthermore the development of information-processing devices that could adjust their own performance by comparing their own current state with some preset goal state, forced a reappraisal of what was meant by goal oriented or purposive behaviour. The difference between living and non-living became much less obvious. The new advances provided a link between previously discrete fields of investigation and gave rise to the hope that it might be possible to develop a general systems theory that would relate to living and non-living systems alike.

An examination of the relationships that can exist between parts and wholes is essential to the understanding of systems. This subject was discussed in chapter three but some additional comments are required in the present context. Kremyanskiy makes the obvious, but often overlooked, point that no material association is absolutely additive as the existence of any relationship between two objects or two changes creates a situation which could not exist in either one of them separately. Any whole, however simple, is more than the sum of its parts taken separately. Order and disorder are properties of an ensemble as a whole, not of the individual. Purcell points out that there are systems, sufficiently primitive for there to be no doubt that we are in possession of all the relevant facts about the parts and their elementary interactions (that is we can be sure that no new organizing principle comes in as we proceed from individual to the system), which change

from disorder to order and vice versa. After discussing two hypothetical systems, the hard-sphere gas and the Ising model, Purcell concluded that the most elementary interactions can generate, in a large assembly, cooperative behaviour the prediction of which challenges our most powerful methods of analysis and he suggests that this should stand as a sober warning to anyone who attempts to carve a path of rigorous deduction from the part to the whole.

ORGANIZATION

The term 'organization' is used in a variety of ways. Kremyanskiy distinguishes between what he calls 'chaotic aggregates' or unorganized systems, and organized systems. The systems discussed by Purcell clearly fall into the first category. There appears to be something of a continuum between the two extremes. The less uniform and the more complex the elements of a system the greater the importance of the characteristics of the individual element or component and the more varied and complex the interactions between them. Gerrard defines organization as an ordering of material in space and events in time. Ashby (1962) claims that the concept of 'organization' assumes that we are speaking of a whole which is composed of parts and that we have organization when we have conditionality between the parts and regularity in behaviour: the presence of 'organization' between variables is equivalent to the existence of a constraint in the product space of possibilities.

A distinction is made between order and complexity by Pringle who points out that when a crystal increases in size there is an increase in order but not in complexity as no new principle of organization is involved. It could be argued that differentiation of parts is an essential characteristic of organization and that the order exhibited by molecules in a crystal is order but not organization. However, whether or not we can have order without organization, order and organization stand together as the converse of chaos and randomness.

MECHANISM

Mechanism is a term often used but rarely defined. Buckley (1967) says that a mechanism is a highly deterministic system. Ashby's view (1962) is that the essential characteristics of a machine (mechanism) is that it behaves in a machine-like and law-abiding way. By machine-like he means that its

internal state, and the state of its surroundings, defines uniquely what the next state will go to. The essentials, he says, have been obscured by two factors which must be excluded as irrelevant. The first is 'materiality' - the idea that a machine must be made of actual matter: the second is any reference to energy; whether energy is lost, gained, or even created is simply irrelevant. What matters, he concludes, is the regularity of behaviour. Rapoport claims that a mechanical explanation of an event is a mathematical rather than a verbal explanation and that it is typically a differential equation whose solutions are trajectories. He comments on the confusion caused by failing to differentiate between the every-day use of the term 'mechanical' and its use in physics.

The existence of a mechanism indicates the presence of powerful constraints which greatly limit the range of possible outcomes and lead to regularity in behaviour. The acceptance of the notion that the universe is not a completely deterministic system directs attention to mechanisms as islands of determinism in a sea of indeterminism. The discovery and understanding of mechanisms play an important role in enabling predictions to be made and systems modified.

FUNDAMENTAL ASPECTS OF ORGANIZED SYSTEMS

Despite variations in detail there appears to be substantial agreement as to what are the fundamental aspects of organized systems. By aspect is meant the way of looking at, or the facet through which we view, a particular matter. Rapoport sees structure, function, and evolution (or being, acting, becoming) as the fundamental aspects. Gerrard sees them as being, behaving, and becoming (or organization, regulation, history) and says that history produces structure, structure determines function, or becoming gives being and this is capable of behaving; thus order is produced and maintained. Kailov's view is slightly different. He sees two fundamental aspects: genesis, or the origin of structure and function, and organization which ensures the existence and functioning of the system. In this chapter three fundamental aspects of organized systems will be examined: development (or genesis, evolution, becoming, history), structure (or organization, being), and function (or acting, behaving, regulation).

DEVELOPMENT

The question of how organized systems come into being is a vexed one. The evolution of such systems seems to run counter to the widely held principle that the universe is moving toward a state of entropy or total lack of energy, or organization. It is however, accepted that this principle is only applicable to a totally closed system, a system which by definition must have completely impermeable boundaries. The universe appears to be expanding and its boundaries constantly moving: if this is so it fails to meet the criteria of a closed system. Approaching the problem in quite a different way Ashby (1962) argues that the assumption that 'the generation of life is rare and peculiar' is false, and that every isolated determinate dynamic system obeying unchanging laws will develop 'organisms' that are adapted to their 'environments'. The important point is that there is no reason to believe that a tendency toward disorganization is any more 'natural' than a tendency toward increased organization. All we can state with confidence in this respect is that there are mechanisms that decrease and mechanisms that increase organization.

The changes that constitute development are enduring, irreversible, and often progressive in contrast to the transient, reversible and often repetitive changes that constitute functioning. Organisms and environments develop or evolve together. A successful organism will therefore be matched to its environment and possess in some way or another an internal representation of the order and regularities of that environment. This is also true of complex social organizations. Success, in this context, merely means to survive. 'Survival' as Ashby (1956) defines it, is identical with the 'stability' of a set of essential variables. This is a useful definition because of its great generality. In the case of living organisms it is the gene pattern which is the set of essential variables that survives. In the case of social organizations we would expect to find an analogous set of essential variables.

The mechanisms of development and evolution are of two main types: those which provide the candidates and those which make the selection. Imperfect replication is a basic requirement for development in that it provides candidates for selection. In selection, competition plays an important role. Competition between species is often treated as if it were essentially biological but it is in fact, an expression of a process of far greater generality. Ashby (1962) provides a simple and interesting model of competition. Survival is not the only consequence of evolution. Surviving

entities are the structural residue of past action. In this way the past imposes on the present; not all such impositions enhance continued survival, they may indeed constitute serious impediments.

STRUCTURE

Structure or being is the instantaneous status of an organization: it is the cross section of an entity in time. Those aspects of the organization which appear relatively unchanged in a series of such instants constitute the essential structure of the organism or entity: invariance in time helps to identify the significant units of a mature system. Structure is the fruit of the past and the seed of the future. The functioning of a system depends upon its structure.

FUNCTION

It has already been noted that the changes which constitute functioning are transient, reversible and often repetitive. The vast bulk of the functioning of any enduring system is as displacement correcting responses. Such systems respond to loads placed on them by the environment with responses of their subordinate units that tend to eliminate stress on the system as a whole; they maintain themselves in dynamic equilibrium by mobilizing internal reserves to oppose environmentally imposed change. Functioning may also be seen as the way in which, by means of processed and stored information, the system responds by 'behaviour outputs' to 'sensory inputs' from the environment. The notion of regulation plays an important part in understanding the functioning of enduring systems. The essential feature of regulation is the use of system resources to counteract disturbances and ensure the continued functioning of the system.

BASIC CONCEPTS

Of all concepts used in systems theory none seems so basic as that of 'constraint'. It is used with varying degrees of precision and clarity by many writers: some who do not use the term are obviously groping for such a concept. Ashby (1962) provides a clear and comprehensive exposition of the concept and the following comments draw heavily on his work. Constraint is present when the possibilities under one condition are less than the possibilities that exist under some other: it is essentially a relation between two sets. Chaos permits transitions from any state to any other state.

A world without constraint would be totally chaotic. Ashby speaks of a 'product space' of possibilities, within which some subset of points indicates the actualities. The product space contains more than actually exists in the physical world. The real world gives us the subset of what is, the product space represents the uncertainty of the observer. The intensity of a constraint is shown by the reduction it brings about in the number of possible arrangements. It is what is excluded that is important and as more is excluded the unexcluded becomes more probable. It is important to note the similarity between this viewpoint and that of Popper in relation to the asymmetry between confirmation and refutation of an hypothesis: experience can refute but not confirm an hypothesis.

A common and very powerful constraint is that of continuity. It is a constraint because, whereas the function that changes arbitrarily can undergo any change, the continuous function can change, at each step, only to a neighbouring value. Spatiotemporal order is generated by the constraints that control spatiotemporal neighbourhood relationships. The existence of an invariant over a set of phenomena implies the existence of a constraint, for its existence implies that the full range of possibilities do not occur. As every law of nature implies an invariant, it follows that every law of nature is a constraint. Objects can also be seen as constraint. The essence of a chair being a 'thing', a unity, rather than a collection of independent parts, corresponds to the presence of the constraint resulting from joining the parts together. A machine can also be seen as a constraint, the form of the constraint being shown in the sequence of the protocol. That something is predictable implies the existence of constraint and learning is only possible or worthwhile to the extent that the environment shows constraint.

The concept of 'boundary' is also basic to systems theory. In a very general sense a boundary is that which separates adjacent areas that differ in some way. The term is commonly used to refer to the point of contact between an organization and its environment, the line that marks the limit of an entity or organism. The boundary acts as a barrier which regulates movement between the areas it separates in a manner which is determined by the constraints which produce it. The selective permeability of a boundary results in differing concentrations of material or energy on each side of the boundary. This difference in concentration constitutes a 'gradient'. There is a tendency for these concentrations to equalize if they are not prevented from doing so, and the gradient to disappear. This process may be tapped to do work.

A gradient cannot be maintained without a boundary, but if the boundary becomes totally impermeable the gradient ceases to exist.

'Information' is a concept widely used in systems theory. Information theory is fundamentally a theory of selection, and information is measured by the extent to which it makes uncertain selection certain; how much it reduces the possible outcomes. Information is essentially related to the existence of a set of possibilities: the information conveyed by a particular message depends on the set of messages it comes from and is not an intrinsic property of the individual message. Information is a relationship, not a stuff, and in this sense is 'non-material', however it is difficult to escape the conclusion that information could not exist in the absence of either energy or matter. The environmental constraints that control spatiotemporal neighbourhood relationships can be preserved in symbolic discourse by a syntax which controls the neighbourhood relationships of the symbols.

'GOOD' ORGANIZATION

We now turn to a brief discussion of what is meant by 'good' organization. The discussion draws heavily on Ashby (1962). Engineers, who are accustomed to the idea of 'bad' organization, know that 'good' organization has to be searched for, whereas biologists who study animal species which have survived natural selection are apt to think of organization as necessarily 'good'. Organization is good if and only if it acts so as to keep an assigned set of variables, the essential variables, within assigned limits. There is no such thing as good organization in an absolute sense; good organization is a relationship between disturbance and goal. Criteria must be provided for distinguishing between good and bad organization - survival only means that the organization is good for survival, and only to the organism or system concerned. In summary it may be said that most organizations are bad ones, the good ones must be sought for and what is meant by 'good' must be clearly defined, explicitly if necessary, in every case.

INVESTIGATION AND MODIFICATION OF SYSTEMS

There are a wide variety of techniques available for the investigation of systems. These techniques are generally associated with one or other of the three fundamental aspects of systems; structure, function, or development. The basic objective of such investigation is to discover 'causal generalizations' on which to base 'causal narratives'. An important aspect

of the investigation of systems is the analysis of systems. The techniques associated with this activity are quite different from those associated with the analytic method of physical science discussed earlier. Systems analysis includes making a careful examination of the system concerned to identify significant components and subsystems, and discovering the salient relations between them.

Mechanisms, as nodes of determinism, play a crucial role in the functioning of complex systems and should therefore be a particular focus of attention. Significant information about the functioning of a system may be gained by imposing a displacement on the system and observing the adjustment the system makes to this displacement. The use of transaction tracing routines will also provide important information as to how the system operates. Maruyama makes the important point that in the case of complex systems it may be impossible to discover simple generating rules after a pattern has been completed except by trying possible sets of rules. The search for, and the trying of, such rules underlay the technique of creating models and simulating systems. These techniques aid both the understanding of the modeling process and the system upon which the model is based.

The modification of a system in a way that will bring about specific desired outcomes without at the same time bringing about a host of unintended and possibly undesirable consequences is no easy task. The lack of established principles to guide the modification of education systems was noted in chapter two. The careful analysis of the system to be modified, however, would appear to be a wise first step. Such an analysis would pay particular attention to the mechanisms relating to that aspect of the system it is intended to modify and to discovering critical points in the system where changes might more easily be made. Gradual changes would appear to offer greater control over the consequences of a modification than an abrupt change, at least in most cases. Gradual changes can be obtained by either introducing the change in a series of steps rather than all at once, or taking action that will result in a self-sustaining tendency toward the state of affairs required, where this is possible.

CHAPTER FIVE

BASIC OBJECTIVES AND CONSTRAINTS

The purpose of the model being developed in this thesis is to show the rational requirements for the matching of teacher to task on a system-wide basis in a way that will optimize the performance of the system as a whole over time. There are two basic sources of these requirements. The first is associated with the matching of teacher to task, the second with the objective of ensuring the effective operation of the system over time. In addition to these requirements there are some basic constraints which arise necessarily from the processes employed to meet these requirements. This chapter discusses these objectives, requirements, and constraints.

THE MATCHING OF TEACHER TO TASK

An effective matching process will depend on the expression of the requirements of the task and teacher performance capabilities in comparable terms. This can be approached by analysing the task in terms of the functions that must be performed for the optimal performance of the task, and teachers in terms of the functions they are able to perform: the problem then becomes a matter of matching function performance with function requirement. Tasks will require and teachers will provide constellations of functions and it is these constellations rather than unitary functions that must be matched.

The units chosen for the focus of attention for the analysis of function requirement and performance is largely a matter of convenience but this does not mean that the outcome of the choice will be trivial. In relation to function performance the individual teacher is clearly the most convenient unit. In general it is the teacher as a complete unit that is assigned to a particular set of tasks, though it should be noted that a team of teachers may be assigned to a particular task and that part-time teaching makes use of only part of a teachers services. Function

requirements arise from a variety of sources at different levels within a system. Some examples are the needs of the particular groups of children with which the teacher is concerned, the needs of the school in which the teacher is located, and the needs of even larger units within the system. The fact that teachers are appointed to positions suggests that the position would be a convenient unit for the analysis of function requirement. However, the fact that the function requirement of a position will vary over a considerable range, depending on the functions performed by the incumbents of other positions within the school, renders it unacceptable for that role. It is the school which exhibits the most stable and easily recognized set of requirements and is therefore the most convenient unit of function requirement. All requirements which arise from the need to arrange for the performance of tasks are performance requirements and will be referred to as primary requirements. Some mechanism will be necessary to ensure that those primary requirements originating in units larger than the school will not be overlooked.

Functions required for the performance of a task may be classified into three groups according to their importance or order of priority: essential, preferred, and desired. By essential is meant that such functions are necessary for the adequate performance of the task; if these functions are not performed the task will not be achieved. Preferred functions are next in importance to essential functions: available resources would be arranged to ensure the performance of preferred functions before they would be used to provide for the performance of desired functions. In a rational system of allocation the consequences of the absence of functions from each of these categories in the performance repertoire of a teacher would be as follows. In the case of essential functions, the teacher would not be assigned to the task. In the case of preferred functions, the teacher would only be assigned to the task if none who could perform the preferred function were available. The situation in the case of desired functions is not so clear cut, especially when considering more than one desired function, in which case the ability to perform a function is not decisive but weighs in favour of the teacher concerned.

Some important features of a rational allocation system are revealed by the consideration of a relatively simple example. Suppose that a task analysis of a three teacher school has indicated that optimal performance will be achieved if it is arranged for the performance of three essential functions

(E1, E2, E3), three preferred functions (P1, P2, P3), and three desired functions (D1, D2, D3). If we assume that among those teachers available for placement in the school, each is able to perform one, and one only, function from each of the three categories; that each teacher has these capabilities in a different combination; and that all possible combinations are represented; then there will be twenty-seven possible combinations to choose from in selecting the first teacher, eight in choosing the second, but only one possible choice for the third. This gives a total of 216 possible combinations of teachers that would fully meet the function requirement of the school. In this example the only constraint on the choice of the first teacher selected is the constraint imposed by the function requirement of the school; that is by primary requirements. The selection of the first teacher however, imposes considerable constraint on the choice of the second teacher, and the selection of the first two leaves only one possible combination for the third position. That is, there are constraints, in addition to those imposed by primary requirements, that, given a particular objective, arise from the logic of the situation. They will be referred to as operational constraints.

OPTIMIZING SYSTEM PERFORMANCE

The adoption of the objective of optimizing the performance of the system as a whole over time imposes further constraints on the matching process discussed above. The way in which teachers are allocated to positions within systems not only affects the extent to which the objectives of the system are met on a day to day basis, but it also influences the attractiveness of the occupation to members and potential members, and may play an important role in staff development (eg. special placement of beginning teachers). Requirements arising from these considerations will be referred to as secondary requirements. Where the needs of the present conflict with those of the future, a compromise must be sought.

The adoption of this objective also gives rise to a further group of operational constraints. The nature of these constraints can be illustrated by an example. Consider the case where there are two positions to be filled and the function requirement of the first is one essential function E1, and one preferred function P1; and of the second, one essential function E2. We assume that there are only two teachers available and their function performance capabilities are as follows: teacher A - E1, E2, P1; teacher B - E2. In these circumstances teacher A is clearly the more suitable for the

first position in terms of the requirements of the position. However teacher B is not at all suitable for the second position while teacher A is. In this situation it would appear that the performance of the system as a whole would be enhanced by filling both positions rather than leaving one vacant. There are difficulties in adopting such an approach, which would be aggravated if teacher A preferred the first position over the second, but they appear susceptible to amelioration and the consequences less serious than those of ignoring the problem.

POLITICAL IDEOLOGY

There is another consideration that imposes important constraints on the process of allocation. It is the basic assumption that any system of teacher allocation will have to be consistent with the political ideology of the society in which it is to operate. An important aspect of the political ideology of the societies for which the model is to be developed, is the commitment to a level of freedom of choice for the individual that rules out all but the most subtle forms of coercion, with the consequence that it will be necessary to attract suitable people to the tasks to be performed. Any effective system of allocation will therefore require a means of attracting the appropriate talent to the tasks to be performed.

CHAPTER SIX

THE REWARD STRUCTURE

The essential features of the reward structure of an education system are the salary structure and the establishment of that system. The salary structure shows what rewards teachers will receive as a consequence of the of the qualifications they possess and the positions they occupy. The establishment indicates the number of positions in each category of position and thus the number of teachers that can receive the rewards associated with each category. This chapter discusses an approach to the analysis of salary structure through the development of a model for the generation of salary structures and applies this approach to the analysis of a salary structure. This is followed by an examination of the general features of a rational salary structure and concludes with some comments on establishment structure.

SALARY STRUCTURE

The role played by the salary structure of an occupation in attracting talent to, and distributing it within, that occupation, has been discussed in chapter two. Mention has also been made of the lack of attention given to the problem of making comparisons between salary structures of different systems. One method which has shown promise in enabling such comparisons to be made, is the use of a model designed to generate a wide range of salary structures by assigning different values to the variables incorporated into the model. The analysis of a particular salary structure involves the examination of the structure to determine approximate values for the model variables and the adjustment of these values until a combination is found which generates a structure closely approximating the salary structure under consideration. The final step is to make ad hoc modifications to the model generated salary structure to obtain an exact correspondence between it and the salary under consideration. The nature and extent of these modifications will reveal important information about the structure under consideration,

and together with the model they relate to, will provide a complete description of that structure.

The essential feature of the model is the division of total salary into a basic salary and a number of additional components. The basic salary is the starting salary of the lowest paid category of teacher. The additional components are payments made in respect of particular characteristics of either the teacher or the task to which he is allocated. The value of all additional components are expressed in units of equal value: the value of the unit is fixed at a specified percentage of the basic salary. The fundamental variables in this model are -

- i) the characteristics on which additional components are based,
- ii) the conversion rate of characteristic measure to unit value,
- iii) the percentage of basic salary at which unit value is fixed, and
- iv) the basic salary.

The total salary payable to a particular teacher in a particular position is found by determining the number of units the teacher is entitled to by virtue of characteristics possessed by the teacher and the position. The total unit entitlement is then multiplied by unit value to give a percentage of basic salary which is added to basic salary to give total salary.

Changes in the value of model variables will produce systematic alterations in the structure generated. A change in the basic salary raises or lowers all salaries together and retains the relativity between them. The choice of characteristics and the conversion rate of their measure to unit value determines the rewards paid to particular kinds of teacher and for particular kinds of task. An increase in unit value will expand the salary range and a decrease will contract it.

Not surprisingly, there are broad similarities in the salary structures of education systems. There are three major additional salary components commonly found. They relate to the experience and educational qualifications of teachers, and the level of responsibility of positions. There are a number of minor additional components such as location, boarding school, and demonstration teaching allowances, but these are of less importance and are more variable from one system to another. The methods by which eligibility for payment of additional components is determined vary widely and the components are not always clearly separated. An important distinction is

whether the component relates to the teacher or the position. Some systems pay a component for the possession of a certain qualification, regardless of the position held, some only when the teacher holds a position for which the qualification is a preferred requirement, others only when it is an essential requirement, and yet others make no payment that can be attributed directly to the possession of the qualification though the possession of that qualification may enhance a teacher's chances of being appointed to a higher level position. As a consequence additional components related to increased responsibility are at time difficult to disentangle from those related to qualifications though it often possible to arrive at a reasonable division between these components by extrapolating from their relationship at a lower level.

ANALYSIS OF A SALARY STRUCTURE

An example of the analysis of a salary structure using the method suggested may help to clarify matters. The example, which is taken from the Papua New Guinea National Teaching Service, is restricted to four qualification groups and three levels of responsibility, although there are more of both. The structure under consideration (SUC) is set out in diagram 1. The additional salary components in this structure relate to experience, educational qualifications, and responsibility. The basic salary (BS) is \$1690. Each of the salary ranges falls somewhere on a scale of 25 steps. The first sixteen of these steps are of \$65 each and the remaining nine of \$70 each, giving an average of \$67 or approximately 4% of BS. As the smallest amount that will be paid as an additional component will be the 4% BS paid for each additional year of experience this percentage will be an appropriate value for the unit in which the other additional components can be expressed. As we have two ranges of 13 increments we will take 13 as the total number of units a teacher can obtain through experience.

Teachers in qualification group two (Q2) have a commencing salary five increments above those in Q1. Those in Q3 commence a further three increments up the scale and those in Q4 a further four. Thus the possession of the qualifications required for the placement in a particular group entitles the teacher to the following number of units: Q1 - zero, Q2 - five, Q3 - eight, Q4 - twelve. Discovering the number of units to be assigned to each level of responsibility is not quite so straight forward: the SUC lacks regularity in this respect and the question of promotion to a higher level

Diagram 1

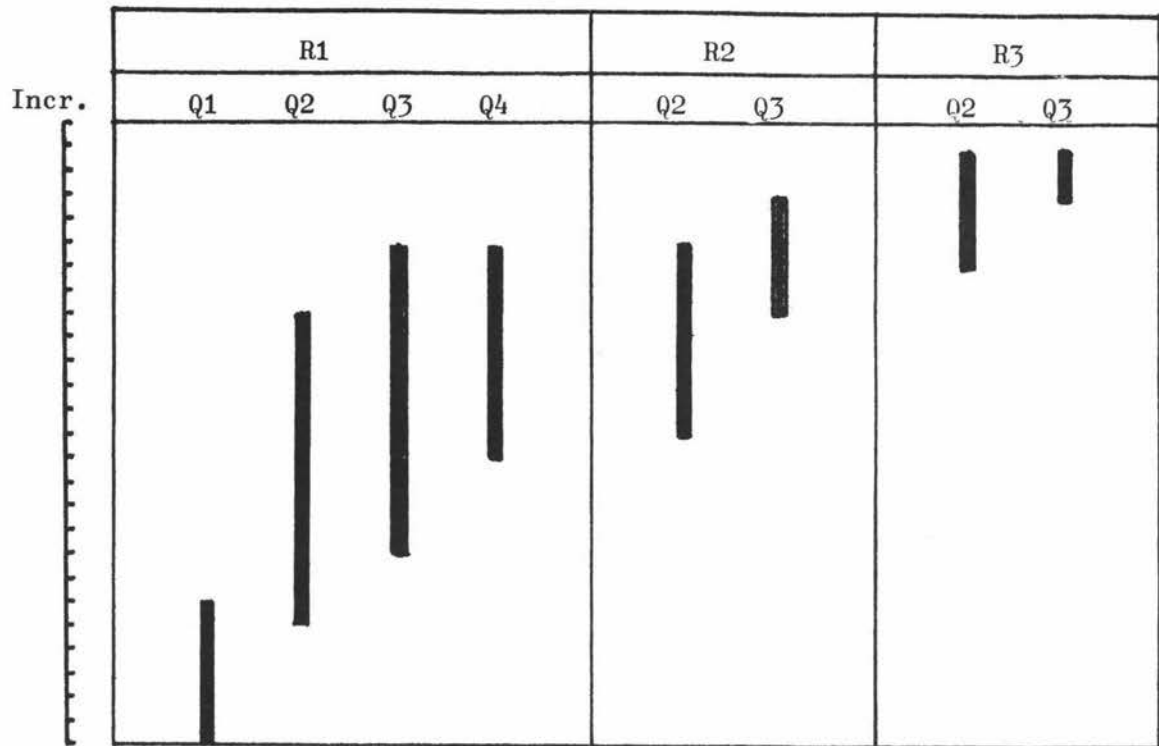
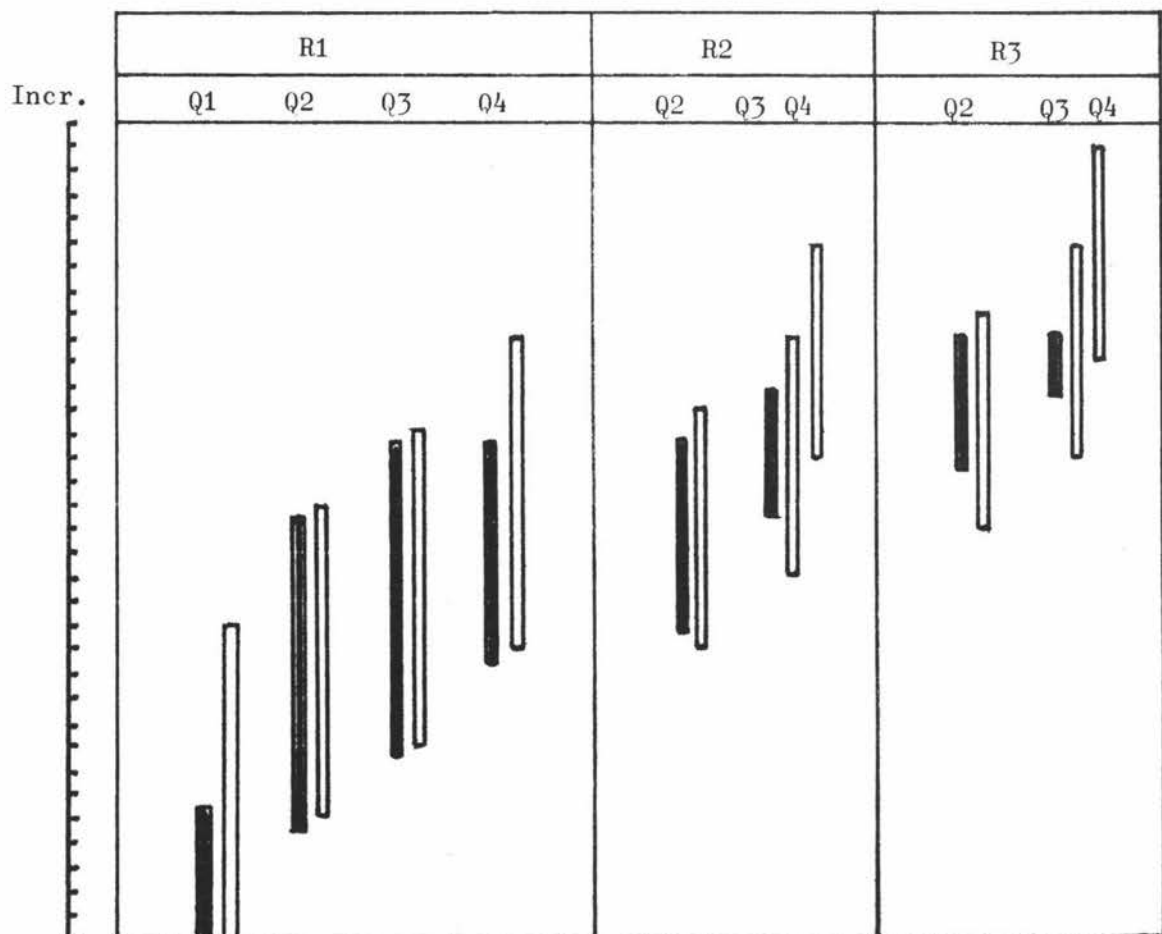


Diagram 2



introduces an element of uncertainty. In the present example promotion is restricted to teachers in Q2 and above. Promotion to responsibility level two (R2) requires a minimum of three years' experience and promotion to each succeeding higher level adds an additional year to this requirement. A teacher in Q2 would, after three years' experience, have to receive five additional units to bring him to the beginning of the existing Q2 range at level two (R2). However, if we assign five units to responsibility a teacher in Q2 with thirteen years' experience would, on promotion, be placed two increments above the top of the existing range. The problem is even more severe with the promotion of a teacher in Q3 from R1 to R2. The seven increments required to take him to the beginning of the range with three years' experience, would place him five increments above the top of the existing range after thirteen. Similar problems are encountered with promotion from R2 to R3. At this point we must be content with an estimate which can be tried for fit and varied if necessary. Something less than five increments is needed but it cannot be too low. In the present example, assigning four units to each additional level of responsibility gave the best results.

We now have all the values required for a trial model generated structure (MGS) to match against the structure under consideration (SUC). Experience entitles the teacher to one unit per year to a limit of thirteen. The entitlement for qualifications is: Q1 - 0, Q2 - 5, Q3 - 8, Q4 - 12. For responsibility the entitlement is four units for each additional level: R1 - 0, R2 - 4, R3 - 8. Promotion to R2 requires three years' experience and to R3 four years' experience. The basic salary is \$1690 and each unit is 4% of basic salary. Diagram 2 compares the model generated structure (MGS) with the structure under consideration (SUC).

On comparing the R1 ranges we find a good fit for the Q2 and the Q3 ranges but the MGS Q1 and Q4 ranges need to be modified by reducing the upper limit of unit entitlement for experience to six in the case of Q1 and to nine in the case of Q4. Teachers in Q1 are not eligible for promotion to a higher level, thus the only path to advancement is through improved qualifications, which the limited salary range presumably encourages them to gain. No rational reason for the restricted Q4 range is readily apparent. The effect of the restriction is that the initial salary advantage related to the possession of additional qualifications is lost. The result could well be that teachers in this group perceive this situation as inequitable and are

thus more inclined to seek alternative employment than they would be if the advantage continued.

Turning our attention to the R2 salary ranges, we see a good fit for the Q2 range, but the MGS Q3 range begins several units below and continues to several units above the SUC Q3 range. The SUC Q3 range has a fixed starting point for any teacher promoted to R2, regardless of the number of years' experience the teacher has. The effect of this is to vary the the additional component for responsibility from seven to zero units depending on the teacher's experience. The extension of the MGS Q3 range above the SUC Q3 range reveals a restriction of the latter which results in a diminution of the component paid to qualifications. There is no separate SUC Q4 range at this level: it is identical with the SUC Q3 range. The MGS Q4 range begins higher and extends about five units higher than the SUC Q3 range thus indicating the extent to which the SUC fails to reward additional qualifications at this level.

At the next level (R3) the Q2 ranges are related in much the same way as the Q3 ranges at the previous level (R2). The Q3 ranges are similar but the differences are exaggerated. The MGS Q4 range bears a similar relationship to the SUC Q3 at this level (R3) that it did at the previous level (R2), but again the differences are exaggerated. At this level we again see the failure of better qualified teachers to maintain their initial salary advantage.

The structure under consideration (SUC) exhibits what appears to be a fairly typical pattern of additional payments for experience at base level in education systems. An annual increment is paid, subject to satisfactory service, for up to thirteen years. Appointment to a higher level position takes the teacher to a salary above the highest in the base level range; consequently the increase in salary resulting from appointment to a higher level position will be greatest for those lowest on the range. If the prospect of reward spurs ambition, such an arrangement will distribute ambition inversely with relation to experience. Informal discussions with Teachers in New Zealand and Papua New Guinea suggest that teachers near the top of the range tend to be less inclined to make sacrifices for advancement. If this is in fact the case, it could have important implications for the design of salary structures and clearly warrants further investigation.

The use of the method of analysing salary structures illustrated above should prove to be of considerable assistance in the task of discovering the effects of one kind of structure as compared to another. An examination of existing data could produce some interesting results, but any really significant advance in this field will probably require the collection of specific data to answer specific questions posed by the analysis of existing salary structures.

GENERAL FEATURES OF A RATIONAL SALARY STRUCTURE

The model developed for the analysis and comparison of salary structures readily lends itself to the investigation of the general requirements for a rational salary structure relating to education systems. There appear to be two main criteria for the assessment of a salary structure. The first relates to its effectiveness in attracting, retaining, and distributing talent in the required manner. The second to operational efficiency. The advantages of using a relatively simple salary structure, that is one that can be generated by the model presented with the minimum of arbitrary modifications, go far beyond the high level of operational efficiency it makes possible. With such a structure it is possible to clearly identify the variables concerned and to vary them independently. A more complex or confused structure makes it extremely difficult, if not impossible, to alter one variable without altering others at the same time, thus making it difficult to respond to the need for change in a rational manner.

It appears likely that additional components for experience, additional educational qualifications, increased level of responsibility, and market demand, constitute a basic minimum for the generation of a rational structure. While further research is clearly required before we can offer precise answers to many of the questions that confront us in this area, we can identify some of the more important issues involved and the questions that need to be answered. There is no general agreement on what actually justifies the payment of a particular salary component, or what conditions should govern the eligibility of particular teachers for the payment of a particular component. Some argue that relative productivity should be the main basis on which relative salaries should be determined, others that the need for incentive (or disincentive) should be the main criterion. However, the choice of either of these as the sole criterion for deciding the value of salary components would result in occasions on which decisions would run

counter to other principles held and valued by society in general, thus rendering the decision unacceptable. What appears to be required is the application of the appropriate principle or criterion in the appropriate circumstances, or in those cases where more than one seems relevant, the achievement of some kind of compromise.

An interesting example of the problems involved in justifying the payment of a particular salary component to a teacher is the apparently straight forward annual increment paid for each additional year of service (up to a limit) which proves to be rather complex and confusing on closer scrutiny. It has been argued that this payment does, and should, reflect the increasing productivity of the teacher with experience. There are two major objections to this point of view. The first relates to the problems associated with the measure of output from teacher services: there are no practical, valid and reliable methods available to make such a measurement. The second arises from the fact that, if such a method was available and it revealed that productivity rises less rapidly with age and experience for teachers than for persons with similar qualifications in other occupations, this could lead to a salary structure that had the unacceptable consequence of failing to provide the kind of teaching service deemed necessary by the society concerned.

A measure of control over the composition of the teaching service can be obtained by the careful use of incentive payments; but a salary structure based solely on the need for incentives could also lead to unacceptable consequences. For example, where circumstances made it no longer necessary to attract more teachers to a particular category, and those already in the service could not readily find alternative employment, the application of the incentive criterion would result in these teachers having their salary reduced to a level just sufficient to retain their services. It appears likely that annual increments serve a number of purposes, all of which must be taken into consideration when deciding what payment should be made.

One area where it appears possible to suggest some fairly definite guidelines is that of the relationship between additional qualifications and experience. If it is intended to encourage teachers to obtain improved qualifications some incentive for the acquisition of these qualifications seems called for. Part of any additional salary component paid for additional qualifications will be absorbed as compensation for losses incurred in obtaining the

qualification. For example, if a particular additional qualification required one year of full-time study to obtain, the teacher would, in the absence of any special allowance, lose one year of income and one year of experience (for which an increment would otherwise have been paid). Given an annual increment of about five percent of basic salary, the compensation would have to be in the order of three additional increments over a period of ten years. Any incentive would have to be an addition to that. Of course any special allowance paid while studying would have to be taken into consideration in making such a calculation.

There do not appear to be any particularly obvious principles to assist in relating the additional component paid for the level of responsibility of the position concerned, to the components paid for qualifications or experience. Comparisons with similar positions in other occupations should provide some guidance. Factors normally considered in relation to this matter include the number of staff and the value of material resources under the control of the incumbent of the position, the nature and extent of supervisory functions, the complexity or difficulty of the task, and the impact of the position on the performance of the unit with which it is associated. The qualifications and experience required for appointment to the position will have an important influence in those cases where they are not dealt with as separate components. The component paid for responsibility will have an effect on the desirability of the position concerned in relation to alternatives, which therefore have to be taken into consideration.

Few, if any, education systems appear to take into account the need to provide for an additional salary component relating to the market demand for the services of particular kinds of teacher, where this demand has raised the salary associated with the provision of these services above that payable by the education system when calculated in the normal manner. The purpose of the proposed additional component is to bridge this gap. The failure to provide for such a component makes it difficult to attract and retain teachers who provide these services. Selby Smith found that salary differentials (inside versus outside teaching) are more marked for science than for arts graduates, and there is a greater tendency to resign among teachers who are science graduates. Furthermore there is a much greater shortage of science graduate teachers than arts graduate teachers in schools.

Difficulties encountered in filling some specialist positions in technical education also point to the need for an additional salary component to adjust the salaries of particular kinds of teacher to take account of the market demand for their services. At times the people whose services are in high demand may not have the formal academic qualifications which would entitle them, inside the education system, to a salary they might find attractive. Temporary expedients, such as classifying the position at a higher level of responsibility, create their own problems and do not appear to offer a satisfactory alternative to the use of an additional component designed for the purpose. To be effective such a component should be subject to variation, up or down, to meet changing circumstances. There are a number of possible approaches to determining the precise value of this component in various circumstances. In the case of the shortage of science graduates, it may be possible to base the payment on a formula related to the number of positions unfilled, in such a way that if the shortage became more acute the value of the component would rise and if it became less acute, it would fall. In all cases the going rate for the services outside teaching would have to be taken into direct consideration.

Additional salary components may also be of use in attracting teachers to positions within education systems where normal incentives prove insufficient. The need for special service salary bars found in some education systems could be eliminated, together with any undesirable consequences they may have, and replaced with an additional component that would attract teachers to the positions concerned. These additional components, though tailored to the purpose concerned, could be placed in a miscellaneous or special category, which could be considered alongside the major categories discussed above. Examples of positions that could entitle teachers to this additional component would be those in remote rural areas or difficult urban schools. The object of such inducement is not only to ensure that the tasks concerned are carried out, but to ensure that they are carried out by the most appropriate teachers available: a consequence that salary bars are unlikely to have. To be effective, this attraction component of salary, will have to be sufficiently flexible to meet changing circumstances, including discontinuation when no longer necessary, and to be administered in a manner that minimizes the possibility of abuse.

ESTABLISHMENT

The reward structure of an occupation is not fully defined until a statement of the number of positions available in each category is added to the salary structure. A statement of this kind is often referred to as the establishment. Though not entirely accurate, it could be said that the salary structure influences the kind of person attracted while the establishment influences the numbers of each kind attracted. An important aspect of an establishment, and one in which there is considerable variation from one system to another, is the proportion of the total available positions associated with each level of responsibility. Typically we find something around seventy-five percent of the positions are at base level. Clearly the prospect of advancement will increase as the proportion of higher level positions increase. The fact that the establishment is an aspect of reward structure suggests that it would be unwise to develop an establishment without reference to the consequences it will have for the attraction, retention, and distribution of talent. Current issues appear to dominate establishment structure design with little attention being given to long term consequences. It also appears likely that the prevailing theory of administrative control within a system exerts an excessive influence on the establishment structure.

CHAPTER SEVEN

SELECTION CRITERIA

Selection criteria regulate access to the reward structure of an education system and thus play an important part in determining the extent to which the system will meet its basic objectives. This chapter discusses the relationship between criteria and career structure, distinguishes between formal and informal criteria, and examines the relationship between criteria and qualifications. Some of the difficulties of developing qualifications from the constraints imposed by the basic matching process and the need for the continued effective operation of the system are examined. A convenient classification of qualifications is suggested and each category is discussed separately. A framework for the analysis, comparison, and development of selection criteria for appointment to positions in education systems is described.

The reward structure of an education system, together with the criteria which regulate access to that structure, determine the career structure of that system. A career path is the sequence of positions occupied by a person during their working life. The career structure of an occupation determines what career paths are possible and exercises a powerful constraint on the nature of typical career paths within that occupation. The prime function of a career structure is to facilitate the performance of tasks essential to the effective operation of the system; which it can do in a number of ways. The total reward conferred by membership of an occupation depends, for each individual, on their career path. Typical career paths indicate the typical pattern of rewards offered by the occupation concerned: the role played by reward has already been discussed. An appropriate career structure will also take into account the changing skills of a teacher over time, provide opportunities for the development of skills, and facilitate evaluation for senior positions. All these functions of a career structure should be reflected in selection criteria.

Criteria are the principles or standards by which something is judged. In this thesis we are primarily concerned with the development of those criteria which are intended to meet the rational requirements for an effective system. Such criteria will be formal in the sense that they are agreed upon and intended to be used. This does not necessarily make them rational criteria; though rational criteria are what we seek. The actual criteria used to arrive at a particular decision can be inferred from that decision after it has been made. It is not uncommon to discover that criteria revealed in this manner are quite different from those by which it was claimed the decision was made; that is there are often informal as well as formal criteria.

In the selection of teachers for appointment to positions within an education system we are concerned with evaluating the relative merit of appointing one teacher, rather than another, in terms of the contribution that the appointment will make to the effective operation of the system, as a whole, over time. The task in selecting appropriate criteria is to choose such criteria that the teacher selected by their proper application will be the most suitable teacher available in terms of that objective. Basic objectives and constraints associated with the matching process were discussed in chapter five. Although in a conceptual sense we are trying to match performance capability with function requirement, in practice we are evaluating evidence concerning the characteristics of teachers in relation to the criteria which have been formulated.

The term 'qualification' has two related but distinct meanings. The first is concerned with the fulfillment of a condition or the possession of a quality; in the present context, what has previously been referred to as teacher characteristics. The second meaning is that of a document attesting such fulfillment or possession; that is, it is the evidence to which criteria will be applied in making a selection. It is the second meaning that the term will generally refer to in this thesis.

DEVELOPMENT AND CLASSIFICATION OF QUALIFICATIONS

There are a number of important problems associated with the development of qualifications from performance requirements which will influence the choice of qualifications to which selection criteria will relate. Assuming that both primary (performance) and secondary requirements have been decided, the next step is to decide which teacher characteristics are indicative of the

required performance capability and the meeting of secondary requirements. Teachers must then be assessed to determine which of those characteristics they possess and in what measure. Provision must then be made for the documentation of the results of this assessment. The objective is to arrive at a set of qualifications such that we can deduce, from the qualifications of a particular teacher, his performance capability and whether or not he meets any conditions that may be imposed by secondary requirements. The problem is that each step provides a further opportunity for deviation from the direct relationship we seek (but can never attain).

The rational response to this difficulty is to take what measures we can to reduce deviation and to relate our reliance on a particular qualification to the confidence we can have in its accuracy. Qualifications can, like function requirements, be classified as essential, preferred, or desired, depending on the consequences of the possession of the qualification for a teacher in relation to his application for a particular position. It would appear unwise to make a particular qualification an essential requirement for appointment to a position, unless we had considerable confidence in its validity even though it might be considered particularly significant or important.

Qualifications may also be classified according to the kind of quality to which they refer. For this task there does not appear to be any more appropriate organizing principle than convenience. A common formula for expressing the basic kind of qualification required for appointment to a position is 'possession of qualifications, professional skills and experience appropriate to the position'. The qualifications referred to in this formula generally prove to be largely, if not solely, educational qualifications. 'Professional skills' generally refer to some kind of performance assessment, and 'experience' to certain kinds or length of experience or service. The role of educational qualifications and experience or service, in relation to salary structure, has already been discussed. In terms of the discussion concerning the meaning of 'qualification' above, the evidence of professional skills, experience, and service may properly be referred to as 'qualifications'. One further category of qualification, that of personal qualifications, must be added if the categories are to encompass all relevant qualifications. Each of the following categories will be discussed separately below: professional, educational, experiential, service, and personal. These are categories of convenience, they are not logically discrete.

PROFESSIONAL QUALIFICATIONS

This section focuses attention on qualifications based on professional assessments such as the report or grading a teacher receives as a result of an inspection of his work. Reports of this kind can be seen as a kind of standardized professional reference. The obvious relevance of professional skills to the effective performance of teaching tasks has led some to argue that relative professional skill should be the sole selection criterion. There are two major objections to such an argument. The first is that we do not have a sufficiently valid or reliable method of assessing these skills for us to place such heavy reliance on the results. The second is that to do this would be to ignore those important secondary requirements which relate to the continued effective performance of the system. Additionally there is the ever present danger of abuse, which would be difficult to check under such an arrangement.

Despite these difficulties which preclude sole use, professional qualifications of this kind do have an important role to play in the selection of teachers for particular positions, especially if they are used with caution and interpreted in the light of other relevant data. There are considerable differences in the way education systems arrange for the assessment of professional skills, and in the way these assessments are used: improvement appears possible in most cases. The basic elements of the process of assessing professional skills are examined below in an attempt to highlight the ways in which systems may differ and to point to possible rationalization of this process.

Systems vary as to the kind of personnel responsible for making an assessment of a teacher's professional skill. Inspectors, principals, colleagues, and students have all been suggested as candidates for the task. There are two issues to be considered in making a choice: ability to make a valid assessment, and the consequences for the relationship between the assessor and the assessed. It could be argued that the transfer of the assessment function from inspector to principal may result in a more valid assessment at the expense of the relationship between principal and teacher, and an impairment in the performance of the school. Interestingly, teachers typically see the choice made by their own system as the wrong one. The role of assessor is not one that is generally compatible with other roles; a factor that weighs in favour of a corps of professional assessors (inspectors). This is the only one of the four candidate groups that is not,

of necessity, involved in an additional, complex and important, relationship with teachers. However, those systems which employ inspectors in the assessing role, usually forgo this advantage by assigning additional roles to inspectors, particularly those of advisor and system policeman. The main consequence of combining these roles, because of their conflicting demands, is the inadequate performance of them all.

The principal of a school is certainly better placed than an inspector to make a comprehensive assessment of the performance of a teacher working in that school. There is, however, the problem of the possibility of the prejudicing of future harmonious relations between teacher and principal. Furthermore, the principal is not in as good a position as an inspector to relate the teacher's performance to the performance of teachers in other schools. Similar comments could be made with regard to assessment by colleagues, which in the present context usually means senior colleagues rather than peers, except that they would be closer to that teacher's work, but further from an appreciation of his performance compared to others. It is difficult to see teachers accepting students as assessors, and in any case, it could be argued that students have neither the experience or knowledge to make meaningful judgements on their teacher's skills. A case could be made for taking their views into consideration, particularly those of more mature students, as it is they who are most directly affected by teacher performance, though it would have to be recognized that the unpopularity of a teacher could easily be a consequence of inappropriate placement. Assessments by inspectors, principals, and colleagues each have different strengths and weaknesses, and complement each other in a way that suggests that some combination of the three would be so far superior to any of them alone, that it would be difficult to justify reliance on assessors from one group only.

From the question of who should make the assessment, we turn to the question of how the assessment should be made. Any proper assessment of a teacher's work depends on the taking of samples from a continuous process, be they samples of teacher behaviour or student performance. The nature of the sample taken and the manner in which it is collected impose constraints on the way in which it may reasonably be interpreted. Sampling technique in teacher assessment appears to be primitive in the extreme, and in particular to fail to account for the 'flowing' nature of the phenomena being investigated. The 'one visit' inspection is clearly of little value.

Sophisticated sampling techniques are available but would have to be adapted for use in the professional assessment of teachers. The performance of a teacher cannot be properly assessed without reference to the context within which that performance occurs. Data concerning this context should be collected at the same time as the sampling of teacher performance.

It is important that an assessment be searching: that is, the assessor should undertake the burden of discovering the strengths as well as the weaknesses of a teacher. There is a danger, if it is necessary for a teacher to find ways of displaying his strengths, that the assessment will be of self presentation, rather than of professional skills. The assessment should also consider the objectives which guide the teacher's behaviour, and by whom they were set. There is much to be said of the approach which requires a teacher to develop a set of objectives in consultation with senior colleagues and the assessment of his work to be made in the context of these objectives. Difficulties in the assessment of teachers seems more often to concern those teachers who do not fall into the average category. There is a danger that innovative teachers will be penalized, to their chagrin and the detriment of the system. It will assist in minimizing this danger if steps are taken to ensure that assessors are aware of the problem and familiar with new trends and techniques in education.

When the purpose of assessment is selection, the time must come when one assessment is compared with another with a view to placing them in an order of priority. This comparison may take place between all teachers currently being assessed before any positions are advertised, or between the applicants for a particular position: the critical point is that unless the assessments can be compared in a rational manner for a clearly specified purpose, they will be of little value. Given the problems involved in making a valid assessment of a teacher's professional skills, measures should be taken to limit the effect of these assessments. They should not be able to consign one to the depths nor elevate to the heavens. There should also be provision for dealing with conflict over assessment, and in particular the teacher should have a genuine right of appeal against an assessment with a reassessment where this is appropriate.

EDUCATIONAL QUALIFICATIONS

This category embraces all those qualifications gained as a result of enrolment in an educational institution and includes what are sometimes referred to as academic qualifications. The attaining, and possession, of such qualifications are matters of some importance in contemporary western society. The claim has been made that qualifications of this kind do not make a teacher more effective. There is no real evidence to support this claim, and given the problems associated with comparisons of teacher effectiveness, it is difficult to see how its truth could be established. On the other hand, it seems hardly likely that the average standard of science teaching, for example, would not suffer if the possession of a science degree was no longer significant in the selection of science teachers. Variations, between systems, in educational qualifications required for entry, and advancement within the system, will have an important influence on the character of the system.

Educational qualifications are usually awarded by institutions which are quite independent of the education system in which the teacher is employed (universities for example). Some systems do provide courses of study for teachers and award certificates. These certificates are frequently of little value outside teaching, or even outside the system within which they are awarded. Being less negotiable than other more general qualifications, their possession is unlikely to improve alternative employment opportunities. This could be counted as something of an advantage to the system concerned, but the disadvantages are that such qualifications generally lack prestige and are subject to manipulation in the interests of short term system needs.

The diversity of qualifications awarded, and the wide variation in the standards governing the award of apparently similar qualifications, make it necessary to develop a method of evaluating qualifications to enable meaningful comparison. Factors such as entry requirements, the amount of time and energy required, and methods of evaluation, would have to be considered. There seems little doubt that for some students the attractiveness of a course leading to a qualification is dependent on the ratio of reward to contribution. The most attractive qualification to such students, the one which offers the highest reward for the smallest contribution, will be the least attractive to the system.

EXPERIENTIAL QUALIFICATIONS

Experiential qualifications can refer to length of experience, type of experience, or the length of a particular kind of experience. The definition of what is to count as experience of a particular kind varies in precision. At times the degree of precision is rationally related to what the experience is being counted for, but often no such relationship is evident. To ensure that such a relationship does always exist would do much to rationalize the use of experiential qualifications. For example, the requirement that a base level teacher complete a specified number of years of teaching before being eligible for promotion, is generally met, regardless of the type of teaching in which the teacher was engaged, so long as that teaching was satisfactory. The standard set is, in this case, appropriate to the purpose of the requirement. On the other hand, if experience as a remedial teacher was considered an advantage for appointment to a particular position, it would appear reasonable to demand that the experience be successful. It seems reasonable to assume that the probability of success of a teacher who had tried and failed, would be less than that of the teacher who had not tried. The status that should be accorded to unevaluated experience is a particularly difficult question. In view of this uncertainty it would be unwise to allow the possession of such experience to count as a decisive advantage.

Most education systems lack any provision for the systematic evaluation and documentation of experience. There does not appear to be any major difficulty in implementing a program to remedy this situation, and such a program could make a significant contribution to the more effective matching of teacher to task. An essential feature of the program would be the right of teachers to request (and receive) an evaluation of their work to ascertain whether or not they can justly claim successful experience in that kind of work, and where this is found to be the case, the teacher would receive documentary evidence which could subsequently be used to support an application for a position to which such experience was relevant.

SERVICE QUALIFICATIONS

Service is a particular kind of experience: experience in the employ of a particular authority. Like experience in general, concern may be with the length of service, the type of service, or a combination of both. Experience outside the authority, no matter how similar, does not count. Service, as

opposed to experiential qualifications, impede movement between systems. Service qualifications have very little to do with the ability to perform particular tasks, but they may be justified as a rational requirement on other grounds, such as staff morale. However, despite the advantage of being very easy to establish, it is difficult to see service qualifications having any but a small part to play in a rational system. Seniority, which plays an important part in a number of systems, refers to some kind of service qualification. What counts as seniority varies from one system to another, in some it is simply the elapsed time of a teacher's service, in others it is much more complex.

PERSONAL QUALIFICATIONS

Personal qualifications can refer to obvious characteristics of teachers such as age or sex, which could be an important consideration in the placement of a teacher. They can also refer to qualities that teachers possess, or are presumed to possess, such as initiative, responsibility, cooperativeness, strength of character, and so on. There are a number of reasons why qualifications relating to such qualities should only play a small part, if any, in the selection of teachers. They may be very important but they are very elusive. Methods for identifying, and estimating the degree, of a particular quality, in a particular individual, lack reliability and are of doubtful validity. This is particularly true for the large-scale assessment with limited resources with which we are concerned. Furthermore, it is difficult to ensure that any provision for taking such qualities into account, does not also allow qualities which are in fact undesirable, to be taken into account. We may seek the cooperative and get the conforming or acquiescent. A further point is that the possession of most important qualities will be reflected in the qualifications discussed under other headings and be, in this way, taken into account.

SELECTION CRITERIA

In deciding which qualifications, in what measure, and with what effect, will constitute rational criteria, we can be guided by a number of general principles. The criteria should be relevant for some legitimate objective. The more relevant a qualification the more advantageous it should be to the possessor. We should be able to establish a positive relationship between criteria and objective. In the absence of the appropriate empirical data

reliance will have to be placed on rational argument based on what evidence we do have, but the empirical data should be sought. Another principle relates to the level of a qualification: higher level qualifications should be more advantageous to the possessor than lower level qualifications. For example, in respect of educational qualifications, a higher degree should count for more than a first degree, and in respect of experiential qualifications, experience as head of a larger class of school should count for more than experience as head of a smaller class of school.

A further principle relates to the evaluation of qualifications. Our reliance on a qualification should be related to our confidence in its validity as a guide to reaching the objectives we seek. Little reliance can be placed on unevaluated experience or an educational qualification that is not based on the achievement of some standard, as a guide to the future performance of a teacher. In those cases where we can have a reasonable degree of confidence, we can also consider relative performance, outstanding performance as a remedial teacher would count for more than satisfactory performance, and a higher pass for more than a lower pass in a particular examination.

The final principle relates to the comprehensiveness of the qualifications possessed by a teacher: more comprehensive qualifications should count for more than less comprehensive qualifications, particularly with regard to experiential qualifications. For example, if neither of two teachers could claim directly relevant experience, we could be more confident that the teacher with the wider variety of successful experience could cope with the new situation. In this context we should note that, while length of experience alone may not make a teacher any more efficient, teachers who have long experience are more likely to have had more comprehensive experience than those who have less experience.

ANALYTICAL FRAMEWORK

Selection criteria relate to the professional, educational, experiential, service, and personal qualifications discussed above, and specify the effects (essential, preferred, desired) of the possession of a particular measure of these qualifications, in relation to selection for appointment to a position or class of positions. We can use the following grid to describe the salient features of a set of selection criteria in a way that facilitates the comparison of one set with another.

	Essential	Preferred	Desired
Professional			
Educational			
Experiential			
Service			
Personal			

We might find, for example, that the criteria relating to professional qualifications refer to a professional assessment carried out within the system concerned with measure related to effect in the following manner -

Essential - satisfactory
 Preferred - above average
 Desired - outstanding

In relation to educational qualifications we might find -

Essential - teachers' certificate
 Preferred - university degree
 Desired - post-graduate studies

We would not expect to find an entry in every cell of the grid on every occasion. We might find criteria relating to experiential qualifications which refer to general teaching experience and relate measure to effect as follows -

Essential - three years
 Preferred - nil
 Desired - six years

In some cases a complete description of the effects of the possession of particular qualification will require a statement of the relative priority, or weight, to be given to a particular qualification as compared with others in the same major effect category. In the case of desired qualifications, we are only concerned with the relative weight to be assigned to particular qualifications, but in the case of preferred qualifications, priority ordering of qualifications may also have to be taken into consideration. By priority is meant that the possession of the qualification concerned, confers a decisive advantage over those who do not possess it, regardless of the combined weight of any lower priority qualifications they may possess. Increased precision in the description of the selection criteria for

appointment to a particular position or class of positions, can be obtained by dividing the major qualification categories into sub-categories, where this is appropriate. Both experiential and service qualifications frequently relate to particular types of experience or service.

This framework, which has been developed to assist in the analysis of the selection criteria which regulate access to the reward structure of particular education systems, may be used in a number of ways. In addition to using it for the analysis and description of the formal selection criteria of an education system, it may also be used to analyse and describe the selection criteria which actually appear to be used in practice. Comparisons of these results could prove revealing and interesting. It also provides us with an approach to the study of the effects of particular variations in selection criteria, and a framework for the development of selection criteria rationally related to the needs of the system for which they are designed.

CHAPTER EIGHT

SELECTION PROCEDURES

Criteria provide the standards and principles by which the qualifications of teachers are judged. Procedures determine the conditions under which these judgements are made. Ideally procedures are aimed at ensuring the proper application of rationally derived criteria. There also seems to be considerable advantage in designing procedures that will enable interested parties to satisfy themselves that legitimate criteria are being applied according to legitimate procedures. To this end, proceedings which involve these parties are to be preferred over those which do not. This chapter looks at the types of decision procedure, decisions, interests, and authorities, involved in the selection process. A brief comment on procedural variations within systems is followed by an examination of the four phases of the selection process: determination of eligibility, ranking, placement, and appeals. Finally there are some concluding remarks.

It has been argued that an important aspect of evolution is the suppression of inappropriate natural impulses. It could similarly be argued that the quest for rational organization involves the design of procedures that will suppress those natural impulses of people in organizations that hinder the rational operation of the system of which they are part. A common characteristic of organizational behaviour appears to be that discretionary powers are rarely used solely for the purpose for which they were granted. Furthermore, the use of this power for unauthorized purposes is rarely in the best interests of the system as a whole, and at times may severely impair the efficient functioning of the system. In relation to staff selection these natural tendencies which have to be suppressed range from blatant patronage to subtle preferences for particular kinds of behaviour in subordinates.

A useful analysis of social decision procedures used in the settlement of conflict is provided by Barry. Conflict, he says, arises whenever two

or more actors have incompatible desires concerning the future state of the world, and try to do something about it. He suggests that there are seven types of social decision procedure -

1. Combat: the conflict is settled by force or one side makes it preferable to the other side to give in rather than resist.
2. Bargaining: any discussion into which the merits of the question are not introduced. The two kinds of sanctions are a) not coming to a deal, b) threats to make the other party worse off. So it refers to any situation where one party offers another either some advantage, or the removal of the threat of some disadvantage, in return for the party's performing some specified action.
3. Discussion on merits: this is an ideal type which involves the absence of threats or inducements. If agreement is reached by this method the parties to the dispute have changed their minds about what they want.
4. Voting: possible only when there are more than two parties to a dispute.
5. Chance: tossing a coin, throwing a dice etc.
6. Contest: a rough but objective method of deciding who is best at X.
7. Authoritative determination: the conflict is resolved by a party recognized by all of those concerned as legitimate.

Barry distinguishes between mixed and combined processes. A mixed process is where a single decision involves more than one of the procedures identified above. Processes are said to be combined with one another if there are two distinct decisions yet one is a necessary condition of the other's occurrence. For example, the membership of some body will be chosen in a certain way and the body will then reach its decisions in a certain way. The choosing of the members is different from the members taking a certain decision, but unless the members had been chosen they could not have made the decision. He goes on to point out that there are four distinct types of decision that can be made and gives each of these a letter of the alphabet as follows -

- S. Specific decisions resolving individual disputes.
- R. Decisions that certain rules, principles, or ends, be adopted.
- A. Appointments to decision-making jobs.
- P. Decisions to employ a certain procedure.

Barry provides the following example of an analysis of a chain of decisions. The numbers refer to the type of procedure and the letters to the type of decision.

A decision by a civil servant (S7) rests on an instruction from his superior covering such cases (R7) made on the strength of some delegated legislation (P7) authorized by an Act of Parliament which lays down the ends of the Act (R4) and the procedure for delegated legislation under it (P4). Both bargaining and discussion on merits may have underlain the vote (R2 and R3). The civil servants concerned are appointed after a competitive examination (A6) conducted by the Civil Service Commissioners, themselves appointed (let us say) by the Cabinet on a majority vote (A4). The Cabinet is responsible to the House of Commons (simplifying, say A4) which is in turn elected (A4). The constitution can be changed, to all intents and purposes, by a simple majority of the House of Commons (P4).

INTEREST GROUPS

There are a number of interest groups which appear to have a legitimate claim for influence over some aspects of the selection process but none which could reasonably demand the exclusive right to decide that a particular teacher should be appointed to a particular position. We could therefore expect that the identification of such groups, the delineation of their legitimate areas of influence, and the development of procedures that will enable them to exercise their legitimate claims for influence, would contribute to the effective functioning of a system, largely by the reduction of disruptive conflict. Such conflicts can also be reduced by taking steps to ensure that representatives of major interest groups are involved in the making of potentially controversial decisions, or at the very least consulted before a final decision is made. Participation allows each interested party to assess the weight of opposition or support for a particular decision or point of view and provides the opportunity to resolve any conflict that may arise without resorting to the bitter public confrontation that sometimes attends such conflicts. The major interest groups appear to be the education ministry or department, the authority which employs teachers, the agency or agencies which conduct schools, teachers, the community, parents, and students.

Despite the fact that, because of variations in the way education is organized, we do not always find the seven interest groups identified here as discrete groups in all systems, the interest itself tends to remain discrete. The first of these interests is the authority charged with the administration of education, by the government of the nation or state concerned, and usually referred to as the education department or ministry. An education department may play a very large part, as it does in the Australian states, or a much smaller one as in the United States. The second interest group is the employer of teachers. This particular role is played by a variety of authorities in different systems. In some systems the education department is the employer, in others it is a local authority, and in yet others it is a central authority designed specifically for the purpose, such as the Teaching Service Commission of Papua New Guinea and the Commonwealth Teaching Service of Australia (which does not staff state schools). The next interest is the agency which conducts a school or group of schools. A good example of such authorities are the church agencies which conduct schools in Papua New Guinea. Local authorities may act as agencies in some systems. These three interests are what we might call the 'official' interests.

Teachers, acting through their associations, form the next important interest group. Their interests will include the maintenance of professional standards and conditions of service and will sometimes conflict with the interests of individual teachers. Teachers' associations play an important role in most education systems, but systems vary widely in the extent to which their participation is formalized. Community interests are at times difficult to pin down, generally however, it could be taken to be the interests represented by community members on education or school boards. The adequate representation of community interests is particularly important where a community exhibits distinctive characteristics, such as consisting predominantly of a certain religious or cultural group. Though we might frequently find that interests of parents coincide with those of the community in general, the potential for conflict between parents and community over some issues warrants their consideration as separate interest groups. The final interest group to be considered are the students. Other interest groups often claim to be representing the interests of students but students are given little opportunity to appoint their own representatives. As students range from young and very dependent children to those who are physically mature and legally adult, generalizations should be avoided.

There seems little doubt that procedures could be designed that would enable older students to have more influence than they have at present, without any undesirable consequences.

AUTHORITIES

At least in a formal sense, decisions relating to the selection of teachers in an education system are made by an individual or group authorized to make the kind of decision concerned. We can refer to such individuals or groups as 'authorities'. These authorities can be classified according to the kind of decision they are authorized to make. There are wide variations in the extent of their powers, some merely being authorized to recommend that a particular decision be made while another may be empowered to make a decision that is absolutely final. We can also distinguish between authorities which are central, local, or intermediate, depending on their sphere of influence. The membership of a decision-making authority may have a powerful influence on the way such an authority operates and the decisions it arrives at, especially if the authority is allowed a degree of discretion. Where this is the case the interests represented by the members of the authority and the manner in which they are selected will be of considerable importance in relation to both the decisions reached and the acceptance of these decisions by interested parties.

PROCEDURES

Education systems generally exhibit several sets of selection procedures, each set being related to a particular kind of position or particular category of teacher. Most systems have quite different procedures for base level and promotional level positions. At the base level a distinction is often made between serving teachers and beginning teachers, and at the promotional level, between transfers and promotions. Some systems deal with transfers at base and promotional levels in the same manner. These distinctions all refer to what could be called permanent appointments to distinguish them from the more temporary kinds of appointments which are usually designed to fill the inevitable gaps. Temporary appointments may be made according to different procedures depending on whether the appointment is an acting one of a serving teacher or the employment of casual staff for a limited period. Not only do systems vary in the procedures used in relation to each of the groups mentioned above but also in the way various sets of procedures are related to each other.

DETERMINATION OF ELIGIBILITY

In discussing the way in which eligibility for appointment to a particular class of position is determined it is important to distinguish between eligibility in the sense of being able to carry out the essential functions of a position and eligibility in the sense of being available for appointment to the position. Availability, as used in this context, means that a teacher is not ineligible for appointment to a position because of some prior obligation incurred as a consequence of their service in the system. Some systems, for example, require that a teacher appointed to a position must serve in that position for some fixed period before being eligible to apply for another position. Again, in those systems which have more than one round of appointments each year, a teacher who successfully applied for a position early in the year is often considered ineligible for positions at the same level in subsequent rounds.

Some systems have geographical constraints on availability for appointment to certain positions. In some cases applications may only be accepted from within a district, or from adjoining districts, or there may be some quota imposed on interdistrict movements. These geographical constraints are more likely to occur where some authority, rather than the teacher, is obliged to meet the cost of movement. Any restriction on the number of positions an other-wise eligible teacher may apply for, constitutes a reduction in the number of teachers available for some positions. It will clearly facilitate the effective matching of teacher to task if the number of teachers unavailable, but otherwise eligible, is kept to a minimum.

Eligibility is generally considered in relation to classes of positions rather than specific positions. The determination of eligibility is basically a process of exclusion: it excludes those who will not be selected for appointment to a particular class of position at a particular point in time. All approaches to the determination of eligibility involve a component that relates to the possession of specified minimum qualifications of the more objective kind: educational, experiential and service qualifications. The procedures associated with establishing that a teacher does in fact possess the required qualifications will be one of clerical checking. One major difference between systems is that some require a teacher to submit proof of possession of these qualifications with every application while others deal with this matter centrally, storing the information for retrieval when required.

Most systems require qualifications, in addition to those discussed in the previous paragraph, that relate to professional skills, and usually to those which are based on a professional evaluation within the system. Where this is the case, the procedures governing the making of such an assessment become part of the procedures for determining eligibility. There appears to be a trend towards evaluation for promotional purposes to be made on application by the teacher concerned rather than as part of a routine evaluation aimed largely at ensuring compliance with official requirements. Where this is the case, the manner in which applications for evaluation are dealt with becomes an important element in the determination of eligibility.

To this point eligibility has been considered as the attainment of some preset standard with no limit on the number of teachers who may be granted eligibility. Obviously these standards would have to be varied if they consistently produced a gross under or oversupply of eligible applicants. Some systems are designed to operate in a way that requires the maintenance of a fairly strict ratio of eligible applicants to positions available. One approach to limiting the number of eligible applicants is to simply refrain from considering any further applications for eligibility once the required number has been reached. Another approach has been suggested by Neal and Radford which involves an assessment of the relative merits of teachers seeking eligibility. In effect the teachers are placed in a rank order and the cut-off point determined by the number of eligible teachers required. They also suggest that a new list be drawn up each year, which, given that a teacher may only be assessed for the same level once every three years (as they suggest), means that an eligible teacher who did not obtain a position could lose his eligibility status in the following year. Procedures associated with such an approach will differ from those associated with the other approaches discussed above, in that they must provide for the making of decisions whereas the others need only provide for the application of decisions already made.

RANKING

The criteria and procedures used by a system to rank applicants for appointment to positions reflects the view held in that system about teachers and teaching. If, as is the case in some systems, all eligible applicants for a particular class of position are placed in rank order and then, beginning with the highest, placed according to their highest available

choice, we can assume that teachers are seen as identical, interchangeable units. Other systems rank teachers only against the other applicants for a particular position; an approach that is consistent with the view that particular positions, and individual teachers, vary significantly from others in the same class. The interchangeable unit view is generally associated with centralized decision-making and advertisements which list rather than describe vacant positions. A greater concern with individual differences between teachers is generally associated with decentralized decision-making, more highly differentiated positions, and detailed advertisements.

Depending on the system concerned, the authority responsible for ranking applicants may be central, local, intermediate, or some combination of these. In the Australian state systems, ranking of applicants is largely a function of the central authority; where local needs are considered they are considered by this central authority. New Zealand and Papua New Guinea are examples of systems where intermediate authorities play a major role in the ranking of applicants for appointment to positions. Community or local control of schools, and appointments to them, has been tried, without much success, in some parts of the United States.

Each level of authority appears to have some legitimate claim for influence on the ranking process. The question is not which authority has the best claim for exclusive control but rather what means can be found to enable each to have an influence over those aspects of the process, and in such proportion, as can be justified by rational assessment of the issue. System needs are unlikely to be met without some involvement by a central authority. While there is no necessary reason why the whole process could not be adequately performed by a central authority it just does not appear to work in practice. The ranking procedures used by the Australian state systems are of little interest because, however adequate, they serve limited ends. They tend to be concerned with numbers of teachers rather than individual teachers, and the fair application of primitive criteria.

The ranking procedures used in the New Zealand and Papua New Guinea systems are of much greater interest. They are designed to perform a more complex task. This increases the burden on these procedures and necessitates a higher degree of sophistication to obtain an adequate level of performance. They are subject to a number of quite serious criticisms. However, the criticism of these systems tends to aid understanding rather than merely

serving to condemn as is the case with criticism relating to more primitive systems. Of the two the Papua New Guinea system appears the more sophisticated, perhaps because a complex situation forced a sophisticated response, and major reform has been more recent. In both systems there is a district education board which is the appointing authority for positions in primary schools. However, the ranking of applicants for permanent appointment to vacant primary positions within that district is carried out by a selection committee (in New Zealand inaccurately called an appointment committee), which makes recommendations to the board. In New Zealand the committee consists of representatives of the appointing authority, the education department, and the New Zealand Educational Institute (teachers' association). In Papua New Guinea it consists of the District Superintendent, who is also chairman of the board, two representatives of the Papua New Guinea Teachers' Association, a representative of the agency conducting the school concerned, and another member appointed by the board. In both cases, though their decisions must be made within certain constraints, and are subject to limited amendment by the appointing authority, these committees do make important decisions in relation to the ranking of applicants for positions in the district concerned.

The situation in relation to secondary school appointments is somewhat different. In both systems, ranking of applicants is generally carried out by the school board or a committee of that board. In New Zealand however, the school board also appoints teachers whereas in Papua New Guinea the school board recommendations are forwarded to the district education board, which may accept, reject, but not amend, the recommendation. Subject area specialization prevents a thoroughgoing interchangeable unit view of secondary teachers and necessitates a greater concern with the particular qualifications of individual teachers in relation to the needs of the school. It appears that the attempt to facilitate the matching of teacher to task in this respect has resulted in procedures that do not allow for an effective means of taking system needs into account. The lack of formal teacher representation on selection committees for positions in secondary schools suggests that they have remained untouched by some of the important reforms that have resulted in significant changes in the selection of primary school teachers in recent years. The procedures currently used in relation to the selection of secondary school teachers are the object of considerable, apparently justified, criticism.

PLACEMENT

Once teachers have been ranked in an order of suitability, whether it be for all positions of a particular class, or for each position of the class, the final step is to place the teacher in a vacant position. The most common criterion in making this final decision is the teacher's preference. In those systems where teachers are ranked in order of suitability for positions of a class as a whole the procedure is quite simple: the highest ranking teacher is placed in the position he most prefers, the next teacher is placed in the position he most prefers, unless it happens to be the position that the first teacher chose, in which case he is placed in the position that was his second choice. The procedure continues with each succeeding teacher being placed in the highest available position on his order of preference. Where applicants for each position are ranked in order of suitability for that particular position the procedure is more complex. In the New Zealand system, the most suitable applicant for each position is offered appointment to that position, if the teacher rejects the offer or fails to accept it within a specified period of time, the position is offered to the next most suitable applicant and the procedure is repeated. Some teachers will receive offers from several boards from which to choose, necessitating the re-offering of those they reject. Second and subsequent offers may go to teachers who have already accepted other offers. The main disadvantages of this procedure are that it is cumbersome and time consuming.

An alternative of the offer system is used in Papua New Guinea where it is referred to as central sorting. The teacher is required to provide an order of preference for all the positions he applies for at the time of application. When ranking for all positions has been completed they are forwarded to a central authority, one list for each position. They are then sorted alphabetically by the first name on the list. If the name appears on more than one list, that teacher's order of preference is consulted and he is placed in the position, of those 'offered', for which he expresses the highest preference. His name is then crossed off the other lists. Once all the first names on the list have been dealt with in a similar manner, those positions which have not been filled are sorted alphabetically by the second name on the list. The procedure is then repeated except that names have to be checked against the list of those that have already been appointed. There are some difficulties with this approach, most of which could be overcome by the use of a more sophisticated matching procedure of the type made possible by electronic data processing. Hirst provides an example of such a procedure.

APPEALS

Most education systems recognize the need to provide for appeals against certain decisions relating to the selection process but there are wide differences as to what decisions are considered to be the proper subject of appeal, the appeal procedure thought appropriate, and the persons or bodies having the right of appeal. Decisions that are likely subjects of appeal are those that have a significant or decisive role in the outcome of the selection process and are made in such a way that injustice is a real possibility. Where professional assessment plays a decisive role in selection, as it does in some systems, there are good grounds for allowing appeals against the failure to make an assessment on request, and against the assessment itself. The New Zealand system allows a request for a review of the report on which the assessment is based, to a review committee, through the senior district inspector. If this does not resolve the dispute the teacher may appeal to an appeal board, through the director of the education department, against the assessment itself. In those systems where promotions are made from a promotions list or a list of eligible teachers there is frequently a right of appeal against not being put on the list. In Papua New Guinea, for example, a teacher may appeal against the Director's failure or refusal to grant a declaration of eligibility in relation to a class of promotional positions.

Decisions concerning appointment and promotion, which stand at the apex of the selection process, may also be subject to appeal. In Queensland, for example, teachers may appeal against the failure to appoint. More commonly the appeal is against the failure to promote. In Papua New Guinea, where promotion is the consequence of appointment to a higher level position, appeals are only allowed where the appointment would result in promotion for either the provisional appointee or the appellant. Education systems generally do not provide for appeals against an appointment on transfer at the same level.

Appeals procedures in general serve a variety of functions which are basically involved with the regulation of the system concerned. Specific appeals procedures may serve a number of these functions simultaneously. A major function of appeals is the reduction of conflict within a system. They do this by providing a definite course of action for an aggrieved teacher to follow, thus lessening the likelihood of the teacher's performance being impaired by his preoccupation with the wrong he considers has been

done to him. Appropriate appeals procedures can be particularly useful in those situations where the complaint is not that a decision was necessarily wrong, but that the case was not given the consideration it warranted. Even where a teacher continues to feel aggrieved because of the disallowal of his appeal, if the procedures followed were acceptable to teachers generally they will tend to withdraw any support they may have given the aggrieved teacher thus placing pressure on him to accept the decision.

Another major function of appeals procedures is to exercise some control over decision-making authorities by making them accountable for their actions or decisions under certain circumstances. If a decision-making authority fails to make a decision in accordance with the prescribed procedures and criteria their decision, if subject to appeal, may be upset by the authority which decides the appeal and this will usually be inconvenient and possibly embarrassing for the decision-making authority. There may need to be stronger and more direct sanctions to deal with flagrant breaches but the lesser penalties such as inconvenience and embarrassment appear to exert a restraining influence on such authorities. An allied function is to guide decision-making authorities by providing a kind of feed-back in relation to their decisions: where appeals are disallowed they will know that they have decided correctly; where they are upheld, that they should take steps to ensure, if it is possible, that they do not make the same mistake again. A further function of appeals procedures relates to the fact that any selection procedure will be a compromise between the conflicting demands of operational efficiency and ensuring justice to individual applicants. The introduction of a right of appeal allows a streamlining of the initial selection process without denying justice to those who would otherwise suffer as a consequence of this streamlining. Such a system will serve to focus attention on those questions that require further consideration. Furthermore, the safeguard of an effective appeals procedure enables the delegation of decision-making authority without the danger of this authority being misused.

The nature of appeals procedures will depend, in part, on the nature of the procedures involved in making the decision which is subject to appeal. The exclusion of interested parties from participation in making the original decision can be expected to increase the demand for a right of appeal. With simple mechanical procedures the only grounds for appeal would be that there was some impropriety in the way the decision was reached and appeal

procedures would merely have to provide for revealing what the decision would have been had there been no impropriety. Where the decision subject to appeal is based on the evaluation of evidence there are two distinct grounds of appeal possible: one that the evidence has not been properly evaluated, the other that all the relevant evidence has not been considered. In some systems the appeal committee is specifically confined to a consideration of the evidence upon which the original decision was based. In other systems an important reason for allowing some appeals is to provide for the consideration of further evidence in the case of difficult decisions. In Papua New Guinea, for example, the order of suitability of applicants is decided, at district level, on the basis of what amounts to abstracts from the personal files of the teachers concerned. The central appeals committee has access to the complete files of the teachers concerned.

Appeals procedures are unlikely to effectively serve the purpose for which they were designed unless justice is both done and seen to be done. Appeals that are determined by an individual rather than a committee generally lack credibility, as do appeals determined by representatives of the authority or group over whose decision one is aggrieved. A right of appeal against the decision of an inspector, for example, which is determined by a senior inspector or a group of inspectors would generally be held to be of little value. The most acceptable arrangement for determining appeals appears to be the committee with an independent chairman and two or more other members nominated by those groups which have an interest in the outcome of the appeal, such as for example, the education department and the teachers' association. The confidence teachers have in the justice of appeals procedures will also depend on the freedom of the committee members from outside interference or influence and the status of the committee's decision. If the committee is empowered to no more than recommend a course of action to some other authority, confidence in the justice of the appeal procedure may be greatly reduced.

CONCLUSION

The basic function of selection procedures is to provide for the proper application of rationally derived criteria. Selection procedures generally consist of complex combinations of basic procedures and mixtures of these basic procedures. Barry's classification of social decision procedures and decision types provides a useful tool for the analysis of selection

procedures. The nature and extent of the representation of various interest groups on decision making authorities will exert a powerful influence on the operation of the system concerned. We find procedural variations within systems relating to particular classes of position or groups of teachers. While the focus is on permanent appointments the arrangements for filling positions on a temporary basis must not be neglected. The division of selection procedures into four phases; determination of eligibility, ranking, placement, and appeals assists in the analysis and comparison of one system with another. The complex criteria which appear to be necessary for the continued effective operation of a system demand sophisticated procedures for their proper application.

CHAPTER NINE

A RATIONAL MODEL

The basic elements of a rational system for the allocation of teacher to task on a system-wide basis; the reward structure, selection criteria, and selection procedures, have been discussed in previous chapters. This chapter addresses itself to the task of outlining a rational system based on a consideration of the issues raised in those chapters, which it attempts to integrate and complete. It discusses the analysis of requirements into duties and qualifications, the separation of basic and additional requirements, and the way in which this assists in providing for the exercise of legitimate claims to influence over the selection process. It considers the problem of the definition of terms and the proper articulation of the various parts of the system. Appointments procedures are outlined and variations discussed. Appeals procedures are discussed and the sequence of major events in the selection process outlined.

The creation of a system for the rational allocation of teacher to task on a system-wide basis begins with a consideration of the experiences to be provided for students during their sojourn in educational institutions and an analysis of the tasks associated with the provision of these experiences to determine function requirement. For reasons discussed in chapter five the institution or school appears to be the most appropriate unit for the analysis of function requirement, despite the fact that some requirements originate in the need to arrange for the performance of tasks which are only indirectly related to particular schools through a contribution to the quality of education in some wider unit. These requirements must be assigned to appropriate schools and considered as part of their requirement. These requirements may be classified as essential, preferred, or desired, as discussed in chapter five.

Function requirement can be translated into terms of performance requirement. There are two important aspects of performance requirement: one relates to

teacher responsibility, the other to teacher capability. The term 'duty statement' is often used to refer to a statement that outlines the major areas of responsibility associated with a particular position and commonly indicates the place of that position in the hierarchy by specifying both, to whom, and for whom, the encumbent is officially responsible. The performance capabilities of a teacher must be inferred from samples of the teacher's behaviour. Qualifications are the evidence relating to these samples or their interpretation. An important group of rational selection criteria will be based on an examination of the relationship between the possession of qualifications and performance capabilities. These criteria will specify the qualifications to be considered, and for each qualification, the effect of the possession of a specified measure of the quality or characteristic to which the qualification relates.

This distinction between responsibility and capability is an important one. Some systems specify 'the ability to carry out the duties of the position' as a selection criterion. Perhaps the most important reason why this is undesirable is that the responsibility for deciding what qualifications are indicative of required performance capabilities falls to the selection committee. The complexity of the task puts it beyond the resources of any practicable selection committee and in any case there is nothing to prevent one committee from adopting different criteria to another, or the same committee adopting different criteria on different occasions, thus denying the consistency in this crucial matter that is essential for a rational system. The rational approach would appear to be to analyse performance requirements into a responsibility component and a capability component. With regard to the responsibility component selection criteria will relate to the teacher's willingness to accept the responsibilities. With regard to the capability component selection criteria will relate to the possession of qualifications. In accordance with common current usage, the statement of responsibilities associated with a particular position will be referred to as a 'duty statement'.

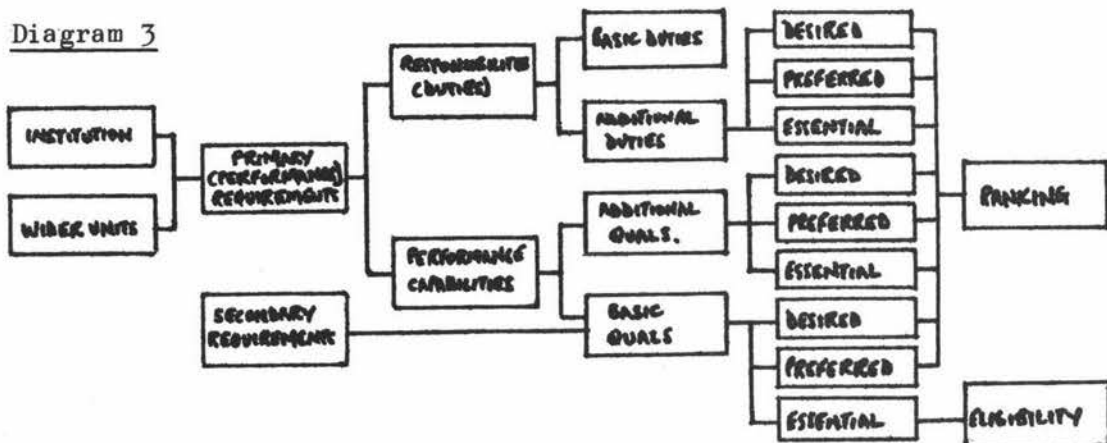
Performance requirements, and the responsibilities and performance capabilities associated with them, may be divided into those that relate to a whole class of positions and those which relate only to specified positions within the class. They will be referred to as basic duties and qualifications, and additional duties and qualifications, respectively.

All basic duties will be essential in the sense that no applicant would be

considered eligible for appointment to a position of the class concerned unless they were willing to accept all the responsibilities referred to in the basic duty statement. Additional duties, however, may be defined as either essential, preferred, or desired, and will influence the ranking of a teacher in relation to a particular position. It should be noted that any teacher who was unwilling to accept essential additional duties would not be eligible for appointment to that position, however, the term 'eligibility' will be used only in relation to a class of positions, to avoid confusion. Both basic and additional qualifications can be defined as either essential, preferred, or desired. A teacher would not be eligible for appointment to any class of position for which he did not possess all the essential basic qualifications. Preferred and desired basic qualifications together with all additional qualifications will influence the ranking of the teacher in relation to the position concerned.

To this point the discussion has concerned only primary or performance requirements. There is a second group of requirements that must be taken into consideration. These are the requirements that arise from the adoption of the objective of optimizing the performance of the system over time, and are aimed at regulating access to the reward structure of the system in a way that will attract to teaching, and retain, those men and women with the required performance capabilities in the numbers required for the continued effective operation of the system. Like performance capability requirements, these secondary requirements are expressed in terms of qualifications. All qualifications relating to these secondary requirements are classified as basic qualifications and handled in the same manner as basic qualifications derived from primary requirements. Primary requirements may have to be modified in the light of secondary requirements. Diagram 3 is a schematic representation of the foregoing analysis of requirements.

Diagram 3



INTEREST GROUP PARTICIPATION IN REQUIREMENT FORMULATION

Interest groups which appear to have a legitimate claim for influence over some aspect of the selection process were discussed in chapter eight, as was the need to develop procedures to enable them to exercise such influence. Providing for the participation of these interest groups in the formulation of requirements can allow them to have a considerable, but controllable, influence over the process. To put this into effect would require the setting up of a central authority, representing all interest groups organized on a system-wide basis, that would be responsible for determining selection criteria. To facilitate discussion we can refer to this authority as the Teaching Council, but to be effective it would have to have more extensive powers than the body of the same name in the Papua New Guinea system. A high degree of flexibility can be obtained by the appropriate use of additional requirements; that is those requirements that relate to a particular position within a class. A list of approved additional qualifications and duties would be draw up, together with a set of rules specifying the conditions under which they may be attached to particular positions. Provision would be made for interested parties to make representations to the Teaching Council to have qualifications or duties added to the list or to have the rules ammended.

An important group of additional requirements will relate to the teaching of particular subject areas. Another group will relate to the teaching of particular groups of children: various grade levels, for example, or remedial groups, groups for gifted children or children belonging to a particular ethnic group. Other requirements will relate to personal characteristics of teachers such as age or sex. It might be felt desirable to achieve some sort of balance between the numbers of male and female teachers in a school or it might be felt that a youthful or a mature teacher might be particularly suitable for a certain position. There might also be requirements relating to a teacher's willingness and ability to drive a school bus or carry on some project in which the school is involved. The translation of requirements into duties and qualifications can be a very complex task and one that needs to be carried out by those with the appropriate skills. It would therefore seem reasonable that it be done by, or under the direction of, the Teaching Council.

Procedures relating to the advertisement of vacant positions should be designed to enable the attachment of additional qualifications or duties to

particular positions by those who have the right to do so. The appropriate authorities to carry out this task would be the governing body of the school concerned and the local or district education authority, both of which should be representative bodies. The advantages of enabling interest groups to influence the selection process at this end rather than at the final selection end are fairly obvious. It provides a genuine opportunity to influence the process while limiting the possibility of abuse. It also removes a number of objections to the participation of some interest groups: students, for example, could have some influence over the selection of staff for their school without the necessity of being privy to confidential information concerning prospective staff members.

In the preceding discussion reference has been made to attaching additional qualifications and duties to particular positions. While this is precisely what is done when only one position in a particular school is being considered it becomes a little more complex when more than one position has to be considered. The reason for considering the school as the unit of function requirement was discussed in chapter five. It is readily apparent that any action which arbitrarily connects one requirement with another unnecessarily reduces the chances of satisfying all requirements. For example, if there were two vacant positions in a school and it had been determined that there were two essential requirements to be met, E1 and E2, and two preferred requirements, P1 and P2, and the requirements were such that teachers could only meet one essential and one preferred requirement each, then to arbitrarily associate E1 with P1 and E2 with P2 would unnecessarily rule out the possibility of the requirements being met by a teacher who could meet requirements E1 and P2 with another who could meet requirements E2 and P1. Because of this, where more than one position is to be advertised it should be done in a manner that avoids the arbitrary association of one requirement with another. This will make the selection procedure a little more complex but the contribution to the effectiveness of the system will be significant.

PRECISION AND CONSISTENCY

Precision and consistency are essential elements of a rational system yet we commonly find that education systems fail to provide precise definitions of crucial qualifications and fail to provide for the effective articulation of one aspect of the system with another. Thus we can find a system that

requires 'successful experience as headmaster of a large school' for appointment to a particular position, but which fails to define 'success' or indicate what is meant by large. In this system teachers were rated on a five point scale, quaintly ranged from six to ten, but no relationship between these ratings and terms like successful, satisfactory, or outstanding were specified. Variations in interpretations were the cause of confusion, inconsistency, and conflict. In the New Zealand system we find that additional qualifications can be attached to some positions (tagged positions) but there is little control over the form of these requirements and little indication as to what qualifications would provide the evidence that the requirements could be met. Selection must be based on evidence. Unless requirements are expressed in terms of the evidence required they will not be precise thus making consistency difficult to achieve. It should be noted that slackness in this part of the system would vitiate the effectiveness of the arrangements to enable the exercise of influence by various interest groups as discussed above.

One measure that can be taken to improve consistency is to provide for the evaluation and accreditation of educational qualifications in relation to particular requirements. The need to do this becomes more pressing with the proliferation of educational institutions and the range of qualifications they award. It is a complex task that demands special skills and knowledge and one that should not be left to a selection committee, particularly where overseas or specialist qualifications are involved. Perhaps the best approach would be to assign the task to a committee that either varied its membership according to the nature of the qualification being considered, or had access to expert advice as required. Though the committee should have the responsibility to consider qualifications as they came to its notice provision should also be made for application to be made to the committee for the consideration of a particular qualification.

A number of important improvements in consistency and articulation can be made by the proper organization of a system of professional assessment. Under favourable circumstances an assessment of a teacher's performance based on an inspection of his work can provide reasonably accurate information about skills and qualities the teacher possesses and in what measure he possesses them. It will also form the basis for the evaluation of his experience. Issues relating to professional assessment were discussed in chapter seven. In the present context we are particularly concerned

with the form of evidence relating to the findings of the evaluation. This evidence should be in the form of qualifications that relate to the requirements for appointment to positions within the system, if inconsistency is to be avoided. In effect, the inspection and assessment of teachers should be carried out with the intention of specifying which of the qualifications, approved by the Teaching Council, and relating to this kind of assessment, are possessed by the teacher concerned. These qualifications would include those relating to the possession of skills or qualities, or a particular standard of performance in a particular kind of task. In the case of new entrants to the system, either beginning teachers or teachers from other systems, some alternative to an assessment based on inspection would be required.

APPOINTMENT PROCEDURES

Having outlined arrangements for the rational specification of the requirements of a position and the qualifications possessed by a teacher, the next step is to outline the procedures by which teacher is matched with task. The end result of such procedures is the appointment of a particular teacher to a particular position. Not all appointments within a system will be made in the same way, nor will they all have the same effect. We can divide appointments into two major types on the basis of their effect: permanent and temporary appointments. By a permanent appointment is meant that once a teacher has been permanently appointed to a position he has the right to remain in that position subject only to the continued existence of the position and satisfactory service. A temporary appointee has no such right. The making of sound permanent appointments should be the central concern of a selection and appointments system. We may also distinguish between different types of position: institutional if they are attached to a particular school, non-institutional if they are not. Institutional positions may be further sub-divided into special and ordinary. A special position is one which is set aside or reserved for some special purpose such as the placement of beginning teachers.

PERMANENT APPOINTMENTS TO ORDINARY INSTITUTIONAL POSITIONS

Procedures used in making permanent appointments to ordinary institutional positions will vary depending on whether they are primary or secondary positions, whether they are base or promotional level, and if promotional level, whether they are promotions or transfers. There are, however, a

number of important common features. The first of these is that there is considerable advantage in having one coordinated round of appointments each year as this will, among other things, maximize the number of eligible applicants who will be available. Next are the major constraints that should be placed on the design of these procedures to provide a framework for orderly operation of the system:

- i) No permanent appointment can be made to a position until that position has been advertised on a system-wide basis in a prescribed manner.
- ii) All vacant positions, that is those which have no permanent appointee, must be advertised

There must be some sanction to prevent an appointing authority from continually failing to make a permanent appointment to a particular position. A suitable arrangement would be to provide that should no appointment be made following the second advertisement of a particular vacant position the right to make an appointment to that position would pass to some other authority.

A further common feature would be that the right to make permanent appointments to ordinary positions would be vested in a district education board (or local education authority) but the board would only be permitted to make appointments on the recommendation of a selection committee. The board should be constituted to provide for the representation of those groups which have a legitimate interest in the conduct of education in the area served by the board. The basic appointment procedure would be as follows. Teachers forward an application form to the appropriate district education board in respect of each position for which they wish to be considered and an order of preference for these positions to the authority that will be responsible for the central sorting of appointments. Applications are acknowledged and prepared for consideration by the appropriate selection committee by the district appointments officer who will be an employee of the board. Part of this preparation will be to check that teachers are in fact eligible for appointment to the class of position for which they have applied. Prepared applications will be passed to the appropriate selection committee. This committee will be responsible for the proper application of selection criteria in the preparation of an order of preference of the applicants in respect of each position with which it is concerned. These orders of preference will be forwarded to the district education board concerned.

The district education board should have the right to accept or reject the recommendations of the selection committees. If the recommendations are accepted they would be forwarded to the authority responsible for central sorting. If recommendations are rejected the board should be required to advise the selection committee concerned, stating the reason for the rejection and inviting the committee to submit an amended order of preference. If agreement cannot be reached the matter should be referred to the Teaching Council for settlement. If the council is unable or unwilling to make a decision before the final date for the forwarding of orders of preference to central sorting, no appointment can be made to that position, with the consequences outlined above. The central sorting process has been discussed in chapter eight. Although it is a purely mechanical procedure provision should be made for scrutiny by interested parties to dispel any suspicion of improper manipulation. The results of central sorting are forwarded to the district appointments officers who are responsible for advising applicants of the result of their applications and of any specific right of appeal they may have.

When the permanent appointee to a particular position gains a permanent appointment to another position, the position he previously held will become vacant. Unless some special provision is made, such a consequential vacancy would have to be filled on a temporary basis until the next round of appointments, and indeed this could prove to be the most satisfactory way to deal with the matter. It is however, possible to fill these positions in the same round as the vacancies are created if arrangements are made for them to be advertised as consequential vacancies: that is, positions that are likely to become vacant in this way are advertised on the understanding that no appointment will be made to them unless the incumbent secures an appointment to another position. It is a relatively simple matter for this requirement to be taken in to consideration during the central sorting process.

Despite similarities there are some important differences between the selection committees which deal with primary and secondary positions respectively, which are partly a consequence of the fact that primary schools are generally smaller and more numerous than secondary schools. Selection for secondary positions appears to be most appropriately handled by a separate committee for each school whereas for primary schools there appear to be advantages in having a committee which remains substantially

the same for all positions within the district with provision for additional members to join the committee under certain circumstances. The permanent members of the committee relating to primary positions will be representatives of the district education board, the education department, and two representatives of the teachers' association, one nominated by the district, the other by the national, executive of the association. One of the additional members would be a representative of the agency conducting the school where this was applicable. There is something to be said for providing for the principal of the school and a representative of the governing body of the school to sit on the selection committee when appointments to that school are being considered. There are, however, some practical difficulties associated with arranging for their attendance at the appropriate time which suggest that this form of representation should be restricted to schools over a certain size.

In the case of secondary schools the committee would consist of the principal of the school, representatives of the governing body of the school, the staff of the school, the national teachers' association, the district education board, the department of education, and where applicable, the agency conducting the school. It should be noted that a number of these members may also be members of the governing body of the school. Consideration could be given to having the district appointments officer act as the executive officer of the committee. As mentioned in chapter eight, what we know about how appointments are currently made to positions in some secondary schools strongly suggests that measures be taken to ensure that interests other than those of people closely associated with a particular school, and indeed the interests of the school itself as opposed to those of these people, are taken into consideration. To this end it should be specified that the teachers' association representative may not be a member of the staff and be nominated by the national rather than the district executive of the association. In addition the departmental representative should also be chosen in a way that will ensure that system needs are considered in addition to those of the particular school.

It should be emphasised that the prime function of a selection committee is the proper application of precise criteria to the ranking of applicants in relation to particular positions. The influence exercised by the members of the selection committee should be confined to ensuring adherence to legitimate procedures and the use of legitimate criteria. Any legitimate

claim the groups they represent have for influence over the type of teacher to be selected for a particular position is properly exercised through participation in the formulation of requirements for appointment to the position. The requirements should be so framed that the committee follows a decision procedure rather than actually making decisions. It must be recognized that there will be occasions on which rational criteria will fail to indicate which of two or more teachers is the most suitable for appointment to a particular position. To resolve such situations systems frequently resort to the use of trivial 'tie breaking' criteria. In Queensland for example, if two or more teachers are equal in efficiency then relevant seniority decides the promotion. In that system seniority means:

- a. that the teacher occupies an office to which is attached a classification with a higher maximum salary; or
- b. that, if the maximum salaries are equal, that teacher is senior who held the office, or one of equal value, for a longer period; or
- c. that, if the maximum salaries and periods of occupancy of the office are equal, the teacher is classified as of higher class; or if he is of the same class, that he is of a higher grade in the class; or
- d. that, if the maximum salaries, period of occupancy of the offices and classification divisions of the teachers are equal, that teacher is senior who held for a longer period an office of the next lowest class, or if such periods were equal, that he was classified in a still lower class, if any, for a longer period than that during which the other teacher was so classified.

It is difficult to see any real relationship between the use of such criteria and justice. There seems to be no reasonable argument against letting the decision in such cases rest upon the personal prejudices of the members of the selection committee and it may be good for their morale.

Education systems typically employ different procedures for making appointments to promotional and base level positions respectively, with procedures relating to base level positions being less sophisticated than those relating to promotional level positions. These differences are generally justified on the grounds that there is less differentiation between base level positions and that the way appointments are made to promotional positions has a greater influence on the operation of the system. There is some substance in both arguments but the fact that base level positions generally account for about three-quarters of all positions suggest that there might be a strong economic motive. Indeed it is not

uncommon to find restrictions on teacher movement that do not appear to bear any relationship to the rational allocation of teacher to task. While there is no denying that economic considerations must be taken into account, any restriction based on such considerations must be carefully weighed against the needs of the system and every effort made to ensure that they are rational and just.

There seems little doubt that most systems would benefit from a greater differentiation of base level positions and more sophisticated procedures for matching teacher to task at that level than are currently common. This is particularly true with regard to primary positions. Increased differentiation of positions and between teachers will restrict the numbers of teachers available for appointment to a particular position. Unlike many other restrictions, it constitutes a step towards a rational solution. Though it may be argued that on an individual basis the way appointments to promotional positions are made will have a greater influence on the operation of the system than the way appointments to base level positions are made this must be weighed against the cumulative effect of the very much larger number of base level positions. By definition all movements at base level are transfers. Transfers fall into two main categories: compulsory and voluntary. Voluntary transfers are motivated by the prospect of moving to a position or location considered more desirable by the teacher concerned: there is not usually any task related economic reward. It is generally voluntary transfers that are subject to restriction and this has the effect of reducing the non-economic rewards available to base level teachers, who constitute by far the largest group of teachers.

A consideration of the relevant facts leads to the conclusion that there is no justification for major differences in the procedures used for making permanent appointments to base level as opposed to promotional level positions. The lack of differentiation between base level positions found in many systems is not a justification for simplified procedures but a deficiency to be remedied. Greater differentiation of base level positions must be accompanied by the provision of assessment of teachers to determine their suitability for appointment to particular positions at base level rather than confining assessment largely to determining suitability for promotion.

At the promotional level we are confronted with what amounts to two different types of appointment: promotions and transfers. As noted above transfers may be further sub-divided into compulsory or voluntary. By compulsory is meant that a teacher is obliged, for reasons outside his control, to seek appointment to another position. Such a situation would arise where a position was abolished. Some systems provide quite separate procedures for appointing teachers in this category. In the interests of obtaining the most suitable teacher for each vacant position some integrated procedure is highly desirable but the effective operation of the system requires that provision is made for the placement of teachers who are obliged to seek new positions. It should be noted that any rational selection criteria would tend to favour the teacher who has previous experience in a position at the same level as the vacant position, that is the teacher on transfer, over the teacher whose experience is at a lower level, the teacher seeking promotion. It may nevertheless prove necessary to confer some decisive advantage on the teacher who is obliged to seek a new appointment, such as for example, requiring selection committees to give preference to such a teacher over those who seek promotion or voluntary transfer. No greater modification of selection procedure is desirable or required.

TEMPORARY APPOINTMENTS

Having outlined the procedures to be used in making permanent appointments to ordinary positions we must now consider what procedures are most appropriate for making temporary appointments. The type of procedures used for making temporary appointments will be partly dependent on those used for making permanent appointments. For example, confining permanent appointments to one round per year rather than as required will necessitate temporary appointments of longer duration. The primary, or performance, requirements of the position will remain the same regardless of the type of appointment concerned, however, in the case of some temporary appointments, these requirements may have to be relaxed a little on some occasions. Secondary requirements will be a little different though their objective will be essentially the same.

The need for temporary appointments will arise in two main ways: the temporary unavailability of a teacher (such as might result from illness), and the resignation or retirement of a teacher. With regard to the latter

it is not uncommon to have resignation rates as high as ten percent per annum with the bulk of resignations coming from teachers occupying base level positions. There are a number of possible approaches to arranging for these vacancies to be filled on a temporary basis involving both serving teachers and teachers outside the service. A common approach to filling a temporary vacancy in a promotional position is to make an appointment from among serving teachers at the next lower level. This approach shifts the problem of finding an additional teacher to a lower level and could result in a chain of acting appointments. Another approach is to have a 'mobile reserve': a number of teachers at various levels employed specifically to fill such vacancies as required. This approach has the advantage of not setting up a chain reaction of acting appointments, however, for economic reasons in particular, the number of teachers employed in this category would have to be roughly equivalent to the average demand for their services thus rendering it necessary to provide for additional measures to meet any unusually heavy demands.

Teachers outside the service vary greatly in the kind of employment they seek and the kinds of requirements they are able or willing to meet. One group, equal to almost half the number of resignations, will be teachers seeking to return to continuous full-time service after absences of varying periods. Where there are suitable vacancies these teachers should be readmitted to the service and appointed to these vacancies on an acting basis. Generally they would only be appointed to a position at the same level (or lower) as the position they held before leaving the service. Other teachers may seek full-time employment in a specified location while others would be happy to work intermittently or part-time, or both. It is from this group that short term needs will usually be met though it should be noted that such teachers are more likely to be available in urban than rural areas.

Rather than excluding one approach in favour of another it would appear that the flexibility required for the effective filling of temporary vacancies can only be achieved by providing for a variety of approaches, from which the most appropriate will be selected to deal with a particular situation. The responsibility for making temporary appointments is most appropriately placed with the district education board though provision must be made to ensure that the board will be responsive to legitimate system needs. There is much to be said for making the majority of acting

appointments on a term basis and using similar committees and procedures to those used in making permanent appointments, except that they would be made on a district-wide rather than a system-wide basis. To minimize disruption, temporary appointments to promotional positions within a term would generally be filled from a mobile reserve though there could, on occasion, be a case for filling the position with some particularly suitable teacher serving in the district and this possibility should be provided for.

Short term base level vacancies will generally be filled by teachers employed on a casual basis. Because these are emergency measures the precise matching of teacher to task will be more difficult and probably less important. The district appointments officer would be the most appropriately placed to coordinate appointments of this kind and the board could delegate the authority to make these appointments to him. Although these teachers have been referred to as being outside the service they are in fact a very important part of the overall system and the efficient use of such personnel should be given a good deal more attention than it has to date.

APPOINTMENTS TO SPECIAL INSTITUTIONAL POSITIONS

Difficulties faced by beginning teachers are widely acknowledged but the literature suggests that far from receiving support the beginning teacher is subject to a number of unpleasant discriminatory practices, including assignment to difficult classes and unpopular locations, which contribute to the high loss of beginning teachers. The placement of beginning teachers is clearly a matter that requires careful consideration. A rational approach would be to set aside, or reserve, an appropriate number of carefully selected special positions to which beginning teachers would be appointed. The criteria for selecting these positions would be based on our knowledge of the kind of position most likely to offer the support required by beginning teachers and would include the availability of advisory staff and the absence of particularly difficult teaching situations. The number of positions set aside would equal the number of beginning teachers expected to enter the system each year; usually about seven percent of the total number of positions in the system or a little over nine percent of all base level positions. District education boards could be asked to nominate positions for this purpose in proportion to the total number of positions in their district. Some procedure to ensure that boards use the required criteria in selecting positions would almost certainly be necessary.

The positions selected for beginning teachers would be advertised in the normal format but separately from other vacant positions. With the exception that only beginning teachers would be eligible to apply for appointment to these positions, the procedures for making appointments to them would be the same as those for making permanent appointments to ordinary base level positions. The teachers appointed to these positions would be obliged to apply for a transfer to another position for the following year. There is much to be said for permitting beginning teachers to remain at their initial postings for two years but that would involve setting aside approximately eighteen percent of all base level positions and, especially as we would expect these positions to be of a kind that most teachers would consider desirable, this figure would probably be unacceptable to the remaining base level teachers.

The technique of reserving positions for special purposes could well have other applications. A common phenomena in education systems is the existence of teacher shortages in some areas (often rural) and surpluses in other areas (often urban). The difficulty is that the surplus is usually largely immobile. This imbalance could probably be corrected by setting aside a number of positions in locations where surpluses are known to exist, not exceeding the known surplus and which taken together and added to all other positions will equal the total number of positions it is desired to fill. These special positions would not be advertised with other vacant positions but would be filled on an acting basis from among those teachers who failed to win a permanent appointment. This approach appears to preserve the maximum freedom of choice for individual teachers compatible with the correction of the imbalance and to penalize those that gain by the restrictions placed on others by denying permanent appointment to the special positions, thus avoiding the charge of unjustly favourable treatment.

APPOINTMENTS TO NON-INSTITUTIONAL POSITIONS

There is one kind of appointment that remains to be considered: the appointment to non-institutional positions. Appointments of this kind would include appointments to the mobile reserve and perhaps full-time relieving teachers. Some of these positions could be located in particular districts and appointments could be made to them in a similar manner to that used in making permanent appointments to ordinary institutional positions. Others however, especially higher levels of the mobile reserve, concern the system

as a whole and are unlikely to be adequately dealt with by a particular district. Clearly some system-wide selection committee and appointing authority is required. The composition of these bodies and the procedures they followed would be similar to those at district level. The criteria for selection to non-institutional positions would tend to emphasise general rather than specific skills. The nature of the duties, particularly the need for mobility, would exercise a strong selective effect by excluding those unwilling to accept them.

APPEALS PROCEDURES

No description of appointments procedures is complete until the appeals procedures associated with them have been specified. Issues relating to appeals procedures were discussed in chapter eight but some additional comments are required in the present context. The appointments procedures outlined in this chapter have been designed to eliminate, as far as possible, the disputable decisions that give rise to the need for appeals. This has been done by providing for the exercise of legitimate claims for influence in a controlled manner and the participation of representatives of major interest groups at all crucial points in the process. Nevertheless disputes will inevitably arise which will most appropriately be resolved by recourse to some suitable appeal procedure. Furthermore, the effect on the operation of the system of providing for an appeal against a particular kind of decision, even if no appeal is ever made, should not be overlooked. It could be argued that the existence of an effective appeal system will be likely to reduce the incidence of decisions likely to result in a successful appeal against that decision. In some respects an appeal system functions as a control system.

An appeals system to complement the appointments procedures outlined in this chapter would include a number of specific appeals procedures relating to particular kinds of decisions. Appeals would be allowed against decisions relating to promotion, eligibility, assessment and reports. Though these appeals would normally be made by an aggrieved teacher, provision should be made for a recognized authority or interested party to appeal against such decisions. These specific procedures should also specify the remedy to be adopted in the event of a successful appeal where this is feasible. A successful appeal against failure to grant eligibility, for example, should result in the granting of eligibility and against the failure to promote,

a promotion. In addition to these specific rights of appeal there should be a general right of appeal: procedures should be specified to indicate the course of action to be followed by a teacher, authority, or interested party, aggrieved by any decision that relates to the outcome of the selection process. Any appeal against the failure to appoint a particular teacher to a particular position would be made under this general right of appeal, unless a promotion was involved, in which case it would be considered as an appeal against the failure to promote.

Provision should also be made for the resolution of disputes or differences between authorities such as, for example, the difference that could arise between a selection committee and a district education board over the order of preference for appointment to a particular position. The way that particular difference should be resolved was discussed earlier in this chapter. In general it is important to ensure that there is always some clearly specified legitimate action that can be taken to resolve a dispute to avoid the need, or at least prevent the occurrence, of informal and highly disruptive tests of strength between the authorities concerned. To this end the source of delegated authority and the conditions under which it is delegated should be clearly defined. In those cases where there is no specific provision made to settle a dispute the effect of an appeal should be to refer the matter to the next higher authority in the chain that leads to its ultimate source.

SEQUENCE OF MAJOR EVENTS

The main features of a rational system for the allocation of teacher to task on a system-wide basis have now been sketched; all that remains is to indicate the sequence of major events. In relation to promotional positions, determination of eligibility will take place in the year preceding the year in which vacant positions will be advertised and appointments decided, and appointments will take effect at the beginning of the following year. That is years I, II and III respectively. Decisions as to what positions are to be advertised and what additional requirements are to be attached to them will have to be made before the middle of year II because this is the latest the advertisement of vacant positions can be left and still allow time for selection and appeals procedures to be completed before the end of the school year. As no appeals will be involved, the advertisement of positions for

which beginning teachers will apply may be later in year II. During the school recess between year II and year III arrangements will be made for any temporary appointments required to ensure that schools commence year III fully staffed.

CHAPTER TEN

CONCLUSION

This chapter attempts to tie up a number of loose ends. It outlines an approach to the analysis and comparison of the ways in which education systems arrange for the allocation of teacher to task on a system-wide basis and discusses the need for the collection of more precise data to advance knowledge and improve the effectiveness of existing systems. A number of suggestions relating to improved staffing arrangements to bring them more into accord with the realities of the situation are made. Some comments are made on the subject of improving the professional standing of teachers.

The object in developing a rational model was to provide a framework to organize knowledge and direct research relating to the systematic allocation of teacher to task. We may approach the analysis and comparison of systems that perform this function in three distinct stages. The first is an examination of the relationship between the reward structure of a system and the structure and pattern of movement of the teaching force of that system. The second stage is to discover the actual selection criteria which regulate access to the reward structure and the third to discover the relationship between selection procedures and the use of particular criteria. Each stage is discussed separately below.

The first stage begins with an analysis of the reward structure of a system using the method outlined in chapter six. This is followed by an analysis of the structure of the teaching force of that system. Structure in this context refers to the nature, number, and distribution of teacher characteristics within that system. These characteristics will include age, sex, experience, educational qualifications, and so on. This is followed by an analysis of teacher movement into, out of, and within the system. This analysis will be concerned with the characteristics of teachers involved in particular kinds of movement. Information about the relationship between these aspects of an education system can be obtained by comparing a number

of systems or by comparing the relationship that exists in a particular system before and after a significant change in the reward structure. The results of this kind of analysis can only be approximate as we have disregarded the effects of selection criteria. It should, however, be possible to establish some broad guidelines.

The second stage is the discovery of the actual criteria upon which selection for appointment to various classes of position are based. As noted in chapter seven these criteria may be very different from those upon which selection is supposed to be based. Criteria will be classified according to the qualification to which they relate and the effect of the possession of a specified measure of that qualification in relation to selection for appointment as discussed in chapter seven. We would expect these actual criteria to consist of some, but not all, of the formal criteria, together with informal criteria which replace or modify the formal criteria. The reward structure and the actual criteria which regulate access to the reward structure are the focal point of the selection process. It is therefore important for us to examine the relationship between them and the structure of the teaching force, patterns of movement, and such factors as the morale and performance of teachers. A knowledge of these relationships will assist in the selection of appropriate criteria for the achievement of particular objectives.

The third stage is the discovery of the relationship between selection procedures and the use of particular criteria. Despite the great deal of attention that must be given to the design of appropriate selection procedures if we are to have selection processes that will lead to the achievement of system objectives, it must be recognized that procedures have their main effect on this process through their influence in determining the actual criteria used. Procedures will generally be designed to ensure the proper application of rationally derived criteria. To do this we must know something of the relationship between the use of various procedures and the actual criteria they result in being used. Where the actual criteria used differ significantly from the formal criteria we know that the procedures require modification if they are to achieve their objective.

On completion of the three stages of investigation we should be in a position to manipulate a system by specifying a set of criteria to be used and a set of procedures to ensure their application that will result in a

selection process that will achieve the objectives defined for this process. An additional point of comparison between systems will relate to the general satisfaction of interested parties with the criteria and procedures used in the system and the level of disruptive conflict associated with the use of particular procedures.

The investigations discussed above will clearly require the collection of a vast amount of precise data, however, most of the data required for this purpose is also required by the systems concerned themselves if they are to operate in a rational manner. The evidence suggests that most systems would greatly benefit from an improvement in their arrangements for the collection and analysis of data relating to their performance. It appears to be fairly common for the statistics branch of an education system to have insufficient resources to do more than collect the most basic of statistics and respond with rough figures to urgent demands for information.

The ultimate objective would be to design a system that was self-adaptive, that is, a system that will respond to changes in its environment in a way that will allow it to continue to meet its basic objectives, without the need for outside intervention. To succeed in this a system would have to be designed to allow for a controlled diversity with an evaluation of the consequences of the variations which occurred. This would result in a kind of continuous natural experiment. In this way we can provide for the operation of the two fundamental mechanisms of development; the provision of candidates and the selection of the most suitable. So organized a system could 'learn' from its experience. Despite the fact that this ultimate objective is unlikely to be achieved there is every reason to believe that systems could be designed to approach more closely to this objective than is common at present.

In most cases where major changes are required in an education system it will either be impossible or undesirable to have them carried out in one fell swoop. There are two major approaches to the gradual modification of a system, in many cases they can and will be used together. The first approach is to arrange for the changes to be made in a series of steps which move in the direction of the desired modification. An example of this approach would be the situation where it was decided to involve teachers in the selection process when hitherto they had played no part. A first step might be to provide for teacher representatives to observe the process in which they will

eventually take part. The second step might provide for those representatives to participate in the process in an advisory capacity. The final step would be full participation.

The second approach is to initiate a deviation amplifying process that once started would continue the change in the required direction with gathering momentum. An example of this approach might be the action that could be taken to stem the tendency toward an increasing proportion of youthful and transient teachers in the teaching service. Arrangements to increase the attractiveness of teaching as a long term career would hold more teachers in teaching for a longer period thus increasing the proportion of career as opposed to transient, and older as opposed to younger teachers. The increased proportion of career teachers together with the increased proportion of youthful teachers intending to make a career in teaching should lead to a greater pressure for improved conditions for career teachers which, if obtained, should lead to a further increase in the proportion of career teachers and a continuation of the process until some limiting factor intervened.

There are a number of areas in which changes in the way education is organized could lead to significant improvements in the effectiveness of the system as a whole. The first of these relates to the need for a greater differentiation of teaching tasks, particularly at the primary or elementary level. It is not suggested that the kind of subject area specialization found in secondary schools should serve as a model; a more coordinated effort would appear preferable, with more attention being given to the possibilities of special expertise being exercised to the benefit of students indirectly through assistance rendered to other teachers. Thus a teacher in a primary school with particular skills and interest in drama may be directly involved with students to initiate a project but give subsequent assistance through, for example, the students' class teacher. In general terms, improvement appears to lie in the direction of more attention to the determination of function requirement in terms of the school as a whole and the designing of mechanisms for the allocation of teacher to task that will facilitate the provision of teachers with the performance capability to meet the requirements so determined.

Some desirable changes in the organization of education are connected with providing for staffing arrangements more in accord with the 'realities' of the situation. There appear to be very good reasons to differentiate between teachers, particularly at base level, on the basis of responsibility and commitment. There is a significant proportion of teachers who, though ostensibly engaged in full-time teaching, are either unable or unwilling to make the commitment to teaching that at least some teachers must be prepared to make if a school is to provide adequate educational opportunities for its students. The lack of differentiation in the remuneration and conditions of service between these groups appears to be a source of considerable dissatisfaction to those teachers who are prepared to make a full commitment to teaching, a dissatisfaction that is very likely to be expressed in terms of a reduced level of performance. The obvious solution would appear to be to have two distinct classes of position with differing responsibilities, remuneration, and conditions of service. The introduction of this innovation would be a delicate matter but it could be done and may constitute a significant breakthrough in the development of teaching as a profession.

The high proportion of women teachers in most education systems demands that issues relating to the effective utilization of their services be given careful consideration. A large number of women leave teaching for 'domestic' reasons: a substantial proportion of these women later return to teaching. The most common domestic reason is to bear and care for children. Effective family planning has given women the opportunity to reduce the disruptive effects of motherhood on their careers if they so choose, nevertheless, the choice to have children generally involves a break in full-time teaching. This break has two important undesirable consequences: the loss of the teacher's services during that period and the atrophy of their professional skills. It may well be possible to minimize both kinds of loss by providing for a range of employment opportunities involving lesser responsibilities than full-time fully committed teaching.

One such category would be that mentioned in a previous paragraph which would be particularly suitable for the woman with school age children to care for. Though quite prepared to devote her full energies to teaching during the day she might prefer not to undertake any responsibilities that would make additional demands on her time. Not only would the existence of such a category reduce dissatisfaction among 'ordinary' teachers but it could well encourage women back to teaching who have refrained from doing so because

they felt they could not in conscience accept the full responsibility of a normal position. Other arrangements for employment involving even less, or quite different, responsibilities could also be made. Some possibilities were considered in chapter nine in connection with temporary appointments. If the provision of such employment opportunities became an integral part of an education system it would be a simple matter to arrange for qualified teachers in non-teaching positions within the system to become partially involved in teaching. A college lecturer, for example, could retain an interest in the activity which is the subject of his lectureship.

The fact that salary structure tends to be determined by factors other than those related to the effective performance of the system was mentioned in chapter six. As the high proportion of national expenditure which goes to teachers' salaries places very definite limitations on the total amount available for that purpose attention should be focused on the distribution of this money within the system and more sophisticated strategies for the improvement of teachers' conditions of service. It is interesting to note that for professional occupations there appears to be some relationship between the extent of the population served and salary level. Thus we find that a medical specialist though he may have a smaller number of clients than a general practitioner, can usually command a higher salary. This suggests that the major thrust for improved conditions by many teachers' associations, a demand for reduced pupil/teacher ratios, is very ill-conceived. The most probable consequence of success would, in the long term, be a reduction in teacher salaries relative to other salaried professionals.

A far more rational approach would be to press for changes that would improve teachers' conditions while at the same time increasing pupil/teacher ratios. This could be achieved by the increased employment of sub-professional staff to perform non-professional tasks currently performed by teachers. This would allow teachers more time for professional tasks and increase the number of students for whom a teacher could be responsible. This would necessarily involve changes in the current conception of teacher role. It is also likely that reduced teacher turnover, which would lead to a reduction in the ratio of teachers in preparation to teachers actively engaged in teaching, would improve the prospect of obtaining higher teacher salaries as the total cost of preparing teachers would be reduced.

The final note concerns the fact that though teacher shortages have frequently plagued those responsible for the provision of education, the United States has, in recent years, had a considerable oversupply of teachers in a number of categories. It is quite possible that this might also occur in Australia and New Zealand. Such a state of affairs makes it possible and desirable to be more discriminating in the selection of teachers.

BIBLIOGRAPHY

- ASHBY, W. An Introduction to Cybernetics
Chapman & Hall, London, 1956
- Principles of the Self-Organizing System
from Foerster, H. & Zopf (Eds) Principles of Self-Organization
Permagon, New York, 1962
- BARRY, B. Political Argument
Routledge & Kegan Paul, London, 1965
- BARTELS, M. Index of Teacher Demand Through 1963
Educational Forum 29, November 1964
- Index of Teacher Demand Through 1964
Educational Forum 30, January 1966
- BATES, R. (Ed) Prospects in New Zealand Education
Hodder & Stroughton, Auckland, 1970
- BECKER, H. The Career of the Chicago Public School Teacher
American Journal of Sociology, 1951
- Notes on the Concept of Commitment
American Journal of Sociology 66, 1960
- BLASER, J. Factors contributing to the problem of men graduates from
the University of Idaho (1951-1960) leaving the teaching
profession Doctoral thesis, University of Idaho, 1965
- BIAU, P. & SCOTT Formal Organizations
Routledge & Kegan Paul, London, 1963

- BUCKLEY, W. (Ed) Modern Systems Research for the Behavioural Scientist
Aldine Publishing Co., Chicago, 1968
- CHARTERS, W. Research in Teacher Mobility
Harvard Center for Research on Careers, Cambridge Mass., 1964
- Some Factors Affecting Teacher Survival in School Districts
American Educational Research Journal 7/1, 1970
- CORWIN, R. Militant Professionalism
Appleton-Century-Crofts, New York, 1970
- DAVIS, J. Great Aspirations
Aldine Publishing Co., Chicago, 1964
- DOWNS, A. Inside Bureacracy
Little Brown & Co., Boston, 1967
- DREEBEN, R. The Nature of Teaching
Scott Foresman, Glenview, Illinois, 1970
- EARP, N. WESLEY & BRADLEY The Increasing Demand for Additional Men in Elementary Education Teachers College Journal 37, March 1966
- EINSTEIN, A. Sidelights of Relativity
Dutton, New York, 1923
- EMMET, D. & MacINTYRE Sociological Theory and Philosophical Analysis
Macmillan, New York, 1970
- ERIC (Educational Resources Information Center) Research in Education
United States Government, Washington, 1974
- FEIGL, H. & BRODBECK (Eds) Readings in the Philosophy of Science
Appleton-Century-Crofts, New York, 1953
- FOERSTER, H. From Stimulus to Symbol: The Economy of Biological Computation
from Kepes, G. (Ed) Sign, Image, Symbol
George Braziller, New York, 1966

- FORD, P. & ALLEN Assignment and Missassignment of Teachers
NEA Journal 55, February 1966
- FOSTER, C. Teacher Supply and Demand
Review of Educational Research, June 1967
- GRIFFITHS, D. et al Teacher Mobility in New York City
New York University, New York, 1963
- GROSS, N., MASON & McEACHERN Explorations in Role Analysis
John Wiley & Sons, New York, 1958
- HARMAN, G. & SELBY SMITH Designing a New Education Authority
Australian National University, Canberra, 1973
- HIRST, F., BOWLES & KENT-HUGHES A Computer Based Matching Service to Facilitate the Appointment of New Medical Graduates
This paper was prepared for the Matching Service Committee of the Melbourne Medical Postgraduate Committee.
- HOSPERS, J. An Introduction to Philosophical Analysis (2nd edn)
Routledge & Kegan Paul, 1967
- HUNTER, J. The Beginning Teacher One Year Later
Office of Education, Washington, 1964
- KAHN, R. et al Organizational Stress
John Wiley & Sons, New York, 1964
- KAILOV, K. The Problem of Systematic Organization in Theoretical Biology
General Systems IX, 1964
- KIRKPATRICK, R. The Relationship of Job Satisfaction to Perceived Staff Promotion Policies California Journal of Educational Research 15, March 1964
- KOB, J. Definition of the Teacher's Role
from Halsey, A. (Ed) Education, Economy and Society
Free Press, New York, 1961

- KREMYANSKIY, V. Certain Peculiarities of Organisms as a System from the Point of View of Physics, Cybernetics, and Biology
General Systems 5, 1960
- KRIMERMAN, L. Autonomy: a New Paradigm for Research
NSSE Yearbook Part I (Ch XIII)
University of Chicago, Chicago, 1972
- KUHN, T. The Structure of Scientific Revolutions (2nd edn)
University of Chicago, Chicago, 1970
- LINK, F. Merit Rating: Have the Issues Changed
Educational Leadership 22, February 1965
- MacKAY, D. Towards an Information-Flow Model of Human Behaviour
British Journal of Psychology 47, 1956
- MARUYAMA, M. Deviation-Amplifying Mutual Causal Processes
American Scientist 51, 1963
- MASON, W. The Beginning Teacher
United States Government, Washington, 1959
- MATTHEWS, J. & RADFORD Career and Salary Structures of Teachers in Government Schools in the Australian States (3rd Edn)
ACER, Hawthorn, Victoria, 1974
- METZ, E. Withdrawal of Teachers from Chicago Public Schools
Doctoral thesis, Ohio State University, Columbus, 1962
- NAGEL, E. The Causal Character of Modern Physical Theory
from his Freedom and Reason
Free Press, Glencoe, Illinois, 1951
- The Logic of Historical Analysis
Scientific Monthly 74, 1952
- NEAL, W & RADFORD Teachers for Commonwealth Schools
Australian Government Publishing Service, Canberra, 1973

- NEA REPORT The American Public School Teacher 1960-61 (M2) 1963
- NEA REPORT Teacher Supply and Demand in Public Schools 1966 (e)
- NEA RESEARCH BULLETIN 41 Economic Rewards of Teaching 1963 (a)
- NEA RESEARCH BULLETIN 42 The Problem: Supply Demand 1964 (a)
- NEA RESEARCH BULLETIN 43 The Selective Shortage of Teachers 1965 (a)

(Published by the National Education Association of U.S.A.)

- NELSON, R. & THOMPSON Why Teachers Quit: Factors Influencing Teachers to Leave their Classrooms After the First Year
Clearing House 37, April 1963

- NEW ZEALAND CENTRAL ADVISORY COMMITTEE ON THE APPOINTMENT AND PROMOTION OF TEACHERS Third Five-Yearly Report 1966-1970
Government Printer, Wellington, 1971

- NEW ZEALAND DEPARTMENT OF STATISTICS Industries and Occupations
Government Printer, Wellington, 1969

- Income and Income Tax Statistics to 1970-71
Government Printer, Wellington, 1973

- NEW ZEALAND LAWS Education Act 1964
Government Printer, Wellington, 1973

- NORTH CAROLINA STATE DEPARTMENT OF PUBLIC INSTRUCTION
The North Carolina Teacher Merit Pay Study
The Department, Raleigh, 1965

- PAPUA NEW GUINEA LAWS Education Act 1970
Government Printer, Port Moresby, 1970

- Teaching Service Act 1972
Government Printer, Port Moresby, 1972

- PETERSON, W. A Study of the Male Teacher in the Elementary Schools of ... Nebraska Doctoral Thesis, University of South Dakota, Vermillion, 1966

- PLANZ, C. & GIBSON Staff Differentiation and Equity Among Early Career Male Teachers Education 91/3, 1971

- POPPER, K. Objective Knowledge: An Evolutionary Approach
Clarendon, Oxford, 1972
- PURCELL, E. Parts and Wholes in Physics
from Lerner, D. Parts & Wholes
Free Press, 1963
- RAPOPORT, A. Foreword
from Buckley, W. (Ed) Modern Systems Theory for the Behavioural Scientist Aldine, Chicago, 1968
- & HORVATH Thoughts on Organization Theory
from Buckley, W. (Ed) Modern Systems Theory for the Behavioural Scientist Aldine, Chicago, 1968
- REPORT OF THE ADVISORY COMMITTEE ON EDUCATION IN PAPUA NEW GUINEA (WEEDEN)
A report to the Minister for External Territories, Canberra,
1969
- RUSSELL, B. On the Notion of Cause, With Application to the Free-Will Problem from Feigl, H. & Brodbeck (Eds) Readings in the Philosophy of Science Appleton-Century-Crofts, New York, 1953
- RYAN, A. Philosophy of the Social Sciences
Macmillan, London, 1970
- SELBY SMITH, C. An Economic Approach to Teacher Loss and Retention
Australian Journal of Education 17/2, 1973
- STEWART, W. Factors Involved in the Withdrawal of Teachers
Doctoral thesis, Indiana University, Bloomington, 1963
- STRICKLAND, B. A Study of Factors Affecting Teacher Morale
Doctoral thesis, University of North Carolina, Chapel Hill, 1962
- STRIKE, K. Explaining and Understanding
NSSE Yearbook Part I (Ch II)
University of Chicago, Chicago, 1972

- THOMAS, A., FARQUHAR & TAYLOR (Eds) Educational Administration in Australia and Abroad - Analyses and Challenges
University of Queensland Press, St Lucia, 1975
- THOMAS, W. A study of the factors associated with the retention of teachers in selected public school systems in Cuyahoga County, Ohio
- THOMPSON, K. & TRLIN (Eds) Contemporary New Zealand
Hicks Smith & Sons, Wellington, New Zealand, 1973
- WALKER, W. Future Occupational Plans of a Sample of Final Year Student Teachers Australian Journal of Higher Education 1/1, 1961
- WILSON, L., KERR & WILSON The Economic Status of Teachers
Review of Educational Research, June 1967
- WYLLIE, R. Ghanian University Students: a research note
British Journal of Sociology 17/3, 1966
-

Use was also made of The Encyclopedia of Educational Research (4th Edn) published by the American Educational Research Association (1969) and statistical material kindly supplied by the education departments of New Zealand and Papua New Guinea.