AN EXPLORATORY STUDY OF FINAL GRADES AWARDED TO BACHELOR WITH HONOURS AND MASTERS STUDENTS

A thesis presented in partial fulfilment of the requirements for the degree of Master of Arts in Psychology at Massey University.

Patricia Bolger

1990

ABSTRACT

This study explores the final grades awarded to Bachelor with honours and Masters students in New Zealand universities from 1960 to 1989 as a function of students' gender, the university attended, the degree completed, and the subject studied. These grades were also compared with the grades awarded to Bachelor with honours students in England and Wales from 1974 to 1989. Chi-square test statistics were used to measure the significance of these relationships. In New Zealand women were awarded significantly more first class degrees than men. In England and Wales men were awarded significantly more first class degrees than women. Science students were awarded a higher percentage of first class degrees than other students in both New Zealand and England and Wales. In New Zealand Bachelor with honours students were awarded first class degrees more frequently than Masters students. Political and historical developments, the nature of the grading procedures used, and institutional and departmental variance provide partial explanation for some of the results. It is clear that no single factor is responsible for these variations in degree performance, but rather a complex interaction of several factors. It is concluded that in New Zealand and England and Wales, gender, university, the degree undertaken, and the subject studied, all have an effect on the final grade a student is awarded.

ACKNOWLEDGEMENTS

I would like to thank Mike Smith, my supervisor, for his encouragement, assistance, and practical research philosophy.

Thanks also to the New Zealand University Students Association for awarding me their Scholarship for Higher Education. Most importantly this strengthened my own belief in the value of this research.

Thanks to Robert Loeffen, Ali Maginness, Joss Tennent, Maria Bolger, and especially Andrew Kibblewhite for their continual support, advice, and friendship.

Lastly, Mum and Dad, thanks for the genes and the environment, without which I could never have come this far. Also thanks for the unending support and friendship.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER ONE

OVERVIEW

The degree class awarded to a student is an important marker of achievement. Yet the reliability of assessment in higher education has been the subject of concern for some years (Hartog & Rhodes, 1935; Dale, 1959; Cox, 1967; Foster, 1985; Johnson, 1988). Research continues to highlight discrepancies in the grades that students receive that are not the result of differences in students academic ability. Differences have been noted in the awarding of honours degrees between institutions (Bee & Dolton, 1985; Connolly & Smith, 1986; Johnes & Taylor, 1987), between courses of study (Bourner & Bourner, 1985; Smith, 1990), and between males and females (Rudd, 1984; Kornbrot, 1987; Clarke, 1988). Further there is still no uniform opinion as to why these differences occur.

Answers to these questions are likely to be of interest not only to the universities themselves, but also to potential university students and to employers. Potential students are likely to be interested in discovering the extent to which their chances of obtaining a "good" degree might vary between institutions and departments. Employers may be interested to know where they are most likely to recruit graduates with "good" degrees. It is the purpose of this research to investigate whether degree results vary between institutions, the subject studied, and between males and females who have completed postgraduate degrees in New Zealand in the last thirty years. New Zealand grades will also be compared with those of England and Wales.

Grading is a form of performance appraisal, and as such a great deal of the research in this area is applicable to grading and assessment within education. Chapter two is an overview of performance appraisal. Nearly

ACKNOWLEDGEMENTS

I would like to thank Mike Smith, my supervisor, for his encouragement, assistance, and practical research philosophy.

Thanks also to the New Zealand University Students Association for awarding me their Scholarship for Higher Education. Most importantly this strengthened my own belief in the value of this research.

Thanks to Robert Loeffen, Ali Maginness, Joss Tennent, Maria Bolger, and especially Andrew Kibblewhite for their continual support, advice, and friendship.

Lastly, Mum and Dad, thanks for the genes and the environment, without which I could never have come this far. Also thanks for the unending support and friendship.

In chapter eight the results are interpreted, and some explanations for the outcomes observed are provided. Contrasts and similarities between the results of New Zealand's universities and those of England and Wales are examined. The implications of these results for postgraduate students from both New Zealand and England and Wales are discussed, along with suggestions for future research.

CHAPTER TWO

PERFORMANCE APPRAISAL

2.1 Introduction

There is no escape from performance appraisal. It is impossible to go through life without being assessed many times, in many different situations, for many different purposes. Assessments are sometimes formal as in job interviews or teachers' reports, though they are just as often informal, such as meeting new acquaintances and judgements made by school peers. We are all assessed virtually from birth, and then continually throughout our life, be it by doctors, school teachers, and family, and later, by the bank manager, lecturers, and the sports coach. We assess people who provide us with services such as solicitors, chefs, and hairdressers and act on our judgement of their effectiveness to decide whether we will continue to use their services.

To appraise anything is to set a value on it. The purpose is to find out how a person performs when compared with a standard. The most common and formal type of performance appraisal takes place in the work setting.

Formal performance appraisal systems are constructed with the understanding that performance evaluations represent meaningful distinctions among individuals that correspond to actual behavioural differences (Wendelken & Inn, 1981). The overall aim of the appraisal is to remove the influence of extraneous factors from the evaluation process in order to focus solely on aspects of performance that are related to some specific criterion.

Although judgements may be made about an individual's performance on a regular basis, the accuracy and equity of this process is still unresolved. Organizations continue to express disappointment in performance appraisal systems despite advances in technology (Banks & Murphy, 1985). It should be appreciated that even with the best intentions, it is unlikely that performance appraisals can ever be made completely objective and accurate. Issues such as validity, reliability, and bias remain major and persistent problems which often hinder or nullify the value of many performance appraisal systems.

2.2 The Criterion

Before a performance appraisal can be conducted it is essential that an organization determines the nature of the dimensions on which distinctions about performance are to be made. This is referred to as criterion development. The criterion is a way of describing success. For example, the criterion for a shop retailer might be the monetary value of sales in a one-month period. A criterion for measuring a student's success in a school subject might be the course grade. The criterion for measuring a dieter's success is most likely to be the amount of weight lost. However, defining "the criterion" is not always a simple matter. It has been a problematic area of Industrial/Organizational Psychology for many years (Landy & Farr, 1983).

For this reason, no doubt, a large amount of research has been directed at determining the necessary "criteria for criteria". Blum and Naylor (1968), for example, compiled a list of fifteen characteristics they considered necessary and/or desirable for criteria. These undefined characteristics are as follows: reliable, realistic, representative, related to other criteria, acceptable to job analysts, acceptable to management, consistent from one situation to another, predictable, inexpensive,

understandable, measurable, relevant, uncontaminated, bias free, and discriminating. Unfortunately, there have been few attempts to refine these characteristics or develop operational definitions of the criteria for the criterion. Subsequently a numerous array of variables have been used to study the effectiveness of performance appraisal data.

This inconsistency in criterion development places doubt on the use of some performance appraisal measures. Downey, Lahey and Saal (1982) have shown empirically that the operational definitions adopted for criteria will significantly affect the conclusions drawn in the assessment of appraisal data. In a comparison of the psychometric characteristics of ratings from graphic and mixed-standard scales, it was found that the use of one set of operational definitions for rating error produced results that differed from the results obtained when another set of operational definitions was adopted. Their study illustrates the need for researchers and practitioners to thoroughly scrutinize the criteria they select for assessing appraisal data. This is best achieved by considering several of the essential requirements for a criterion.

The first requirement of a criterion is that it be relevant to some important goal of the individual, the organisation, or society (Smith, 1983). Determination of relevance, is however, a matter of judgement. Some group or person must decide which activities are most relevant to success. Once these activities have been identified, effort must then be directed towards developing psychometrically sound measures of these activities. The measure of a criterion should be, neither contaminated with irrelevant variance, nor deficient in terms of measuring the important objectives of the organisation and of the people in it. As well, neither the criterion nor the measure of it should be biased or trivial. Relevance, consists of two parts. One is the validity of the goal which is judged to be important. The second is the validity of the measure(s) of goal

achievement. This requirement is parallel to the requirement that a test be valid.

Reliability is the second requirement of a criterion. The estimates of reliability may be grouped into three general classes: (a) measures of stability; (b) measures of equivalence; and (c) measures of internal consistency (Landy & Farr, 1983). A criterion measure must in addition be practical, available, plausible, and acceptable to those who use it (Smith, 1983). Once an appropriate criterion has been determined, a method of measurement needs to be chosen. Frequently referred to as a performance measure or assessment method.

2.3 Assessment Methods

The techniques used to assess and measure performance can be grouped into three general categories: comparative, absolute, and outcome or results-orientated. (Landy & Farr, 1983; Long, 1986). Comparative techniques evaluate the performance of employees in a work group relative to each other, using paired comparison, a ranking procedure, or forced distribution. All procedures are highly subjective as the rater is given a great deal of latitude to infer what distinguishes levels of effective performance.

Absolute or criteria referenced methods attempt to describe or evaluate the performance of an individual by reference to some standard or standards of performance, not in relation to other individuals. Techniques include the essay or narrative-type approach, graphic or trait rating scales, mixed standard rating scale (Blanz & Ghiselli, 1972), checklists, critical incidents (Flanagan, 1954), and behavioral anchored rating scales (Smith & Kendall, 1963). All these procedures have limitations, but they may be appropriate depending on the purpose for which the appraisal is conducted.

The final group of methods is those that are results-orientated. These methods concentrate on specific accomplishments and outcomes achieved as a result of job performance, rather than job behaviours. Central to this approach is employee participation, objectives being jointly agreed between superiors and subordinates, and standards established in advance as the result of discussion and negotiation (Long, 1986). One problem with this approach is that a high degree of inferential skills, management time and effort is required for the method to work effectively. This method has also been found to be unsatisfactory for complex positions (Gruenfield, 1981).

2.4 Types of Data

In conjunction with the method to be used in a performance appraisal, the type of data to be collected needs to be determined. There are several kinds of data that can be used to provide the necessary information. Guion (1965) identified at least three different types of measures of job behaviour: objective data, personnel data, and judgmental data. Ideally, Landy (1989) states that a complete performance measurement should include a combination of all three of these indices of performance, as the multi-dimensionality of job performance only becomes apparent when these categories are considered simultaneously. This advice is rarely put into practice.

Both objective data and personnel data can be problematic. Generally the recording of this information is either not done correctly, or is unable to be done adequately enough for the resulting information to be useful, valid, or reliable. This does not imply that objective or personnel data have no value as criteria, but rather, that if they are to be useful, a careful analysis of the relationship between the elements of the job as identified

by the job analysis and elements of the behaviour as related to performance appraisal is necessary.

Judgmental data is the most frequently used form of measurement. Landy (1989) reported that a literature review of validation studies in the Journal of Applied Psychology between 1965 and 1975 revealed that ratings were used as the primary criterion in 72% of the cases. These judgments can take several forms. They may be a simple comparison of one employee with another, a list of statements which are applied to each employee, or some form of rating by which the employee is placed on a continuum depending on their level of proficiency.

2.5 Rating Scales

The most widely used performance appraisal method is the judgemental rating scale (Long, 1986; Baker, 1988; Leap & Crino, 1989). Rating scales can be distinguished from one another on three different dimensions (Guion, 1965). The first dimension is the degree to which the meaning of the response category is defined. This deals with how the rating scale is marked off into units. Here a number of important decisions need to be made, the first is how many points the scale should contain. Previous research on the use of rating scales indicates that the optimal scale should include four or five points. Reliability drops with three categories or less, and there is little increase in reliability when there is more than five points (Lissitz & Green, 1975). Further, when deciding on the number of scale points, the organisation must decide whether they wish to permit central, uncertain, or undecided responses, which can occur with an odd-numbered scale (Jacobs, 1986).

The second dimension is the degree to which the person interpreting the scale can tell what response was intended by the ratee. This is referred to as response clarity and is largely determined by the structure of the

scale. The third dimension is the degree to which the performance dimension being rated is defined for the rater. Whenever possible, verbal descriptions should accompany the numerical scale (Jacobs, 1986). Scale anchors that are defined precisely are less open to misinterpretation and therefore give the rater a reasonable idea of what performance dimensions are being considered. It has also been suggested that points on a rating scale should be reviewed between raters to ensure that there is agreement concerning what each point means in terms of actual performance behaviour (Leap & Crino, 1989).

2.6 Rating Error

In spite of the different forms and widespread use of judgmental indices of performance there has been a consistent dissatisfaction with these measures on the part of the researcher and practitioner. This dissatisfaction can be largely attributed to three types of rating errors - halo, central tendency, and leniency (Anastasi, 1982). Other errors also contribute to the contamination of performance ratings, they include contrast, first impression, and spillover effect.

Halo error, named by Thorndike (1920), occurs when a rater has a generally favourable or unfavourable impression of the person rated. This influences the rater in such a way that ratings are assigned which are consistent with that impression. The effect of this psychometric error is most exaggerated when multi-factor ratings are required. No method has been devised that effectively eliminates halo errors, and research on alternative solutions still continues (King, Hunter & Schmitt, 1980; Landy, Vance, Barnes-Farrell & Steele, 1980).

The tendency to overweight in an appraisal any information and/or observations made on a person early in the appraisal period, is labelled first impression error (Latham, Wexley & Pursell, 1975). This

judgemental error is thought to be related to halo in that first impressions may facilitate or in fact be synonymous with the development of a positive or negative halo impression about a person.

Other rating errors are the result of inappropriate rating patterns, due to the rater's failure to make necessary and appropriate distinctions among the performance levels of different individuals (Leap & Crino, 1989). They include central tendency error which is generally defined as the "bunching up" of ratings at or near the middle of the scale owing to raters unwillingness to assign extreme ratings. Since many individuals do perform somewhere around an average, it is an easily rationalised escape from making a valid appraisal (Henderson, 1984).

Leniency error, refers to raters who are unusually harsh or unusually easy in their ratings. This results in ratings being bunched up either towards the lower or upper end of the scale. Both leniency and central tendency errors reduce the effective width of the scale and make ratings less discriminatory (Anastasi, 1982).

One suggestion that has been offered to eliminate these errors is a forced distribution in which the rater is required to allocate a given percentage of the ratees' to each category (Landy & Farr, 1983). However, the forced distribution assumes that there is some knowledge of what the distribution should look like, in most circumstances this assumption is probably untenable.

Better scale development has also been suggested as one means of reducing leniency error. In particular, reducing the ambiguity of the scale by improving the definitions of the dimensions of the scale. Finally, attempts to eliminate rater errors have often focused on training raters to be aware of these tendencies.

2.7 Rater Training

Skill is required to appraise performance, therefore it makes sense to train raters. As Allinson (1977) observed, if an appraisal system is to function effectively, all members of an organisation should be educated about how to use the particular rating form, and its purpose. There has been a considerable amount of research on rater training (see reviews by Spool, 1978; Bernardin & Buckley, 1981). Traditionally, an important part of rater training has involved a description of the traditional rating errors of leniency and halo and suggestions on how to avoid them (Landy, 1989). However, Bernardin and Pence's (1980) study found that raters who were only trained in avoiding rating errors adopted a "set" or a cognitive control mechanism that was geared towards producing ratings that had certain statistical properties rather than ratings that described actual behaviour. A more effective rater training method proposed by Murphy, Martin and Garcia (1982), is to train raters in observation skills rather than in the ways of avoiding rater error. Their proposal is based on the assumption that raters who are more accurate observers are also more accurate evaluators.

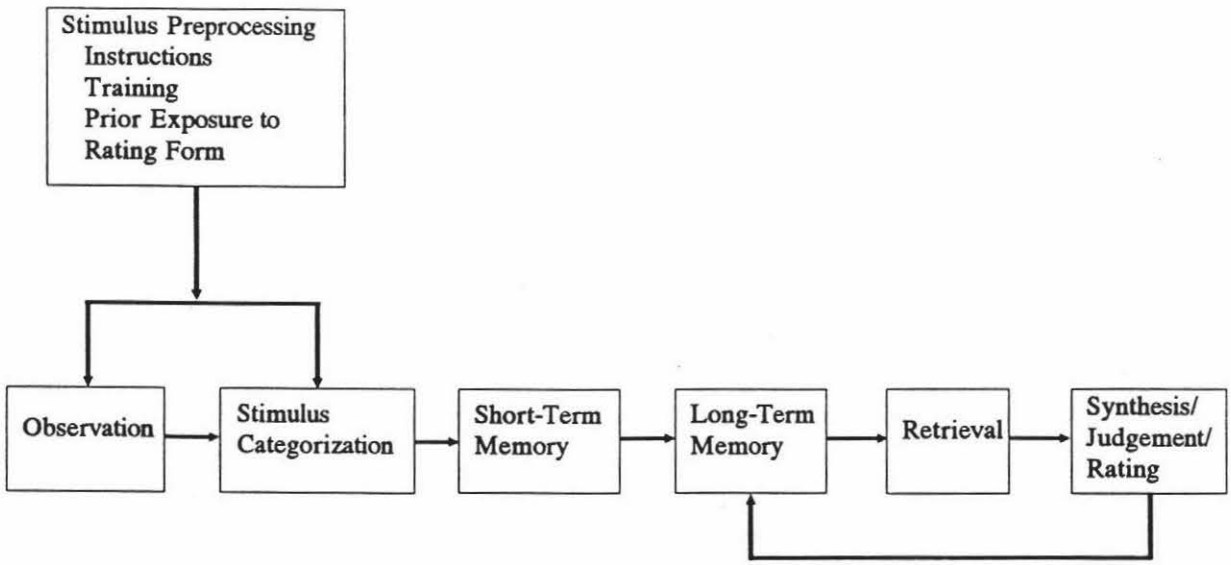

Figure 2.1: Cognitive Components in Rating.
Source: Landy & Farr (1980).

Accurate evaluation depends on accurate perception. However, even with extremely competent raters, it is unlikely that performance appraisals can ever be completely accurate. A major reason for this is that humans have limited information processing capabilities (Feldman, 1981). Consequently research has focused on why some, as opposed to other, appraisal information is attended to; whether information is stored in long or short term memory; how information is organised in memory; and how it is retrieved and combined for decision making. A model of the relationship between these cognitive components is presented in Figure 2.1. It is an elaboration of the cognitive section (ie., observation/storage and retrieval/judgement) of Landy and Farr's (1980) process model. The hope is that as the sequence of events that occur in performance appraisal becomes better understood, fair and unbiased appraisal systems will become commonplace (Feldman, 1981). Until then, rater accuracy may be best achieved using some type of regular refresher training to sustain appraisal skills (Ivancevich, 1979).

2.8 The Process Model

The process of performance rating is incredibly complex. There are many opportunities for ratings to be influenced by factors other than the performance of the person rated. Bernardin and Beatty (1984) have suggested that the complexity of performance appraisal is best represented by Landy and Farr's (1980) process model of performance rating. This model, shown here in Figure 2.2, purports to describe the task of performance rating from a process perspective. When considering this model it is important to remember that the goal of performance rating is to provide an accurate performance description of the person in question. In Landy and Farr's (1980) model this is represented by the box labelled "Performance Description". Most of the other boxes might

be thought of as "potential obstacles to accurate performance description" (Landy, 1989, p. 147). The model attempts to define the specific subsystems and their interactive effects that form the larger rating system. Each component of the model has a research history which may be said to justify its inclusion in the model.

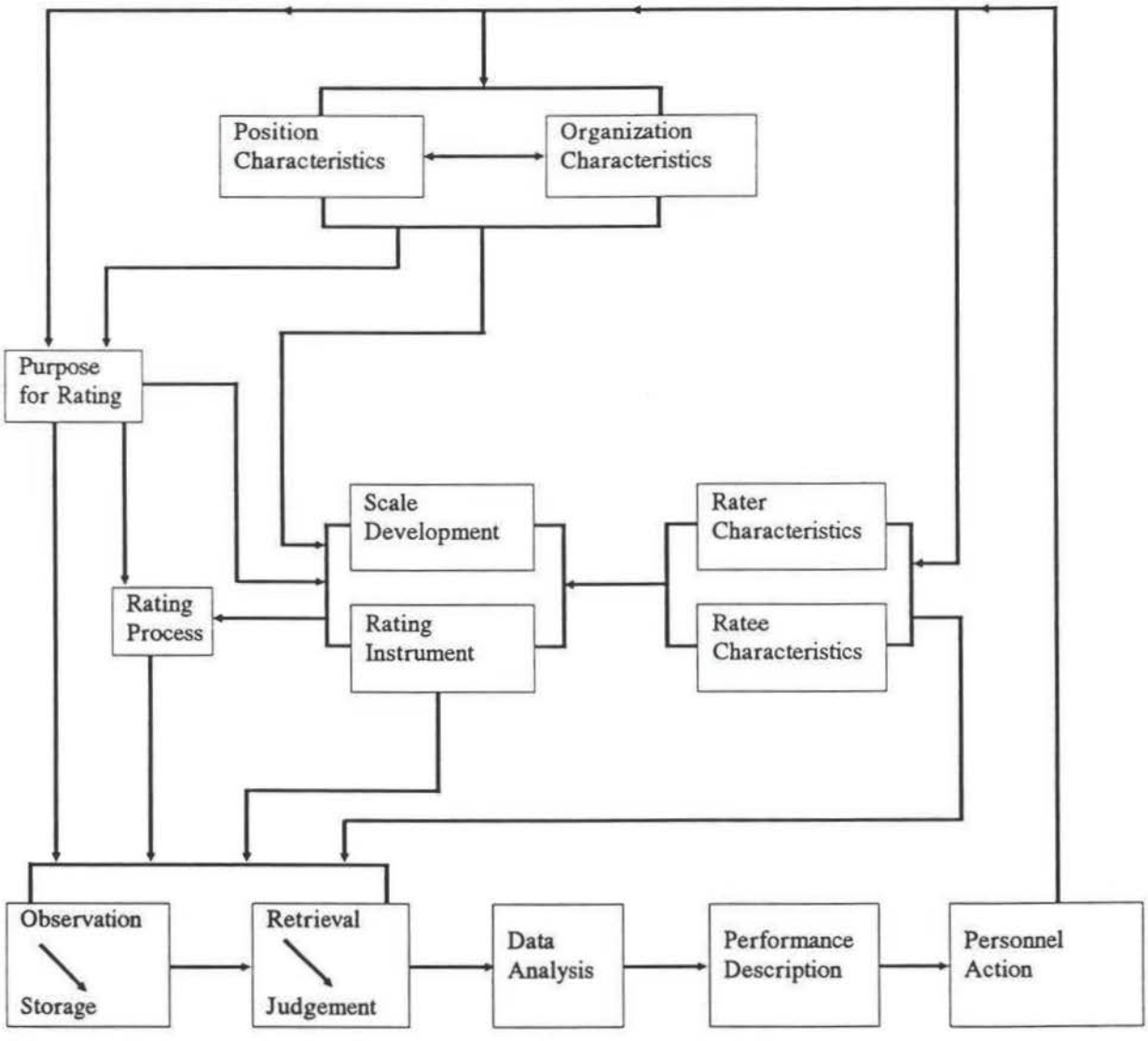

Figure 2.2: The Process Model of Performance Rating.
Source: Landy & Farr (1980).

Although the model does not offer much in the way of explanation concerning why these elements may have adverse effects on the accuracy

of performance description, it does present a reasonable view of the complexity of the process. Note however that the rating process is not developed in isolation, it will inevitably be influenced by the purpose of the rating and the instruments used for the rating.

2.9 Performance Appraisal within Education

The development of a fairer, more appropriate, and consequently better performance appraisal system has generally been conducted within the realms of the business sector. Nonetheless, performance appraisals are conducted in many other facets of life.

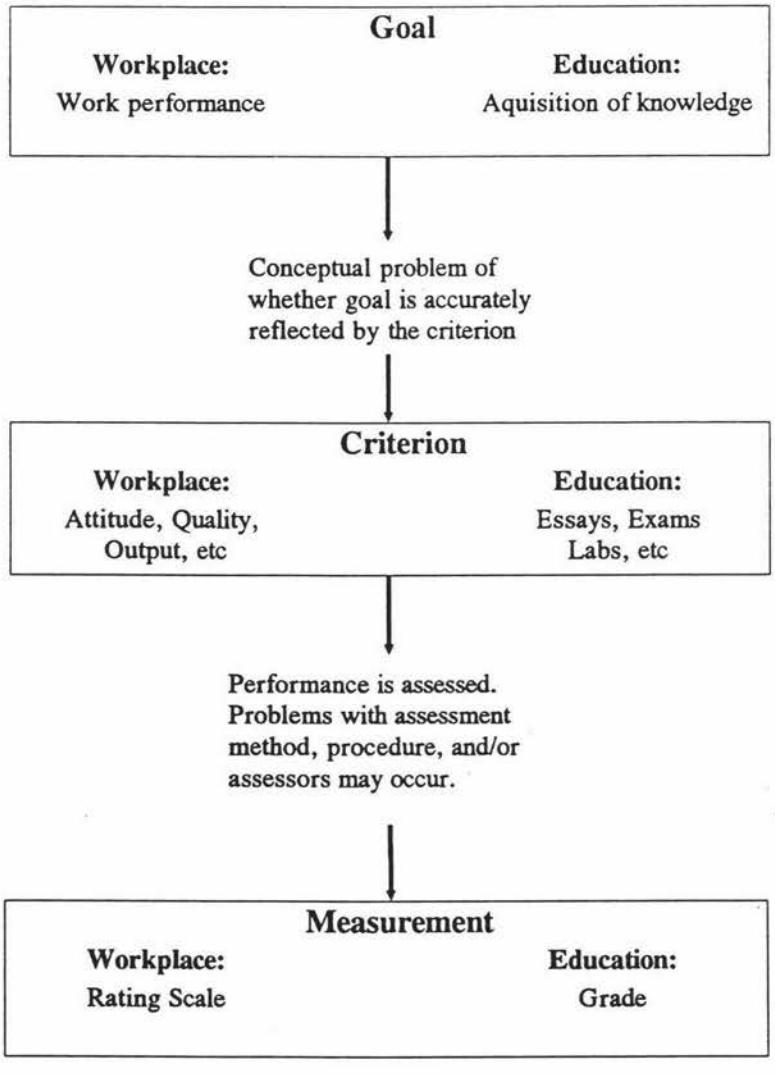

Figure 2.3: An illustration of the similarities between Education and the Workplace in Judgemental Ratings.

In education performance judgements of students are a regular occurrence. They are included under a multitude of other names, such as oral examinations, laboratory tests, internal assessment, and final exams. It is therefore disappointing that the methods to improve the faults highlighted in the performance appraisals' conducted within business, are often not used or acknowledged in education (Bee & Dolton, 1985; Foster, 1985; Heywood, 1989).

The relationship between the concepts presented previously with respect to performance appraisal in the work place and performance appraisal conducted within education are graphically presented in Figure 2.3. In postgraduate education an absolute method of performance appraisal, the rating scale is used. For honours degrees the final assessment is the class of honours received. Problems within the rating scales used to measure work performance are just as evident in measures of student assessment. The raters are just as susceptible to halo, leniency, central tendency and other forms of rater error and bias. Consequently, all of these factors can affect the reliability, validity, and accuracy of the performance appraisal of student performance. Chapter three looks at issues relevant to performance appraisal in postgraduate education.

CHAPTER THREE

ASSESSMENT IN POSTGRADUATE EDUCATION

3.1 To Grade or not to Grade

Society usually expects that the education system will select, sift, and categorize individuals (Heywood, 1989). Although it is possible for a person without a tertiary education to be successful, education is usually important for success. Education also aids social development, teaches society's values, and strives to instill a quest for knowledge into students (Birt, 1985). It is however, the grades that individuals obtain that directly affect their future.

In education grades are used to make judgements about students. They are an important standard for admission to higher education. They can determine the university attended, and the subject studied at that institution. In New Zealand this occurs as a direct result of restrictions placed on the number of students that are accepted into some courses. Grades can also limit the level to which a person is allowed to progress in their chosen subject (Heywood, 1989).

It is not only within education that grades are important. In the work force employers generally believe that grades provide valuable information. Consequently for the graduate their final grade can be important as a means of obtaining employment, and the remuneration package they receive (Dolton & Makepeace, 1990).

Grades may also be addressed in relation to the performance of universities. In line with today's imperatives of relevance, efficiency and accountability, universities are now required to look more closely at what they are doing and how much it costs to do it. In Britain this is highlighted

in the recent Green Paper on "The Development of Higher Education into the 1990's" (Department of Education and Science, 1985), and in New Zealand via several reports on education (Boston, 1988). With the need to develop appropriate performance indicators, Smith (1990) noted that grades awarded to students are being used to judge performance between institutions.

Some people nevertheless, do not favour the use of grades. They maintain that they are ineffective in assessing the value of the educational process (Powell & Butterworth, 1971; Wainwright, 1977). Fawthrop (1968) for example believes that examinations are a constraint on education:

> "From the educational viewpoint examinations are a supreme form of alienation in the modern world. This is also relevant to the teaching sphere, in which the genuine aims of the tutor are periodically subverted by the exigencies of the system, which emphasize that the first obligation is to get them through the examination at all costs rather than to stimulate a relevant contribution to the advancement of learning. One might well ask what does a society profit if it gains a whole world of degrees and yet loses its own educational soul? In a world of ignorance what can we give in exchange for true knowledge - a million scraps of paper certifying student degree status?" (p. 24).

Most would agree that what Fawthrop believes has some truth. Students aiming for high grades and teachers trying to cover the curriculum, can result in original thought being dismissed. It is generally acknowledged that assessment is not infallible (Cox, 1967; Klug, 1976; Johnson, 1988), but most people believe that some form of assessment of students abilities must be made. Grades and examinations are as much a part of life within education as are the judgements and assessments made by

people in all other parts of life. It is therefore of the utmost importance that examinations and the resulting grades should be both valid and reliable.

3.2 Assessment Methods

In recent years the methods and timing of assessment of students performance have become more diverse. The final exam is still a component of most courses. However the majority of university courses do not rely on the final exam alone. Internal assessment now forms a large proportion of a student's final grade (McKay, 1984). Several of the methods in which students are assessed before the final exam include, essays, tests, oral examinations, seminar presentations, laboratory reports, and mastery of practical skills.

The final exam has also incorporated several new methods of measuring acquisition of knowledge. In the United States multiple choice questions are now the predominate means of assessing students in their final exams (Foster, 1985; Heywood, 1989). Short answers and paragraph answers are also in use, as well as the traditional essay questions. The aim is to cover a greater range of the curriculum.

Deciding which method(s) best measure whether students have acquired a satisfactory level of knowledge in a given course is a complex task. One wants a device that samples the whole range of educational aims, provides grades which are fair and stable over time, and which different examiners can use consistently. One does not want a technique likely to be contaminated by extraneous factors such as a student's sex or name, which assesses a limited subset of the educational aims, or which is unfairly biased toward some students and against others (Foster, 1985).

This research considers grading and assessment methods, their value in the educational process and their impact on the individual. Teaching

knowledge alone is no measure of the value of an education an individual acquires. "If we are to improve learning, we will have to improve the methods of testing and learning we use. They will have to become intimately related" (Heywood, 1989, p. 2).

3.3 Assessment Reliability

The reliability of assessment in higher education has been the subject of concern for some years (see Dale, 1959; Foster, 1985; Silver & Silver, 1986; Johnson, 1988). It is complicated by the fact that assessment procedures differ widely, not only between counties, universities, and faculties, but also between departments, and within departments. As a result there have been pleas for greater consensus in course objectives, and for them to be more explicitly presented (Johnson, 1988).

For many years psychometric experts have commented that the unseen essay examination, the most frequently used assessment technique in British higher education (Hewton, 1987), and one of several techniques used in New Zealand (McKay, 1984), possesses many disadvantages. Students' grades are affected by factors such as the quality of their handwriting (Marshall & Powers, 1969), inconsistent marking (Cresswell, 1986), the exam sampling a very limited section of the student's knowledge (Johnson, 1988), and grades being unstable over time (Foster, 1985).

In postgraduate education there are two areas where reliability is important. The reliability of the measurement device, and the reliability between markers in their assessment of an individual. Both have been extensively researched because they are fundamental to assessment practice (see Cox, 1967; Miller & Parlett, 1974; Bell, 1980; Heywood, 1989).

Assessment reliability is also contingent on the particular postgraduate qualification undertaken. A Bachelor with honours candidate is partially protected against a marked fluctuation in the standard of the papers by the number of papers they take, provided that compensation is allowed from one paper to another. Similarly, the number of markers is some protection against a change in the standard of the marking, and against any unreliability of marking (Dale, 1959).

It has recently been proposed however that the averaging of students performance over a number of papers is no guarantee of a reliable assessment outcome (Johnson, 1988). This may be the case, particularly where the component with the lowest reliability carries a relatively high weight in aggregation of marks. For example the thesis in some Masters programmes (for example Masters of Arts or Masters of Science) can be a large proportion of the final grade.

It is now over thirty years since Dale (1959) addressed the reliability of university grading, and although his work has been cited many times it appears that very little has changed. Dale (1959) suggested that the biggest obstacle to the reform of unreliable university examinations, was the ignorance of the university staff with regards to the pitfalls for the examiner. He stated that "the calm assurance with which lecturers and professors alike believe that they can carry around in their heads an unfailingly correct conception of an absolute standard of the pass line is incomprehensible to anyone who has studied the research on the reliability of examinations" (p. 186).

Research has continually shown that examiners not only differ with one another, but that any one examiner will disagree with their own assessment of a particular piece of work on a different occasion (Cresswell, 1986). Further it is incorrect to assume that examiners share

implicit notions about standards, and that they consistently allocate grades with the same degree of severity or leniency (Johnson, 1988).

Human error also compounds the problem of marker reliability. Marker errors are more easily reduced when the work being assessed is either right or wrong, and no subjective judgement needs to enter the decision about how to mark a question or examination script. Nonetheless, it is well known (Brooks, 1980; Heywood, 1989) that one way to reduce errors in marking is to employ more than one marker and take the mean of their marks. Another method of improving marker reliability is to have marking schemes (Foster, 1985; Johnson, 1988). At the postgraduate level however, marking schemes are not always appropriate because of the nature of the work assessed. Markers can also be unintentionally biased in their marking, just as bias can effect other aspects of higher education.

3.4 Biases in Assessment

Higher education is exclusive. In any one year although thousands of eighteen-year-olds enter universities to begin courses in higher education, many more do not. A small number wish to go but are positively excluded, either because they do not reach the minimum level for entry or because places are offered to better qualified applicants. A far greater number are excluded because their previous education denied them the chance or even the ambition to consider higher education (Burgess, 1981).

Most people believe that in admitting people to higher education there is no desire to exclude on any but objective academic grounds. If there are too few places, then the better qualified will be admitted.

On examination however the population in higher education is not representative of the adult population as a whole. In New Zealand those who are successful are overwhelmeningly young, and from this group they are predominately white middle-class men (Jones, 1982). Within higher

education there are effective biases against age (Woodley, 1984), class (Williamson, 1981), disability (Sturt, 1881), religion (Gay, 1981), race (Little & Robbins, 1981) and sex (Spender, 1981; Acker & Piper, 1984).

These biases prevent people from entering higher education. In some cases they prevent individuals from obtaining an adequate education at all. Once a person has entered higher education, there is no guarantee that the biases that hampered them from entering these institutions will subsequently not affect their grades.

3.5 Sex Bias

The evaluation of students' work is supposed to be objective and merit based. However the evaluation criteria for assessing students' written work are highly ambiguous and the marking process is known to be unreliable (Hartog & Rhodes, 1935; Dale, 1959; Robbins, 1963; Cox, 1967). There is a high level of inference required to evaluate students' written work, and therefore it is often stated that biases, including sex bias, would be expected to occur under such conditions.

Most of the studies of sex bias in evaluation have examined the hypothesis that when both sexes have identical qualifications or performance, men are evaluated more favourably than women. Although many studies have demonstrated this pro-male evaluation bias (for example, Lao, Upchurch, Corwin & Grossnickle, 1975; Gutlek & Stevens, 1979; Sharp & Post, 1980), some studies have found no sex bias (Hall & Hall, 1976; Dipboyd & Wiley, 1977; Frank & Drucker, 1977), and others have demonstrated a pro-female evaluation bias (Jacobson & Effertz, 1974; Bigoness, 1976). Nieva and Gutlek (1980) reviewed the literature on sex bias in a variety of situations and suggested that the degree and pattern of bias depends on three factors:

1. Level of Inference: sex bias tends to operate where there is ambiguity concerning evaluation criteria.

2. Sex Role Incongruence: Sex bias tends to occur when the tasks undertaken are deemed to be more appropriate for one sex than the other.

3. Level of Performance: the operation of sex bias appears to be affected by the level of qualification or performance involved.

These factors suggest that the grading in universities could be sex biased. Particularly in postgraduate education where evaluation criteria are often ambiguous, and in subjects where the essay exam format is prevalent. These assumptions can be supported by experimental studies which have shown that identical essays get higher marks when a male rather than a female name is attached (Wallston & O'Leary, 1981). Women tend to be evaluated less favourably than men when both men and women are highly qualified or perform well (Bradley, 1984).

Generally subjects offered at universities are classified as either male orientated or female orientated, and the level of qualification assessed is generally considered high. Therefore if women were assessed unfavourably at university this would lend support to Nieva and Gutlek's (1980) study. So, in practice do results indicate that sex bias operates in universities?

A study by Bradley (1984) addressed this issue. The study was designed to exclude the possibility that it was differences in the abilities of both men and women. This is the reason generally given for any differences in the distribution of examination marks between the sexes (Dale, 1959; Murphy, 1982; Rudd, 1984). Results indicated that markers who were familiar with the student being marked were not biased in their marking, but markers unfamiliar with a student were biased. In discussion it was noted that it may therefore be the case that the risk of sex bias may be greater in large departments due to the small amount of staff-student

contact. When determining the occurrence of sex bias, the sex of the examiner is of less importance than the traditionality of the examiner, as both men and women examiners are exposed to the same cultural stereotypes and expectations of sex-role appropriate behaviours (Bradley, 1984). Thus both male and female markers can be influenced by the sex of the individual being evaluated (Nieva & Gutlek, 1980).

Determining whether sex bias, or indeed any form of bias, exists is possible. However, the detection of bias is not a matter of simple observation. There is no support for the opinion that examiners are aware of any biases they themselves contribute, nor is there any reason to expect that examiners are aware of the biases contributed by their colleagues or that they will be able to take steps to make it ineffective (Bradley, 1985).

3.6 Conclusion

Like all appraisals, performance appraisals in education of postgraduate students' acquisition of knowledge and skill are fallible. As this chapter has shown, questions have been continually asked about the appropriateness of the methods of assessment used and it is well known that these methods are not always reliable. Further, their validity is complicated by the biases that operate both within education and by markers. How severely these inaccuracies of the education process affect the final grades awarded to students is the subject of the research reported here.

CHAPTER FOUR

THE UNIVERSITY SYSTEMS

4.1 Universities - Their Purpose

Universities are among the oldest institutions in Western society. Their long history shows how they have developed and changed in response to peoples' insatiable desire for knowledge, and society's need for advanced thinking and skilled workers. Originally the word "universitas" meant a whole body of masters and students in a community, working together to seek truth through instruction, debate and research (Gibson, 1978).

Today, universities are structured very differently, and the purposes of universities are more diverse. Consequently academics, are frequently drawn into discourse as to what the purposes of universities are, and whether present systems are successful in fulfilling these aims. On the one hand governments, industry and students urge a "vocationalism" upon the universities which finds expression in labour market trends (Birt, 1985). Highlighted by the demand for courses in Accountancy, Technology, and Computer Science. Yet others believe university students should also be encouraged to pursue truth, knowledge and understanding, to develop intellectual exploration and the free exchange of ideas (Ball, 1985). That teaching in universities should focus on old ideals and the notion that postgraduate study is a preparation for a life of scholarship and admission to an academic community (Blume, 1986).

No doubt the debate as to universities' actual priorities will continue, but at present perhaps it is best to concede, that regardless of their specific purpose, a university education is now something that is becoming more and more common. The situation in New Zealand is no exception.

4.2 New Zealand Universities - The Beginnings

On the thirteenth day of September 1870 the Act of the General Assembly was passed signalling the beginning of university education in New Zealand (Parton, 1979). Since that day, over one hundred and twenty years ago New Zealand's university system has undergone many changes in the structure, operation, and funding of universities. Changes in the composition of the students, the courses they pursue, and the way they are assessed are also evident.

The first university in New Zealand was established in Dunedin, a year prior to the Act of the general assembly by an ordinance of the Provisional Council of Otago. However, this university, latter to become known as Otago University did not have the authority to grant degrees (Bell, 1981). As a result of the 1870 Act the University of New Zealand was founded, and granted the right to confer degrees. In an effort to ensure the acceptance and international recognition of the degrees awarded, an early decision of the University of New Zealand was that examinations should be set and marked by eminent academics in the United Kingdom (Yearbook, 1990). Once established, this policy proved hard to alter and continued to have a significant impact on university teaching, restricting initiative and change for many years. Finally in 1939 it was agreed that professors in New Zealand should be the examiners for a stage three subject. The commencement of World War two, and the possible risk of examination papers being lost or delayed on their way to the United Kingdom, then ensured that this reform continued and an increasing number of New Zealand examiners were appointed.

In 1961, the federal University of New Zealand was abolished and the universities in operation at that time, Auckland, Victoria, Canterbury, and Otago, become autonomous entities. A link between the universities and

government was established by the introduction of the Universities Grant Committee. Latter in 1963 separate Acts of Parliament established the universities of Waikato and Massey. Since then university education within New Zealand has expanded to include seven universities. The last of which Lincoln University (previously known as Lincoln College and associated with Canterbury University), obtained University status in 1990 (Yearbook, 1990). On July 1st 1990, the Universities Grant Committee was abolished under the provisions of the Education Amendment Act 1989 (Hall, 1990).

4.3 The Present New Zealand University System

All the universities in New Zealand are divided into faculties and departments except for the University of Waikato, which is divided into schools. Students may undertake a course of study either on a full-time or part-time basis. Additionally, Massey University offers many courses of study through distance education.

Prior to 1988, to be eligible for entry into any university course of study, an applicant was required to have successfully passed the University Entrance exam, in at least four subjects including English. Since then, entry to university has been determined with reference to a students Sixth Form Certificate points classification. It is required that 12 or less points are accrued over fours subjects. However, most students complete a seventh form year, and entry is determined on Bursary examination results. Provisional entrance may also be granted to students over the age of twenty one years who do not have the minimum qualification.

Some courses however have restricted entry due to there being more candidates than places. Preference is usually given to students with the best examination results in specified subjects after their seventh form

year of study at secondary school, or at the end of their first year of university study (intermediate year).

The main, and usually first, stage of university education in New Zealand universities leads to the Bachelors degree. The length of this course of study differs from faculty to faculty, but typically a Bachelor degree requires three years of study for Arts, Science, Horticulture, Agriculture and Commerce; four years for Engineering, Horticultural and Agricultural Science; five years for Architecture, Veterinary, Dentistry and Law; and six for Medicine. A Bachelor with honours degree usually requires an additional year of study.

The second stage of university education leads to the Masters degree. This is usually obtained in one to three years, and can be awarded with honours or distinction. The Masters program usually entails course work, a thesis, or most commonly, a combination of the two. Typically the third stage of university education is a Doctor of Philosophy, obtained after a minimum of two years supervised research and a presentation of a thesis. Doctorates of Literature, Science, and Law are the most advanced degrees of the university system and they are awarded for exceptional advanced research, or as honourary degrees to those in the community deemed to deserve them by the universities.

4.4 The University System of England and Wales

The university system, with which New Zealand is most frequently compared is that of Britain. This is generally because up to date British statistics are available, New Zealand universities are staffed by some academics with first hand experience of British universities (New Zealand University Conference, 1969), and because with few exceptions, the British system of education more closely resembles our own than any other (Pool, 1987). Therefore the present study will research whether

there are similarities in the distribution of grades for honours students from these two university systems. A considerable amount of research has already been conducted in Britain regarding the equivalence of grading standards between the sexes, institutions, and faculties of British universities. These studies will be discussed in Chapter five.

A comparison of this nature lacks validity unless it takes into account the different circumstances operating within the university systems of the countries compared. Entry to university in both England and Wales normally takes place after a minimum of 13 years of primary and secondary education. To be eligible, an individual requires a certain number of passes in the General Certificate of Education examinations (GCE) at both the "O" level and "A" level. The first degree of higher education, the Bachelor degree, is usually awarded after three years of study, but this varies between faculties and can be as long as six years. There are two types of Bachelor degrees. The first is the honours or special degree, the second is the ordinary or pass degree generally awarded to those candidates who have studied for an honours degree but whose results do not justify the award of honours (UNESCO, 1980). For the final examinations, universities not only appoint examiners from their own teaching staff, but also call in the services of a number of external examiners from other universities (Williams, 1979; Piper, 1985). In this way whilst preserving the autonomy and character of each individual university, the universities also try to maintain an equivalent standard of achievement throughout the country. However, comparability of standards in England and Wales has not always been maintained by the external examiner system.

4.5 Standards in the British University System

The problem of addressing fairness, that is, the maintenance of equivalent standards both between and within universities has been a reoccurring one within the British university system. In Britain, standards were first maintained by controlling the institutions which were empowered to award degrees. At the beginning of the nineteenth century Oxford and Cambridge were exclusive with regards to social-class and religious denomination. Then with the creation of London University and later the provincial colleges the notion of standards was more implicit in the discussion of institutional hierarchies (Silver & Silver, 1986). Later the various roles of London University in particular, addressed the issues of standards, their definitions, and guardianship.

In 1858 The Charter permitted colleges to prepare students to sit the London University external exam (Silver & Silver, 1986). However, the external degree soon raised questions about the appropriateness and justice of examinations divorced from teaching. While the separation looked attractive as a guarantee of objectivity, students faced examinations whose standards were based on criteria often unrelated to or in conflict with those of the teaching colleges. In the beginning of the twentieth century, the external examiner system became crucial to the concept of examination standards.

By the 1960's further development meant that new meanings were being sought for the concepts of standards, quality and excellence. Concepts which had once seemed absolute and measurable. Christopherson (1967) suggested that the maintenance of standards meant ensuring that students on completion of their course had some familiarity with the basic ideas in a particular field of study, some experience of living and working with people of similar ability in other fields of study, and were

at least equal to others who had done the same course in earlier years. However, this was becoming more difficult to achieve as higher education continued to expand.

In addition, the new generation of lecturers in the free speech society of the 1960's were instrumental in introducing a number of significant changes. Examinations were now being set by those who taught the candidate, with the external examiners continuing to play a supervisory role to ensure that standards were met. This ensured that papers reflected the material covered in the course (though not necessarily the syllabus) and thus removed some chance effects. However, it increased the chance of poor quality questions, and reduced the level of consistency of standards between colleges and between years of any course (Gaskell, 1979).

As previously discussed, the reliability of examinations and marks had already been challenged, most notably in Britain by Hartog and Rhodes (1935). Various techniques proposed to improve marking reliability did not silence anxieties about differences amongst subjects, and within subjects (Cox, 1967). Dale in 1959 castigated staff for their ignorance of the pitfalls of examining, and their belief that they carried in their heads an absolute standard of 40 percent. He pointed to the wide disparities of first class honours awards in different subjects, ranging from 1/4 in Applied Science to 1/70 in Arts (Dale, 1959). What was being discovered was "the complexity of the assessment task" (Miller & Parlett, 1973). By the 1980's the same reservations were appearing with regards to the role of the external examiner, whose presence did not appear to guard against arbitrary differences, and whose experience of "comparability" was questionable (Silver & Silver, 1986). Yet the external examination system is still held up as one of the major guarantees of quality and equity within

British higher education (Williams, 1979; Piper, 1985; Connolly & Smith, 1986; Johnson, 1988).

4.6 The British External Examination System

Very little has been published on the role of external examiners, and until recently no systematic survey of their work has been undertaken. Unfortunately, the results are not encouraging, the external examination system is not very effective in guaranteeing equivalence of standards between universities.

Piper (1985) asked external examiners to outline their role in this capacity. The most commonly reported role was that of being an additional marker for borderline candidates (86%). Being an additional scrutineer for exceptionally good or exceptionally poor work was reported in 70% of the cases. Similar figures were found for arbitration when internal examiners failed to agree on a mark. The role of ombudsman was not common, 10%, as it was thought that other resources were open to students who felt they had been unfairly treated.

In comparison, institutions saw their external examiners as having the function of checking standards. They did not perceive the recommendations of their external examiners as moving them towards the centre, rather most institutions saw their external examiners as either sanctioning the present state of affairs, or else encouraging them to award more top grades (Smith, 1990).

Williams (1979) states that the purpose of the external examiner "is generally understood to be the maintenance of similar standards between different universities" (p.162). Yet the question of standards is not straightforward. There are at least four forms of consistency or equality which need distinguishing:

1. The maintenance of standards from year to year in a give course.
2. The monitoring of equivalence between course options.
3. The parity of standards between universities within subjects.
4. Parity between different subjects for nationally recognised levels of accreditation.

It is apparent that a clear understanding of the role of external examiners is neither manifest or practised. Institutions' reliance on external examiners to ensure fairness and comparability seems naive, when the external examiners themselves fail to see this as one of their major tasks in the external examining system. This would indicate that the system needs to be rethought and objectives need to be defined more carefully. Failing that perhaps other means of addressing equity may need to be considered.

In England and Wales comparability is too serious an issue to be dismissed by complacent references to the external examining system. In New Zealand, although there is no "appointed" national body to ensure equivalent standards, comparability is equally as important. Degree class has too great an impact on the future lives of students for scant attention to be paid to this matter (Klinov-Malul, 1974; Johnson, 1988; Dolton & Makepeace, 1990).

It has been argued that unless standards can be maintained, the ability to compare students, courses, and institutions becomes highly questionable. It can be equally proposed however, that it is only through comparative studies of this nature, that questions concerning the validity and reliability of the existing standards can be made. Chapter five discusses several studies that have addressed these questions.

CHAPTER FIVE
HONOURS STUDIES

5.1 Introduction

Degrees with distinction provide their holder with opportunities for further advancement within higher education and in the labour market generally. Therefore any other factors apart from ability and knowledge that might improve opportunities to obtain a top degree are extremely important. Several studies have addressed the impact of subject studied, institutional characteristics, and gender on students degree performance.

5.2 Gender Studies

A study by Rudd (1984) sparked a great deal of debate in Britain about the pattern of honours degrees awarded. Rudd's research examined honours degrees awarded to men and women in British universities during 1967, 1978 and 1979. He reported that women gained a lower percentage of both first class degrees and the lower honours degrees compared to men. After discounting a number of plausible explanations as to why this might be the case, he concluded that "the only explanation that seems to fit all the facts is that this difference is linked to differences in the distribution of ability as measured by the scores gained in intelligence tests" (p. 47). Support for this explanation was credited to Heim's (1970) study which suggests that women's test scores give a distribution of measured intelligence which is slightly different to that of men, with a smaller percentage at the extreme ends of the scale.

Rudd (1984) also looked at the differences between the sexes in obtaining a "good" degree, that is a first class or upper second honours degree. His results showed that women performed better than men in Education, Medical subjects, Engineering, Agricultural subjects, Social studies,

Architecture and other Professional studies groups. Men performed better in Arts and Language subjects, even though these are two areas in which men are under-represented.

It is perhaps not surprising that Rudd's (1984) research was controversial, but this was not due to his results, which generally have been supported by other British studies (Jones & Castle, 1986; Kornbrot, 1987; Clarke, 1988), but rather because of his explanation for the results obtained.

In 1988 Simon Clarke reevaluated Rudd's (1984) study and suggested that Rudd overestimated the tendency for men to achieve a disproportionate number of first and third class honours degrees, and that he failed to pay sufficient attention to the marked differences in performance as a function of the subject studied or to the change in relative performance over time. Clarke (1988) found that in general, women did better in Professional subjects and Chemical and Biological Sciences. Men did better in the Arts, Mathematics and the Physical Sciences, and the sexes performed at the same level in Social Sciences. Women still underachieved at the first class level, and men still tended to get more third class degrees, but Clarke (1988) suggested that these factors were often linked to the area of study.

Acknowledging the differences between the sexes that Rudd (1984) had reported Clarke (1988) also questioned why males and females were disproportionately represented with respect to classes of degrees. He rejected Rudd's (1984) explanation on the grounds that IQ tests are not a valid measure when assessing differences between the sexes. A crucial aspect in the design of intelligence tests, is that the test not be biased in favour of either sex. As IQ tests have developed, items that have shown consistent differences between the sexes have been excluded.

Due to this fact all attempts to show sex differences in ability by use of intelligence tests are invalid (Ryan, 1972).

After reviewing the evidence Clarke (1988) proposed that the differences in the overall performance of men and women were the result of social and institutional pressures. He pointed to sex stereotyping, and biases in examining, supported by Bradley's (1985) research, as part of the explanation of men obtaining a disproportionate number of first and third class honours degrees. Clarke (1988) also suggested that there is a need to look at differences in the cultural and institutional framework that may exist which discriminate differently between men and women in different subject areas. In conclusion he stated that there have been positive changes over time, evident by the improvement in performance by women in all subjects except Arts, relative to that of men.

One of the major advances within this area that Clarke's (1988) study appears to advocate, and which Rudd (1984) failed to acknowledge, is that differences between the sexes cannot be considered in isolation. An important factor is an individual's area of study. This has been supported by other researchers, for example Kornbrot (1987) who concluded from her study that gender differences in degree performance tend to depend on content area and topic.

Kornbrot's (1987) study found women significantly more likely than men to achieve a competent degree of lower second or better in all disciplines, but like other studies men obtained more first class degrees. In particular men were substantially more likely than women to achieve first class degrees in the Humanities, Social Sciences, and Language and Literature areas. Women were more likely than men to achieve first class honours degrees in Medicine. The overall pattern suggested that women were highly successful in many disciplines which were strongly stereotyped as

male, and where they were currently under-represented. This raises the interesting question of whether a person's assessment is affected by their choice of study.

5.3 Subject Studies

Regardless of whether a student is majoring in Physics, Accountancy, or French, a first class honours degree should require the same amount of ability, sagacity and effort on the student's behalf. Several studies have investigated this phenomenon and found discrepancies in the grades awarded between different subjects. Ascertaining the reasons for these differences however, has not been entirely successful.

Neuman and Ziderman (1985) investigated the existence of differences in standards in awarding first degrees with distinction amongst universities in Israel. Considerable diversity was found in the tendency to award first degrees with distinction between and within universities and faculties, and between the major subject departments of the Social Sciences, which was selected for more detailed analysis. The results of their research may be particularly pertinent to New Zealand research as Israel's university systems parallels New Zealand's university system in several ways. Israel is a small country with six independent universities, all operating within the framework of a central Universities Grant Committee, modelled on the British pattern. (Note, the Universities Grants Committee ceased to exists in New Zealand from 1st July 1990 (Hall, 1990), however the research conducted in the present study extends only to 1989).

An analysis of variance of first degrees awarded with distinction, by university and faculty in Israeli universities between 1979 to 1983 revealed that both the main effects and the interaction effect were highly significant. Neuman and Ziderman (1985) reported that Natural Science faculties tended to award more degrees with distinction than average

(coefficient of +0.21), whereas Social Science awarded less (-0.19), and Arts faculties were on a par with the overall average tendency to grant degrees with distinction. In conclusion Neuman and Ziderman (1985) stated that "there is a pressing need for universities in Israel, as in England (and possible in other countries too), to set their houses in order through the framing of procedures for the maintenance of common standards in the granting of degrees with distinction, both between as well as within universities" (p. 458-459).

The need to develop a method to ensure equivalence in standards is echoed by others. No less so than by Bourner and Bourner (1985) whose research explored the pattern of honours degree results in Accounting with those of other subject areas. Their results based on British data were in agreement with Neuman and Ziderman (1985). Individuals in the Science and Engineering/Technology subject groups were awarded, on average, a higher proportion of first class degrees than any other subject group. Specifically, the proportion of first class degrees awarded by both of these groups exceeded that of Accounting by a factor of seven. Note that Accounting was placed in the subject group Social, Administrative and Business studies, which in total received the smallest number of first class degrees.

An older, yet frequently quoted piece of research that addresses the variation from department to department and from year to year in the standard of degree classes is that of Dale (1959). Dale's (1959) results also showed a greater proportion of first class honours degrees awarded to Science students compared to both Commerce and Arts students. It would be naive to expect that class percentages for different faculties should be equal, however most researchers would be even more astonished if these results were a true reflection of the comparative ability of students from different faculties. Doubtless, individuals of different

major fields do differ in several ways. It has been shown that they differ in their personality traits (Elton & Rose, 1967), and in their scholastic strategies (Goldman & Warren, 1973). Nevertheless, Dale's (1959) study found no evidence from psychological testing of students from different faculties or departments in their ability that corresponded with the differences in degree awards obtained. Other studies have also failed to support the idea that variation in grades is due to the ability composition of students studying different subjects (Nevin, 1972; Rudd, 1984; Clarke, 1988).

Although several studies have obtained similar results in the awarding of first class honours degrees between faculties, little discussion has been offered as to why this might be the case. Yet all researchers are adamant that standards should be more equivalent, and that methods to achieve this should be developed. Generally Dale's (1959) explanation of these results is accepted as addressing some of the discrepancies. Dale (1959) reasoned that the wide variation in degree standards from one faculty to another lay in the nature of the subject matter. Those subjects in which the mathematical content is high yield a much greater spread of marks than subjects such as English and History in which the essay type of answer predominates. Therefore Mathematics will award more firsts than English. Using this argument Mathematics should also award more thirds.

5.4 The Student Population

Throughout the world it is evident that employment in certain sectors of society are decreasing while other sectors are increasing. Specifically the number of people employed in the agricultural and industrial sectors are declining, while there is an increased need for individuals in the commercial and service industries (Yearbook, 1990). Therefore it is not surprising that these trends are reflected in the enrolment figures of

students in university courses (Blume, 1986; Fenner, 1989). However, other trends also exist, so that the changing structure of the student population, with regards to their choice of subject, is not a simple linear equation, between area of greatest employment and increased numbers enroled in the appropriate faculty area.

The population of students in New Zealand universities reflects that of most overseas universities in that there has been an annual increase in the total number of students attending university, and that there has also been an increase in the number of students furthering their education by undertaking postgraduate education (Sub-Committee on Graduate Employment, 1988). The proportion of females attending university comes closer to approaching fifty percent of the total student population each year (Pool, 1987).

American studies show that the general pattern of change for women students, is that they have increased their presence across the board in all fields of study (Roemer, 1983). Women have made decisive movements into fields in which they have previously not been well represented. At the same time women have accepted the basic patterns that were established in the 1970's, and continued to pursue studies in areas that are regarded as appropriate choices for women. In Britain the representation of women in Sciences and Engineering at all levels has shown a steady increase over the past two decades, although most women are still at the low levels, both in terms of academic achievement and employment (Ferry, 1982). In the United States the same situation prevails (Fenner, 1989).

Women's participation at the postgraduate level of education is still substantially less than that of men's in the United States (Roemer, 1983), Britain (Jones & Castle,1986), and New Zealand (Taiaroa, 1985). The

reasons for this are complex, but a major contributing factor is that postgraduate degree enrolments are largely determined by the quality of the first degree and men still achieve more and better honours degrees than women (Jones & Castle, 1986). A further result of this is that men, due to their better grades, are more likely to be recipients of scholarships, and therefore to have greater access to postgraduate education (Jones & Castle, 1986).

A further restriction on the entry of females to postgraduate studies is their predominance in the traditionally "acceptable" areas of study for women, that is the Arts and Education. For this reason, there are large numbers of women competing against one another for the limited number of positions, scholarships and grants available (Jones & Castle, 1986). So a closer look at higher education reveals that females have made definite inroads in relation to their participation in universities, however the rule of "the higher the fewer" still applies to women in almost every field of study (Ferry, 1982).

This fact is further emphasised by a glance at the composition of university staff. In Britain, of the full time teaching staff in universities, only 10% are women. At the higher positions of readers, senior lecturers, and professors, 40% of men hold these positions compared to 18% of women, and they are usually represented in the faculties of Arts and Social Sciences (Ferry, 1982). Similarly, in Australian universities only 17% of the senior academic staff are women (Buckridge & Barham, 1984).

5.5 Institutional Differences

In Britain several recent studies have considered whether graduates of one institution are comparable with graduates of other institutions. The studies of Bee and Dolton, (1985); Connolly and Smith, (1986); Johnes and Taylor, (1987); and Smith, (1990) have all shown that there is a

significant, and frequently large, variation in the degree classes awarded to students as a function of the university they attended. Several explanations for this variation have been presented.

The most comprehensive of these studies was conducted by Johnes and Taylor (1987). Three significant relationships between the variation in degree results of universities and several student and institutional characteristics researched were found. They were A-level scores, proportion of students living at home, and library expenditure as a percentage of total spending.

The mean A-level scores of a university's students was quite significantly related to degree results. A one point increase in A-level scores was associated with an increase of between three to four percentage points in the proportion of graduates with a first or upper second class honours degree. This finding differs from previous research (Wilson, 1981; Sear, 1983; Foy & Waller, 1987) which has found only a weak relationship between A-level scores and the prediction of class of degree. Further, the studies of Connolly and Smith (1986) and Smith (1990), which investigated the variation in degree classes in Psychology, also found that A-level scores were not able to predict class of degree.

Universities with a high proportion of students living at home during the terms, were more likely to produce poor results than universities in which the proportion of students living at home was low. As Johnes and Taylor (1987) pointed out, the interpretation of this result is unclear since it can not be determined whether the proportion of students living at home describes the type of students a university acquires or whether it is indicative of characteristics which relate to the universities themselves. Similarly it is difficult to interpret why large expenditure spent on the

library was positively related with universities that awarded a higher than average number of good degree results.

All studies concerned with variations in universities have attempted to measure whether these differences are a function of the quality of different universities, in particular the quality of teaching. However, it has been difficult to obtain a true measure of this factor. Connolly and Smith (1986) considered the accessible statistics of staff-student ratio as a crude operationalised measure of quality of teaching. This measure has since been used by other researchers. Connolly and Smith's (1986) results were significant but small, $r = 0.40$ and 0.11. All other studies (Bee & Dolton, 1985; Johnes & Taylor, 1987; Smith, 1990) found a non-significant relationship between staff-student ratio and the variation between universities in the distribution of degree classes. The other notable finding observed in all these studies is that, the variation in degree awards across universities was consistent over time.

Several researchers (Bee & Dolton, 1985; Johnes & Taylor, 1987) have suggested that from the point of view of the student seeking a good degree result it matters little whether differences in awards across universities arise through genuine differences in "value added" by the institution or simply through arbitrary institutional perceptions. What does matter is that the differences do exist, that they can be large, and that the pattern is consistent over time.

The same can also be said about the impact of a student's, sex or choice of subject studied on their resulting degree award. Bee and Dolton (1985) further suggest that "for all concerned a reappraisal of the award system is both necessary and long overdue " (p. 49). It is possible that an appraisal of the New Zealand university award system might also be warranted.

5.6 The Present Study - Part A

The present study is firstly concerned with whether the grading practices employed at the postgraduate levels of Bachelor with honours and Masters degrees, in New Zealand universities are appropriate and fair. Secondly, whether they are comparable to the universities of England and Wales. The appropriateness of the way in which students are graded is addressed from a theoretical discussion of the past research in this area of interest. The fairness of New Zealand's grading system is researched by statistical analysis of the results awarded to New Zealand postgraduate students over the past thirty years in relation to several other factors, such as gender, course taken, subject studied, and university attended. Whether the systems are comparable is considered with reference to a comparison of the New Zealand results and English and Welsh results generated in the present study, and the results of several previous British studies.

The present study is not a replication of any previous research. There are however, similarities between the present study and several other recent studies. The following studies, unless otherwise stated, all involve research using British subjects and/or statistics. The studies of Rudd (1984), Kornbrot (1987), and Clarke (1988), compared degree performance as a function of gender and discipline studied. Research completed by Bee and Dolton, (1985), and Johnes and Taylor, (1987) sought to explain the variation in class of honours as a function of several student and institutional characteristics. Bourner and Bourner (1985) and Smith (1990) looked at the equality of standards within specific departments, namely, Accounting and Psychology respectively. Neuman and Ziderman (1985) considered whether universities maintained common standards in awarding first degrees with distinction in Israel.

None of these studies have incorporated data that spans three decades, or have covered the population of postgraduate students as comprehensively as the present study. The present study is the first to address the population of New Zealand Bachelor with honours and Masters postgraduate students, as a function of grades received and several other variables discussed below.

The present study is exploratory. The first part of the study, Part A, is only concerned with New Zealand students. The variables explored in this part of the research are as follows:

1. Sex of student
2. Course student studied
3. Major studied
4. Year completed degree
5. University attended
6. Class of honours received

The major objective of the present study is an analysis of the relationships between the class of honours a student receives and the five other variables. The null hypothesis for this research is that the differences in class of honours awarded is in no way a function of differences between the sexes, between universities, between degrees, between fields of study, or across time.

A secondary consideration is any significant relationships between the independent variables. For example, the sample data is measured over the years 1960 to 1989 inclusive. Have their been changes in the proportional representation of male and female students over this time? Are the subjects that were most popular in 1960 the same as those in 1989?

The number of students going on to further education in New Zealand has grown in the last two decades, however, in comparison to other similar countries the proportion of students continuing their education is low (Cabinet Committee on Training and Employment, 1987). For example, in 1984 only 24% of 18 to 23 year olds in New Zealand were in some form of part or full time education compared with 49% of the same aged students from North America in 1985, 28% for East Asia, 27% for Latin America, and 32% for Europe and the United Kingdom (Population Monitoring Group, 1986).

Students who chose to attend university in New Zealand are not representative of New Zealand's general population. Social and ethnic origins have a significant effect on the likelihood of a student entering university. For example Maori and Pacific Island students are under-represented at the University of Auckland by a factor of four (Jones, 1982).

Women fare better. They now represent close to 50% of the intake of undergraduate students, which displays a degree of equivalence between the sexes, unparalleled by most other Western Countries. However, women are disproportionately represented among the part-time students, mature students, and those studying extramurally (Pool, 1987).

Given the unfavourable situation of university education in New Zealand compared to several other countries, comparative research may highlight specific problem areas in the New Zealand university system. The analysis of performance in New Zealand universities is given added meaning by comparing it with the performance of other countries, this is the intention of Part B of the present study.

5.7 The Present Study - Part B

The most parsimonious comparison of New Zealand grades with British grades seems best. For this reason the New Zealand university grading system will only be compared with the universities of England and Wales. Scotland, Northern Ireland and Eire, have been omitted because they have different entrance requirements, and different degree and grading structures (UNESCO, 1980; Smith, 1990). Further, previous studies have stated that the differences between the structures of the British university systems have only served to complicate the analysis of results with regards to their investigations of degree performance (for example, Bee & Dolton, 1985; Johnes & Taylor, 1987; Clarke, 1988; Smith, 1990).

In England and Wales, data similar to the variables being considered in Part A of the present research, are collected and collated yearly, and presented as the Universities Statistical Record. This information for the years 1974 to 1989 will be used in Part B of the present study. First a separate analysis will be done to ensure that results of the present study concur with those of past studies that have used this same information. Then these results from England and Wales will be compared with the New Zealand results previously obtained in Part A of the study. The comparisons of results will examine the following variables:

1. Sex of student
2. Major studied
3. Class of honours received

The objective of Part B of the present study is to determine whether the distribution of grades received by Bachelor with honours and Masters students in New Zealand universities differs to the distribution of grades Bachelor with honours students in England and Wales universities receive.

The hypotheses of the present study are listed below. The first two hypotheses apply to the results researched in both Part A and B of the study. The next three hypotheses only address the results of Part A of the present study, the New Zealand results. The last two hypotheses refer to the comparison of results from Part A and Part B of the present study.

HYPOTHESES

1. That male and female students do not receive equivalent proportions of each class of honours.

2. That the grade distribution between areas of study is not equal.

3. That in New Zealand the distribution of grades is different for Bachelor with honours and Masters qualifications.

4. That in New Zealand between the years 1960 to 1989 males and females representation in areas of study has changed.

5. That the proportional distribution of honours grades awarded differs between New Zealand universities.

6. That the areas of study chosen by students in New Zealand and England and Wales universities are dissimilar.

7. That the distribution of grades awarded at New Zealand universities differs to the distribution of grades awarded in England and Wales universities.

CHAPTER SIX

METHOD - PART A

6.1 Subjects

The sample consisted of all individuals who had completed a Bachelor with honours or Masters degree at any university in New Zealand between the years 1960 to 1989. This complete population of students was chosen above any sampling procedures for several reasons. Firstly, because the statistical analyses used were sensitive to low or zero cell counts (Upton, 1978). This would have eventuated if a sampling procedure had been used. Secondly, as research into this field has never been conducted in New Zealand, it was decided to address global issues before proceeding to more specific areas of investigation. For this purpose an extensive sample is therefore advantageous. Finally, this exploratory research may assist in highlighting where further research may be warranted, unaffected by the problem of inaccurate sampling procedures.

There was a total of 34413 students, of which 21914 were male, 9601 were female and 2898 were of unknown gender. Gender was unable to be classified in some cases as students had first names that were appropriate for either males or females, or they had foreign names which were unable to be correctly determined. After inspection of individual cases the sample was reduced to 31072 students. This represents the total number of subjects for which there was complete and useful information for all variables. Students whose gender was unable to be interpreted, and/or students who had graduated from The University of New Zealand, and/or students with no area of study provided or who had completed a double major were excluded. The sample of 31072 students consisted of 21364 (69.4%) males and 9508 (30.6%) females.

6.2 Procedure

The information required about each student was extracted from the University Graduation Ceremonies booklet of New Zealand's seven universities: the University of Auckland, University of Waikato, Massey University, Victoria University of Wellington, University of Canterbury, Lincoln College (now Lincoln University), and the University of Otago. As well, the monthly council meetings of Victoria University since 1980 were used as this university has not included graduates "in absentia" in their graduation ceremony handbook since that time.

The computer program Massey University Database (Massey University Computer Centre, 1988) was used to record the necessary information for each student in the sample. Information recorded was the student's name, their course of study (COURSE) and their major taken (SUBJECT), and in coded form their gender (SEX), the university they attended (VARSITY) and in what year (YEAR), also the class of honours they received for the course undertaken was recorded (GRADE). The data was then double checked and corrected for discrepancies.

The computer program Word Perfect 5.1 (WordPerfect Corporation, 1989) was used to combine all information into one file, and to code the information on course of study and major taken. The codings used for the variables are listed in Appendix 1.

6.3 New Zealand Analyses

The statistical packages SPSS-PC version 3.1 (SPSS Inc., 1988) and SPSSX version 10 (SPSS Inc., 1986), were used to analyze the data. As the majority of the variables were measured on a nominal scale, analyses were restricted to frequencies, crosstabulations, and chi-square test statistics. The analysis of the data was performed in several steps, in

answer to the questions that were being addressed and dependent on the results obtained from previous analyses.

6.3.1 Step One - Univariate analysis

Univariate information, in the from of frequencies of the variables, were obtained to determine the characteristics of the population that the present research addressed. This was a necessary consideration as the population was not represented in New Zealand annual statistics.

6.3.2 Step Two - Crosstabulation of degree and gender

Due to the exploratory nature of the present study, the focus of interest was on global rather than specific differences in the population. For this reason, several of the original variables were reduced to a smaller number of categories. The variable COURSE was collapsed into two categories. They were Bachelor with honours or Masters qualifications. This new variable was labelled DEGREE. The variables DEGREE and SEX were crosstabulated to determine whether males and females undertook both Bachelor with honours and Masters qualifications in the same proportions.

6.3.3 Step Three - Changes in the sample over time

Similarly the variable YEAR was collapsed into six separate levels by grouping each consecutive five years together into one value. This variable was called TIME. Previous research overseas has found that the gender composition of persons who attend university now differs from those who attended university in the past (Roemer, 1983; Clarke, 1988). Therefore, step three sought to determine if there had been any changes in the representation of both males and females at New Zealand universities in the last thirty years.

6.3.4 Step Four - Changes in subject areas over time

To determine if an individual's choice of major had an influence on the other variables in the study, the relationships between SUBJECT and other variables needed to be considered. To measure this effectively, the variable SUBJECT was collapsed into eleven values which represented different areas of study. This variable was relabelled STUDY. The eleven areas of study were Medicine/Dentistry, Sciences, Agriculture/ Horticulture, Engineering, Architecture, Social Sciences, Law, Business, Languages, Humanities and Education. The subjects included under each of these values are listed in Appendix 2.

These specific groups were created for several reasons. Firstly, the majority of these categories represent actual faculty divisions within New Zealand's universities. The only differences are that some smaller faculties have been included within global faculties. For example at Massey University the Veterinary Science faculty is separate from the Science faculty, but in the present study Veterinary Science was included in the created faculty of "Science". Secondly, these decisions were not made arbitrarily, but rather the judgement as to where to apportion each value in the SUBJECT variable was based on the groups used by past researchers (Rudd, 1984; Kornbrot, 1987; Clarke, 1988). Finally, the groupings chosen, had to correspond with the data from England and Wales to be analyzed in Part B of the present research.

The fourth step of the analysis measured whether the proportion of male and female students entering each area of study (STUDY) had changed as a function of TIME. Again overseas studies have found that this has been the case (Roemer, 1983; Blume, 1986; Fenner, 1989).

6.3.5 Step Five - The distribution of grades

Once all necessary interrelationships between the independent variables had been studied, the question of what effect, if any, these variables had on the GRADE a student received was investigated. Step five measured any differences in the grade distribution of students as a function of the gender of students. In addition a test of whether a students gender plus their degree completed, that is a Bachelor with honours or Masters degree, had an effect on the distribution of grades was also conducted.

6.3.6. Step Six - The effect of gender and subject on grades

Crosstabulations and chi-square statistics were calculated for the variable STUDY, in relation to the variable GRADE, firstly controlling for gender, and then for male students only and then for female students only. These analyses were also done separately on all students who had completed a Bachelor with honours degree, and all students who had completed a Masters degree. The separate Bachelor with honours and Masters analyses were conducted because large differences in the pattern of degree distribution had been observed in step five.

6.3.7 Step Seven - The distribution of first class honours

The variable GRADE was reduced to a two level variable, distinguishing between students who had obtained a first class honours degree and all other classes of honours. This variable was labelled FIRSTS. A crosstabulation of FIRSTS with SEX was calculated for the total sample, Bachelor with honours sample, and Masters sample. This was to determine if the differences in number of first class honours degrees awarded between the sexes was significant. The same chi-square calculations were also done for each area of study (STUDY), to determine if the differences in the proportions of males and females who were awarded a first class honours degree in each area of study was significant.

These calculations were done separately for the Bachelor with honours sample and Masters sample.

6.3.8 Step Eight - Institutional differences in grades

The final step in Part A of the analysis addressed institutional differences in the awarding of grades in New Zealand universities. Previous British studies have always found that institutional differences in the awarding of grades do exist (Connolly & Smith, 1986; Johnes & Taylor, 1987; Smith, 1990). Chi-square test statistics for the total sample of students from each university and then for each gender were tested for independence in relation to the variable FIRSTS. The variable GRADE was not used as New Zealand universities do not use the same grading scales, but they all award first class honours degrees.

METHOD - PART B

6.4 Subjects

The sample consisted of all students who had obtained a Bachelors degree with honours at either an English or Welsh university between the years of 1974 to 1989. The sample totalled 735323 individuals, of which 448334 (61%) were males, and 286989 (39%) were females.

The sample was drawn from extracts of undergraduate analyses numbers 1442, 2169, 3302, 4434, 6007, 7071, 8790, 10123, 11836, 13715, 15437, 17734, 19500, 20974, 22953, and 24784. The analyses list "Subject by sex and class of degree of undergraduates who have obtained a first degree as at 31 December 1989", for example. These analyses were obtained from the Universities Statistical Record in Cheltenham, England.

6.5 Procedure

The presentation of information on the undergraduate analyses has changed considerably over the fifteen years investigated in the present study. Therefore it was necessary to develop a consistent format so that the fifteen years sampled could be treated as one block of data. The same eleven areas of study that were developed in Part A of the present study were used to classify the English and Welsh data into more useful information. This required some manipulation of the figures provided on the original extracts of undergraduate analyses.

6.6 England and Wales Analyses

6.6.1 Step One - Gender differences in choice of subject area

With the information from England and Wales only three variables were considered, they were STUDY, SEX, and GRADE. Like the analysis conducted on the New Zealand sample the crucial area of interest in Part B of the study was the predictive effect of the variables STUDY and SEX on GRADE. However like the New Zealand part of this study, relationships between the variables needed to be addressed first. The first step in Part B of the analysis considered the differences, if any, between males and females choice of area of study.

6.6.2 Step Two - The distribution of grades

Step two, like step five in Part A of the present study investigated whether there were any differences in the grade distribution of students as a result of their gender. Previous British studies have also considered this relationship (Rudd, 1984; Kornbrot, 1987; Clarke, 1988).

6.6.3 Step Three - The effect of gender and subject on grades

The effect of both a student's gender and their area of study on the class of honours they received was addressed in this step. The methodology

was the same as step six in Part A of the study. Again several British researchers have addressed this relationship (Kornbrot, 1987; Clarke, 1988).

6.6.4 Step Four - A comparison of New Zealand and England and Wales grades

A comparison of the distribution of grades between England and Wales, and New Zealand was conducted in step four. A chi-square test to measure the independence of these samples was performed. Note that in England and Wales all students with the intention of proceeding to a Doctorate undertake a Bachelor with honours degree. In New Zealand either a Bachelor of honours or Masters degree can be undertaken before proceeding to a Doctorate. Therefore the complete New Zealand sample was used in this comparison.

6.6.5 Step Five - A comparison of the subject area studied in New Zealand and England and Wales

In the final step, differences between the subjects studied in England and Wales compared to those studied in New Zealand for male students was considered. The same relationship was compared for female students. Chi-square test statistics were used. This comparison was tested due to the differences in subjects studied by New Zealand students compared to students from England and Wales observed in previous steps.

CHAPTER SEVEN

RESULTS - PART A

7.1 New Zealand Analyses

Analysis of the results for the present study were conducted in several steps. These will be presented in the same order as discussed in the method.

7.1.1 Step One - University attended

Figure 7.1 shows the frequency distribution of one of the original variables, the university a student attended. It is apparent that the number of postgraduate students who have attended New Zealand universities has not been equally distributed across the seven universities. Auckland and Canterbury together account for over half of the students (53%). Whereas postgraduate students from Waikato and Lincoln represent less than 7% of the total sample population.

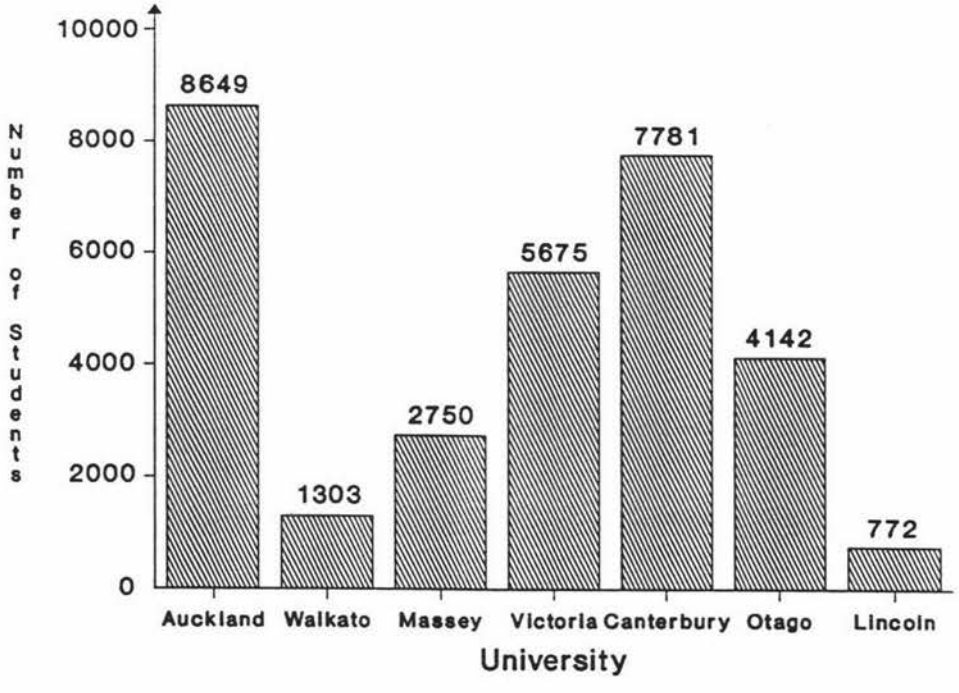

Figure 7.1: The distribution across New Zealand's universities of students who completed a Bachelor with honours or Masters degree during 1960 to 1989.

7.1.2 Step Two - Crosstabulation of degree and gender

Table 7.1 shows a crosstabulation of degree undertaken and the sex of each student. Of the total sample of 31072 students, 69.4% of the sample were male, and 30.6% female. Masters degrees were undertaken by slightly more than half (55%) of the sample. Female students appear to be better represented in Masters than Bachelor with honours degrees.

The figures in brackets represent the percentages of students in each group. The chi-square for these two independent groups was 62.439, $df = 1$, $p < .0001$ after Yates correction. Therefore the null hypothesis was rejected.

Table 7.1: The Gender and Degree composition of the sample.

	Bachelor	Master	TOTAL
Male	10,015 (32.2 %)	11,549 (37.2 %)	21,564 (69.4 %)
Female	3,955 (12.7 %)	5,553 (17.9 %)	9,508 (30.6 %)
TOTAL	13,970 (45.0 %)	17,102 (55.0 %)	31,072

7.1.3 Step Three - Changes in the sample over time

The differences in distribution of individuals from 1960 to 1989 in five year blocks, for the total sample, male sample and female sample is shown in Figure 7.2. Over this time the total number of students shows a relatively consistent increasing linear trend. The latter half of the sixties and eighties being the times of greatest increases in the number of postgraduate students who completed a degree.

Figure 7.2: The change in distribution of New Zealand students who have completed a Bachelor with honours or Masters degree between 1960 to 1989.

The number of men completing postgraduate studies increased the most between the years 1960 to 1974. In contrast, the participation of women showed a lower but consistent increase in the numbers completing postgraduate studies during the years 1960 to 1989. Women's proportional representation in postgraduate studies increased from 23% in the sixties to 38% in the eighties. The chi-square test found these results significant, $\chi^2 = 475.391$, df = 5, $p < .0001$. Therefore the null hypothesis was rejected, and it can be concluded that at New Zealand universities the gender composition of postgraduate students was not independent of the time of study.

7.1.4 Step Four - Changes in subject areas over time

Figure 7.3 represents the percentage of postgraduate students in each area of study, in relation to the decade in which they finished their

studies. The following major trends from 1960 to 1989 were observed. The Sciences consistently attracted the greatest number of students. The number of students who completed Languages and Humanities degrees have decreased the most from 1960 to 1989. The greatest increases over these thirty years have been in the fields of Engineering and Business. In the eighties the spread of students across all subject areas was more evenly distributed than in the sixties. The results of the chi-square test for these independent samples was 1319.17, df = 20, significant at the $p < .0001$ level. Therefore it can be concluded that for this sample of New Zealand postgraduate students the area of study was not independent of the decade in which the student studied.

The effect these changes had on men's choice of subject area is shown in Figure 7.4. The changes in the male population over time, basically mimics those of the population as a whole. However, some of the increases or decreases in subject areas are more pronounced. The number of men in Languages in the eighties was only a third of the number in the sixties. The number of men completing Engineering in the eighties was double that of the sixties. The only conflict in trends between the total population and the male population is that during these thirty years the number of students completing degrees in Social Sciences and Education have increased in the general population, though not substantially, whereas male representation in these two fields has decreased. The area a male obtained his degree in was not independent of the decade in which he obtained his degree at the $p < .0001$ level, $\chi^2 = 954.11$, df = 20.

The areas that women have chosen to study have changed quite dramatically over the last thirty years, as shown in Figure 7.5. The most notable fact is that in the sixties over half of all female postgraduate students were studying Languages. In the eighties, the number of women studying Languages made up less than a fifth of the total female

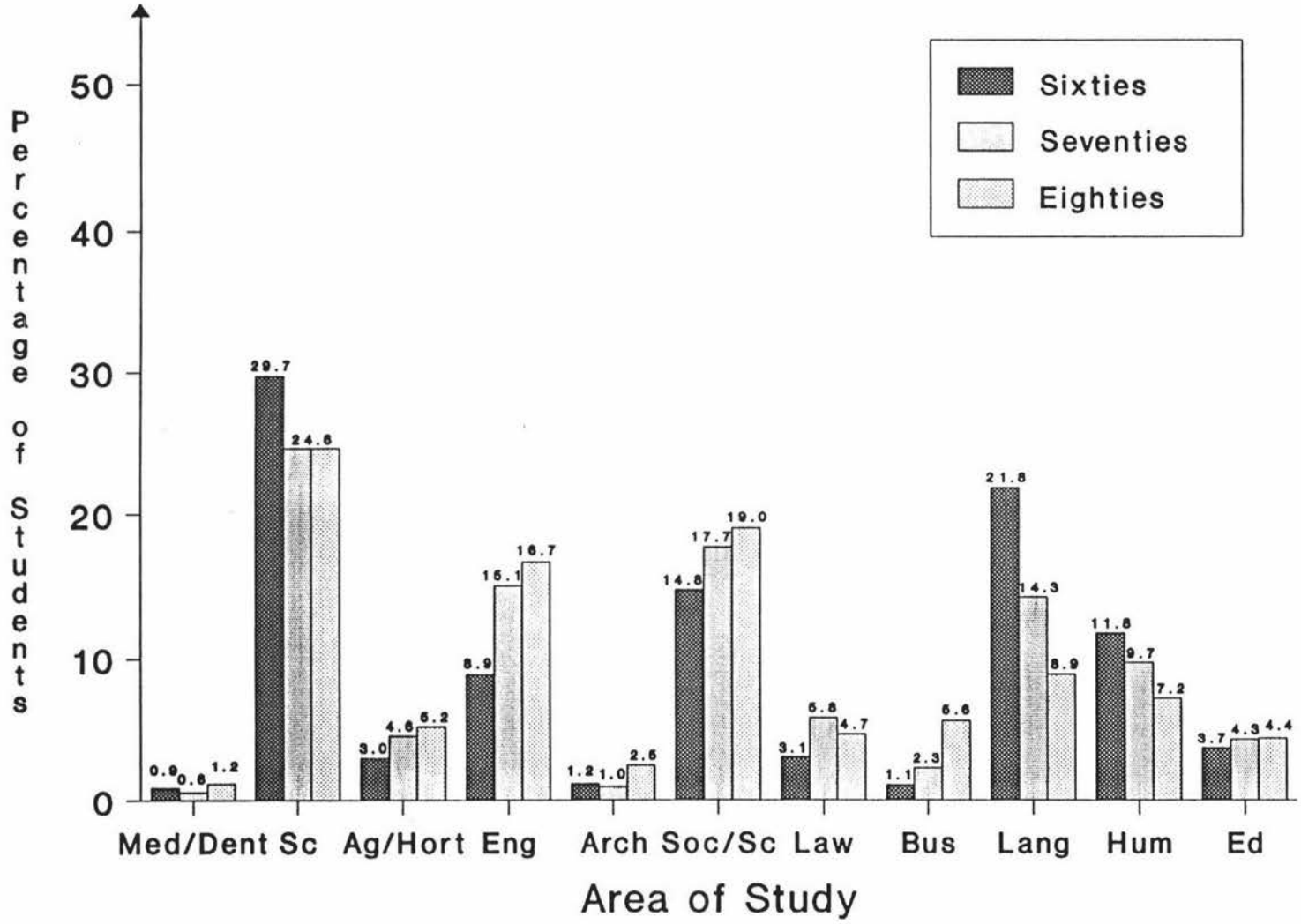

Figure 7.3: The percentage of New Zealand students who have completed a Bachelor with honours or Masters degree in each subject area during the Sixties, Seventies, and Eighties.

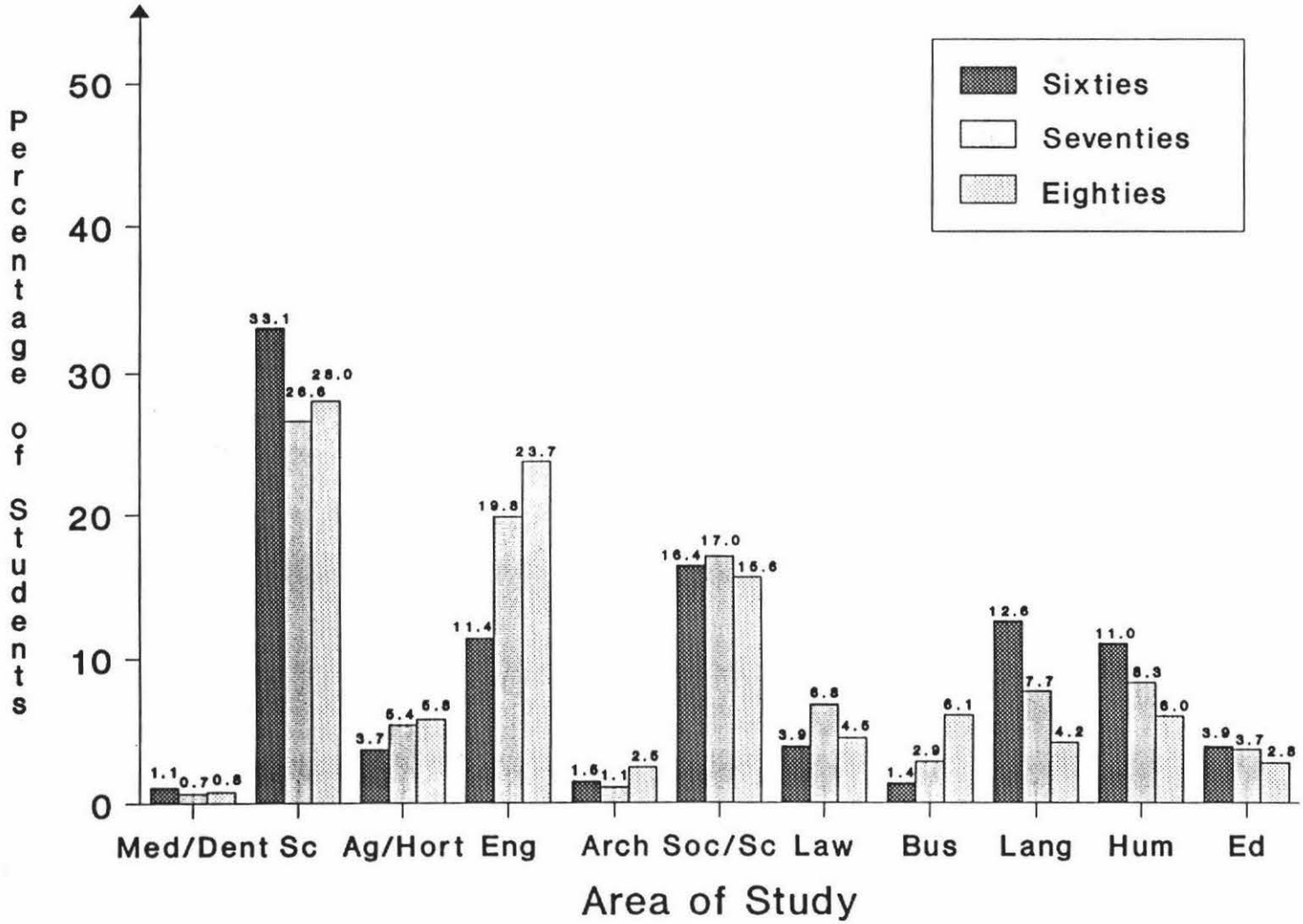

Figure 7.4: The percentage of New Zealand Male students who have completed a Bachelor with honours or Masters degree in each subject area during the Sixties, Seventies, and Eighties

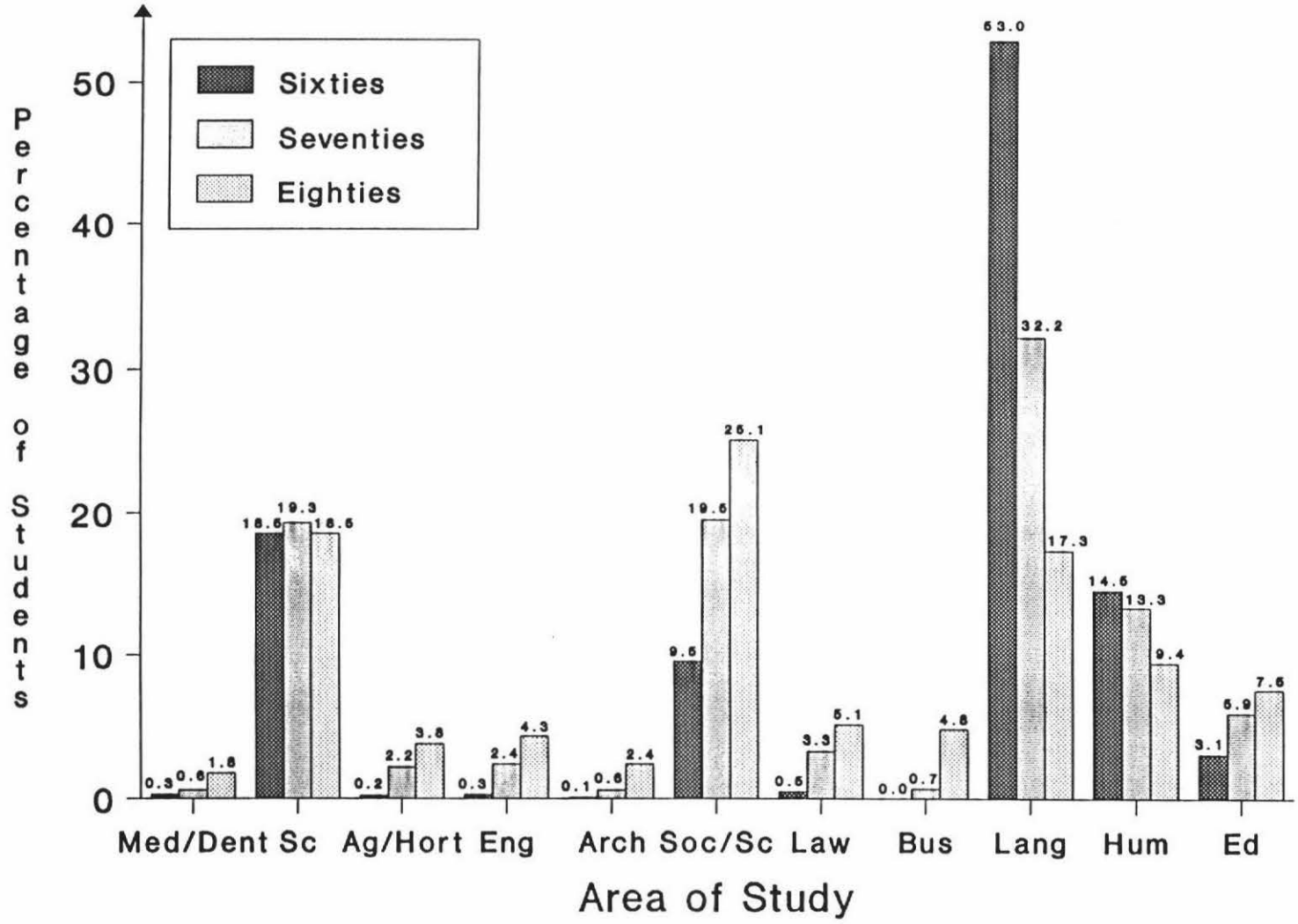

Figure 7.5: The percentage of New Zealand Female students who have completed a Bachelor with honours or Masters degree in each subject area during the Sixties, Seventies, and Eighties.

postgraduates. The areas where women's participation increased the most were the fields of Social Sciences, which was the most popular option with over a quarter of the total female population studying Social Sciences in the eighties. The other noticeable changes were in the fields of Medicine/Dentistry, Engineering, Business, Agriculture/Horticulture, Architecture, and Law. In the sixties these subject areas were chosen by only 1.4% of the total female population, in the eighties they consisted of 22.2% of the total subjects chosen by the female population. In conclusion, the representation of females across subject areas in the eighties, more closely resembles that of the male population, than it did in the sixties, with the exception of Engineering which continued to be dominated by men. Due to these evident changes in areas of study for females it is not unexpected that females' choice of area of study was not independent of the decade in which they studied, $\chi^2 = 1068.74$, significant at the $p < .0001$ level, $df = 20$.

7.1.5 Step Five - The distribution of grades

Figures 7.6, 7.7, and 7.8 show the proportional distribution of the total sample, Bachelor with honours sample, and Masters sample respectively that awarded each class of honours. With reference to Figure 7.6, note that females received a greater percentage of top grades than men. First class degrees were awarded to 28.8% of the women, compared to 26.5% of the men. Over half the women, 51.9% received a "good" degree, that is a first or upper second, whereas only 45.6% of the men did. It should also be noted that the majority of students, regardless of their sex, received satisfactory degrees, only 20.8% of the entire sample received a third class or passing grade.

It is evident that the pattern of grade distribution differs markedly as a function of the qualification sought (see Figures 7.7 and 7.8). Over 60%

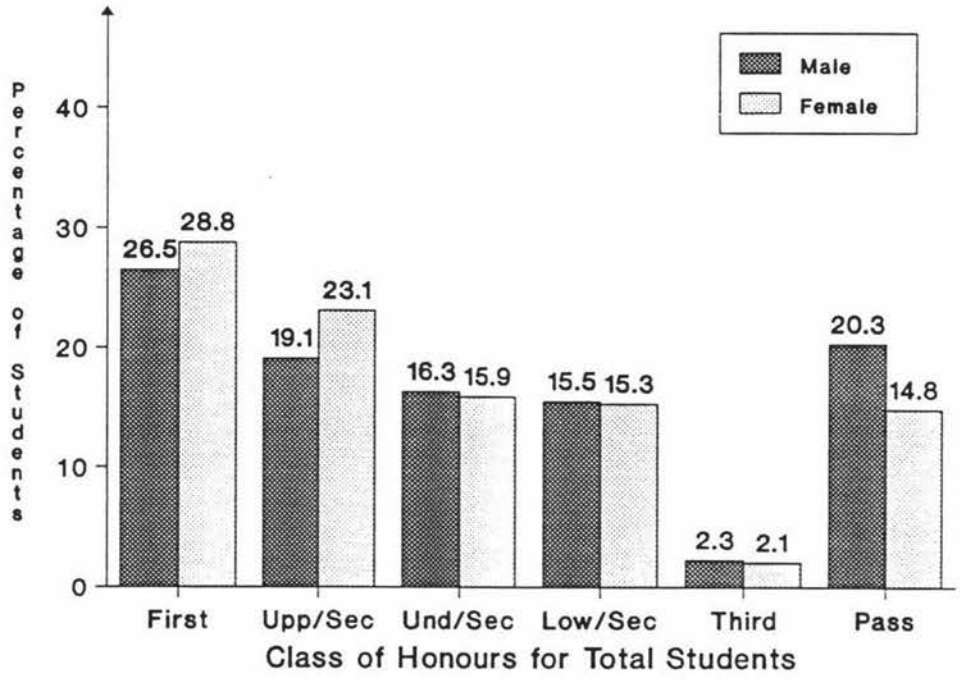

Figure 7.6: The proportion of each class of honours awarded to Bachelor with honours and Masters students of New Zealand.

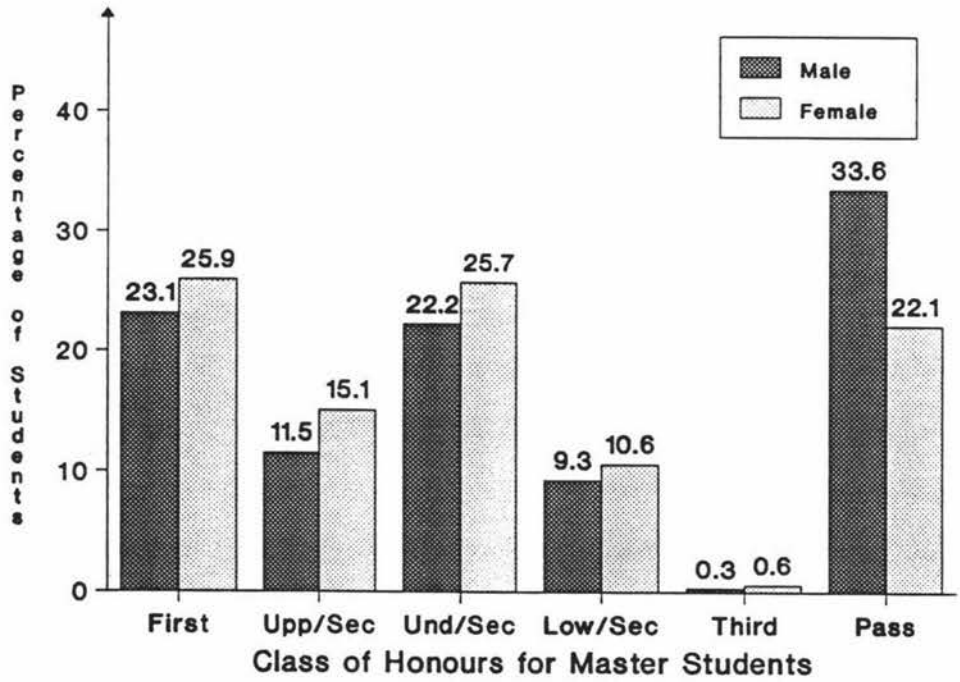

Figure 7.7: The proportion of each class of honours awarded to Masters students of New Zealand.

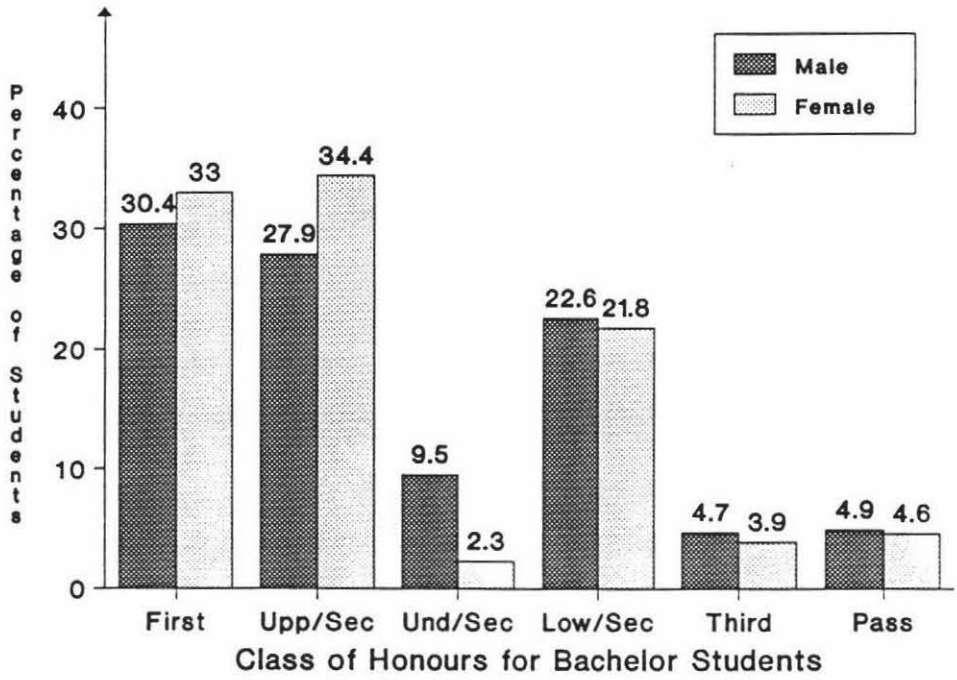

Figure 7.8: The proportion of each class of honours awarded to Bachelor with honours students of New Zealand.

(60.9) of the Bachelor with honours students were awarded a first or upper second, compared to 36.7% of the Masters students. Also a small 4.8% of the Bachelor with honours sample were given a passing grade, whereas 29.9% of the Masters sample received a passing grade.

7.1.6 Step Six - The effect of gender and subject on grades

Tables 7.2, 7.3, and 7.4 display the proportion of the sample who studied each subject area, broken down into male and female as well as the total, this is shown in the far right column. Secondly, these Tables present the proportion of each subject total who received each class of honours also broken down into male, female and total. Results of the whole sample are shown in Table 7.2. Table 7.3 illustrates results for the sample of students who obtained a Masters degree and Table 7.4 presents the same results, but for the sample of the population who completed a Bachelor with honours degree.

Table 7.2: The proportion of New Zealand students who studied each subject area as a function of Gender and class of honours.

		First Class	Upper Second	Undivided Second	Lower Second	Third Class	Pass	Total
Medicine/	Male	28.2	3.5	34.7	1.8	0.6	31.2	0.8
Dentistry	Female	29.4	20.2	21.0	12.6	1.7	15.1	1.3
	TOTAL	28.7	10.4	29.1	6.2	1.0	24.6	0.9
Science	Male	33.8	19.1	15.4	11.2	3.7	16.8	28.3
	Female	39.0	24.3	11.7	11.5	2.8	10.7	18.7
	TOTAL	35.0	20.2	14.6	11.3	3.5	15.4	25.4
Agriculture/	Male	32.3	29.0	7.0	18.0	0.1	13.6	5.3
Horticulture	Female	51.3	23.1	1.8	13.2	0.0	10.6	2.9
	TOTAL	35.9	27.9	6.0	17.1	0.1	13.0	4.6
Engineering	Male	28.9	17.4	20.6	17.5	0.2	15.4	20.1
	Female	39.0	17.9	11.7	25.6	0.0	5.8	3.2
	TOTAL	29.5	17.5	20.0	18.0	0.2	14.8	15.0
Architecture	Male	7.7	12.1	4.4	17.2	0.0	58.6	1.8
	Female	12.4	15.2	10.3	16.6	0.0	45.5	1.5
	TOTAL	9.0	12.9	6.0	17.0	0.0	55.1	1.7
Social	Male	18.9	22.0	15.8	18.8	2.9	21.6	16.3
Science	Female	26.3	24.4	15.5	15.9	2.4	15.5	21.6
	TOTAL	21.6	22.9	15.7	17.8	2.7	19.3	17.9
Law	Male	14.1	19.1	10.0	19.2	2.7	34.9	5.2
	Female	11.5	24.1	5.0	18.4	1.9	39.1	4.0
	TOTAL	13.5	20.3	8.8	19.0	2.5	35.9	4.9
Business	Male	20.3	20.6	5.7	15.6	2.1	35.7	4.1
	Female	24.3	25.4	5.4	17.8	0.4	26.7	2.9
	TOTAL	21.3	21.8	5.6	16.2	1.6	33.5	3.7
Languages	Male	28.9	18.3	20.9	16.4	2.9	12.6	7.0
	Female	26.4	23.6	21.7	16.8	2.1	9.4	26.2
	TOTAL	27.3	21.5	21.5	16.7	2.4	10.6	12.8
Humanities	Male	22.8	18.4	22.0	15.5	3.3	18.0	7.7
	Female	22.3	24.0	20.4	17.3	2.1	13.9	11.2
	TOTAL	22.6	20.6	21.4	16.1	2.9	16.4	8.8
Education	Male	17.2	10.5	17.0	12.1	2.8	40.4	3.4
	Female	30.6	15.6	18.8	7.3	1.3	26.4	6.5
	TOTAL	23.4	12.8	17.8	9.9	2.1	34.0	4.3
GRAND	Male	26.5	19.1	16.3	15.5	2.3	20.3	
TOTALS	Female	28.8	23.1	15.9	15.3	2.1	14.8	
	TOTAL	27.2	20.4	16.2	15.4	2.2	18.6	

Table 7.3: The proportion of New Zealand Masters students who studied each subject area as a function of Gender and class of honours received.

		First Class	Upper Second	Undivided Second	Lower Second	Third Class	Pass	Total
Medicine/	Male	20.8	0.8	36.0	0.0	0.0	42.4	1.1
Dentistry	Female	20.4	14.8	24.1	7.4	0.0	33.3	1.0
	TOTAL	20.7	5.0	32.4	2.2	0.0	39.7	1.0
Science	Male	30.6	9.1	25.9	4.9	0.0	29.5	30.2
	Female	36.2	11.4	24.8	4.0	0.1	23.5	14.5
	TOTAL	31.6	9.6	25.7	4.8	0.0	28.3	25.1
Agriculture/	Male	23.8	26.3	11.0	13.4	0.0	25.5	4.6
Horticulture	Female	22.8	29.8	1.8	8.8	0.0	36.8	1.0
	TOTAL	23.7	26.6	10.1	13.0	0.2	26.6	3.5
Engineering	Male	15.7	0.6	5.8	0.7	0.0	77.0	7.5
	Female	43.1	11.8	7.8	2.0	0.2	35.7	0.9
	TOTAL	17.2	1.2	5.9	0.8	0.0	74.7	5.3
Architecture	Male	7.9	2.0	14.9	0.0	0.0	75.2	0.9
	Female	12.7	0.0	25..5	0.0	0.0	61.8	1.0
	TOTAL	9.6	1.3	18.6	0.0	0.0	70.5	0.9
Social	Male	18.1	14.3	22.8	13.4	0.1	31.3	21.0
Science	Female	24.2	15.7	24.6	10.7	0.1	24.7	23.2
	TOTAL	20.2	14.8	23.4	12.5	0.1	29.0	21.7
Law	Male	20.8	13.4	30.5	11.8	0.0	23.5	3.2
	Female	28.1	7.0	33.3	12.3	0.0	19.3	1.0
	TOTAL	21.7	12.6	30.9	11.9	0.0	22.9	2.5
Business	Male	15.0	11.8	8.8	9.3	0.0	55.1	4.9
	Female	15.9	12.4	10.3	9.7	0.0	51.7	2.6
	TOTAL	15.1	11.9	9.1	9.5	0.0	54.4	4.2
Languages	Male	27.5	15.4	24.5	15.6	2.3	14.7	11.1
	Female	24.8	19.3	27.6	14.7	1.7	11.9	35.3
	TOTAL	25.9	17.8	26.3	15.1	1.9	13.0	18.9
Humanities	Male	20.6	12.9	28.9	12.3	0.0	25.3	10.1
	Female	21.5	12.2	29.9	13.2	0.0	23.2	11.4
	TOTAL	20.9	12.7	29.3	12.6	0.0	24.5	10.6
Education	Male	17.2	7.6	19.7	8.6	0.0	46.9	5.4
	Female	26.5	8.2	25.7	3.5	0.0	36.1	8.1
	TOTAL	21.1	7.9	22.3	6.4	0.0	42.3	6.3
GRAND	Male	23.1	11.5	22.2	9.3	0.3	33.6	
TOTALS	Female	25.9	15.1	25.7	10.6	0.6	22.1	
	TOTAL	24.0	12.7	23.3	9.7	0.4	29.9	

Table 7.4: The proportion of New Zealand Bachelor with honours students who studied each subject area as a function of Gender and class of honours received

		First Class	Upper Second	Undivided Second	Lower Second	Third Class	Pass	Total
Medicine/	Male	48.9	11.1	31.1	6.7	2.2	0.0	0.4
Dentistry	Female	36.9	24.6	18.5	16.9	3.1	0.0	1.6
	TOTAL	41.8	19.2	23.6	12.7	2.7	0.0	0.8
Science	Male	38.1	32.1	1.4	19.6	8.6	0.0	26.2
	Female	41.3	35.0	0.8	17.7	5.0	0.2	24.7
	TOTAL	39.0	32.9	1.3	19.1	7.6	0.1	25.8
Agriculture/	Male	39.7	31.5	3.4	22.1	0.2	3.1	6.1
Horticulture	Female	58.8	21.3	1.9	14.3	0.0	3.7	5.5
	TOTAL	44.7	28.8	3.0	20.1	0.1	3.3	5.9
Engineering	Male	32.1	21.6	24.3	21.7	0.2	0.1	34.7
	Female	38.1	19.1	12.5	30.3	0.0	0.0	6.5
	TOTAL	32.5	21.4	23.5	22.3	0.2	0.1	26.8
Architecture	Male	7.6	15.6	0.7	23.2	0.0	52.9	2.9
	Female	12.2	24.4	1.1	26.7	0.0	35.6	2.3
	TOTAL	8.7	17.7	0.8	24.0	0.0	48.8	2.7
Social	Male	20.8	39.2	0.3	30.8	8.8	0.1	10.9
Science	Female	29.8	39.1	0.3	24.5	6.3	0.0	19.3
	TOTAL	24.5	39.2	0.3	28.4	7.7	0.1	13.3
Law	Male	10.8	21.8	0.0	22.8	4.1	40.5	7.5
	Female	8.6	27.2	0.0	19.4	2.2	42.6	8.2
	TOTAL	10.2	23.4	0.0	21.8	3.5	41.1	7.7
Business	Male	30.1	36.9	0.0	27.2	5.8	0.0	3.1
	Female	33.3	39.3	0.0	26.7	0.7	0.0	3.4
	TOTAL	31.1	37.6	0.0	27.0	4.3	0.0	3.2
Languages	Male	36.4	34.3	0.4	22.7	6.2	0.0	2.3
	Female	32.3	39.4	0.2	24.5	3.6	0.0	13.3
	TOTAL	33.5	37.9	0.3	23.9	4.4	0.0	5.3
Humanities	Male	28.3	31.6	5.1	23.4	11.2	0.4	4.9
	Female	23.4	41.0	6.7	23.2	5.2	0.5	11.0
	TOTAL	26.0	36.0	5.8	23.3	8.4	0.5	6.6
Education	Male	17.2	28.3	0.0	34.3	20.2	0.0	1.0
	Female	41.8	35.8	0.0	17.6	4.8	0.0	4.2
	TOTAL	32.6	33.0	0.0	23.9	10.5	0.0	1.9
GRAND	Male	30.4	27.9	9.5	22.6	4.7	4.9	
TOTALS	Female	33.0	34.4	2.3	21.8	3.9	4.6	
	TOTAL	31.1	29.8	7.4	22.4	4.5	4.8	

Note in Table 7.3, which represents the Masters sample, that the range of first class degrees, differs between areas of study. Sciences awarded the highest number of first class honours degrees 31.6%, Architecture awarded the lowest 9.6%. Note also, that females obtained a greater proportion of these first class degrees in all subject areas except Languages, Medicine/Dentistry, and Agriculture/Horticulture. In Engineering note the large discrepancy with respect to gender, 43.1% of females received first class degrees whereas only 15.7% of men did. A large amount of variability is also evident between the areas of study with regards to giving passing grades. In Languages only 13% of the sample were given a pass grade, whereas in Engineering 74.7% were given a pass, the average was 29.9%. Note also that the Languages area of study appears to be the only area using all points of the available grading scale.

As can be seen in Table 7.4 a high percentage of Bachelor with honours students were given a first class honours degree. Females received a higher proportion of the first class degrees awarded than men, with the exception of the subject areas Medicine/Dentistry, Law, Languages, and Humanities.

7.1.7 Step Seven - The distribution of first class honours

Individual two by two contingency tables of gender by either first class or other honours degrees were calculated for the entire sample. A chi-square of 18.62, df = 1, significant at the $p < .001$ level was obtained for the entire sample. For Masters students alone the chi-square was 16.13, df = 1, significant at the $p < .001$ level. The chi-square for Bachelor with honours students was 9.01, df = 1, significant at the $p < .01$ level.

Tables 7.5 and 7.6 present the results of several chi-square calculations where the same two by two contingency tables were calculated, but for each area of study individually. In Table 7.5, which presents this information for Masters students, Engineering, Social Science, and Education were significant at the $p < .001$ level, and Science at the $p < .01$ level. Therefore these subject areas, at their respective significance levels, awarded females first class degrees more frequently than males.

Table 7.5: Chi-Square results of the proportion of first class honours degees awarded to Males and Females who completed a Masters in each subject area.

Subject	Chi-Square	Significant at p <
Med / Dent	0.00	-
Science	9.66	.01
Ag / Hort	0.09	.8
Eng	24.18	.001
Arch	1.32	.3
Soc Sc	19.21	.001
Law	1.95	.2
Bus	0.07	.8
Lang	2.97	.1
Hum	0.81	.4
Ed	14.38	.001

Table 7.6: Chi-Square results of the proportion of first class honours degees awarded to Males and Females who completed a Bachelor with honours in each subject area.

Subject	Chi-Square	Significant at p <
Med / Dent	1.39	.3
Science	3.13	.1
Ag / Hort	24.37	.001
Eng	3.71	.1
Arch	1.63	.3
Soc Sc	14.25	.001
Law	1.21	.3
Bus	0.44	.6
Lang	1.40	.3
Hum	2.73	.1
Ed	16.59	.001

The Bachelor with honours results are presented in Table 7.6, it can be seen that both Social Science and Education were again significant at the $p < .001$ level as was the subject area of Agriculture/Horticulture. Similarly, it can be concluded, that females studying for a Bachelor with honours qualification, were awarded a first class degree more frequently than males in Social Science, Education and Agriculture/Horticulture.

7.1.8 Step Eight - Institutional differences in grades

Figure 7.9 shows the percentage of first class honours degrees awarded by each university, irrespective of other variables. It can be seen that the sample average of first class degrees awarded, (27.2%), was deflated by the results of two universities, Victoria and Canterbury, who awarded substantially less first class honours degrees than the other five universities. The range between universities was nearly 10%. Lincoln awarded the most first class honours degrees. The chi-square statistics for this relationship was significant at the $p < .0001$ level, $\chi^2 = 169.19$, $df = 6$. This supports the hypothesis that the awarding of first class degrees was not independent of the university awarding the degree. The same can also be concluded when a recipients gender is considered, the chi-square for males was 105.71, $df = 6$, $p < .0001$, and for females $\chi^2 = 82.67$, $df = 6$, $p < .0001$.

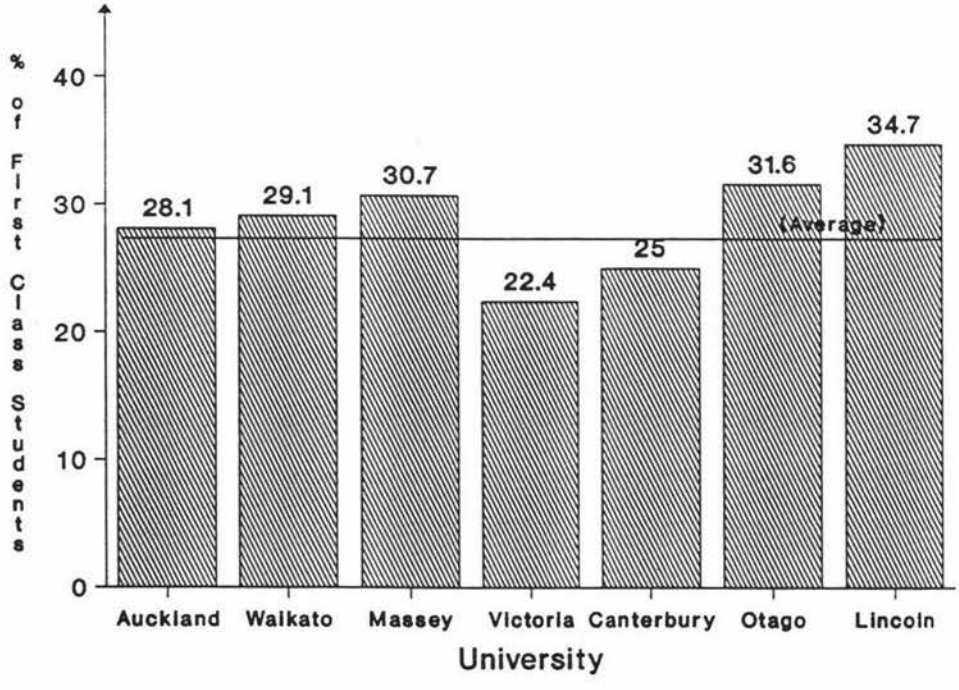

Figure 7.9: The percentage of Bachelor with honours and Masters students who were awarded a first class honours degree at each New Zealand university.

RESULTS - PART B

7.2 England and Wales Analyses

7.2.1 Step One - Gender differences in choice of subject

Figure 7.10 shows the percentage distribution of male, female, and total students from England and Wales, who completed a Bachelors degree with honours in each area of study, during the years 1975 to 1989. It is clear that gender differences do exist in a student's choice of subject studied. Sciences was the area chosen most frequently by men with nearly 30% of the total male population completing degrees in this area. The second most popular choice, as seen in Figure 7.10 was Engineering chosen by 22.9%. The areas of Social Science, Business, Languages and Humanities all attracted between eight and nine percent of the male population.

The greatest proportion of women chose to study Languages, 25.92%. This was followed by Science, 21.50%, Social Sciences 15.21%, and Humanities 12.84%. Note that the spread of female students across the different areas of study is less consistent than that for males.

The chi-square statistic indicates that there is a relationship between these variables, at the $p < .0001$ level, $\chi^2 = 216687.85$, $df = 10$. Therefore the null hypothesis was rejected. It can be concluded that during the years of 1974 to 1989 a student's choice of area of study in England and Wales was not independent of that student's gender.

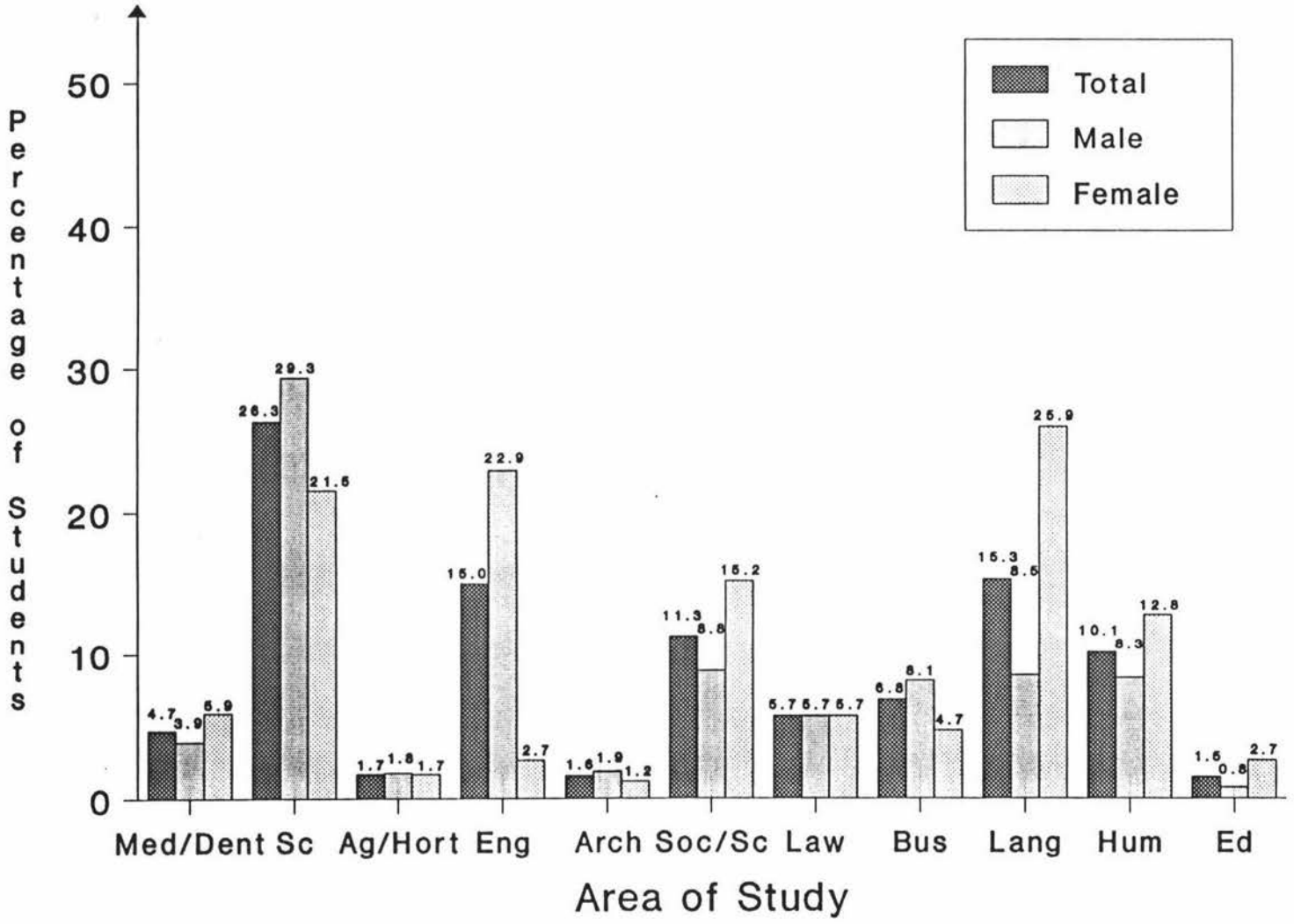

Figure 7.10: The distribution of students who completed a Bachelor with honours degree in England or Wales in each subject area from 1974 - 1989 by Gender and Total.

7.2.2 Step Two - The distribution of grades

In Figure 7.11 the proportion of both male and female students who received each class of degree is pictorially represented. Observe that men received a greater proportion of first class degrees than women. However, men also received a larger percentage of the third or lower class degrees than women. Women received a higher number of good degrees, that is first and upper second honours degrees (45.2%), than men (43%).

The chi-square test statistic for the independence of the groups men and women with respect to the grades they received was $\chi^2 = 12252.31$, df = 4. This was significant at the $p < .0001$ level, so the null hypothesis was rejected, and it was concluded that the grade an individual received was not independent of that individuals gender. Similarly, a chi-square test of the proportion of students who obtained a first class degree compared to all other classes of degrees, revealed that the gender of a student was not independent of this relationship, significant at the $p < .0001$ level, $\chi^2 = 3682.32$, df = 1.

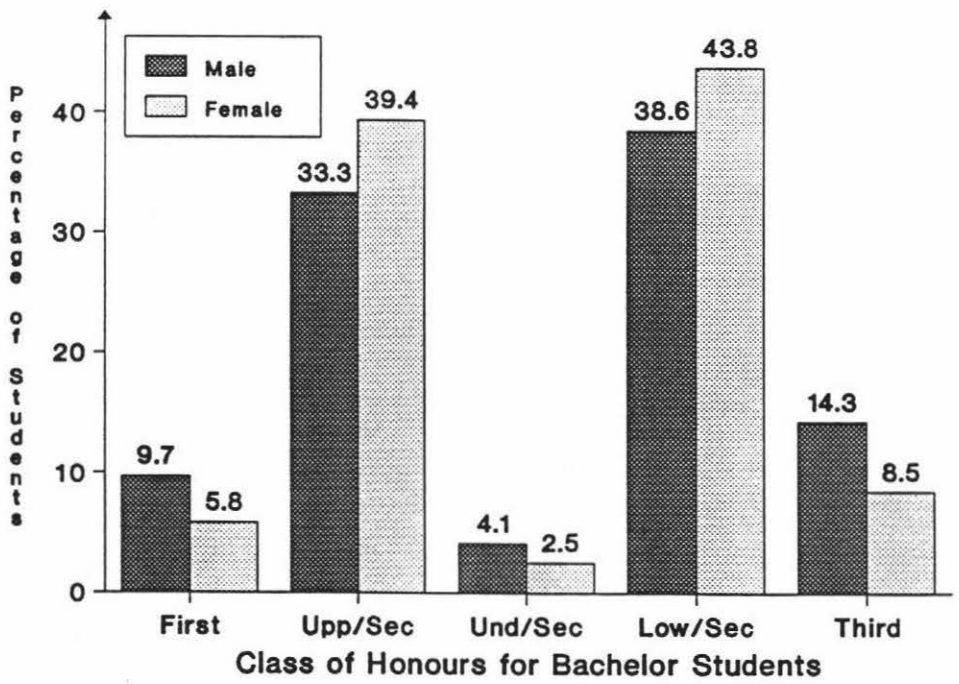

Figure 7.11: The proportion of each class of honours awarded to Bachelor with honours students at England and Wales universities.

Table 7.7: The proportion of England and Wales students who studied each subject area as a function of Gender and class of honours received.

		First Class	Upper Second	Undivided Second	Lower Second	Third & Fourth	Total
Medicine/	Male	11.4	35.2	3.2	27.4	22.8	3.9
Dentistry	Female	10.7	42.9	1.8	28.9	15.7	5.9
	TOTAL	11.0	39.0	2.6	28.1	19.3	4.7
Science	Male	13.2	29.6	5.0	34.0	18.2	29.3
	Female	9.3	35.3	3.3	37.9	14.2	21.5
	TOTAL	11.9	31.4	4.5	35.3	16.9	26.3
Agriculture/	Male	4.1	35.7	2.2	44.2	13.8	1.8
Horticulture	Female	4.7	40.4	2.2	39.3	13.4	1.7
	TOTAL	4.3	37.5	2.2	42.4	13.6	1.7
Engineering	Male	12.2	30.0	1.2	38.1	18.5	22.9
	Female	11.5	33.8	1.5	37.8	15.4	2.7
	TOTAL	12.2	30.3	1.2	38.0	18.3	15.0
Architecture	Male	7.0	30.9	0.1	45.1	16.9	1.9
	Female	5.6	36.9	0.1	47.4	10.0	1.2
	TOTAL	6.6	32.6	0.1	45.8	14.9	1.6
Social	Male	4.9	39.6	2.1	46.3	7.1	8.8
Science	Female	3.4	43.1	0.9	48.2	4.2	15.2
	TOTAL	4.1	41.4	1.5	47.4	5.6	11.3
Law	Male	4.6	32.3	7.1	47.6	8.4	5.7
	Female	3.6	40.3	3.2	47.8	5.1	5.7
	TOTAL	4.2	35.5	5.6	47.6	7.1	5.7
Business	Male	3.7	34.5	0.1	51.2	10.5	8.1
	Female	4.1	39.8	0.0	48.8	7.3	4.7
	TOTAL	3.8	35.9	0.1	50.6	9.6	6.8
Languages	Male	9.3	38.4	9.8	34.9	7.6	8.5
	Female	4.7	39.4	3.4	46.8	5.7	25.9
	TOTAL	6.3	39.1	5.6	42.7	6.3	15.3
Humanities	Male	7.5	42.8	7.0	35.5	7.2	8.3
	Female	3.4	41.3	3.0	46.1	6.2	12.8
	TOTAL	5.4	42.1	5.0	40.8	6.7	10.1
Education	Male	4.2	28.3	8.9	46.8	11.8	0.8
	Female	4.1	36.8	4.2	46.9	8.2	2.7
	TOTAL	4.1	34.1	5.6	46.9	9.3	1.5
GRAND	Male	9.7	33.3	4.1	38.6	14.3	
TOTALS	Female	5.8	39.4	2.5	43.8	8.5	
	TOTAL	8.2	35.7	3.4	40.6	12.1	

7.2.3 Step Three - The effect of gender and subject on grades

Table 7.7 provides the percentage of total students, male students, and female students, who obtained each class of honours in each area of study for a Bachelor with honours degree in England and Wales during the years 1974 to 1989. Note that although in total men received a higher proportion of first class honours than females, females received a higher proportion of the first class degrees in the areas of Agriculture/ Horticulture, and Business. Men received a higher proportion of third class honours degrees in all subject areas. A "good" degree, that is either a first or an upper second was received by a larger proportion of females than males in all areas of study except, Languages and Humanities, in which males obtain a higher proportion of good degrees than females.

7.2.4 Step Four - A comparison of New Zealand and England and Wales grades

A chi-square test was done to determine if the differences in the grade distributions of New Zealand universities and England and Wales universities was significant. The null hypothesis could be rejected at the $p < .0001$ level, $\chi^2 = 10321.38$, $df = 4$. It was therefore concluded that the distribution of grades in New Zealand differed to the distribution of grades in England and Wales.

7.2.5 Step Five - A comparison of the subject area studied in New Zealand and England and Wales

A chi-square test was calculated to test if the number of males in New Zealand completing Bachelor with honours or Masters in each area of study differed significantly to the number of males in Britain completing Bachelor with honours in each area of study, the results were $\chi^2 = 2952.85$, $df = 10$. The null hypothesis was rejected at the $p < .0001$ level. The same test was done for females subjects and again the null hypothesis could be rejected at the $p < .0001$ level, $\chi^2 = 1082.60$, $df = 10$.

CHAPTER EIGHT
DISCUSSION

8.1 Introduction

All of the hypotheses have been supported. Grades are not distributed equally either between the sexes or between areas of study. Different universities also award different proportions of grades. Further, this fact is also influenced by whether the degree undertaken is a Masters or Bachelors with honours qualification. The passing of time has influenced degree selection of both men and women. When New Zealand universities were compared with those of England and Wales, distinct and significant differences were found in the way grades were distributed and in the areas of study that were most studied.

8.2 Characteristics of the postgraduate population

8.2.1 Gender and Degree

In recent years, the proportion of students choosing to continue to further education in New Zealand has increased (Department of Education, 1988). Women have also improved their representation in university studies. They now represent close to half of all undergraduates who enrol at university (Keef, 1990), and nearly 45% of those who graduate each year (Sub-Committee on Graduate Employment, 1988). A greater number of students are also choosing to continue their studies as postgraduate students, see Figure 7.1 (p. 58).

The number of students who chose to complete a postgraduate qualification in the eighties grew in comparison to other decades. A major source of the growth in higher education between 1955 to 1970 was in the 18-24 age group, stemming from the postwar explosion in birth rates,

which has since stabilised (Dresch, 1975). The results for the 1980's therefore represent both an overall increase in numbers, and an increase in the proportion of people who proceeded to this level of education.

There are proportionately less female postgraduate students than undergraduates. But each year the proportions move closer. In 1989 just over 39% of those completing a postgraduate degree were women. Females have more Masters degrees than Bachelor with honours degrees (see Table 7.1 p. 59). It is likely that this is to some extent a result of mens' domination in Engineering subjects. Over a quarter of the students studying for a Bachelor with honours degree were students studying in the field of Engineering. Engineering however was the choice of study for only 5.3% of the total Masters students (see Tables 7.3 and 7.4 p. 69-70).

8.2.2 Changes in Subjects Studied

The results seen in Figures 7.3, 7.4 and 7.5 (p. 62-64) provide support for the hypothesis that there has been changes in the choices of degrees undertaken by men and women in the thirty year period 1960 to 1989. In the eighties, degree courses leading towards specific vocations attracted a greater number of students. Particularly Engineering, Architecture, and Business courses. These changes are in line with those of other countries (Roemer, 1983; Zetterblom, 1986; Hartnett, 1987; Fenner, 1989).

Students increasingly seek qualifications which will benefit them in an inhospitable labour market, and universities are increasingly inclined to respond to this demand. In line with this "vocationalism", the structure of postgraduate study has changed. The overall number of higher degrees awarded has increased and there has been an effective redistribution.

In the United States, the increase in the number of Masters degrees in Business Administration has been, on average, 7.2% per year; in Great Britain 10.6% per year, and in France 11.5% per year (Blume & Amsterdamska, 1986). In New Zealand an increase of 500% in the numbers completing Business postgraduate qualifications, and nearly 200% in Engineering has occurred over the last thirty years (See Figure 7.3 p. 62). Such a shift fits well with the general thrust of government policy in most countries towards an increasing emphasis on the industrial relevance of training. Humanities degrees have suffered the most as a result of these changes, both in New Zealand and elsewhere (Blume, 1986; Fenner, 1989).

Over the last thirty years there have been substantial changes in the subjects women have chosen to pursue. Previously women were concentrated in a small number of fields. During the sixties over 95% of women were studying in either the Arts; that is Languages, Humanities, and Social Sciences, or the Sciences. Of that over 50% were studying Languages. Women now participate in all subject areas (see Figure 7.5 p. 64).

The women's movement has been an event of high social significance in the last three decades. A major part of this movement has been the effort to expand the social roles available to women and to reduce the relevance of gender in the assignment of occupations. Therefore a direct relationship could be expected between the social events of the women's movement and the educational events of earning a higher degree (Roemer, 1983). The findings of New Zealand women's postgraduate studies in the present study supports this assumption. However it is probable that the impact of changing economic conditions is also responsible for some of the movement in fields of study that women have made.

Men have doubled their participation in Engineering subjects. This is not surprising as employment opportunities in this field continue to rise (Yearbook, 1990). Women however have not taken advantage of this fact. Engineering continues to be dominated by men in New Zealand, in the United States (Tuckman & Tuckman, 1984) and in Britain (Clarke, 1988).

Part B of the study showed that there are significant differences in the subjects studied in New Zealand and England and Wales. There were five times as many students in the Medicine/Dentistry subject category in England and Wales, (4.7%), compared to New Zealand (0.9%). Some of this variance may be explained by the large number of students studying Nursing who were included in this faculty for the England and Wales data. In New Zealand there were nearly three times as many students involved in the study of Agriculture/Horticulture, (4.6%), compared to (1.7%) for England and Wales. This is no doubt due to the different employment opportunities in each country. In New Zealand 7.4% of the female workforce, and 13.3% of the males workforce are engaged in Agriculture, Animal, and Forestry (Yearbook, 1990). In England and Wales only 1.5% are engaged in the same field of work (Whitaker, 1986). Overall no differences specifically related to either males or females participation in any subject areas were apparent between these countries.

8.3 Grading Issues

The large variability in the way different universities, faculties, and departments, structure the curriculum and grading procedure employed, continues to be a problem for studies in this field. The present study did not consider the quality of teaching or the value of the different methods of instruction that are used. It should be noted that grading standards are not synonymous with teaching standards. A field with "easy" grading standards could impart vast quantities of knowledge, while a field with

"stringent" grading standards could impart little. Thus, when relative grading standards are considered no inference can be made concerning the inherent value of the knowledge imparted by different fields (Goldman & Widawski, 1976).

The variability between universities in the different rating scales used to award classes of honours has posed the largest hindrance to any accurate analysis of results. Auckland University's grading system is the most at odds with the systems used at New Zealand's six other universities. Auckland University uses a rating scale of only three points. A student can be awarded either a first class, second class, or passing grade. In comparison, the other universities use a five point rating scale of, first, upper second, lower second, third, and a passing grade.

Consequently, the only grades that are used with any degree of consistency across all of New Zealand's universities are the first class honours qualification and the passing grade. For this reason, the results focused on the differences in awarding first class degrees.

Any confounding effects caused by the different rating scales used by Auckland University could have been eliminated by excluding Auckland University from the sample. However, the impact of any differences between the universities was not a major focus of the study. Eliminating Auckland University from the study would have resulted in a drop in sample size of 27.8% (see Figure 7.1 p. 58), and more importantly, any useful findings would be of no value to over a quarter of the population addressed. This suggestion could be implemented in future research. Particularly as previous research on the use of rating scales has indicated that the optimal scale should include four or five points of reference. Reliability drops with three categories or less, and there is little increase in reliability when there are more than five points (Lissitz & Green, 1975).

In recent years English and Welsh universities have made some effort to introduce these suggestions by, where necessary, extending their rating scales to five points.

8.4 Differences in Gender and Grades

The results of the present study supports the hypothesis that New Zealand males and females do not receive equivalent proportions of each class of honours degrees. Women were awarded significantly more first class degrees than men (see Figure 7.6 p. 66). The difference is small. Of the total population of women who completed a postgraduate degree between the years 1960 to 1989, 28.8% of them were awarded a first class degree, compared to 26.5% of the equivalent male population. Nonetheless, this result was significant at the $p < .0001$ level. Further this result was the same regardless of the degree undertaken, a Masters or Bachelor with honours qualification (see Figures 7.7 and 7.8 p. 66-67).

This result is in direct contrast to that of previous British studies which have found that males were awarded a significantly higher proportion of first class degrees than women (Rudd, 1984; Kornbrot, 1987; Clarke, 1988). The results of Part B of the present study also confirm that in England and Wales men were awarded significantly more first class honours degrees than women. Thereby supporting the present study's hypothesis that in England and Wales men and women do not receive equivalent proportions of each class of honours. The differences between the New Zealand results and those of England and Wales also lends support to a further hypothesis of the present study, that the grade distributions between New Zealand and England and Wales are dissimilar. There could be several reasons why females obtain a greater proportion of first class honours degrees than men in New Zealand, and why this result is in direct conflict with those of England and Wales.

When comparing the performance of men and women, it should be remembered that a lower proportion of women enter university, and even less continue on to postgraduate study. For example in the present research New Zealand females made up only 30.6% of the total postgraduate population (see Table 7.1 p. 59). Females made up 39% of the total population in England and Wales. One might expect those females who are academically successful to win through to university on equal terms with males, and that those who are marginal in their performance in school examinations would be more easily diverted from going to university, so that amongst the females there could be a higher proportion of the most able (Rudd, 1984). The validity of this assumption could be considered by comparing the university entry grades of males and females.

A New Zealand study by Keef (1990), examined the pass rates of females and males that entered Victoria University of Wellington directly from sixth form. Females entrance grades, Sixth Form Certificate scores, were better than males. An analysis of covariance also showed that females had a significantly higher pass rate than males in their first year of university study. This raises questions about whether the better performance of female students at university is simply a reflection of their better performance at secondary school.

Entry qualifications for New Zealand universities are not standardised across the country. Entry to university is also more flexible and less uniform than in other countries. Consequently caution must be used in assessing students performance on entry criteria as the main reason for the superior performance of females at university. For example Keef's (1990) study also found that the gender differential was apparent even after adjusting for the prior academic achievement of the students using

their Sixth Form Certificate scores. Therefore other factors may contribute to the superior performance of females at university.

Several British studies have also compared students university entry qualifications with their university grades, usually on completion of university. Results have shown that there is only a weak relationship between "A" level grades and degree class (for example, Wilson, 1981; Sear, 1983; Rudd, 1984; Rudd, 1988; Smith, 1990). Specifically, there is a significant, but low correlation between a student's "A" level grade and degree completion, but few significant correlations between a student's "A" level grade and the specific class of honours they receive. These comparisons may be more reliable than equivalent New Zealand studies however, as selection into university is standardised in England and Wales. For all students their grade point average (GPA) on their "A" levels determines their entry into university.

In England and Wales a smaller number of females than males take the Advanced level examination of the General Certificate of Education. Education statistics for England and Wales illustrate that unlike New Zealand's results, women do not perform better than males. Indeed the opposite seems to be the case. For example the figures for the examination of the summer of 1978 (Department of Education and Science, 1981) showed that the same percentage of passes were gained by both males and females - 68.0%. However, females obtained the highest grade (A) in 7.7% of entries and males in 9.8%, a difference that cannot be accounted for by differences in the proportion of males and females who sat the subjects.

Moreover, amongst the more select group who entered university, broken down into their area of study, there is an almost uniform pattern of the women holding slightly weaker grades than the men (UCCA, 1983). For

example, at the level achieved in 1982 by 29% of British entrants holding 'A' levels, namely a score of 13 or better on three subjects, there was a higher percentage of men than women in all groups except Engineering and the very small Agricultural group.

These contrasting results between males and females from New Zealand and England and Wales in relation to entrance grades for entry into university suggest that the gender differences observed in the present study may occur well before graduation. However, these results still provide no further assistance in determining why New Zealand females perform better than New Zealand males, and why the situation is reversed in England and Wales. Remembering that the results obtained in England and Wales have been replicated several times (Rudd, 1984; Kornbrot, 1987; Clarke, 1988).

In New Zealand females obtained a greater proportion of first class Bachelor with honours degrees in all subjects of study except, the two professional subjects of Medicine/Dentistry and Law, and the two Arts subjects of Languages and Humanities (see Table 7.4 p. 70). At the Masters level, which is shown in Table 7.3 (p. 69), the only two areas where men obtained more first class honours degrees than women were the areas of Medicine/Dentistry and Languages.

Tables 7.5 and 7.6 (p. 72) addressed the significance of these results, and it becomes apparent that the difference between the sexes are not as large as they might have first appeared. When the degree sought was a Bachelor with honours, females obtained significantly more first class honours degrees than males in the following subjects Agriculture/ Horticulture, Social Science, and Education. When a Masters qualification was obtained females obtained significantly more first class honours degrees in the subjects Science, Engineering, Social Science and

Education. It may therefore be the case that there is not a universal difference in gender performance, but rather this fact is isolated in specific subject areas. The different sex ratio in these subjects might therefore explain the apparent differences between the sexes.

It is noteworthy that some of the subject areas that women did significantly better than men in are subjects where females are under represented. Similar findings have consistently emerged in overseas research, including the United States (Roemer, 1983) and Britain (Rudd, 1984; Kornbrot, 1987; Clarke, 1988). Rudd's (1984) study found women received more first class degrees in Agriculture and Architecture, and basically equal to that of men in Engineering. Men did extremely well in the Humanities and Arts. In these cases it has been suggested that the minority sex tends to do better because it takes more drive and initiative to break with the stereotypical subject choices (Rudd, 1984; Clarke, 1988).

In New Zealand however, women were also awarded first class honours degrees significantly more often than men in the areas of Social Sciences and Sciences. In Britain men have performed better in these subject areas (Rudd, 1988; Kornbrot, 1987; Clarke, 1988). New Zealand women also did better in Education, which was also true in a British study (Rudd, 1984). Females' proportional under-representation cannot be used to explain these differences. In conclusion, although a large amount of the gender difference in the number of first class honours degrees awarded may be directly related to subject choice, this variable does not appear to explain all the variance in gender performance.

Further, why are females more successful in New Zealand compared to in England and Wales. There is no reason to believe that the psychological makeup of New Zealand women differs markedly to that of women from

England or Wales. It may be suggested however that New Zealand's society perceives gender roles differently to that of England and Wales, and that these differences may account for differing opinions in sex role appropriate behaviour and the role of women generally. Sex biasing behaviour on the part of the examiner, has often been suggested in studies of British students as being responsible for the poor results of women at universities (Bradley, 1984; Clarke, 1988).

Research which shows that gender affects evaluations undoubtedly reflects the social conditions of the times. As Gerden (1973) pointed out, social-psychological research is embedded in a historical context and findings that may be true of one time period may not be replicated in another. Nieva and Gutlek (1980) in their review of sex effects on evaluation found that three of the four studies showing no sex difference in evaluation were all recent (Hall & Hall, 1976; Dipboyd & Willey, 1977; Frank & Drucker, 1977) and that they might be interpreted optimistically as a trend towards increasing equity in evaluation.

With respect to women's performance in Britain, Clarke (1988) noted that women's relative performance had improved during his five year review in all subjects except the Arts. Therefore perhaps in time the results of English and Welsh women will be equitable with English and Welsh men. In fact this may already be the case, but this result is hidden by the pooling of several years results into one analysis as was done in the present study.

The near equitable performance of New Zealand men and women with respect to university grades is perhaps a reflection of the development of New Zealand. New Zealand women have historically been the first to conquer many obstacles. In 1893, New Zealand women became the first women in any British colony to vote in a general election (Lambert, 1989). Similarly, New Zealand women have been the first to achieve many goals

in the university setting. In 1881, Helen Connon of Canterbury University, was the first woman in the British empire to be granted an honours degree (Gardner, 1979). Previously, Kate Edger had graduated with a Bachelor of Arts degree in 1877 being the second women to do so from a university in a British colony. During the rest of the century women took one third of all Masters of Arts degrees granted in New Zealand. The beginning of the next century proved no different. In 1905 for example, one third of those qualifying as doctors or taking Masters degrees were women, while in 1910, women made up over half of the graduating honours class, receiving all the firsts, and more than half of the second class honours degrees awarded. Women were distributed through all the subjects, being highly represented in Science, Medicine, and Law (Interuniversity Committee for Sex Equality in Education, 1974).

Although the present study has focused on the awarding of first class degrees, a number of other points relating to the other classes of degree should be discussed in relation to the results.

Like previous British studies (Rudd, 1984; Clarke, 1988) men in New Zealand were awarded a higher proportion of third class and lower degrees than women. The New Zealand results may be due to differences in the entrance grades of males and females, supported by Keef's (1990) study. If men enter university with a greater number of the lower entrance grades, it would not be unexpected that they would subsequently receive a larger number of the lower grades at university, just as women received a larger number of the top grades because they entered with higher grades. Also mens' dominance in the subject areas of Engineering, Architecture, and Business, which awarded a high percentage of third or lower grades may account for some of this variance in results (see Tables 7.3 and 7.4 p. 69-70). The significance of these results for individual subject areas was not determined in the present study due to the erratic

use of the third class honours grade. It may therefore be the case that this result is subject based as opposed to gender based. Future research could address this issue.

8.5 Grade Differences in Subjects

Two further hypotheses were that the distribution of grades between areas of study is not equal in New Zealand, and the distribution of grades between areas of study is not equal in England and Wales. These hypotheses were supported. Several overseas studies have found that Sciences give a higher proportion of first class honours degrees than other subjects (Dale, 1959; Nevin, 1972; Ford, 1977; Rudd, 1984; Bourner & Bourner, 1985; Neuman & Ziderman, 1985; Kornbrot, 1987; Clarke, 1988). Similarly, this result was also evident in both the New Zealand and the England and Wales results of the present study.

Results in Table 7.2 (p. 68) highlight the enormity of this difference. Of the students studying Science in New Zealand, 35% were awarded a first class degree. The average for the total sample was 27.2%. Similarly, the three other Science related subjects in the present study also awarded a large number of their students with first class honours degrees; Agriculture/Horticulture 35.9%, Medicine/Dentistry 28.7%, and Engineering 29.5%. None of the other subject categories in this study awarded more first class honours degrees than these four subject areas. Similarly in the results of Part B of the present study, the highest percentage of first class honours degrees was awarded to English and Welsh students in the following order, Engineering, 12.2%, Science, 11.9, and Medicine/Dentistry, 11%. The average for all faculties was 8.2%.

The most plausible explanation for these results would be that the population of students studying Science subjects differs from those

studying other subjects in some important respect(s). For example, they could be of a higher academic calibre than other students. An assumption for which there is some support. It is generally believed that in New Zealand the most capable secondary schools students are encouraged to take Science and Mathematics. Secondly, academic restrictions are placed on entry into the Science related areas of Medicine, Dentistry, and Engineering courses in New Zealand. It is possible therefore that on entry to university these students may have, on average, an academic ability which is higher than students in other subjects. However, whether these differences are present on graduation, or in the present sample of postgraduate students cannot be determined. In Britain, Clarke (1988) found that this was not the case. The higher proportions of first class honours degrees awarded in Sciences were not reflected in the "A" level grades of entrants to Science degrees.

In England, Nevin (1972) examined the possibility that differences between fields of study, in the proportion of degrees granted with distinction, could be accounted for systematically by objective factors such as differences in the required academic standards for entry and rate of drop out from study. He was unable to identify any factors that consistently explained the results observed. This was perhaps not surprising as in England the drop-out rate is no more than 2% in finals, and this is one of the lowest drop-out rates in the world (Heywood, 1971). In addition, drop out rates fail to support the observed discrepancies in Science subjects as it is generally acknowledged that drop-out rates are much higher in Social Sciences and Humanities subjects than in any other subjects at the postgraduate level of study (Blume, 1986).

In New Zealand academic restrictions are also placed on entry into Law, Architecture, and some Business courses. These subject areas all awarded a lower than average number of first class honours degrees.

Therefore it is suggested that future research into the relationship between university entrance grades and final university grades will not support the higher than average number of top grades awarded in the Sciences. Further several studies have shown that students of a high academic ability no longer pursue Science degrees.

Due to an inhospitable job market, some studies have shown that the ablest postgraduate students are now concentrated in the areas of Business, Law, and Medicine (Blume, 1986; Hartnett, 1987), and that these students are being taken from the Art and Science faculties. For example at Harvard between the years of 1964 to 1981 the percentage of seniors graduating with high honours who entered graduate school in the Arts and Sciences dropped from 77% to 31% (Hartnett, 1987). More recently Dolton and Makepeace (1990) found that increases in the areas of Computing, Business, and Engineering were justified by the earnings received from subsequent employment as a consequence of studying these subjects.

It has also been suggested that differences in the percentages of good degrees awarded, may be a factor of the size of the department. Specifically that students in large departments are disadvantaged as they receive less contact hours. This suggestion might explain why the subject area Medicine/Dentistry awards a high percentage of first class honours degrees, as departments within this subject area are small in relation to other subjects. On the other hand several of the departments included under the created faculty of "Science" in the present study are large departments, for example, Chemistry, Microbiology, and Zoology, yet Sciences awarded a high proportion of first class honours degrees. It therefore appears that in this study the suggestion that students are disadvantaged in the grades they receive as a result of their department size is not supported. If anything the present study provides evidence that

the opposite is true, seen by the fact that the smaller postgraduate faculties of Architecture, Law, and Business awarded the smallest proportion of first class honours degrees. More research into any correlations between these variables needs to be conducted before any of these suppositions can be confirmed.

Dale (1959) suggested that the different variance between subjects in grades awarded might be a result of the different subject matter of the disciplines. Specifically that subjects where the answer could either be right or wrong, such as those with a high degree of scientific and mathematical knowledge, would award a greater number of both first class degrees and third class degrees. Effectively the distribution of grades would be flatter. In comparison subjects that require an essay answer are more difficult to accurately assess as a greater degree of judgement is required (Kornbrot, 1987). Students are rarely right or wrong but rather students may be thought of as either better than or worse than another student. Consequently in subjects such as these, the grade distribution is likely to be "bunched" in the middle. It is harder for a student to obtain a first class grade, but it is also less likely that they will receive a third class grade. This explanation received some support in the past (Nevin, 1972; Chedzoy, 1977; Ford, 1977) although it has not been suggested to explain recent British results.

As an explanation for the present study's results this theory can not account for all the variance between different subjects in the proportions of first class degrees awarded. Students in Science subjects appear to be no more likely to obtain a third class honours degree than students in other subject areas (see Table 7.2 p. 68). Dale's (1959) suggestion also implied that students in Humanities should receive the lowest number of first class and third class honours degrees because these subjects are most inclined towards essay based assessment. This was not the case in

the present study, rather the subject areas that lay between the Sciences and the Arts, were the subjects that awarded the lowest number of first class honours degrees. The subject areas of Architecture, Social Sciences, and Business in the New Zealand study and Business and Social Sciences in the England and Wales study (see Table 7.2 and 7.7 p. 68 and 77). In addition this theory becomes more untenable at the postgraduate level of education as a large majority of the assessment in all subjects at this level is essay based.

There is one explanation that has found support in past British studies. Bee and Dolton (1985) suggested that over time a "preconceived notion" can develop within departments, faculties, or institutions, and that it is this notion that dictates the grades awarded more than other factors. Support for this theory is provided by several studies that have noted a great deal of consistency in individual departments in the awarding of grades across time (Goldman, Schmidt, Newlin-Hewitt & Fisher, 1974; Ford, 1977; Bourner & Bourner, 1985; Connolly & Smith, 1986). Other studies in Britain have generally concurred with this conclusion after finding no other satisfactory answer to explain variations between subject areas (Goldman et al, 1974; Connolly & Smith, 1986;). Bee and Dolton (1985) concluded their discussion by stating that "such a possibility is highly disturbing" (p. 49). If this theory was to be proven correct, and the present study has found no evidence to suggest that it is not an unlikely explanation given these results, then the situation is equally disturbing in New Zealand. It is suggested that future research into these large discrepancies between subjects in the awarding of first class honours degrees is paramount.

Lastly it must be acknowledged, that the present study has only addressed a small number of variables, in relation to the questions posed about grading standards. Obviously, the question of why the Sciences

faculty awards a larger number of first class degrees than any other faculty has in the past concerned several researchers, and no totally acceptable answer has emerged. In considering whether some departments unfairly award higher grades, the important question concerns whether different departments are assessing in the same ways. It seems intuitively reasonable that both a Biology and French class containing students of equal ability, motivation, and work habits ought to be awarding approximately the same distribution of grades. The difficulty lies in equating the students on factors such as ability, work habits, or motivation level in the groups to be compared. Several studies by Goldman and associates (Goldman et al, 1974; Goldman & Newlin-Hewitt, 1975; Goldman & Widawski, 1976) clearly show that different grading standards exist for different departments within the same university, and that some of these difference are quite substantial. Future research therefore, needs to look within faculties as well as between faculties to more accurately determine where differences exists in the awarding of grades between different subject areas.

8.6 Comparison Between Grade Distributions of New Zealand and England and Wales.

The results indicate that New Zealand universities award a larger proportion of their students with first class degrees, compared to England and Wales. Approximately three New Zealand students obtained a first class degree compared to one English and Welsh student (see Tables 7.2 and 7.7 p. 68 and 77).

When students are seeking employment within their own country this fact might be considered acceptable as long as students results were equivalent across all universities, subjects of study, and between the sexes. However, it is now a frequent occurrence for individuals to seek work outside their own country (Sub Committee on Graduate

Employment, 1988). Therefore degrees between countries should be comparable. In consideration of the fact that the New Zealand university system originally developed along the lines of the British system (Bailey, 1989), and that the British system is most often used as a comparison for the New Zealand system, due to a large number of similarities (New Zealand University Conference, 1969), it is unexpected that such large differences in the patterns of degree awards between these countries exist.

This difference however can not be explained without due consideration of the differences in the structure and selection of students in New Zealand universities, compared to students of England and Wales universities. As previously discussed, in England and Wales the Bachelor with honours degree is the most frequently sought qualification. A Bachelor degree without honours is generally only awarded if a student fails to meet the standard required for a Bachelor with honours degree. In 1984, for example, ordinary Bachelors degrees constituted only 11% of the total Bachelors degrees awarded in England and Wales (Johnes & Taylor, 1987).

In New Zealand the Bachelors degree alone is the most commonly awarded first degree. In most cases a Bachelor with honours degree, is considered a postgraduate qualification. Figures taken from Paxton (1990), and the present study's results, show that at the time of the last census in England and Wales, in 1981, just over 0.1% (0.106) of the population had completed a Bachelor with honours degree in that year. In that same year the equivalent figure for New Zealand students who had obtained a Masters or Bachelor with honours degree was just under 0.04% (0.039) of the total population of the country (Yearbook, 1990). Note that the New Zealand figure includes both the Masters qualification and the Bachelor with honours degree as no equivalent to New Zealand's Masters

degree exists in England and Wales. In England and Wales the Bachelor with honours degree is undertaken before progressing to a Doctorate, whereas in New Zealand a student can choose to complete a Bachelor with honours or Masters qualification, before progressing to a Doctorate.

It is apparent that nearly three times as many English and Welsh students obtained a Bachelor with honours degree compared to New Zealand students. Research by the Cabinet Committee on Training and Employment (1987) states that the number of students continuing on to university studies in New Zealand is poor compared to similar other studies. The present results would confirm that this is also the case at the postgraduate level of university education.

Even though only 10% of English and Welsh students receive a first class honours degree, effectively a greater proportion of the total population of England and Wales have first class degrees, simply because a greater number of students undertake advanced university study. Consequently, New Zealand did not award more Bachelor degrees with first class honours than England and Wales, as a proportion of the total population of the country. However, New Zealand did award more first class honours degrees as a proportion of the number of students who had undertaken university study.

It is theorised that this difference in grade distributions between these countries can be explained by the fact that these countries employ different grade referencing methods. Specifically that England and Wales employs norm-referenced grading and New Zealand employs criterion-referenced grading. Although it has not been explicitly stated that England and Wales universities assess students in relation to one another as opposed to the content of students work, this suggestion was

raised a number of years ago, and continues to be supported today in discussions of the assessment methods employed by British universities.

Oppenheim, Jahoda and James (1967) stated that within departments in Britain it is assumed that there will always be very few first class honours degrees, a rising number of upper and lower seconds, and very few failures - but that there must always be some failures. If it should ever happen that 40% of a given year obtained first class honours degrees in a particular subject, this would be regarded as "wrong". Ager and Weltman (1967) suggested that one way in which grading dilemmas have been resolved is by the use of a conscious or unconscious ranking procedure. Candidates are grouped into proportions of classes of honours which remain relatively the same over time within a particular university or faculty. The findings of several studies that grades are consistent within departments over time support this assumption (Bee & Dolton, 1985; Clarke, 1988; Smith, 1990). The Robbin's report (1963) which investigated higher education in Britain implied that students in any given year are graded in relation to each other rather than against an independent and constant standard of academic achievement. As a result of this not only the distribution of grades have remained consistent over time but also the wastage rates (Malleson, 1972). The percentage of students who fail has also remained constant even where entrance standards have been known to increase (Klug, 1976). The Nuffield Research Group (1973) has also confirmed that grading tends to be norm-referenced. In reality, marking tends to be relative rather than absolute. If instead fixed criteria were employed, the percentage of students in any given group who met these criteria might vary from 0% to 100%. In contrast, the statistics show a fairly constant distribution of degree classes in any given department from one year to the next which

suggests that the actual practice is to rank students against a series of norms established by the achievement of the course group as a whole.

The alternative to norm-referenced grading is criterion-referenced grading, a term first proposed by Glaser (1963). Criterion-referenced grading uses as its interpretive frame of reference a specified content domain rather than a specified population of persons (Anastasi, 1982). Therefore unlike norm-referenced assessment where grades should approximate the normal curve distribution, in criterion-referenced grading no distribution is imposed. If, for example the quality of work from all students of a department in any one year was considered to show a high level of proficiency equal to that of a first class honours in all the required criteria of assessment, then all these students would theoretically be awarded a first class degree.

The speculation that New Zealand universities are assessing their Bachelor with honours and Master students, in relation to the content of each student's work as opposed to in relation to one another can not be confirmed without further analyses of the internal operations of the assessment procedures employed by New Zealand's universities, and the departments within those universities. However, the distributional pattern of grades awarded to students in New Zealand compared to those awarded in England and Wales lends support to this theory. The England and Wales grade distribution, as seen in Figure 7.11 (p. 76) approximates the normal curve distribution if undivided seconds are omitted. This would be expected if norm-referenced grading was used (Anastasi, 1982). Figure 7.6 (p. 66), the grade distributions for New Zealand shows a definite skewed distribution in favour of "good" degrees.

A discussion of the advantages and disadvantages of both norm-referenced and criterion-referenced assessment is beyond the scope

of the present study. However an answer to the question "Do New Zealand universities use criterion-referenced grading?", could be of paramount importance, as it raises the further question "Is criterion-referenced grading used universally throughout all New Zealand universities and departments?". Or can observed differences between universities, and between subject areas found in the present study be accounted for on the basis of this difference in grading practices?

One alternative explanation for the different grade distributions observed in Figures 7.6 and 7.11 (p. 66 and 76), is that New Zealand examiners are committing leniency error. Reducing the effective width of the scale, and making ratings less discriminatory (Anastasi, 1982). Given the size of the New Zealand sample in the present study, 31072 students, it is arguable however, that this fact alone could not be responsible for an effect of this magnitude. Again further research into this question would be valuable.

8.7 Differences in Grades Between Bachelor with honours and Masters Degrees.

The differences between the grade distribution for New Zealand Bachelor with honours and Masters students supports the hypothesis that the distribution of grades differ as a function of whether the qualification obtained is a Bachelor with honours or Masters degree. It would appear that an individual's opportunity to receive a "good" degree is increased if the degree sought is a Bachelors with honours degree. Over 60% of Bachelor with honours students were awarded a "good" degree compared to 36.7% of Master students (see Tables 7.3 and 7.4 p. 69-70).

However, on close inspection a large amount of this variance can be accounted for by including undivided second honours degrees. Then just over 68% (68.3) of Bachelor with honours students received a first, upper

second, or undivided second class honours degree, compared to 60% of Masters students. As undivided seconds are generally only awarded at Auckland University, it is obvious that a greater proportion of students at this university chose to study for a Masters degree more frequently than a Bachelor with honours degree. This preference for one qualification compared to another is an accepted phenomena which reflects the idiosyncrasies of individual departments and universities in New Zealand.

Apart from first class honours degrees, a pass is the only other point on the rating scale that is awarded consistently across all universities. The difference between Bachelor with honours and Masters qualifications in the number of students who were awarded this grade are large. Nearly 30% (29.9) of Masters students obtained a passing grade, whereas, under 5% (4.8) of the Bachelor with honours population received this grade. Men earned a higher proportion of this grade in both populations. Several explanations for these results are provided.

Some of the Bachelor with honours courses do not award passing grades. For example the Bachelor of Technology with honours degree at Massey University. Students eligible for this honours qualification must complete a research project to a satisfactory level as well as the papers required for the ordinary degree. If a student's work is not satisfactory, they receive an ordinary degree without honours, as opposed to a Bachelor with honours passing grade.

The number of passing grades awarded to Masters students has also been inflated by students who have chosen to complete a Masters after they have completed a Bachelor with honours. In this situation a student undertakes a Masters by thesis only, grades awarded for this qualification are either a pass with distinction or pass.

These differences in the percentage of passing grades awarded might also be related to the different roles markers occupy in assessing these different qualifications. Most Bachelor of honours and Masters qualifications require a student to submit a piece of research. This research may be marked by internal or external markers, or a combination of both. Generally Bachelor with honours students are assessed by internal lecturers, that is lecturers from ones own university and department. In comparison Masters students are usually assessed by both internal and external examiners.

In Britain the use of external examiners is more regimented than in New Zealand. There the specific role of the external examiners is to ensure the maintenance of equivalent standards across universities (Piper, 1985, Johnson, 1988) Perhaps external examiners in New Zealand are inadvertently attempting to control the numbers of first class qualifications given. If this is the case, it would lend support to the purpose behind the British external examining system. However, in Britain this system does not work effectively (Williams, 1979; Piper, 1985).

Also the final grade of a Bachelor with honours qualification, is normally a combination of papers and a dissertation that is usually equivalent to the value of one paper, therefore the research component is small (Silver & Silver, 1986). With a Masters qualification, the research component, the thesis, often represents half of the qualification. If the research is not well done, then the overall assessment is likely to be unfavourable. Further it has been suggested that even though a thesis is technically about half of a Masters qualification, its influence on the final grade is greater than this (Zetterblom, 1986). This is complicated by the fact that examinations based on the essay format, (such as a thesis) are more prone

to unreliable assessments than are other forms of assessing students (Dale, 1959; Cox, 1967; Foster, 1985).

To conclude the results have shown that there are differences in the grade distribution of students as a function of whether a Bachelor with honours or Masters degree is completed. This supports the present study's hypothesis. It is suggested that this result is mainly due to the different structures, grading practices, and emphases on these separate qualifications within each of New Zealand's universities. Further it is arguable that these two qualifications do not need to be comparable, as they serve different functions. Nonetheless, if a student intends to obtain a Doctorate, they generally must receive either a first class or upper second Bachelor with honours or Masters degree, therefore the boundary between upper second and lower second is crucial (Rudd, 1985). If there is a large discrepancy between these degrees in the proportion of students awarded these grades, then one set of students may be unfairly disadvantaged. In the future, research directed at determining if the different marking structures used by different universities and/or departments have an impact on the grades awarded is needed.

8.8 Institutional Differences

Inferential statistics from the present study suggest that there is variation in the class of honours awarded as a function of the university attended. As previously discussed, several British studies (for example, Bee & Dolton, 1985; Smith & Connolly, 1986; Johnes & Taylor, 1987; Smith, 1990), have also found significant and consistent variation in the proportional distribution of grades of different universities.

In their study, Johnes and Taylor (1987) reported that a high proportion of students living at home during term time, correlated with poor results in degree performance. Students living at home may have less

opportunity to obtain the full benefits of university facilities, such as the library, computer terminals and laboratories, because a greater proportion of their time may be spent in transit between home and university. In New Zealand the issue of transit time, as discussed in the British study, is not relevant as nearly all postgraduate students would be in outside accommodation. It can therefore be assumed that students in outside accommodation, like those living with their parents, would be equidistant from the university's facilities.

However, there may be other reasons why students living at home may be less likely to perform well. Figure 7.9 (p. 73) shows that the universities which attracted the largest proportion of students from outside that city were in fact the universities that awarded a greater number of first class degrees, that is the universities of Otago, Massey and Lincoln. New Zealand education statistics show that students attending Auckland, Victoria and Canterbury universities are more likely to reside with their parents, whereas students at Waikato, Massey, Lincoln, and Otago generally live in rented accommodation (Education Department, 1988). These figures provide some support for Johnes and Taylor's (1987) suggestion that students living at home do not perform as well as those who do not. Exactly what interpretation can be placed upon this fact is not clear however since it is uncertain whether the proportion of students living at home describes the type of students a university acquires or whether it is indicative of characteristics which relate to the universities themselves.

It is suggested that at New Zealand universities the factor that accounts for the largest amount of variance in the degree performance of different institutions is the composition of courses and subsequent subjects offered at the university. Similarly other researchers have suggested that it is

essential to take subject mix into account when comparisons are being made between universities (Taylor, 1986a, 1986b).

Victoria University awarded the lowest percentage of first class degrees (22.4%). This might be explained by the fact that Victoria University teaches the two subject areas that award the lowest percentage of first class degrees. As seen from Table 7.2 (p. 68), Architecture awards only 9.0% of its students with a first class honours degree, and Law 13.5%. Victoria University also offers no postgraduate studies in three of the four subject areas that award the highest percentage of first class degrees, they are Agriculture/Horticulture 35.9%, Engineering 29.5%, and Medicine/Dentistry 28.7%.

On the other hand Lincoln University awarded the highest number of first class honours degrees. Lincoln University is predominately an Agriculture/Horticulture university, therefore the majority of its postgraduate students would have been studying in either the field of Agriculture/Horticulture or Sciences. Considering that these two subject areas award the highest proportion of first class degrees as a function of subject studied the proportion of firsts awarded at this university seems to be adequately explained by this subject mix.

Similarly if the subject mix of New Zealand's remaining five universities is addressed, the courses they offer provide adequate explanation for the proportions of first class honours degrees awarded. Therefore it is suggested that the apparent differences in the proportion of first class degrees awarded in each of New Zealand's universities is not a result of an overall tendency of any university to exercise an unfair degree of lenient or harsh grading compared to the other universities. Rather the variations between universities with respect to degrees awarded is a direct result of the composition of areas of study offered, and here as has

been previously discussed, there are apparent differences in the proportions of first class honours degrees awarded.

Unlike the findings from several British studies, which have found distinct difference in the grading patterns of different universities, students need not be concerned about being unfairly biased by their choice of university. Students should however be aware of the fact that their ability to obtain a first class honours degree is considerably harder to accomplish in some areas of study than others. Employers should also be aware of this when comparing students who have obtained postgraduate qualifications in different fields of study.

APPENDIX ONE

VARIABLE CODES

UNIVERSITY ATTENDED

New Zealand University	1
Auckland University	2
Waikato University	3
Massey University	4
Victoria University of Wellington	5
Canterbury University	6
Otago University	7
Lincoln (College) University	8

GENDER

Female	1
Male	2
Unknown	3

GRADE AWARDED

First Class Honours	1
Second Class Honours (Upper Division)	2
Second Class Honours (Undivided Division)	3
Second Class Honours (Lower Division)	4
Third Class Honours	5
Pass or Fourth Class Honours	6

SUBJECTS ALPHABETICALLY

COURSE COMPLETED

APPENDIX TWO

STUDY CATEGORIES

STUDY 1 - MEDICINE/DENTISTRY

The Medicine/Dentistry category contains subjects which may be studied under a Bachelor of honours and/or Masters degree of Community Dentistry, Dental Surgery, Human Biology, Medical Science, Medicine and Surgery, Pharmacy, or Science.

Anatomy
Clinical Biochemistry
Clinical Pharmacology
Community Dentistry
Community Health
Conservative Dentistry
Dental Surgery
Dentistry
Dentistry for Children
Human Biology
Human Nutrition
Immunobiology
Immunology
Medical Physics
Medical Science
Medicine
Medicine & Surgery
Nursing Studies
Nutrition
Oral Pathology
Oral Surgery
Orthodontics
Paediatric Dentistry
Paediatrics
Pathology
Peridontia

Pharmacology
Pharmacy
Preventive Dentistry
Prosthetic Dentistry
Restorative Dentistry
Surgery
Toxicology

STUDY 2 - SCIENCES

The Sciences category contains subjects which may be studied under a Bachelor of honours and/or Masters degree of Applied Science, Computing and Mathematical Science, Consumer and Applied Science, Home Science, Science, or Veterinary Science.

Applied Geology
Astronomy
Biochemistry
Biological Science
Biological Science & Chemistry
Biology
Botany
Botany & Zoology
Cell Biology
Cellular & Molecular Biology
Chemistry
Computer & Mathematical Science
Computer Science
Consumer and Applied Science
Data Processing
Earth Science
Earth Science & Chemistry
Ecology
Ecology & Resource Management
Engineering Geology
Entomology

Environmental Microbiology
Genetics
Genetics & Plant Breeding
Geochemistry
Geology
Geology & Chemistry
Geology & Geography
Geophysics
Home Science
Marine Science
Mathematics
Mathematics & Physics
Microbiology
Natural Resources
Natural Resource Economics
Nature Conservation
Physical Geography
Physics
Physics & Computer Science
Physiology
Radio Physics
Resource Management
Sciences
Statistics
Systems Mathematics
Zoology

STUDY 3 - AGRICULTURE/HORTICULTURE

The Agriculture/Horticulture category contains subjects which may be studied under a Bachelor of honours and/or Masters degree of Agricultural Economics, Agricultural Science, Forestry Science, or Horticultural Science.

Agricultural Botany
Agricultural Economics

Agricultural Economics & Marketing
Agricultural Education
Agricultural Extension
Agricultural Mechanization
Agricultural Meteorology
Agricultural Microbiology
Agricultural Science
Agricultural Zoology
Agriculture
Agronomy
Animal Ecology
Animal Nutrition
Animal Physiology
Animal Science
Dairy Chemistry
Dairy Science
Farm Management
Food Processing
Forestry Science
Horticultural Botany
Horticultural Economics
Horticultural Economics & Marketing
Horticultural Education
Horticultural Management
Horticultural Production
Horticultural Science
Horticulture
Pedology
Plant Ecology
Plant Husbandry
Plant Pathology
Plant Physiology
Plant Protection
Plant Science
Range Management
Rural Development & Extension
Rural Education
Seed Technology
Sheep

Sheep Husbandry & Wool
Sheep Production
Sheep Science
Soil & Water Engineering
Soil Biology
Soil Conservation
Soil Fertility
Soil Science
Veterinary Science
Water Resources
Water Resource Engineering
Wool Science

STUDY 4 - ENGINEERING

The Engineering category contains subjects which may be studied under a Bachelor of honours and/or Masters degree of Engineering, Food Technology, Mineral Technology, Surveying, or Technology.

Advanced Mineral Engineering
Advanced Mining
Agricultural Engineering
Biotechnology
Chemical
Chemical & Materials
Chemical & Process
Civil Engineering
Computer Technology
Electrical & Electronic
Electrical & Mechanical
Electrical Engineering
Electronics
Engineering
Engineering Science
Food Technology
Industrial Engineering

Industrial Technology
Manufacturing
Mechanical Engineering
Metallurgical Engineering
Mineral Engineering
Mineral Technology
Mining
Product Development
Production Economics
Surveying
Technology
Textile Science

STUDY 5 - ARCHITECTURE

The Architecture category contains subjects which may be studied under a Bachelor of honours and/or Masters degree of Architecture, Building Science, Regional and Resource Planning, Regional Planning, or Town Planning.

Architecture
Building Science
Environmental Planning
Environmental Studies
Parks & Recreation
Recreation Administration
Recreation Resource Planning
Regional & Resource Planning
Regional Planning
Town Planning

STUDY 6 - SOCIAL SCIENCES

The Social Sciences category contains subjects which may be studied under a Bachelor of honours and/or Masters degree of Arts, Business, Commerce, Science, Social Sciences, or Social Work.

Anthropology
Anthropology & Psychology
Applied Psychology
Applied Psychology (Education)
Business Psychology
Clinical & Community Psychology
Economic Theory
Economics
Economics & Geography
Economics & Political Science
Economics & Psychology
Economics & Sociology
Geography
Geography & Politics
Geography & Psychology
Geography & Sociology
International Politics
Political Science
Political Studies
Politics
Psychology
Psychology & Sociology
Psychology (Clinical)
Psychology (Occupational)
Psychology (Vocational)
School Psychology
Social Anthropology
Social Science
Social Work
Sociology
Sociology (Social Work)

STUDY 7 - LAW

The Law category contains subjects which may be studied under a Bachelor of honours and/or Masters degree of Jurisprudence or Law.

Bodies Corporate
Bodies Corporate & International Law
Conflict
Conflict & Constitutional & Administration
Conflict, Constitutional & Administrative, & Land
Constitutional & Administrative
Constitutional & Administrative, & Bodies Corporate
Contracts
Contracts, Conflicts, & Torts
Contracts & International Law
Criminology
Equity
International Law
International Law, Conflict, & Jurisprudence
Jurisprudence
Jurisprudence & Bodies Corporate
Jurisprudence, Constitutional & Administrative, & Equity
Jurisprudence, Torts, & Bodies Corporate
Land
Law
Sales & Sales Financing
Sales, Bodies Corporate, & International Law
Torts
Torts & Contracts
Torts & International Law
Torts, Bodies Corporate, & Sales
Torts, Conflicts, & Bodies Corporate
Torts, Contracts, & Constitutional
Torts, Contracts, & Equity
Torts, Contracts, & International Law
Torts, Contracts, & Jurisprudence
Torts, Jurisprudence, & Equity

STUDY 8 - BUSINESS

The Business category contains subjects which may be studied under a Bachelor of honours and/or Masters degree of Agricultural Commerce, Agricultural Business and Administration, Business Administration, Business Studies, Commerce, Commerce and Administration, Management Studies, Property Administration, or Public Policy.

Accountancy
Accounting
Accounting & Fiance
Agricultural Business
Agricultural Commerce
Business Administration
Business Information Systems
Commerce
Commerce & Administration
Economics & Marketing Administration
Financial Management
Industrial Management
Industrial Management & Engineering
Industrial Relations
Information Science
Information Systems
International Business
Management & Administration
Management Methods
Management Studies
Marketing
Marketing & Business Administration
Marketing & International Business
Marketing Management
Marketing Trade & Policy
Operation Research
Personnel Management
Personnel Management & Industrial Relations
Property Administration

Public Administration
Public Policy
Training & Development
Valuation & Property Management

STUDY 9 - LANGUAGES

The Languages category contains subjects which may be studied under a Bachelor of honours and/or Masters degree of Arts or Literature.

American Studies
Applied Linguistics
Asian Studies
Chinese
Classical Studies
English
English & French
English & German
English & Greek
English & Italian
English & Latin
English Language & Literature
French
French & German
French & Italian
German
German & Italian
Greek
Hebrew
Indonesian
Italian
Japanese
Language & Literature
Latin
Latin & English Literature
Latin & French

Latin & Greek
Librarianship
Linguistics
Literature
Maori
Maori Studies
Modern Languages
Russian
Russian & English
Russian Language & Culture
Spanish

STUDY 10 - HUMANITIES

The Humanities category contains subjects which may be studied under a Bachelor of honours and/or Masters degree of Arts, Divinity, Fine Arts, Music, Philosophy, or Theology.

Ancient History
Art History
Biblical Studies
Christian Thought & History
Divinity
Economic History
Fine Arts
History
History & Literature of Music
History & Phenemenology of Religion
Humanities
Music
Music - Composition
Music - Performance
Philosophy
Religious Studies
Theology

STUDY 11 - EDUCATION

The Education category contains subjects which may be studied under a Bachelor of honours and/or Masters degree of Arts, Education, Educational Administration, Social Sciences, or Physical Education.

Education
Educational Administration
Physical Education

REFERENCES

Acker, S., & Piper, D. W. (Eds.). (1984). Is Higher Education Fair to Women? Surrey: SEHE & NFER-Nelson.

Ager, M., & Weltman, J. (1967). The present structure of examiniations. Universities Quarterly, 21(3), 272.

Allinson, C. W. (1977). Training in performance appraisal interviewing: An evaluation study. Journal of Management Studies, 14(2), 179-191.

Anastasi, A. (1982). Psychological Testing. (5th ed.). New York: Macmillan.

Bailey, C. L. (1989). A Documentary History of New Zealand Education, Part One. Wellington: NZCER.

Baker, J. (1988). Causes of Failure in Performance Appraisal and Supervision. Westport, Connecticut: Quorum Books.

Ball, C. (1985). The Pursuit of Truth. In Urwin, D. (Ed.). Fitness for Purpose, (p.1-4). Surrey: SRHE & NFER-NELSON.

Banks, C. G., & Murphy, K. R. (1985). Towards narrowing the research practice gap in performance appraisal. Personnel Psychology, 38, 335-345.

Bee, M., & Dolton, P. (1985). Degree class and pass rate: An inter-university comparison. Higher Education Review, 17, 45-52.

Bell, R. C. (1980). Problems in improving the reliability of essay marks. Assessment and Evaluation in Higher Education, 5 (3), 254-263.

Bell, T. H. (1981). The Educational System of New Zealand. Washington: U.S Department of Education.

Bernardin, H. J., & Beatty, R. W. (1984). Performance Appraisal: Assessing Human Behaviour at Work. Boston: Kent Publishing.

Bernardin, H. J., & Buckley, M. R. A. (1981). A consideration of strategies in rater training. Academy of Management Review, 6, 205-212.

Bernardin, H. J., & Pence, E. C. (1980). Effects of rater training: Creating new response sets and decreasing accuracy. Journal of Applied Psychology, 65, 60-66.

Bigoness, W. J. (1976). Effect of applicant's sex, race, and performance on employers' performance ratings : Some additional findings. Journal of Applied Psychology, 61, 80-84.

Birt, M. (1985). The organization of tertiary education in Australia: The need for re-arrangement. Journal of Tertiary Education Administration, 7(1), 21-34.

Blanz, F., & Ghiselli, E. E. (1972). The mixed standard scale: A new rating system. Personnel Psychology, 25, 185-200.

Blum, M., & Naylor, J. (1968). Industrial Psychology. New York: Harper & Row.

Blume, S. (1986). The development and current dilemmas of postgraduate education. European Journal of Education, 21(3), 217-222.

Blume, S., & Amsterdamska, O. (1986). Postgraduate Education in the 1980's. Paris: OECD.

Boston, J. (1988). The Future of New Zealand Universities: an Exploration of some of the Issues raised by the Report of the Watts Committee and the Treasury. Wellington: Victoria University Press.

Bourner, J., & Bourner, T. (1985). Degrees of success in accounting. Studies in Higher Education, 10, 55-68.

Bradley, C. (1984). Sex bias in the evaluation of students. British Journal of Social Psychology, 23, 147-153.

Bradley, C. (1985). Sex bias in examining reconsidered: A rejoinder to Rudd. Studies in Higher Education, 10(1), 91-93.

Brooks, V. (1980). Improving the Reliability of Essay Marking: A Survey of the Literature with particular reference to the English language composition. Leicester: University of Leicester.

Buckridge, M., & Barham, I. (1984). Transition of women to honours. HERDSA News, 6(2), July, 6-7 & 16.

Burgess, T. (1981). Bias is of the essence. In Piper, W. (Ed.), Is Higher Education Fair? (p. 1-16). Dorset: SRHE.

Cabinet Committee on Training and Employment. (1987). Further Education and Training: Who Should Pay? Have Your Say. Wellington: Government Printer.

Chedzoy, O. B. (1977). Towards a standardisation in degree classification. Assessment in Higher Education, 2(2), 104-117.

Christopherson, D. G. (1967). Standards - The concept of excellence. The British University Annual 1967. London: Association of University Teachers.

Clarke, S. (1988). Another look at the degree results of men and women. Studies in Higher Education, 13(3), 315-331.

Connolly, K. J., & Smith, P. K. (1986). What makes a "good" degree: Variations between different departments. Bulletin of the British Psychological Society, 39, 48-51.

Cox, R. (1967). Examinations and higher education: A survey of the literature. Universities Quarterly, 21, 292-340.

Cresswell, M. J. (1986). A review of borderline reviewing. Educational Studies, 12(2), 175-190.

Dale, R. R. (1959). University Standards. Universities Quarterly, 13, 186-195.

Department of Education and Science. (1981). Statistics of Education 1979 Vol. 2. London: HMSO.

Department of Education and Science. (1985). The Develpment of Higher Education into the 1990's. Cmnd. 9524. London: HMSO.

Dipboye, R. L., & Wiley, J. W. (1977). Reactions of college recruiters as a function of interviewee sex and self-presentation style. Journal of Vocational Behaviour, 10, 1-12.

Dolton, P. J., & Makepeace, G. H. (1990). Graduate earnings after six years: who are the winners? Studies in Higher Education, 15(1), 31-55.

Downey, R. G., Lahey, M. A., & Saal, F. E. (1982). Quantifications of Rating Errors: Madness in our Method. Unpublished manuscript, Kansa State University.

Dresch, S. P. (1975). Demography, technology, and higher education: Toward a formal model of educational adaption. Journal of Political Economics, 83(3), 535-569.

Education Department. (1988). Education Statisitics of New Zealand. Wellington: Government Printers.

Elton, C., & Rose, H. (1967). Significance of personality in the vocational choice of college women. Journal of Counselling Psychology, 14, 293-298.

Fawthrop, T. (1968). Education or Examination? London: Radical Students Alliance.

Feldman, J. (1981). Beyond attribution theory: Cognitive processes in performance evaluations. Journal of Applied Psychology, 66, 127-148.

Fenner, P. (1989). Assumptions affecting alternative higher education. International Journal on Innovative Higher Education, 6(1), 33-43.

Ferry, G. (1982). How women figure in science. New Scientist, 94, 10-13.

Flanagan, J. C. (1954). The critical incident technique. Psychological Bulletin, 51, 327-358.

Foster, J. J. (1985). Assessing student learning: Psychologists in blinkers? Bulletin of the British Psychological Society, 38, 370-374.

Ford, B. (1977). The dubious meaning of a first. New University Quarterley, 31(4), 396-412.

Foy, J. M., & Waller, D. M. (1987). Using British school examinations as a predictor of university performance in the pharmacy course: A correlation study. Higher Education, 16, 691-698.

Frank, F. D., & Drucker, J. (1977). The influence of evaluatee's sex on evaluation of a response of a mangerial selection instrument. Sex Roles, 3, 59-64.

Gardner, W. J. (1979). Colonial Cap and Gown. Wellington: University of Canterbury Publication.

Gaskell, T. (1979). Changes in assessment. In Armstrong, S. (Ed.), Decade of Change , (p. 60-63). Dorset: SRHE.

Gay, J. (1981). Religious bias. In Piper, D. W. (Ed.), Is Higher Education Fair? (p. 140-159). Surrey: SRHE.

Gergen, K. J. (1973). Social psychology as history. Journal of Personality and Social Psychology, 26, 309-320.

Gibson, C. A. (1978). What are the Purposes of the University? Dunedin: University of Otago.

Glaser, R. (1963). Instructional technology and the measurement of learning outcomes. American Psychologist, 18, 519-522.

Goldman, R. D., & Newlin-Hewitt, B. (1975). Adaption-level as an explanation for differential standards in college grading. Journal of Educational Measurement, 12(3),149-161.

Goldman, R. D., Schmidt, D. E., Newlin-Hewitt, B., & Fisher, R. (1974). Grading practices in different major fields. American Education Research Journal, 11(4), 343-357.

Goldman, R. D., & Warren, R. (1973). Discriminant analysis of study strategies connected with college success in different major feilds. Journal of Educational Measurement, 10, 39-47.

Goldman, R. D., & Widawski, M. H. (1976). A within-subject technique for comparing college grading standards: Implications in the validity of the evaluation of college achievement. Educational and Psychological Measurement, 36, 381-390.

Gruenfield, E. F. (1981). Performance Appraisal: Promise and Peril. New York: New York State School of Industrial and Labor Relations.

Guion, R. M. (1965). Personnel Testing. New York: McGraw-Hill.

Gutlek, B. A., & Stevens, D. A. (1979). Differential responses of males and females to work situations which evoke sex-role sterotypes. Journal of Vocational Behaviour, 14, 23-32.

Hall, D. (1990). Final Report of the University Grants Committee. Wellington: Government Printers.

Hall, F. S., & Hall, D. T. (1976). Effects of job incumbents race and sex on evaluations of managerial performance. Academy of Management Journal, 19, 476-481.

Hartnett, R. T. (1987). Has there been a graduate student "brain drain" in the arts and sciences? Journal of Higher Education, 58(5), 562-585.

Hartog, P., & Rhodes, E. C. (1935). An Examination of Examinations. London: Macmillan.

Heim, A. (1970). Intelligence and Personality. Harmondsworth: Penguin.

Henderson, R. I. (1984). Performance Appraisal. (2nd ed.). Reston, Virginia: Reston Publishing Company.

Heywood, J. (1971). A report on student wastage. Universities Quarterly, 25(2), 189-237.

Heywood, J. (1989). Assessment in Higher Education. (2nd ed.). Chichester: John Wiley & Sons.

Hewton, E. (1987). Teaching, learning and assessment. In Becher, T. (Ed.), British Higher Education , (p.178-196). London: Allen & Unwin.

Interuniversity Committee for Sex Equality in Education. (1974). Women in Higher Education. Wellington: Government Printers.

Ivancevich, J. M. (1979). Longitudinal study of the effects of rater training on psychometric error in ratings. Journal of Applied Psychology, 64, 502-508.

Jacobs, R. R. (1986). Numerical Rating Scales. In Berk, R. A. (Ed.), Performance Assessment: Methods and Applications (p.82-99). Baltimore: John Hopkins University Press.

Jacobson, M. B., & Effertz, J. (1974). Sex roles and leadership perceptions of the leaders and the led. Organizational Behaviour and Human Performance, 12, 383-397.

Johnes, J., & Taylor, J. (1987). Degree quality: An investigation into differences between U. K. universities. Higher Education, 16, 581-602.

Johnson, S. (1988). Comparability in degree awards: Implications of two decades of secondary level examination research. Studies in Higher Education, 13(2), 177-187.

Jones, J. (1982). Access to university education in New Zealand. Studies in Higher Education, 7(2), 159-168.

Jones, J., & Castle, J. (1986). Women in U. K. universities, 1920-1980. Studies in Higher Education, 11(3), 289-297.

Keef, S. P. (1990). Direct entry to university from the sixth form: gender performance differentials in first year of study. New Zealand Journal of Educational Studies, 25(1), 71-74.

King, L. M., Hunter, J. E., & Schmitt, F. L. (1980). Halo in multidimensional forced choice performance scales. Journal of Applied Psychology, 60, 695-703.

Klinov-Malul, R. (1974). Is it worthwhile to get a first? The Economic Journal, 84, 143-150.

Klug, B. (1976). To grade or not to grade. Studies in Higher Education, 1(2), 197-207.

Kornbrot, D. E. (1987). Degree performance as a function of discipline studied, parental occupation and gender. Higher Education, 16, 513-534.

Lambert, M. (1989). New Zealand Almanac. Wellington: New Zealand Press Association.

Landy, F. J. (1989). Psychology of Work Behaviour. (4th ed.). Illinois: Dorsey Press.

Landy, F. J., & Farr, J. L. (1980). Performance rating. Psychological Bulletin, 87(1), 72-107.

Landy, F. J., & Farr, J. L. (1983). The Measuremnt of Work Performance: Methods, Theory, and Application. New York: Academic Press.

Landy, F. J., Vance, R., Barnes-Farrell, J., & Steele, J. (1980). Statistical control of halo error in performance ratings. Journal of Applied Psychology, 65, 501-506.

Lao, R. C., Upchurch, W. H., Corwin, B. J., & Grossnickle, W. F. (1975). Biased attitude toward females as indicated by ratings of intelligience and likeability. Psychological Report, 37, 1315-1320.

Latham, G. P., Wexley, K. M., & Pursell, E. D. (1975). Training managers to minimize rating errors in the observation of behaviour. Journal of Applied Psychology, 60, 550-555.

Leap, T. L., & Crino, M.D. (1989). Personnel/Human Resource Management. New York: Macmillian.

Long, P. (1986). Performance Appraisal Revisited. Bradford-on-Avon: IPM Infomation and Advisory Service.

Lissitz, R. W., & Green, S. B. (1975). Effect of the number of scale points on reliability: A Monte Carlo approach. Journal of Applied Psychology, 60, 10-13.

Little, A., & Robbins, D. (1981). Race bias. In Piper, D. W. (Ed.), Is Higher Education Fair? (p. 57-79). Surrey: SRHE.

Malleson, N. (1972). Student wastage in the United Kingdom. In Butcher, H. J. & Rudd, E. (Eds.), Contemporary Problems in Higher Education , (p. 83-99). London: McGraw Hill.

Marshall, J. C., & Powers, J. M. (1969). Writing neatness, composition errors and essay grades. Journal of Educational Measurement, 6(2), 97-101.

Massey University Computer Centre. (1988). Massey University Database. Palmerston North: Massey University.

McKay, R. I. (1984). Internal and In-term: A University Examines its Examining. A paper presented at the 6th National Conference of the New Zealand Association for Research in Education.

Miller, C. M. L., & Parlett, M. (1974). Up to the Mark. London: SHRE.

Murphy, K. R., Martin, C., & Garcia, M. (1982). Do behavioural observation scales measure observation? Journal of Applied Psychology, 67, 562-567.

Murphy, R. J. L. (1982). Sex differences in objective test performance. British Journal of Educational Psychology, 52, 213-219.

Neuman, S., & Ziderman, A. (1985). Do universities maintain common standards in awarding 1st degrees with distinction? The case of Israel. Higher Education, 14, 447-459.

Nevin, E. (1972). How not to get a first. The Economic Journal, 82, 658-673.

New Zealand University Conference. (1969). The Quality and Performance of Students. Wellington: NZCER.

Nieva, V. F., & Gutek, B. A. (1980). Sex effects on evaluation. Academy of Management Review, 5(2), 267-276.

Nuffield Research Group in Higher Education. (1973). Newsletter. Number 3.

Oppenheim, A. N., Jahoda, M., & James, R. L. (1967). Assumptions underlying the use of university examinations. Universities Quarterly, 21(3), 341-351.

Parton, H. (1979). The University of New Zealand. Auckland: Auckland University Press.

Paxton, J. (1990). The Statesman's Yearbook. (127th ed.). London: Macmillian Press.

Piper, D. W. (1985). Enquiry into the role of external examiners. Studies in Higher Education, 10, 331-342.

Pool, I. (1987). New Zealand Universities Until 2007: Demographic Structures and Changes. Hamilton: University of Waikato.

Population Monitoring Group. (1986). The New Zealand Population: Change, Composition and Policy Implications. Report No. 4. Wellington: New Zealand Planning Council.

Powell, A. & Butterworth, B. (1971). Marked for life. In Klug, B. (Ed.), A Question of Degree. London: The Nutfield Group for Research and Innovation in Higher Education.

Robbins, L. C. (1963). Report of the Committee on Higher Education. London: HMSO.

Roemer, R. (1983). Changing patterns of degree selection among women: 1970-1978. Research in Higher Education, 4, 435-454.

Rudd, E. (1984). A comparison between the results achieved by women and men studying for first degrees in British universities. Studies in Higher Education, 9(1), 47-57.

Rudd, E. (1985). A reply to Bradley. Studies in Higher Education, 10(1), 95-96.

Rudd, E. (1988). Reply to Clarke. Studies in Higher Education, 13(3), 333-336.

Ryan, J. (1972). IQ - the illusion of objectivity. In Richardson, K. & Spears, D. (Eds.). Race, Culture and Intelligence, (p. 36-55). London: Penguin.

Sear, K. (1983). The correlation between A level grades and degree results in England and Wales. Higher Education, 12, 609-619.

Sharp, C. & Post, R. (1980). Evaluation of male and female applicants for sex-congruent and sex-incongruent jobs. Sex Roles, 6, 391-402.

Silver, H., & Silver, P. (1986). The escaping answer. In Moodie, G. C. (Ed.) Standards and Criteria in Higher Education, (p.9-30). Surrey: SRHE & NFER-Nelson.

Smith, P. C. (1983). Behaviours, results, and organisational effectiveness: The problem of the criteria. In Dunnette, M. D. (Ed.). Handbook of Industrial and Organisational Psychology, (p. 745-775). New York: John Wiley & Sons.

Smith, P. C., & Kendall, L. M. (1963). Retranslation of expectations: An approach to the construction of unambiguous anchors for rating scales. Journal of Applied Psychology, 47, 149-155.

Smith, P. K. (1990). The distribution of psychology degree classes in the U.K. The Psychologist: Bulletin of the British Psychological Society, 4, 147-152.

Spender, D. (Ed.). (1981). Men's Studies Modified. Oxford: Pergamon Press.

Spool, M. D. (1978). Training programs for observers of behaviour: A review. Personnel Psychology, 31, 853-888.

SPSS Inc. (1986). SPSS-X Users Guide. (2nd ed.). Chicago: McGraw-Hill.

SPSS Inc. (1988). SPSS-PC Users Guide. (2nd ed.). Chicago: McGraw-Hill.

Sturt, R. (1981). Disability. In Piper, D. W. (Ed.), Is Higher Education Fair? (p. 128-139). Surrey: SRHE.

Sub-Committee on Graduate Education. (1988). Graduate Employment in New Zealand. Report No. 15. Wellington: The New Zealand Vice-Chancellors' Committee.

Taiaroa, L. S. (1985). Enrolment trends in New Zealand universities 1974-1984 and the possibly effect of the declining secondary school roles. In Trends in the Graduate Employment Market. Wellington: Victoria University.

Taylor, J. (1986a). The employability of graduates: Differences between universities. Studies in Higher Education, 11(1), 17-27.

Taylor, J. (1986b). Comparing universities: Some observation on the first destination of new graduates. Higher Education Review, 19(1), 17-27.

Thorndike, E. L. (1920). A constant error in psychological ratings. Journal of Applied Psychology, 4, 25-29.

Tuckman, B. H., & Tuckman, H. P. (1984). Unemployment among graduating Ph.D's: Do economic conditions matter? Research in Higher Education, 20(4), 385-398.

UNESCO, (1980). World Guide to Higher Education: A comparative Survey of Systems, Degree and Qualification. (2nd Ed.). Essex: Bowker Publishing/Unipub/The Unesco Press.

Universities Central Council on Admissions, (UCCA), (1983). Statistical Supplement to the Twentieth Report 1981-1982. Cheltenham: UCCA.

Upton, G. J. G. (1978). The Analysis of Cross-tabulated Data. Bristol: John Wiley & Sons.

Wainwright, C. (1977). The Degree Merchants. Albany, Auckland: Stockton House.

Wallston, B. S., & O'Leary, V. E. (1981). Sex makes a difference: Differential perceptions of women and men. Review of Personality and Social Psychology, 2, 9-41.

Wendelken, D. J., & Inn, A. (1981). Non performance influences on performance evaluation : A laboratory phenomenon? Journal of Applied Psychology, 66, 149-158.

Whitaker, J. (1986). Whitaker's Almanac. (118th ed.). London: Whitaker & Sons.

Williams, W, F, (1979). The role of the external examiner in first degrees. Studies in Higher Education, 4, 161-168.

Williamson, B. (1981). Class bias. In Piper, D. W. (Ed.), Is Higher Education Fair? (p. 17-39). Surrey: SRHE.

Wilson, J. M. (1981). The accuracy of A-level predictions. Assessment and Evaluation in Higher Education, 6(1), 80-82.

Woodley, A. (1984). The older the better? A study of mature students performance in British universities. Research in Education, 32, 35-50.

WordPerfect Corporation. (1989). WordPerfect Version 5.1. Utah: WordPerfect Corporation.

Yearbook. (1990). New Zealand Offical Yearbook. Wellington: Government Printers.

Zetterblom, G. (1986). Postgraduate education in Sweden: Reforms and results. European Journal of Education, 21(3), 261-273.