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Intuitive and rational approaches to decision making in education

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CONTENTS

Introduction

"Any decision is better than none" (Sartwell, 1994)

Very few people doubt the importance of the role of the head teacher in ensuring the schools they lead are effective and providing a high quality of education to their pupils. Several studies (for example, Mortimore et al, 1988) have clearly emphasised the importance of the head teacher's role and the pivotal nature of their influence is now largely undisputed within educational circles. Educational leadership is a key area of concern for policy makers and commentators.

In order to fulfil their leadership role, head teachers have to make decisions on a daily, minute by minute basis, but it is not clear how they do this. We may all know someone who finds making decisions difficult. They always seem to hesitate before committing themselves to a course of action. Head teachers do not always have this luxury. They must make decisions both large and small that bind the school to commitments and outcomes which may or may not be well defined or predictable:

"Uncertainty, doubt, and fear are common experiences we would prefer not to have, or at least not to have very often. But we do have these experiences, and the policymaker has them often, frequently all three at once" (Hammond, 1996 p.11).

An indecisive head teacher may well be considered a weak leader by those that he or she is charged with leading. Leaders are expected to be able to make effective decisions regardless of situational factors such as complexity and uncertainty. In

addition, they must be accountable to an increasingly large audience for those decisions.

In their seminal study of successful organisations, Peters & Waterman (1982) identify eight "themes" that they argue are responsible for the success of the organisations studied. The first theme they describe is titled "a bias for action" which concerns the propensity for active decision making. It can be well argued that head teachers need such a bias for action which implies timely and effective decision making in the face of adverse environmental factors to ensure their schools are successful.

The past two or more decades have been a period of rapid and increasing change in education. Major governmental education legislation and rising social aspirations for education have created a very demanding educational environment. The major events within educational policy making over the past half century and the broader social context will be highlighted in chapter one.

It is within the demands of the current educational environment that head teachers make their decisions. In hand with the increasing social demands on education has come increasing accountability. Head teachers are now accountable for their decisions to a wide range of audiences, including governors, parents, staff, Local Education Authorities, and government. The broad nature of the head teacher's role is evident in this extract from the National Standards for Head teachers:

"The Head teacher is the leading professional in the school. Accountable to the governing body, the Head teacher provides vision, leadership and direction for the

school and ensures that it is managed and organised to meet its aims and targets." (DfES, 2004):

As well as the complexity inherent in this description it is clear that, in order to fulfil the leadership function, many (although certainly not all) of the decisions taken by head teachers relate to the management of personnel. Decisions need to be made, for example, about the deployment of staff and management of conflict. Disputes between staff and poor performance need to be tackled. As the lead professional within the school the head teacher needs to make a wide range of personnel decisions and be accountable for those decisions to those that are affected.

It is through decisions that head teachers put their aspirations, goals and plans into action. Without decisions (including deciding not to do something) there could be no action and no impact. Decisions represent one of the most important behaviours that head teachers demonstrate as leaders in order to lead and develop their schools. It can therefore be reasonably argued that the study of how head teachers make decisions is of importance and worthy of enquiry.

There has been much research over the last two decades into the skills and knowledge required of head teachers which have had an influence on training for head teachers and aspiring head teachers. For example the Leadership Programme for Serving Head teachers (LPSH) has been based on interviews of "highly effective" head teachers in a research project conducted by Hay McBer (2000) on behalf of the Teacher Training Agency (TTA). There has however been surprisingly little, if any, research into how head teachers actually make decisions. Conventionally, when faced with complex

decisions head teachers (like many other professionals) have been advised to use a range of rationalistic methods designed to produce a menu of options from which the best can be chosen. Sometimes these methods may be applicable and sometimes they may not. There is the added problem of how to make a decision about how to go about making decisions. Faced with the demand to make increasingly rapid and complex decisions, many experienced head teachers may prefer to rely on their "gut feelings". Interest in how head teachers may use their intuition to make decisions has been heightened by the writing of Goleman (1996) on the role of emotions within leadership. However the definition of intuition remains ill defined and vague and little remains known of the appropriate balance between decision making methods.

The key question therefore that this research focuses on is:

How do head teachers make decisions?

In addition, there are a range of sub questions that are worthy of consideration within the remit of this study. What strategies do head teachers use in making decisions? How do factors such as accountability, metrics, complexity and uncertainty affect decision making? What is the impact of experience on decision making? Does increased accountability lead to a greater choice of rational or intuitive decision making strategies? To what extent do head teachers rely on their "gut feelings" in making decisions? What mix of rational and intuitive strategies do head teachers use in making decisions and do head teachers make use of their staff to explore different perceptions and frames?

In considering what is the best research approach to answer these questions, reference can be made to a new branch of research known as Naturalistic Decision Making (NDM) which has arisen over the past fifteen years. The proponents of NDM have questioned both the application and validity of the rational methods. One of the major proponents of this approach is Gary Klein who has undertaken research into decision making within a wide range of professional domains such as fire fighting, health and the armed forces. His research (1999) suggests that, in real life situations, experts employ a range of strategies very different from the oft espoused rational models of decision making. Instead they habitually use strategies that rely very heavily on domain specific knowledge developed through extensive experience. They do not involve the generation of alternative options but rather use perception and mental simulations, for example, as tools for decision making. The decision making strategies that experts employ mark them out from novices and can perhaps give us an insight into the acquisition of expertise. In this thesis the application of NDM to the work of primary head teachers will be considered.

In chapter one the relationship between education leadership, accountability and decision making will be explored making reference to the many changes that have influenced and created the current educational context. The extent to which decision making strategies may be influenced by the context in which they are made will also be considered.

In chapter two an overview of theoretical approaches to decision making will be provided, drawing out the many distinctions between rationalistic methods and what can be termed "intuitive" methods such as those "discovered" by NDM. The

relationship and tension between rationalistic and intuitive approaches to decision making will be considered. This will involve exploring the well worn battleground between these two age old competing ideologies within Western civilisation:

"Traditionally, two forms of cognition—analysis and intuition—have been distinguished. This sharp dichotomy was made early; indeed, it is as old as the history of thought. Plato, Aristotle, Hume, and Kant all recognized that the difference between the two forms of cognition is fundamental. Even today, almost every study of human judgment employs these concepts, implicitly or explicitly" (Hammond, 1996, p.60).

A definition of "intuitive" and "rational" will be provided in this chapter and will be used throughout the thesis to highlight the differences between these two approaches.

Chapter three will give a detailed account and critique of the work of Gary Klein discussing the model of decision making he has developed and his ideas on recognition, mental simulations, stories, decisions within teams and decision making mistakes.

Chapters four and five will consider research methodology and the practical application of research to this thesis. Details of how the research was conducted, head teachers recruited and interviewed and basic data analysis will be described. Chapter six will provide a quantitative analysis of the interview data to provide the reader with a context for understanding and judging the research findings.

Chapter seven is at the heart of this research project. Here the qualitative analysis of the research data will be outlined using substantial quotations from the interview transcripts to enhance credibility and ensure that the findings are truly grounded in the research evidence. Issues such as accountability, working with staff and, most importantly, head teachers' preferred decision making styles will be discussed and illuminated.

Chapter eight will then summarise the main findings of the research and discuss possible implications arising from the findings including a description of decision making to aid our understanding of this subject.

A postscript will retrospectively consider the work of Klein in the light of this research as well as provide a reflection on the research process.

1

Education leadership, accountability, professionalism and decision making

"In any moment of decision the best thing you can do is the right thing" (attributed to Theodore Roosevelt by Blaydes, 2003).

INTRODUCTION

What is leadership? Management guru Peter Drucker is attributed as saying that "management is doing things right; leadership is doing the right thing". However, it is not clear how a head teacher decides what the "right thing" is, or whether experienced head teachers are better at deciding "the right thing" than inexperienced novice head teachers. Indeed, it is not clear how experience directly influences decision making strategies or how experience translates into expertise.

These questions all highlight the important role that decision making has in the exercise of educational leadership. Decision making can be viewed as leadership in action. It is the way in which a leader's skills, knowledge and intent become practical and evident to others, whether those others are people to whom the head teacher is accountable or people for whom the head teacher is accountable. Decision making is the process by which thoughts and aspirations are translated into action.

Before decision making in educational leadership is explored in more depth it will be helpful to consider the changing education landscape that provides the context in which head teachers find themselves making decisions. It seems reasonable to assume

(and will shortly be explored in greater depth) that the context in which decisions are made affects the processes employed by head teachers in making those decisions.

This opening chapter will look at the historical and legislative context for decision making in education and discuss the possible impact of accountability and metrics on decision making strategies, in particular the potential impact of accountability on the choice of analytical or non-analytical strategies. The chapter will end with a consideration of the issue of complexity and uncertainty as it relates to decision making.

HISTORICAL CONTEXT

The latter half of the 20th century and the beginning of the 21st century marks a period of considerable change in education within the UK. The period between the 1944 Education Act and the Education Act of 1988 (commonly known as the Reform Act) was a time of intensive experimentation with educational methods and ideological approaches. During this period, teachers and head teachers had a wide licence and control on curriculum content and teaching methodology. In 1967 the publication of the Plowden Report, "Children and their Primary Schools", further encouraged the development of "child-centred approaches" to teaching based largely on the child developmental ideas of Piaget (1936). This was exemplified by the opening sentence of chapter two: *"At the heart of the education process lies the child"*. Radical and sometimes controversial approaches were tried. In 1974 the William Tyndale Primary School in London attained notoriety when the school descended into chaos after staff introduced radical changes based on an extreme form of liberalism which was *"seen*

as a dispute between the progressives and the traditionalists" (Gretton & Jackson, 1976, p.38).

By the mid 1970s public opinion was beginning to swing away from these so called "progressive" approaches to education. In his famous 1976 Ruskin College speech, Lord Callaghan became the first Prime Minister in office to voice fears about the quality of teaching in schools and go into what David Eccles, the Minister for Education in 1960, described as the "secret garden" of the curriculum. The Ruskin speech had a huge influence on public debate about education and paved the way for major educational reforms by the following Conservative government. The advocates of a return to "traditional" teaching methods and curricula found a powerful ally in the form of Rhodes Boyson, a junior minister at the Department of Education from 1986 and a former head teacher himself.

All this came to a head when the freedom of the education profession underwent a radical change with the introduction of the 1988 Education 'Reform' Act. This major piece of legislation introduced the National Curriculum and thus at a stroke removed the major historical area of professional influence for head teachers. However, the 1988 Act and subsequent legislation also introduced further new elements that were to have a dramatic effect on the role of the head teacher.

Local Management of Schools (LMS)

Prior to the 1988 Act, head teachers only exercised control over a very limited budget to be used primarily to purchase learning resources. The 1988 Education 'Reform' Act introduced greatly increased financial responsibility through the Local

Management of Schools (LMS). This new development meant that head teachers were given far greater financial control, managing almost the whole school budget, including salary budgets. LMS dramatically changed the role of the head teacher from an educationalist to an institutional manager. As a result the head teacher has had to learn a wide range of new skills such as recruitment and selection procedures, employment and building maintenance. The range of decisions that head teachers have to make was therefore expanded exponentially overnight. All of these new responsibilities were introduced with little or no training. Yet all these areas require critical decision making capabilities.

Office for Standards in Education (Ofsted)

The 1992 Education (Schools) Act introduced a new, rigorous (and some would argue onerous) system of school inspections through the establishment of the Office for Standards in Education (Ofsted). This was in essence a quango set up to privatise the system of school inspections that had previously been dominated by a more establishment focussed team of Her Majesty's Inspectors (HMIs). This new accountability measure was and remains a major source of stress and anxiety for many head teachers. When making decisions head teachers have to think how they might have to justify them to an inspection team. The establishment of Ofsted and regular in-depth school inspections has raised accountability for the head teacher to new heights. A poor Ofsted report can signal the end of the head teacher's career. The development of the internet has meant that reports and a wide range of other school details are now available to the public in a way that was inconceivable twenty years ago.

Parent power

Throughout the 1980s the then Tory government took a number of steps to strengthen what has become known as "parent power". This process started when the 1980 Education Act established parent governors on school governing bodies. A Green Paper (1984) called "Parental influence on schools" quickly followed. Following the establishment of the National Curriculum, assessment arrangements were introduced which meant that, for the first time, children in the primary school were tested in all subjects of the National Curriculum against a range of "levels" and more importantly the aggregated whole school results appeared in local "league tables" published by mainstream daily newspapers and made available over the internet. In 1991 the government introduced the "Parents' Charter" which guaranteed parents information about schools and their performance. This was all part of the governmental drive to introduce competition into the education system in support of a political ideology that asserts that standards in schools will be improved through parental choice. Schools were therefore in direct competition with each other for pupils. As school funding is related directly to pupils on roll, the loss of pupils is a direct threat to the viability of the school. The number of parents on governing bodies was increased so that they came to dominate local governance, thus providing parents with real political power. All of these measures increased the demand for accountability.

In 1997 when New Labour was successful in the general election there were probably many teachers who would have felt that government priorities would change. However, the Labour government continued to pursue the strategies laid down by the previous Tory government. Ofsted remained (including the Chief Inspector) and league tables (in England at least) have been staunchly defended by successive

Education Ministers. The focus on standards as measured in key stage test results has remained and the publication of key stage 2 results remains a measure that head teachers are accountable for to parents, the LEA and government.

All of these developments within education can also be seen within a broader context of sociological development within the 20th century with regard to the standing and conceptualisation of the professionals. Schön (1982) has argued that within the first half of the 20th century there arose a *"crisis of confidence in the professions"*. The anxiety surrounding professional activity lies in what Schön describes as the "technical rationality" model which describes professional expertise as *"instrumental problem solving made rigorous by the application of scientific theory and technique"* (Schön, 1982, p.21). Professionals have been seen to fail at providing adequate solutions to society's major problems, and so disillusionment has set in. Society has learnt to distrust experts who disagree amongst themselves and provide solutions that lead to unexpected and unpalatable outcomes from a wide range of domains such as town planning, medicine and the law.

Parsons (1995) agrees with this analysis of the broad social context, which he describes as the *"assault on professional power"*:

"This assault on professional power has not been confined to the field of health. Other policy areas such as policing, local government and ***education*** *have also been the subject of reforms designed to reduce the impact that professionals have at both the operational and policy making level and to subject them to greater managerial accountability" (Parsons, 1995, p.264).*

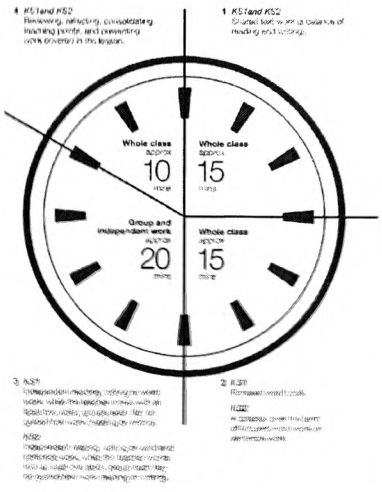
Within the educational sector these sociological factors have lead not just to a de-valuing of the teaching professional but an attempt to de-professionalise the activity of the teacher:

" ... teachers' work is portrayed as becoming more routinised and de-skilled, more and more like the degraded work of manual workers and less and less like that of autonomous professionals trusted to exercise the power and expertise of discretionary judgment with the children. Teachers are depicted as being increasingly controlled by prescribed programs, mandated curricula, and step-by-step methods of instruction" (Hargreaves, 1993, p.76).

The de-professionalisation of education practitioners has given fruit to a wide range of competency style assessment practices. The job of the professional has been reduced to a set of check boxes against which the teacher can be "objectively" assessed. These practices ignore the synergy of the learning experience. By de-constructing teaching they merely create a cadaver whilst giving the false impression of greater understanding. Ofsted's claims for objectivity in its lesson observation assessments come from a belief in the ability to de-construct teaching.

With the introduction of the Literacy Strategy in September 1998 the government for the first time became directly involved in not just what teachers teach but how they teach. Guidance on exactly how to time activities during lessons was even specified:

Structure of the Literacy Hour



(The National Literacy Strategy: Framework for Teaching, DfEE, 1998, p.9)

A target setting culture and regime has been established by the government and schools are required by law to set an ever increasing range of targets for school and pupils' performance against which they are measured. Thus, over the past half century, there has been an unremitting shift of power in terms of educational policy making from the education profession to central government. As education has come into sharper political focus for successive governments so concern about teachers' and head teachers' professionalism has risen. Concern about "educational standards" is seen as such a failure on the part of the educational professions. This has inevitably led to the reduction of the autonomy of teachers and increasing direction both in terms of content and pedagogy from central government.

However, Schön (1982) points out that this perceived failure on the part of the educational profession is an inevitable consequence of the "technical rationality" conceptualisation of the work of the professional and he presents an alternative definition of professional expertise which he refers to as "reflection-in-action". This alternative conceptualisation emphasises the need for constant reflection and

adaptation in the face of uncertain goals and shifting environmental factors. He cogently points out that much professional activity is not focused on problem solving but on problem setting:

"From the perspective of Technical Rationality, professional practice is a process of problem solving. Problems of choice or decision are solved through the selection, from available means, of the one best suited to established ends. But with this emphasis on problem solving, we ignore problem setting, the process by which we define the decision to be made, the ends to be achieved, the means which may be chosen. In real-world practice, problems do not present themselves to the practitioner as givens. They must be constructed from the materials of problematic situations which are puzzling, troubling, and uncertain. In order to convert a problematic situation to a problem, a practitioner must do a certain kind of work. He must make sense of an uncertain situation that initially makes no sense" (Schön, 1982, p.40).

It can be argued that much of the decision making undertaken by head teachers revolves around problem setting and that this is a major component of their work. Schön's reference to "*situations which are puzzling, troubling, and uncertain*" would certainly apply to many situations that head teachers encounter. Head teachers have to learn to balance the demand for higher and higher academic results with the government's drive for a broad curriculum such as that outlined in the government's document "Excellence and Enjoyment" (DfES, 2003). The circumstances in which head teachers operate do not often conform to simple problem solving scenarios. Before problem solving can be attempted, meaning must be generated from the

situation and that meaning shared widely with the school community. Problem setting therefore becomes a major factor in how head teachers go about decision making.

But not all commentators have lamented the fall of the professions. Alongside the demise of professional credibility has risen the influence of the lay person. The introduction of lay inspectors to school inspections teams by Ofsted is a clear example of the valuing of a lay perspective over the experience of the educational professional. Lindblom (1990) has argued that professionals have no special techniques or prerogatives over lay persons:

" ... it is all the more apparent that professional social inquiry covers the whole range of lay probing and can stake a claim not to some defining set of techniques but to more skill" (Lindblom, 1990, p.161).

But it is surely not just "*more skill*" that professionals bring to the situations in which they work but experience that, by definition, the lay person does not have. If we accept Schön's notion of problem setting as being of prime importance then generating meaning from problematic situations is crucial. Experience provides the means through which complex environments can be understood and appropriate meaning generated. The lay commentator has, by definition, no background of experience that can enable them to make sense of complex situations. Many could argue that the experience, knowledge and understanding of head teachers and other educational professionals has been de-valued over the past few decades.

"Research on expert problem solving has shown that a significant aspect of what specialists do when functioning in their everyday complex environments is to use their knowledge and experience to size up the situation, determine if a problem exists, and, if so, whether and how to act upon it. Experience enables a person to seek information that will be helpful in coping with the situation, and to generate a limited set of plausible diagnoses, options, or hypotheses, rather than wasting precious time and energy on low payoff leads ..." (Orasanu & Connoly, 1995, p.12).

The lay person is, therefore, severely limited in the ability to "size up the situation". However, this ability is crucially important to effective decision making. Decision making can be seen as the major behavioural activity in which expert performance is demonstrated and experience becomes expertise.

ACCOUNTABILITY AND DECISION MAKING

By the turn of the 21st century, the accountability of the primary head teacher was vastly different from head teachers half a century ago. Changes in the legislative framework for education in England outlined in the previous section describe a working environment in which accountability is becoming increasingly critical. According to Bush (1994, p.310):

"At minimum, accountability means being required to give an account of events or behaviour in a school or college to those who may have a legitimate right to know. One of the central aspects of accountability relates to establishing which individuals and groups have that legitimacy".

The changes that have taken place over the past half century have greatly increased the number of individuals and groups that can now claim legitimacy of accountability. The National Standards for Head teachers (DfES, 2004) specifies who the head teacher is accountable to:

"In carrying out this responsibility, Head teachers are accountable to a wide range of groups, particularly pupils, parents, carers, governors and the LEA, "

what he/she is accountable for:

"They are accountable for ensuring that pupils enjoy and benefit from a high quality education, for promoting collective responsibility within the whole school community and for contributing to the education service more widely,"

and the legal framework for that accountability:

"Head teachers are legally and contractually accountable to the governing body for the school, its environment and all its work."

In addition, a plethora of educational data in the form of test results and league tables is now made available in the public domain to support this accountability. As a result, the performance of head teachers has never been more firmly in the spotlight and the decisions they make more open to challenge and criticism.

It is worthwhile considering how accountability might affect decision-making strategies. In their paper "A Contingency Model for the Selection of Decision Strategies", Beach & Mitchell (1998) outline how factors such as the increasing need for accountability can lead to the decision maker choosing more and more analytical approaches. The following diagram has been generated from Beach & Mitchell's article to show how they propose strategies are chosen according to increasing accountability:

Non Analytical Strategies	Unaided Analytical Strategies	Aided Analytical Strategies
Habit Pre-formulated rules, i.e. "rules of thumb" Tradition	Purely mental strategies "Satisficing" Mental simulations	Analytical tools Technology (calculator, computer) Statistics Paper exercises
Increasing accountability----------→		

Beach & Mitchell have grouped decision making strategies into three broad groups. The first group is what they describe as "non-analytical strategies". This includes such strategies as arriving at decisions on the basis of habitual patterns of decision making or tradition. We possibly all know institutions that make decisions on that basis – "that's how we do things here". We should, however, not be totally dismissive of such an approach. The strategy has most probably been honed by years of experience and also has the advantage of being well understood and accepted by others. Linked to these strategies are those "rules of thumb" that people use when they are faced with common problems or scenarios and that have proved to be effective over time.

The second group of strategies includes strategies that work on the basis of "satisficing" (more about this later in chapter two) or the exploration of mental simulations. These strategies are not formalised or written down in any way. Finally Beach & Mitchell group more traditional approaches together under the heading "aided analytical strategies". This includes the formal strategies and procedures including computation that are strongly associated with analytical approach. Beach & Mitchell postulate that as the need for accountability increases so decision makers come to rely increasingly on these more analytical strategies.

This has much resonance in the current educational climate where head teachers work in an environment which demands high levels of accountability. Given this factor, it may be that head teachers feel they need to use analytical methods not because they produce the best solutions but because they are easier to justify to a sceptical audience. Analytical approaches have the advantage of at least appearing to be rational, objective and easy to justify. They are attractive not just because they may generate good outcomes but also because they can be presented positively to a potentially hostile public. However, their surface appeal may be a mere myth:

"Modern organisations are sustained by belief systems that emphasise the importance of rationality. Their legitimacy in the public eye often depends on their ability to demonstrate rationality and objectivity in action. It is for this reason that anthropologists often refer to rationality as the myth of modern society" (Morgan, 1986, p. 39).

The need to justify decisions to an external agent may impact on the decision making process in other, less predictable, ways. In 1966 Soelberg used the students who attended his course at the MIT Sloan School of Management in an experiment to see how rational decision making strategies stood up in real life practice. All the students were trained to use the following rationale choice strategy: identify a set of options; identify the ways of evaluating these options; weight each evaluation dimension; work out the ratings; pick the option with the highest score.

After their training, Soelberg asked the students to perform a simple real life decision making task: selecting their preferred jobs as they finished their degree. The obvious inference was that the students would apply the methods they had so studiously learnt.

They did not. They showed little inclination to use the rationalistic analytical method studied but instead appeared happy to rely on their "gut feelings". Soelberg had trained his students to use rational methods, yet when it was time for them to make a rational and important choice, they would not do it.

On further investigation, Soelberg found that they were employing an entirely different strategy from the one they had been taught. They would arrive at an intuitive decision, sometimes comparing their choice with one other in order to provide a basic comparison. They would then present their decision as a rational choice. What they were actually doing was constructing a justification.

When put under accountability pressure and the need to provide a justification to external audiences, it may be that decision makers often feel that they must present

decisions that have been arrived at intuitively as if they were the result of a rational, analytical process. Such post-rationalisation may be abundant, particularly as it is quite conceivable that the decision makers in question really believe they have made their decision rationally. This problem arises at least in part due to the low value placed in our culture (which has its philosophical roots in Plato) on intuition:

"... it is not that in uncertain conditions we have to 'make do' with intuition, as if we were clutching at straws. It is that well-developed, tentatively used intuition is actually the best tool for the job; while the apparent solidarity of a rational, strategic plan offers nothing more than a comforting illusion" (Claxton, 1997, p.211).

Thus there is the possibility that high accountability scenarios merely increase the impact of post rationalisation rather than lead to an actual increase in the use of rationalistic decision making strategies. Faced with the task of explaining a course of action to others, people often find it difficult, if not impossible, to communicate effectively except by reference to rational outcomes and process:

"In contemporary Western cultures, when people are called upon to give reasons—even to themselves—for choosing a volition [course of action], they often find it difficult to maintain sustained thought about it other than by exploring connections between it regarded as means and some other volition as end. Often they cannot think, cannot analyze, cannot debate except about means to assumed ends. ... Even sophisticated intellects often cannot define rational thought other than as thought that appropriately connects means to end" (Lindblom, 1997, p.41).

One reason that people may place so much store in rationalistic methods and may even be tempted to "dress up" intuitive decisions in rationalistic "garb" is that rationalistic methods are capable of linguistic analysis. We have a common language and vocabulary franca for rational decision making. We can discuss, argue and debate rational methods and conclusions in a way that we often find difficult and awkward with intuitive methods. But rational methods not only have language at their disposal – they also have numbers in the form of metrics.

METRICS AND DECISION MAKING

The use of metrics has been a long established characteristic of rational approaches espoused within the business sector:

"The numerative, rationalist approach to management dominates the business schools. It seeks detached, analytical justification for all decisions" (Peters & Waterman, 1982, p.29).

As accountability within education has soared over the past years the role and demand for metrics within education has grown exponentially. The introduction of "league tables" in the 1992 Education (Schools) Act is just one example of a new emphasis within education of metrics. Policy makers within education have focussed on highly analytical approaches based on metrics and numerical analysis, and in the current educational environment, the analytical abilities of head teachers have become more and more important. Head teachers are urged to *"use data to analyse and evaluate performance"* (NCSL Learning-centred Leader training material 2005) and analytical

thinking is a crucial personal characteristic listed by Hay McBer in their "Raising Achievement in Our Schools Report" (2000). There is certainly no shortage of data for head teachers to analyse. The introduction of the Performance AND Assessment Report (PANDA) by the government in 2000 emphasised the crucial role that the government places in formal data analysis. In 2004 it became statutory for head teachers to produce an annual achievement report for the governing body. This often includes data analysis by gender and ethnicity as standard, and increasingly analysis at individual pupil level.

In the current educational environment of hard data analysis the value of "intuition" and expertise has been devalued to such an extent that it can be seen as superfluous:

"...formerly skilled occupations are analysed, systematised and routinised to such a degree that the autonomous and non-standard application of expertise is seen neither as desirable nor necessary" (Bottery, 1994, p.115).

The inevitable result of an undermining of professional expertise is "analysis paralysis" - an over reliance on facts and figures and a devaluing of expertise:

""Constantly accumulating new information and numbers, without giving the mind a chance to percolate and come to a conclusion intuitively, can delay any important decision until the time for action expires. This immobility, caused by substituting study for courage, has been labelled analysis paralysis" (Rowan, 1986, p.91).

The generation of metrics can often be at the expense of an over-simplification of the context, and data taken out of context can be dangerous. Data will need interpretation to turn it into useful information and we will surely continue to need the experienced eye of the professionally informed head teacher to interpret data in the light of real educational settings:

"Facts and figures give one only raw data: they cannot decide how or where they should be used" (Bottery, 1994, p.111).

Metrics also only provides evidence for part of the picture. The famous saying that *"not everything that counts can be counted, and not everything that can be counted counts"* (attributed to Einstein) holds true for education. It can be argued that extensive and laborious data analysis can reduce the effectiveness of decision making.

One definition of a professional expert is someone who is not a slave of information but who is able to bring his or her experience to bear on the accurate interpretation of the numbers. However, *"the pervasiveness of... metrics of success and failure encourage an excessive reliance on calculative rationality"* (Dreyfus & Dreyfus, 1986, p.194) and have a strong tendency to undermine the expert standing of the educational leader.

The introduction of national testing and league tables in the 1992 Education (Schools) Act are stark examples of metrics of failure or success. The test results have become so critical for head teachers that there have been instances where head teachers have

even broken the law and cheated on the test results. It is clear that the pressure of accountability can distort professional behaviour.

In their book "Mind over Machine", Dreyfus & Dreyfus (1986) present a model of five stages of skill acquisition that mark the transition from novice to expert. This journey is partly a process that leads away from a slavish attachment to analysis and procedures demonstrated by the novice to the greater reliance on the use of intuition and experience by the expert. The novice is bound by a step by step analytical linear process because he/she has no experience to fall back on.

In this model of expertise, rational decision making is necessary only when intuitive responses based on experience are not available:

Skill level	Components	Perspective	Decision	Commitment
1. Novice	Context-free	None	Analytical	Detached
2. Advanced beginner	Context free and situational	None	Analytical	Detached
3. Competent	Context free and situational	Chosen	Analytical	Detached understanding and deciding. Involved in outcome.
4. Proficient	Context free and situational	Experienced	Analytical	Involved understanding. Detached deciding.
5. Expert	Context free and situational	Experienced	Intuitive	Fully involved

reproduced from "Mind over Machine", Dreyfus & Dreyfus,(1986) p.50

Dreyfus & Dreyfus characterise the novice in a number of ways. They suggest that the novice relies on context free rules and procedures without reference to the specifics of the situation (the "components" column). An example of this would be a beginner car

driver (Dreyfus & Dreyfus,1986, p.22) who is told at what speed to change gear – this is a context free rule. After some experience he will begin to decide for himself when to change gear and move from context free rules to situational procedures. Furthermore, the novice assigns failures and mistakes simply to poor application of rules and procedures. He remains detached from the process (the "commitment" column). In contrast by the time someone has reached the level of competency (Dreyfus & Dreyfus,1986, p.24), they are becoming more and more involved, perceiving the successful outcome as more than just an application of rules but also the involvement of judgement. Finally, the competent learner starts to choose a path and engage with the problem solving scenario (the "perspective" column). The beginner driver merely does what he is told by the instructor. The competent driver chooses a set of actions to achieve an end. In the experienced driver these action sets become intuitive. This modelling of the transition from novice to expert is useful as it identifies many of the contextual elements that affect decision making throughout the process, but how valid the model is across a wide range of domains is open to question. It is not clear whether all the steps in the model are necessary or how precise the distinction is between the merely proficient and the expert. What the model does help to emphasise is the important role of intuitive decision making gained through experience. Dreyfus & Dreyfus point out the mistake of neglecting expertise by exalting rationality above all else:

"The increasingly bureaucratic nature of society is heightening the danger that in the future skill and expertise will be lost through over reliance on rationality" (ibid, p.195).

Accountability based on analytical procedures using metrics clearly impacts on decision making strategies and probably does so in different ways depending on the expertise level of the decision maker. Novice decision makers are likely to be caught in "context-free" analytical rules and procedures that more experienced decision makers can place within meaningful situational contexts.

COMPLEXITY, UNCERTAINTY AND DECISION MAKING

It is not just accountability that has increased over the past decades within education. Educational environments are now increasingly complex. The government's National Standards for Head teachers (2004) divides the head teacher's role into six different areas: Shaping the future; Leading, learning and teaching; Developing self and working with others; Managing the organisation; Securing accountability, and Strengthening community.

Each of these areas is split up into knowledge, professional qualities and actions and each of these sub headings is divided into a number of specific statements. However, the majority of these statements are extremely broad. For example one statement under "Developing self and working with others" includes "building and sustaining a learning community". There is no definition of what a "learning community" is and certainly no guidance on how to achieve this statement which is a job in itself. Head teachers are urged in the document to: *"think strategically, inspire, challenge, motivate, empower others, initiate, analyse, collaborate, influence, delegate, prioritise, plan, organise, reflect, think creatively and demonstrate personal enthusiasm".*

The description of the head teacher's role gives a flavour of the demanding and complex nature of education today. The following characteristics can be said to apply to complex situations and are particularly pertinent in education:

Problems are ill-structured

Decisions in real life are often embedded in a wider context. The decision maker will often be faced with multiple goals which may or may not be mutually compatible. Some or all of these goals may be defined externally to the decision maker and the decision maker may therefore lack ownership. The problem may be ill-defined (Schön's problem setting) or shifting as events unfold.

Information is incomplete, ambiguous or changing

In real life scenarios, decisions often need to be made with less information than we would like. Rational decision making processes assume an unlimited search for information which is often impractical in real life. The issue of the impact of incomplete or changing information with regard to uncertainty will shortly be explored.

Decisions occur in multiple event feedback loops

Decision making is not just a matter of making a single choice at one point in time but rather involves a whole series of actions or decisions each of which affects the situation in ways that have an inevitable influence on the decisions that follow. Decisions in real life situations are therefore cumulative in their effect and this creates

uncertainty as it is not possible to predict future decisions without knowledge of decisions yet to be made.

Time constraints exist

The majority of real life decision making contexts are time constrained. Unlimited time does not exist to consider strategies and gather information. The best decisions must be made with what is available and ready to hand. Time constraints are likely to have a major impact on the decision strategy chosen. Given this factor, decision makers have to choose strategies that do not rely on extensive information: *"studies show, that under time pressure, people use less information in making choice decisions" (Means, et al , 1995, p.319).*

Stakes are high

In real life there are consequences (sometimes serious consequences) that arise from decisions made. For professionals working within the emergency services the consequences can prove literally life threatening. For other professionals the consequences can pose a threat to personal identity and influence, professional kudos and even employment/promotion prospects.

Many participants contribute to the decisions

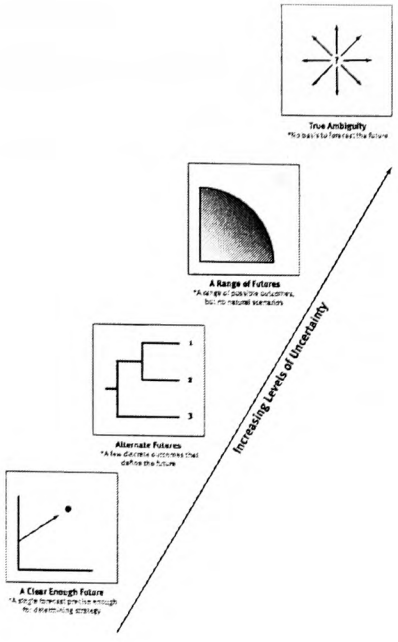
Many decisions are made within the context of tasks performed by teams of people not just individuals. Team members must interact, work towards shared goals and adapt to changes in the decision making environment as they occur. Decision making within teams assumes high levels of communication and shared values/aspirations.

Given the characteristics of complex decision making environments, head teachers will need to create strategies to support their decision making. One strategy for coping with complexity is simplification:

"From the viewpoint of the organism, uncertainty will always be an important feature of the environment. There will, therefore, always be a need to simplify" (Hogarth, 2001, p.181).

One would therefore expect experienced head teachers to be very proficient at simplifying in order to prioritise appropriately. An inevitable consequence of increased complexity is increased uncertainty. Russo & Schoemaker in their book "Winning Decisions" (2002) devote a whole chapter to uncertainty entitled "Intelligence in the face of uncertainty". They acknowledge the changing and demanding context: *"unfortunately in a world characterised by rapid change and discontinuities, decision makers are dealing not so much with trends as with surprises" (p.101).*

Their response is increasing reliance on rational/analytical approaches which they categorise situations into four "levels" of uncertainty:



Level 4 – True Ambiguity
No basis to forecast the future.

Level 3 – A range of Futures
A range of possible outcomes, but no natural scenarios

Level 2 – Alternate Futures
A few discrete outcomes that define the future

Level 1 – A Clear Enough Future
A single forecast precise enough for determining strategy.

As the level of uncertainty rises so Russo and Schoemaker exhort their readers to use ever more rational analytical "tools":

"The best tool for your task will depend largely on what type of uncertainty you face. Select the simplest tool possible, without underestimating the complexity of the decision you face" (ibid, 2002, p.102).

The tools that they describe have titles like: "confidence-range estimates", making people more "calibrated", "pro/con reasoning", "prospective hindsight" and "options thinking". They celebrate the efficacy of these tools by stating that:

"If you can use these tools effectively, you will find that uncertainty is no longer the enemy but rather can give you a competitive edge. In fact, you may start to welcome it as your friend" (ibid, 2002, p.104).

Robin Hogarth (2001), however, has suggested that people tend to reject analysis when faced with uncertainty. He proposes three reasons why people place less trust in analytical methods as the situations they face become complicated;

"First, by definition, analytic methods imply simplification and thus cannot capture the richness of the problem context, missing details that may be important. Second, analytic methods require explicit assumptions, and these assumptions may be perceived as unrealistic. Third, people know that even the smallest mistake can invalidate the results of an analysis .... Thus, even though intuitive solutions may not have been reached by obviously rigorous means, they have a strong appeal, an appeal based on what seem like many points of contact with the person's experience" (Hogarth, 2001, p.12).

Hogarth's analysis is then the opposite of Beach & Mitchell's. He is postulating that as the decision making context becomes more complex, decision makers will tend to use more intuitive rather than analytical approaches. Each of the three assertions that he makes can be rebutted. Firstly, analytical methods are likely to be employed when situations are complex and it becomes apparent that simple solutions may be elusive. However, the strength of rational approaches is their ability to deal with complexity and a wide range of variables.

Secondly, the notion that analytical methods require "explicit assumptions" can be viewed as a positive aspect of their nature. Hidden assumptions are perhaps more clearly problematic in non-analytical approaches. Thirdly, it is difficult to see how the

impact of small mistakes is any different in analytical or intuitive approaches. In both situations, if the mistake is significant, then it will impact on outcomes.

However, there is reason to believe that Hogarth may be right. The study by Soelberg (1966) would suggest that, even faced with important decisions and the time available to undertake a detailed rational analysis, people are more inclined to rely on "intuitive" methods. Other writers have emphasised the ability of intuition in dealing with complexity and uncertainty:

"Intuition, as we have seen, tends to work best in situations that are complex or unclear, in which the information that is given may be sketchy or incomplete, and in which progress can only be made by those who can, ... 'go beyond the information given', and are able to draw upon their own knowledge in order to develop fruitful hunches and hypotheses" (Claxton, 1997, p.72).

It must be considered likely that head teachers often struggle with what Hammond has described as *"irreducible uncertainty—uncertainty that won't go away before a judgment has to be made about what to do, what can be done, what will be done, what ought to be done"* (Hammond 1996, p.11). One of the major sources of uncertainty lies in the information available. Klein (2003) has identified five different challenges to decision making associated with information that he claims contributes to uncertainty. They are:

Missing information

This category is self evident. It includes all those items of information that we would wish to have available to make our decisions but which we do not have access to. There will be many occasions on which time does not allow for detailed information gathering. Head teachers will often be faced with the task of making critical decisions with obvious gaps in the information available.

Trustworthiness

Often the trustworthiness of information given may be open to question, particularly with personnel issues where the information may be compromised by the sources. Head teachers need to develop a sense of which information sources are trustworthy and which are not. This requires an understanding of and sensitivity to people's motivations and aspirations. Keen judgement of people is demanded here.

Inconsistency

We may have information that is contradictory which will impede any attempts at analytical analysis. Sometimes we can resolve this issue by placing more weight on a particular piece of information but at other times the conflict between information is a major constraint on our decision making capabilities. Conflicting information may often be a signal for further information gathering but this will not always be possible.

Noise

Not all information is important. Sometimes the information that we receive may be irrelevant and merely contributing to a "noisy" messy environment. Deciding what is relevant or important may not be obvious. A large amount of "noisy" information

makes the task of sifting through information extremely demanding and increases the risk of overlooking vital data.

Interpretation

Sometimes we have information but we cannot make sense of it. Perhaps the information is too complex or presented in a way that makes it difficult for us to interpret its meaning. The ability to assign meaning to data is crucial in being able to understand its relevance.

In situations where information is missing, untrustworthy, inconsistent, "noisy" or not capable of interpretation. It will be instructive to find out how head teachers make decisions and whether they either turn to rational analytical methods or they rely on "gut feeling". This is an important question in the current data rich educational environment.

Although the quality of information clearly plays an important role in dealing with uncertain and complex environments, it is also clear that the skills that decision makers bring to bear on the situation are critical to successful decisions in these contexts. Head teachers are not just passive recipients of information but bring skills and experience to bear on the problems that they face. In their paper "Training decision makers for complex environments", Canon-Bowers & Bell (1997) hypothesise a number of characteristics of the effective decision maker in complex situations:

Flexible

Real life situations are often ill-structured, dynamic and complex. Under these conditions, decision makers need to be flexible. That is, they need to be able to cope with environments that are ambiguous and rapidly changing. The implication of this train of thought is that decision makers need a range of decision making strategies that they can quickly deploy according to the situation.

Quick

Real life situations are often severely time constrained. It is not possible to wait for all the information that may be available. Decision makers have to be able to make rapid choices, even if those choices potentially have severe or unknowable consequences. This feature of real life situations strongly militates against rational/analytical strategies.

Resilient

Ambiguity, high stakes, increased workload and uncertainty all create stress. Expert decision makers must be able to demonstrate the ability to continue to make decisions under these potentially debilitating environment features.

Risk taking

In real life situations which are characterised by high stakes, decision makers must be able to use their experience to assess risk effectively and quickly. They need to be able to weigh the consequences of multiple courses of action rapidly against potential payoff.

Adaptive

Static models of decision making do not allow for the rapid changes that often take place within real life settings. Effective decision makers must engage in a continuous process of strategy assessment and modification. Sticking strictly to an agreed plan in the light of changing circumstances (as the novice in the Dreyfus model would do) would be ineffective behaviour. When and how to change a course of action as situations unfold is a critical skill for the effective decision maker.

Accurate

It is worth stating, although obvious, that the effective decision maker has also to be accurate and, in high risk, complex situations, avoid making potentially costly mistakes.

Although these hypotheses are untested as yet, they do provide a set of criteria that can be matched against real experience. It will be useful to find out the extent to which head teachers demonstrate these characteristics.

NEW PERSPECTIVES ON ORGANISATIONS

The problems presented by complexity in organisations have led some researchers to develop radical new perspectives on organisations based on ideas gleaned from chaos theory. These new ideas have critical implications for decision making.

Stacey (2000) presents a radical view of organisations as complex responsive processes. He rejects many of the assumptions of previous organisational models that

have emphasised control and the setting of strategic goals by a select small group of top managers as a key element in understanding how organisations function. These models of organisations see change as either imposed from outside or initiated by management and emphasise the need for effective and accurate forecasting in order to make appropriate and effective decisions. The basic assumption is that, at least within manageable limits, it is possible to predict the future and thereby make decisions that direct the organisation in line with desired goals.

Instead, Stacey emphasises the inherent unpredictability of organisations similar to that observed in real life physical chaotic systems. The application of chaos theory to organisations points to the problems with assuming predictability and direct causal relationships when the people within any organisation are free to make decisions and take action based on their own perceptions, ideas and motivations. He points out that *"complex systems often produce unexpected and counter-intuitive results"* (p.157) and that *"in complex systems the links between cause and effect are distant in time and space"* (p.157). Under such circumstances, rational decision making becomes very challenging:

"...in a totally unpredictable environment, under strict time pressures, it would not be logical or sensible to try to make decisions in a painstaking manner" (p.89).

In developing his new model of organisations as "complex responsive processes" he emphasises the relationships between people as of prime importance rather than the individuals themselves or groups. Previous models of organisations have tended to focus on the role of groups within organisations. More recently, complex adaptive

models of organisations that have looked at, for example, the flocking behaviour of birds, have focused on the individual who is seen as an independent agent constrained merely by a simple set of rules. Stacey's focus on the relationships between individuals as the prime locus of attention is a new development. For Stacey, it is through the interplay of relationships that meaning is generated and the life of the organisation is played out. The primary mechanism for relationships is through conversation and the quality of conversations that organisational members engage in becomes crucial:

"Ordinary conversations are complex responsive processes evoking and provoking responses in a continuing back and forth rhythm. Each response is made on the basis of local organising principles in the absence of any overall blueprint. Complexity theory suggests that it is just this kind of interaction that has the potential, in certain conditions, for producing emergent new forms" (p.392).

One implication of chaos theory is that new forms of behaviour and self organisational features arise from diversity and unpredictability. The notion is that dissent, conflict, misunderstanding and what Stacey describes as "shadow themes" hold the seeds of change and novel adaptations. Instead of concentrating on issues such as power, strategic targets, analysis and forecasting, Stacey suggests that managers should instead focus on the quality of participation in the organisation, the quality of conversational life, on the level of anxiety which is felt as a natural by product of change, on the need for diversity and on the issues of unpredictability and paradox. These all have major implications for decision making:

"If this [chaos theory] applied to organisations, one would raise questions about decision making techniques that involved step by step reasoning from assumptions about the future. One would have to rely instead on using qualitative patterns to reason by analogy and intuition. Those who succeeded in the borders between stability and instability would be those who saw patterns where others searched for specific links between cause and events" (Stacey, 2000 ,p.267).

It is clear, therefore, that if Stacey's perspectives on organisations are accurate, that highly rational approaches to decision making based, as they are, on consideration of a wide range of criteria and extensive searches are unlikely to be fully relevant or effective. Indeed, if this radical model of organisations is true then it could be argued that it would not be sensible to rely purely on rational decision making approaches under such circumstances. Given these perspectives, intuitive decision making approaches based on pattern making would appear to be an appropriate strategy to choose. These issues are pertinent to the research focus of this thesis and will be explored in the forthcoming chapters.

However, a note of caution needs to be made at this point. The radical organisational ideas presented by Stacey are new, untried and have not, at least yet, gained widespread currency. Stacey himself suggest that:

"...the development of the theories I will outline ... are in their infancy. It follows that their implications for action in organisations are far from clear at this point" (p.254).

SUMMARY

This chapter has attempted to provide a coherent historical overview of some of the major changes that have taken place within the last half century in education in the UK. It is within this changed and changing environment that head teachers are charged with making effective and timely decisions. The case has been presented for why decision making is a critical skill for the head teacher and decision making has been described as leadership in action.

The most notable changes within education impacting directly on the role of the head teachers have been the increase in the range of decision making (following LMS, for example) and in the vastly changed accountability environment underpinned by dramatic changes in the education legislative landscape.

Issues surrounding increasing accountability, complexity and uncertainty and the manner in which they may affect the decision making strategies employed by head teachers have been explored, as has the extent to which the use of metrics may have a negative impact on decision making. The following chapter will look at different approaches to decision making, some of which have been alluded to in this chapter.

2

An overview of theoretical approaches to decision making

"... when experts make decisions, they don't logically and systematically compare all available options. That is the way people are taught to make decisions, but in real life it is much too slow"
Malcolm Gladwell, 2005, p.107.

INTRODUCTION

Classically, theories within the first approach of decision making are based on the premise that human decision making can be modelled in terms of formal processes predicted by theories of rationality, logic and Bayesian probability. There has often been the assumption that good decision making follows a rational approach in which decisions are based on expected outcomes and where there is an attempt to select a course of action that will bring about the optimal outcome. This is often referred to as optimisation.

Western civilisation has been dominated by the notion of the superiority of the rational. This can be traced all the way back to Plato. It is not without good reason that Alfred North Whitehead (1979, p.39) said *"...the safest general characterization of the European philosophical tradition is that it consists of a series of footnotes to Plato."* In Plato's "The Republic", the ideal society is ruled by the cool pure reason of the philosopher kings. Under the philosopher kings comes the military classes and at the bottom of society's hierarchy are the artisans. Thus, a clear three layer hierarchy of value and worth is created starting with cool reason as the most worthy attribute

and base emotions associated with the artisan classes as of least value. It is clear that Plato intends this model of society to be a template for individual humans, so that on an individual basis, too, reason is exalted above emotions:

"when the reasoning ... is asleep; then the wild beast within us, gorged with meat or drink, starts up and having shaken off sleep, goes forth to satisfy his desires; ... but when a man's pulse is healthy and temperate, and when, before going to sleep, he has awakened his rational powers, and fed them on noble thoughts and inquiries, collecting himself in meditation; .. he attains truth most nearly" (Jowett, 2000, pp.230-231).

Only within the past few years has serious interest been generated in the notion of how emotions and intuition interact with reason in the field of leadership. There has been an increasing recognition that the nature of the real world limits a human decision maker's ability to implement truly analytic processes. This has led to the development of complementary approaches that comprise what are called naturalistic or intuitive theories of decision making. This approach is based on the premise that people use informal procedures to make decisions within the restrictions of available time, limited information, and limited cognitive processing capabilities.

In the previous chapter the historical background context for decision making within headship was considered and some of the factors that may influence decisions. This chapter will provide a theoretical basis for understanding decision making in education. Two general but highly influential approaches to understanding decision making will be contrasted. These approaches differ in a number of key respects and

can be described in two broad terms: rationalistic/analytical approaches and naturalistic/intuitive approaches.

RATIONAL AND NON-RATIONAL APPROACHES

Intuitive decision making offers a different way to think about decision making than the analytic approach. Unfortunately intuition is a term that *"means a lot of different things to many different people"* (Hogarth, 2001, p.5) and can create confusion. At one extreme it can refer to an almost magical ability associated with a paranormal "sixth" sense. It can be easy to fall into the trap of associating intuition with the irrational and abandon ourselves to mysticism and any form of reasoned explanation.

However, it is possible to unpack intuition and thereby gain a deeper understanding of the concept that can have practical applications. Klein defines intuition simply as *"the way we translate our experience into action"* (2003, preface). This roots intuition directly in actual experience rather than simply the application of cognitive abilities. Hogarth (2001, p.14) proposes that, *"the essence of intuition or intuitive responses is that they are reached with little apparent effort, and typically without conscious awareness. They involve little or no conscious deliberation."* Here the emphasis is on the role of consciousness.

Epstein's (1998) idea of a dual mode of thinking is helpful in understanding the different roles of intuition and rationality:

"... human beings operate by two minds, an experiential mind, which learns directly from experience, is preconscious, operates automatically, and is intimately associated with emotions and a rational mind, which operates according to logical inference, is conscious, deliberative, and relatively emotion-free. All behaviour is determined by the combined influence of the two minds, with the degree to which each contributes varying from almost no influence to almost complete dominance, depending on the situation and the person" (Epstein, 1998, p.9).

In his description of the two modes of thinking, Epstein identifies many of the characteristics of intuition. These are that intuition is based on experience, that it is rapid (sometimes appearing almost instantaneous as when you have a "flash of inspiration"), that it is linked to emotions and arises from the preconscious or subconscious. We have enough information in these definitions to contrast the major distinguishing features of the rational and intuitive:

Rational	Intuitive
Not necessarily based on experience	Embedded in direct experience
Conscious	Unconscious
Emotion free	Emotionally associative
Requires cognitive effort	Appears effortless
Time consuming	Very quick – instantaneous

This table identifies some key differences between rational and intuitive approaches, which are used as the basis for this research. As intuitive approaches are shown in

contrast to rational approaches it might be tempting to suppose that intuitive approaches are therefore, at least in some measure, irrational.

As irrationality is usually understood in contrast to rationality, it will first be necessary to have a clear understanding of what is meant by rationality. However, rationality is not always clearly understood and well defined:

"The word rational can be used in a number of different ways and its use can cause confusion" (Stacey, 2000, p.89).

Rationality often has a wide range of meanings, from a general sense of what is sensible or reasonable to the application of logic to a situation. It is also often defined in relation to emotions as being in some way an approach or viewpoint that is seen as being free of emotions or emotional influence. In their book "Theory in practice", Argyris & Schön (1974) explore the underlying ideas and assumptions that people make in their "theories of use", that is, their conceptualisation of their role and action within the context of their organisational setting and practice. They suggest that "being rational" is a common cultural aspiration and basic tenet of many people's theories of use and go on to describe "being rational" as associated with the following statements:

"Be objective, intellectual, suppress your feelings and do not become emotional: "Be cool. Don't let yourself get emotional"; "Remain as objective as possible"; ... "People expect policies to have rational explanations, not emotional reasons"; "Be

objective and clear, but don't come on too strong"; ... "Hold back your feelings even if it hurts." (Argyris & Schön,1974, p.67)

The wide range of definitions for rationality makes defining irrationality a challenge. Nevertheless some writers have tried. Dawes (2001), for example, makes recourse to logic in defining irrationality, emphasising that irrationality contains inherent contradictions:

"I define irrationality (irrational conclusions or beliefs) as conclusions or beliefs involving self-contradictions. Consider the simple example from the preface. A psychotic woman believes that she is the Virgin Mary because she is a virgin. Her belief involves a clear contradiction, because this woman simultaneously acknowledges that other people are virgins, but that she herself uniquely is the Virgin Mary" (Dawes, 2001, p.1).

Irrational behaviour then can be seen as behaviour that is illogical, unreasonable, lacking in any sense or thinking, action and behaviour that is self contradictory.

The characteristics that distinguish an intuitive approach from a rational approach have been delineated in the previous table but although that means that intuition can be described as a non-rational approach it does not follow that it represents an irrational approach to problem solving or decision making. Intuition is not without sense, logic or in any way inherently contradictory, the factors which could allow for it to be described as irrational.

Dreyfus & Dreyfus (1986) refer to the kind of intuitive approach that they have observed as characteristic of expert performance as "arational":

"Although irrational behavior—that is, behavior contrary to logic or reason—should generally be avoided, it does not follow that behaving rationally should be regarded as the ultimate goal. A vast area exists between irrational and rational that might be called arational. The word rational, deriving from the Latin word ratio, meaning to reckon or calculate, has come to be equivalent to calculative thought and so carries with it the connotation of 'combining component parts to obtain a whole'; arational behavior, then, refers to action without conscious analytic decomposition and recombination. Competent performance is rational; proficiency is transitional; experts act arationally." (Dreyfus & Dreyfus, 1986, p. 36).

Some practical examples might help to demonstrate the different characteristics of rational, intuitive and irrational approaches. If we consider the example of choosing a new house, it is likely that most people would start the process of house hunting in quite a rational manner. They could, for example, decide on an affordable price range for houses based on their income, set some criteria such as the number of bedrooms and might research the local area. They would without doubt search the local newspapers and/or contact/visit estate agencies.

It would be unusual for decisions to be made without visiting some houses that met the pre selected criteria. However on visiting a prospective house it is possible to suggest that they would switch to a largely intuitive strategy based on their first impressions of the house, what the owners told them about the house, their views of

the locality or a whole range of other highly subjective issue. They may go on to use their imagination to envisage what it would be like to live in the house and the extent to which they could make it a "home".

It is important to note that although these hypothetical house hunters are seamlessly moving between strategies, they are not welding the different characteristics together into some sort of hybrid mode of thinking. It is possible to distinguish very clearly when they are operating in a rational mode and when they are operating in an intuitive mode. For example, on the basis of their intuitive response they may revisit the rational selection criteria agreed, or it may be that a very positive intuitive impression of a house is overridden by their research into schools in the local area.

An irrational approach, on the other hand, would be one that was nonsensical. If the house hunters had established that they could afford a property in the region of, say, £250,000 it would be irrational to abandon the agreed criteria and only look at properties in excess of £5 million. Or, having established that they want to move to the country, only consider houses that were inner city.

So it seems likely that people employ rational and non-rational (or "arational") strategies to suit the conditions and circumstances in which they find themselves. Dreyfus & Dreyfus suggest that rational approaches are, in fact, approaches that are employed by non-experts and that being forced to apply rational strategies when arational approaches would be more appropriate to the circumstances and the skills of the decision maker may be counter productive. Argyris & Schön in their study state that:

"Rational behavior means being objective, intellectual, and unemotional. The cases show that this does not help the actors reach their goals" (Argyris & Schön, 1974, p.80).

Dreyfus & Dreyfus go further than Argyris & Schön to suggest that applying rational approaches may lead to the expert regressing to the level of a beginner. They have considered the implications for this understanding of rational and arational in the application of human knowledge to computer based "expert systems":

"... expert systems are never as good as experts. If one asks the experts for rules one will, in effect, force the expert to regress to the level of a beginner and state the rules he still remembers but no longer uses. If one programs them on a computer, one can use the speed and accuracy of the computer and its ability to store and access millions of facts to outdo a human beginner using the same rules. But no amount of rules and facts can capture the knowledge an expert has when he has stored his experience of the actual outcomes of tens of thousands of situations" (Dreyfus & Dreyfus, 1986, p.108).

Thus it can be seen that an intuitive approach is far from an irrational approach but rather an approach based on experience, unlocking powerful mental processes. That the unconscious mind has a powerful influence on us is reported by a number of commentators. Hogarth (2001, p.59) for example, asserts that, *"many processes of which we have no conscious awareness affect what we see and learn and how we*

react to the world" and Myers (2002, p.28) suggests that *"sometimes we intuitively feel what we do not know we know."*

Perhaps the most persuasive account of the power of the unconscious mind comes from the work of Damasio. In his book The Feeling of what happens (2000) he relates the story of one of his patients, Emily:

"When [Emily] a face agnosic patient is shown, in random presentation, faces of people whom she has never met as well as faces of close relatives and friends, and when we simultaneously record her skin conductance with a polygraph, a dramatic dissociation takes place. To her conscious mind, the faces are all equally unrecognizable. Friends, relatives, and the truly unfamiliar generate the same void, and nothing comes to mind to permit the discovery of their identity. And yet, the presentation of virtually every face of a friend or relative generates a distinct skin-conductance response, while unknown faces do not. None of these responses is noticed by the patient. Moreover, the magnitude of the skin-conductance response is higher for the closest of relatives. The interpretation is unequivocal. In spite of being unable to conjure up knowledge in image form, such that conscious survey would permit recognition, the patient's brain can still produce a specific response that occurs outside of conscious survey and betrays past knowledge of that particular stimulus" (Damasio, 2000, p.300).

The application of rational and arational or intuitive approaches to decision making within the context of primary school leadership is at the heart of this research, and an understanding of the key differences between these strategies and their

appropriateness to real life situations as outlined in this section will be crucial to making sense of the research outcomes.

RATIONALISTIC APPROACHES

Researchers in the analytic tradition have emphasised explicitly computable processes to take in information, manipulate it symbolically and generate some output. Analytic theories require some kind of formal comparison among decision alternatives using deliberate and procedural rules that quantify those alternatives. This assumes that all pertinent factors can be both identified and quantified in terms of their absolute or relative impact.

Rationalistic approaches have been supported by experiments and some of the characteristics of rationalistic approaches are a direct result of the limitations and demands of experimental methodologies:

"Most traditional decision research has involved inexperienced people who are engaged in laboratory tasks where contextual or situational factors play a limited role" (Zsambok, 1997, p.4).

By limiting the context and situational factors, the experimenter can reduce variables and ensure consistency. This is easier with novices who are just developing their skills and have no experience of situational factors to influence their decision making. In the experimental context "expertise" just introduces difficult and uncontrollable variables.

Traditional approaches have relied on generating simplified, artificial scenarios for prompting decision making. These often lacked relevance and meaning to the decision maker. However, by simplifying the scenario it is easier to set clear decisions, goals and objectives and enable easy judgements to be made about the effectiveness of the outcomes. Most traditional approaches to decision making presume a simple notion of what constitutes a good decision - in effect it is a decision that meets the goals or objectives of the experimental scenarios.

Perhaps the major characteristic of the rationalistic decision making approach is the assumption that the decision making process essentially consists of first generating options and then choosing from among them. This is a highly rational approach that is still largely advocated within the business and educational sector. A whole host of rational decision making tools such as decision trees and regression analysis are offered as examples of "good" decision making at training seminars and when it is found that people rarely use them it is considered evidence of problem solving incompetence on the part of practitioners.

Finally, traditional approaches to decision making have tried to uncover a general decision making ability or decision making process. They attempt to devise and generate processes that have theoretical application across a wide range of contrasting domains. The implication has been that if one can muster all the relevant information and skills then the actual act of problem solving is straightforward and applicable across a wide range of decision making environments.

In summary, the main characteristics of rational/analytical approaches are: assumes clear goals and outcomes; is a formal process proceeding in a step wise manner; involves the generation of a range of options; includes the selection of the best option to create optimal outcomes (optimisation); is generalisable across a range of domains; and is a process in which experience is not an essential prerequisite.

An example of a rationalistic approach might be illustrative. Imagine someone wanted to purchase a car. They have a clear, unambiguous goal or objective. They might proceed in a very logical step wise manner – looking through car magazines and visiting show rooms, arranging test drives among many other preliminary activities. They could consider criteria to use for selecting a car, such as price, carrying capacity, engine size, colour and accessories. Their efforts would provide them with a range of choices and they could use their criteria to make the best final choice (optimising). However, there are problems with rationalistic methods.

PROBLEMS WITH RATIONALISTIC APPROACHES

A core assumption of analytic theories is that the goal of decision making is to reach an optimal decision as assessed along some criterion dimension. This can be defined in terms of maximizing potential benefits. A premise related to achieving optimality is that all possible hypotheses must be analysed because there is no prior means of knowing what alternative will be optimal. As a consequence, analytic decision making entails extensive computations, except for very simple problems.

In the illustration of purchasing a car, the potential car owner is faced with the problem of how to decide which criteria to use. The list is potentially endless so it would have to be prioritised, and it is not immediately clear how this task would be accomplished. Some of the criteria would perhaps be more important than others such as price, but it is clearly a matter of personal judgement and circumstance as to whether price is more important than, say, engine size or colour. It is therefore clear that even apparently simple decision making scenarios that seem ideal for rationalistic approaches are fraught with problems.

Let us take another example. Suppose someone wishes to buy a house and therefore needs to purchase a mortgage. This is a common decision and a very important one. It is a decision that presumably would be best made in a very rational manner. Let us say that their goal is to minimise their monthly payments and they have the following information:

Mortgage lenders	**Mortgage rate**
"Safe as Houses" Building Society	5.25
"Trust Us" Banking Ltd.	6.00
"Houses R Us" Building Society	4.75

(For the sake of our illustration we will skip over the immediate problem that we have information on only three mortgage lenders – in reality the list could be virtually endless and this would provide us with our first decision making problem).

Given the clear goal – to minimise monthly payments – the choice is obvious. They should arrange a mortgage with "Houses R Us". Indeed it is possible to argue that this

is not really a decision as there is only one mortgage lender that would enable us to fulfil our goal. Thus optimising has been easy.

However, let us imagine that they are given some further information on the type of mortgage provided:

Mortgage lenders	**Mortgage rate**	**Mortgage type**
"Safe as Houses" Building Society	5.25	5 year fixed term.
"Trust Us" Banking Ltd.	6.00	2 year capped
"Houses R Us" Building Society	4.75	Repayment

Suddenly the decision has become much more difficult because the element of risk has been introduced into the decision scenario. For the financially cautious person, a five year fixed term mortgage might be best. The point is, it is difficult to see how a purely *rational* choice can be made as risk assessment is very much a personal preference.

The scenario can be made even more complex by adding information about the ethical investment standing of the providers:

Mortgage lenders	**Mortgage rate**	**Mortgage type**	**Ethical investor?**
"Safe as Houses" Building Society	5.25	5 year fixed term	No
"Trust Us" Banking Ltd.	6.00	2 year capped	Yes
"Houses R Us" building society	4.75	Repayment	No

For the ethical investor, "Trust Us" Banking Ltd. might be the best choice. Now an element of morality has been introduced into the scenario and it has become even

more difficult to make a rational choice as the importance placed on this information will vary widely from person to person.

These examples illustrate some of the problems with rationalistic approaches. In real life, decisions are often influenced by factors such as assessment of risk, morals and emotions. It can be difficult under these circumstances to see exactly how purely rational decisions can be made.

One of the major assumptions of rationalistic approaches is that of optimisation. It was the work of Simon within the field of economics (a bastion of rationality) that questioned the role of optimisation in real life situations. Simon coined the term "satisficing". He argued that people did not make decisions to find the best solution to a problem but to find the first acceptable or satisfactory solution:

"... when you make any particular decision, even an important one, you probably do not work out detailed scenarios of the future, complete with probability distributions, conditional on the alternative you choose. You have a general picture of your life-style and prospects, and perhaps of one or two major contemplated changes in the near future, and even of a couple of contingencies. When you are considering buying a car, you have a general notion of your use of automobiles, your income and the other demands on it, and whether you are thinking of getting a new job in another city. You are unlikely to envision large numbers of other possibilities that might affect what kind of car it makes sense to buy" (Simon, 1982, p.18).

People, therefore, are not rational decision makers in the strict economic sense. Instead, they operate within what Simon called bounded rationality. Rather than "maximize" outcomes, their decisions involve "satisficing". This is based on the notion that in evaluating alternatives, people set goals in the form of levels of aspiration (e.g. I need a job in Paris that pays at least £x per year). Alternatives are then accepted or rejected depending on whether or not they meet these aspirations.

Rationalistic approaches assume a direct linear process but some commentators, such as Schön and Lindblom, have emphasised the need for continual adjustment and adaptation during the decision making process:

"Inquiry mixes with and advances through action, for we do not first probe and then act but continue to probe and learn in every action we take. For complex personal and social problems, we practice, among other strategies of inquiry, trial-and-error, realizing that we cannot know very much until we act, must consequently learn from the consequences of the act, and use the new knowledge for another fallible step" (Lindblom, 1990, p.30).

Although analytic theories have been tested with great experimental rigour, there are a number of conceptual problems with this approach. Analytic theories generally assume some form of exhaustive option generation and evaluation, implying that people either can access all possible options or are somehow able to generate a complete set. Such a comprehensive search, however, would be extremely time consuming, if not impossible, in real world problems, given limitations on human knowledge and cognitive capacity.

Tests of analytic theories have generally been conducted in the context of relatively simple problems, in which decision makers have sufficient time and access to all relevant knowledge and information. Such situations may bear little similarity to complex real life situations. It is therefore possible to argue that analytic theories have little relevance in the real world. In real world domains, people are likely to deal with multiple pieces of information that may be ambiguous, highly inter-related, and potentially obscured or missing. Such limitations can make analytical theories intractable and highly implausible as descriptive models of human decision making.

Most rational models of decision making are basically "stagist" in approach. That is to say that they suggest a step wise approach to decision making. Parsons (1995) identifies at least seven different stagist approaches to decision making including Hogwood and Gunn's model from "Policy Analysis for the Real World" (1984):

Deciding to decide (issue search or agenda-setting)
Deciding how to decide (issue filtration)
Issue definition
Forecasting
Setting objectives and priorities
Options analysis
Policy implementation, monitoring and control
Evaluation and review
Policy maintenance, succession, and termination

However, Parsons (1995, p.79) points out the inherent limitations of stagist approaches, suggesting that in the real world decision making is not composed of

"tidy neat steps, phases or cycles". He identifies the problem of over valuing models which are simplified metaphors for the reality which is inherently complex.

Lindblom has rejected any stagist approach outright and takes an entirely different approach. He rejects a means-end analysis approach that is characteristic of all rationalistic methodologies. To Lindblom, decision making is more of a journey of discovery than an event. In the decision making process values, goals, objectives are all dynamically intertwined and cannot be separated into neat packages or stages. Since the goals are often negotiated through the decision making process itself, formal means-end analysis is often inappropriate or unhelpful. His approach has become known as an incrementalist approach emphasising the exploratory nature of much decision making.

Perhaps most importantly, Lindblom believes that the outcome of a decision making process should not be measured by objective outcomes (as these cannot be thoroughly known beforehand) but by the extent to which the people engaged in the decision making process agree that the outcome was/is "good". The fruits of the decision making process are therefore negotiated by the participants. This allows for the possibility that some may agree and some may not – *"what counts as a solution or betterment will vary from person to person" (Lindblom, 1990, p.4).* The weight of agreement should be the final deciding factor in qualifying outcomes.

The major characteristics of Lindblom's approach are that decision making proceeds through incremental change; that incremental change is successive (each change builds on the next); that decision making involves mutual adjustment and negotiation;

that decision making often involves trial and error and tends to be non-systematic; and that the test of a good decision is agreement rather than goal attainment.

Although Lindblom's ideas may appear esoteric, a personal illustration may help. My wife and I recently agreed to have the loft in our house converted into an extra room. We had thought of many reasons why this would be appropriate – we needed the extra room as a study and guest room, it would also provide another bathroom (much needed in a house with teenagers), and it would improve the market value of the property in the long run. We therefore set about seeking quotes from respected builders who could undertake this work. During the period that we were engaged in seeking quotations we were able to reflect on our decision. Although initially we were looking forward to the extra facilities that this building work would provide, we became aware of other issues. Suddenly the extra room seemed to be an extravagance, we could consider the possibility of the children leaving home as they take up places at universities and there were plenty of other simpler (and less costly) solutions to our problems. We decided to abandon the process and have not proceeded with the loft conversion.

This story is illustrative of Lindblom's ideas in that the decision making process was a period of exploration for us and it revealed issues that we either were not aware of beforehand or had dismissed with little thought. The process of engaging quotes focussed our minds and led us to consider different perspectives.

Judged from a mean-ends analysis point of view the decision making process was a failure – we did not go through with the building work. However, we had negotiated

the outcome through the process and were happy with the final conclusion. The fact that the initial goal proved to be inappropriate was a strength of the process not a failure.

It may be that Lindblom's incrementalist approach is not necessarily appropriate for all decision making scenarios. We would probably agree that the life or death scenarios that are the focus of Klein's research with fire fighters (the subject of the next chapter) have a clear, unambiguous outcome – saving lives. However, head teachers are quite likely to be working within a decision making environment where an exploratory approach, based on negotiated outcomes would be most appropriate. Although head teachers may not be subject to the kind of constraints necessitated by the work of firefighters (i.e. saving lives) their decisions may, in fact, be constrained by a wide range of complex and subtle factors that make an incrementalist approach a preferred option.

BIASES IN HUMAN DECISION MAKING

Researchers over the past few decades have postulated a range of "biases" in people's thinking and decision making. These biases are ways of thinking that are almost unconscious and affect our ability to make fully objective and rational choices. Hammond, Keeney & Raiffa (1999) describe a number of these biases that researchers have claimed to identify, which they refer to as "psychological traps", including:

The Anchoring trap

This occurs when people are unduly influenced by the initial piece of information they have been given. The example that Hammond, Keeney & Raiffa give is asking people the question, "Is the population of Turkey greater than 35 million?", and then asking them to estimate the population of Turkey. The number 35 million is purely arbitrary but it influences the estimates that people give. If the figure is changed to 100 million then the estimates people produce cluster around 100 million. Anchors can be quite obvious, such as in that example, or they can be more subtle. It is possible for choices to be influenced by a comment of a colleague you recently overheard or a headline in a newspaper you read that day.

The Status Quo trap

This occurs when people show a strong inclination to use alternatives that merely perpetuate the current situation. People are generally disinclined to be radical in their approach. The first cars, for example, were called "horseless" carriages and looked very much like their non-mechanised forebears. Another name for this trap might be the "play it safe" trap. Faced with a number of options people tend to choice the one that is closest to the status quo – in other words select what they perceive as the safest option and least radical approach.

The Sunk-Cost trap

Once people have invested effort, time or money in a venture they are inclined to continue even though it becomes self evident that the venture is a failure. People not only invest time into a project but also their personal or even professional kudos. It can be difficult for people to let go of a failing project because it is an admission of

failure. Under these circumstances, people often find ways of justifying continuing with the project even when it is self evident that it is failing.

The Confirming Evidence trap

People have a tendency to look for confirming evidence rather than actively seek disconfirming evidence. This is identified as a major weakness in decision making. It affects all areas of enterprise, including research. Not only do people not actively seek disconfirming evidence (which logically they should do for any major decision) but they often misinterpret it to fit in with a chosen theory or hypothesis. Karl Popper (1935) has argued that science does not advance through rational incremental exploration but through the generation of new paradigms that are subjected to unstinting criticism. Therefore falsifiability is the key test of any scientific theory. It is the constant search for disconfirming evidence that creates scientific progress. We are naturally drawn to that which confirms rather than disconfirms our beliefs. It takes active and determined effort to seek and recognise disconfirming evidence.

The Framing trap

Being clear about the problem is crucial in avoiding "wild goose chases" or pursuing cul-de-sacs. The importance of clear perception or framing in decision making is recognised by some researchers, including Klein. If you ask the wrong question you will get the wrong answer. Hammond Keeney & Raiffa (1999, p. 196) use this joke to illustrate this problem:

"A young priest asked his bishop, 'May I smoke while praying?' The answer was an emphatic 'No!' Later, encountering an older priest puffing on a cigarette while

praying, the younger priest scolded, 'You shouldn't be smoking while praying! I asked the bishop, and he said I couldn't'. 'That's strange,' the older priest replied. 'I asked the bishop if I could pray while I'm smoking, and he told me that it was okay to pray at any time'".

The joke is illustrative. It points out that how you frame a question may be just as important as the question itself. People are generally inclined to be "loss averse" – that is, more influenced by the possibility of a loss, than a gain, and, if questions are posed in terms of a loss they tend to elicit less favourable responses. Organisers of contests and competitions will want to emphasise the potential gains of taking part in their activity rather than the slim chances of winning. The national lottery would probably be less popular if the chances of winning (approximately 1 in 13,983,816) were printed on each ticket. Advertisers know that they must communicate the potential gains inherent in using their product or services rather than any losses (i.e. cost).

The Overconfidence trap

Overconfidence at the initial stages of a problem solving situation can lead to the development of too narrow a range of opportunities This is linked to the anchoring trap as relying on initial information can lead to overconfidence. In generating estimates or predictions, Hammond, Keeney & Raiffa (1999) suggest that people often focus on a prediction based on a mean or average value and ignore the range of possibilities within any set of predictions. This narrowing of thinking exposes people to either higher risk or missed opportunities when targets are based on an average. This would suggest that generating specific targets as opposed to a range of predicted

outcomes is potentially misleading. This is an interesting notion as education at the moment is highly target driven.

The Recallability trap

There is a tendency to give overdue weight to information that may be recent or lurid, leading to distorted thinking. If you have just read a newspaper account of an awful aeroplane accident you may be more anxious about your forthcoming plane journey even though you know that, statistically, flying by plane is a very safe form of transport. Any event that is dramatic and therefore can be recalled quickly from memory may have an unwarranted effect on decisions made. Time is an important factor. We are more able to recall recent events, situations or information and so they tend to have more prominence than information that, although very relevant, is further back in the past.

The Outguessing Randomness trap

People are notoriously bad at making predictions about potential future events or likelihoods. Having a run of bad luck the person may well persevere because each stroke of bad luck just confirms that the situation will soon take a turn for the better. Because people infer the chances of events happening based on their own experience (rather than statistical models) they are overly influenced by what they can remember or what has left a strong impression on them.

This list of biases is not exclusive but it does give a flavour of the issues that researchers have raised with regard to how people habitually deal with decision making. By describing them as "traps" Hammond, Keeney & Raiffa (1999) are

explicitly warning us against them, and presenting them as in-built limitations on human rational thinking.

However, not all researchers have perceived biases as examples of human weaknesses in the face of decision making. In order for these biases to become widespread it is argued that they must have proved useful and adaptive in certain circumstances. Using biases as examples of human decision making incompetence may be exaggerated:

"Some ... have begun to emphasize methodological and conceptual problems in the research on biases, and have concluded that, at the very least, human shortcomings have been exaggerated at the expense of human capabilities" (Cohen et al, 1995, p. 39).

Many of the biases described as "traps" by Hammond, Keeney & Raiffa can be seen as effective strategies in some circumstances. When faced with major change, perhaps it is best to play safe (the Status Quo trap) and there is always the chance that if you kept on going for a little bit longer you would eventually succeed (the Sunk-Cost trap).

The biases noted here relate solely to the individual. There is strong evidence (Asch 1951; Janis 1972; Sherif 1935) to suggest that social dynamics can influence and bias decisions in subtle but powerful ways. Janis (1972) described this phenomena as "group think". Murgatroyd & Morgan (1992, p.153) defined group think as when *"teams begin to see maintaining their ways of working as more important than*

finding new and more effective ways of working." They describe five "dangers" associated with group think:

Incomplete surveys of alternatives

This is where teams only consider options that reinforce the current ways of working.

Incomplete surveys of goals

This is where teams seek to minimize the value of the problem or task in order to avoid change.

Failure to examine risks

This is where teams fail to consider the risks inherent in maintaining current ways of working.

Poor information search

This is where teams restrict their search for information to the team itself rather than seeking information from those outside the team.

Selective bias in processing information

This is where teams interpret information to match their pre-conceived goals or plans.

Some of these group think biases can be seen as an amplification of individual biases. For example, the poor information search associated by Murgatroyd & Morgan with group think can be considered an extension of the Disconfirming evidence trap.

PERCEPTION AND FRAMING

Traditionally rationalistic approaches *"treat perception as unproblematic" (Claxton, 1997, p.7).* They take no account of the impact of perception on the decision making processes. However, many people working within the sphere of decision making have emphasised the importance of perception to effective decision making. DeBono has described perception as *"by far the most important part of thinking"* (DeBono, 1982, p.8) and in their book Winning Decisions, Edward Russo & Paul Schoemaker emphasise the importance of "framing":

"... different ways of looking at the world can be explained by what cognitive scientists call 'frames'. Frames are mental structures that simplify and guide our understanding of a complex reality. Everyone must inevitably adopt some kind of simplifying perspective. If we didn't focus our attention on some things and ignore others, we would quickly be consumed solely with trying to make sense of the world around us" (Russo & Schoemaker, 2002, p.21).

So how we frame or perceive the situation can be critical to the outcome of the decision making process. Gary Klein's model of decision making (which will be introduced and discussed at length in the next chapter) starts with perception in the form of cues – perceived critical aspects of the environment or situation for the decision maker. By placing this at the start of his simplified model he has also emphasised its importance. His model is also known as the Recognition Primed Model (RPM), again emphasising this aspect. However, he does not explain how this process operates or offer much guidance on how perception may be improved.

Perception can often form the basis of the intuitive response so often demonstrated in people who have high expertise. For example, studies of grand master chess players (Klein, Wolf, Militello, & Zsambok, 1995, and Chase & Simon, 1973) have revealed that they are able to propose strong moves after merely observing the position of the pieces on the board for a matter of seconds. This is the same recognition mechanism that allows everyone to recognise a friends face in a crowd. In effect grand master chess players have many "friends" that they recognise on the chess board. As Simon has commented:

"In any field of expertise, possession of an elaborate discrimination net that permits recognition of any one of tens of thousands of different objects or situations is one of the basic tools of the expert and the principal source of his intuitions" (Simon, 1982, p.26).

Hammond, Keeney & Raiffa (1999) suggest that one way of overcoming the problems associated with framing is to actively seek and examine the way other people at work might frame the same question or problem.

The importance of biases in perception and decision making in general is that they can and often do operate at a subconscious level. Perception itself is not always a conscious activity. We can therefore be influenced by perception and biases that we are not consciously aware of:

"Although perception requires attention, unattended stimuli can subtly affect us" (Myers, 2002, p.26).

It is therefore difficult to be aware of the all pervading and subtle effects of perception and its influence on action. Perception can also be influenced by a number of factors, including emotions.

EMOTIONS AND DECISION MAKING

Over the past few years there has been considerable interest in the role of "emotional intelligence" in the exercise of educational leadership. Emotional intelligence has become an increasingly legitimate concept with the publication of "Emotional Intelligence" (1996) by Daniel Goleman.

It is not clear what role emotions play in decision making, indeed, it is not just rational approaches that have ignored the role of emotions. Gary Klein's work (to be discussed in the following chapter) has produced a decision making model that is emotion free. But other commentators are clear that emotions play a major part in decision making:

"If information is sufficient to make the decision for us then - we, as humans, are superfluous. We are only called in to make decisions when an analysis of information is insufficient—that is to say, when we have to speculate or guess or apply human values and emotions. So the human element in decisions is vital. In the end all decisions are emotional" (De Bono, 1982, p.13).

In contrast, proponents of traditional rational approaches would have us believe that it is possible to remove emotions from the decision making process altogether and operate on a purely rational basis. The dominance of an "emotion free" scientific approach in western civilisation can be traced all the way back to Plato's The Republic. However, our increasing understanding of human rationality necessitates the need to find the role of emotions in reason:

"In order to have anything like a complete theory of human rationality we have to understand what role emotion plays in it" (Simon, 1982, p.20).

The work of Damasio (1994) provides evidence that pure rationality in decision making is a fallacy. In work with far-reaching implications for understanding mental life, Damasio, a neurologist at the University of Iowa College of Medicine, has made careful studies of just what is impaired in patients with damage to the prefrontal-amygdala circuit. Their decision-making is terribly flawed – and yet they show no deterioration at all in either Intelligence Quotient (IQ) test scores or any other cognitive ability. Despite their intact intelligence, they make disastrous choices in business and their personal lives, and can even obsess endlessly over a decision as simple as when to make an appointment.

Damasio explains the difficulty experienced by many of his patients in making even simple day to day decisions, on their apparent inability to make any emotional link or connection between the situations they encounter. They are no longer capable of having emotional reactions to events and as a result everything takes on a kind of grey

neutrality. Events lose their intrinsic meaning and effective decision making becomes impossible. Damasio has described the link between emotions and events as "somatic markers" and his theory is now known as the somatic marker theory. His work has led him to reject the purely rationalistic view of decision making:

"I had been advised early in life that sound decisions came from a cool head ... I had grown up accustomed to thinking that the mechanisms of reason existed in a separate province of the mind, where emotion should not be allowed to intrude ... But now I had before my eyes the coolest, least emotional, intelligent human being one might imagine, and yet his practical reason was so impaired that it produced, in the wanderings of daily life, a succession of mistakes, a perpetual violation of what would be considered socially appropriate and personally advantageous" (Damasio, 1994, p. xxxi).

Damasio's work would indicate that emotions are crucial in decision making and the selection of appropriate courses of action. There are examples where the impact of emotions is self evident. For example, most people (at least within Western European culture) would believe that emotions played a part in deciding on a marriage partner. Damasio's work would lead us to consider the possibility that emotions permeate all decisions. And he is not alone in considering that emotions can also play a major role in ensuring attention is focused on what is perceived as important:

"A very strong case can be made, and has been made by physiological psychologists, that focusing attention is one of the principal functions of the processes we call emotions. One thing an emotion can do for and to you is to distract you from your

current focus of thought, and to call your attention to something else that presumably needs attention right now" (Simon, 1982, p.21).

It seems likely that many of the decisions made by head teachers will have an emotional context. Educational leaders often have strong emotional beliefs about the value of education and it is likely that this will influence their decision making. Bottery (2007), for example, found that primary school head teachers held strong beliefs about the goals and priorities of education that centred around "doing the best" for the children. One head teacher interviewed said "[we undertook this initiative] because of the children's learning. ... they weren't happy ... and school should be a happy place to be." (see page 222).

It is within the arena of emotions that women are often credited within western culture of having particular intuitive abilities. In common parlance it is not uncommon to hear about "women's intuition" and, in particular, women are often assumed to be better at reading emotions in others than men. Social expectations are that women will be more interested and better at managing interpersonal relationships than men.

Unfortunately much of the research in this area is inconclusive. Graham & Ickes (1997), for example, found some evidence that women may be better at decoding non-verbal emotional signals than men but found no overwhelming evidence for superior abilities in other empathic abilities. Myers (2002, p.47) has stated:

"The gender intuition gap is easily overstated. Some men are more empathic and sensitive to nonverbal messages than is the average woman."

What does appear clear is that societal expectations and norms have a powerful and overwhelming role to play in our perception of gender differences. In western culture it can be argued that women are expected, assumed and supposed to be better at understanding emotions than men and that it is this expectation rather than any real abilities that are at play. It is certainly difficult to extricate the influence of social norms from individual differences and abilities. Myers (ibid, p.48) suggests that *"western tradition has a history of viewing rational thinking as masculine and intuition as feminine"* thereby adding a gender dimension to the historical dimension already given to the age old battle between rationality and intuition.

Given this, an in-depth consideration of gender differences will probably not be helpful in improving our understanding of decision making. It may be impossible to separate social influence from gender differences and discussions around female intuitive abilities often appear to gravitate towards the "mystical" view of intuition. Intuition is defined within this thesis in a very practical way that is rooted in direct first hand experience, not in any innate personal attributes.

BOUNDED RATIONALITY AND HEURISTICS

A more complex view of rationality is emerging from research based on bounded rationality. The old notion of a pure objective form of rationality is being replaced with notions of "bounded rationality", a phrase first coined by Simon and now the basis of much new thinking around decision making. Simon used the metaphor of a pair of scissors, where one blade is the "cognitive limitations" of actual humans and

the other the "structure of the environment". Minds with limited time, knowledge, and other resources can nevertheless be successful by exploiting structures in their environments. In Simon's (1956, p.129) words, *"a great deal can be learned about rational decision making ... by taking account of the fact that the environments to which it must adapt possess properties that permit further simplification of its choice mechanisms."*

Bounded rationality can be viewed as an "evolutionary" or "adaptive" perspective on decision making – *"good reasons can be given for supposing that evolutionary processes might produce creatures capable of bounded rationality"* (Simon, 1983, p.19). In this perspective human beings are seen to have developed a range of successful strategies for dealing with real life decision making situations. All the strategies must therefore be of some benefit or they would not have survived. They may however, of course, be considered maladaptive within the current social and cultural context which is very different from the evolutionary context in which they were developed. The fight or flight reflex is an obvious ancestral adaptation that may have been very effective when dealing with predators on the African savannah but will be less useful in dealing with a demanding boss in the 21st century.

Proponents of bounded rationality often refer then to an "adaptive toolbox" – the strategies that people use to solve decision making problems. The metaphor here is for a toolbox containing a range of tried and tested strategies available to meet the demands of decision making environments. These strategies are commonly known as heuristics, simple decision making processes that use stopping rules to end searches for options:

"The notion of an adaptive toolbox provides a framework for non- optimizing visions of bounded rationality, emphasizing psychological plausibility, domain specificity, and ecological rationality. Heuristics in the adaptive toolbox are modelled on the actual cognitive abilities a species has rather than on the imaginary powers of omniscient demons. They are designed for specific goals — domain specific rather than domain general — which enable them to make fast, frugal, and computationally cheap decisions. Heuristics are composed from building blocks that guide search, stop search, and make decisions. Heuristics that are matched to particular environmental structures allow agents to be ecologically rational. The study of ecological rationality involves analyzing the structure of environments, the structure of heuristics, and the match between them" (Gigerenzer, 1999 p.37).

Some examples of heuristics include:

"Recognition" heuristic

Faced with a series of options, one simple way to choose is to select the option that is familiar and recognised. This is a very fast decision making process that uses very little information.

"Imitation" heuristic

One way of making a choice is observing the choice of others. If in a similar situation you observe someone choosing a particular option it "seems to make sense" to choose that option yourself.

"Take the First" heuristic

Make the first choice that comes to mind. This may seem a bizarre choice decision strategy but it utilises intuitive decision making human abilities. How often have we been asked a question in a "quiz" contest, for instance, and hesitated to give the first answer that came to mind only to find that it was correct.

"Take the Best" heuristic

In this heuristic each choice is examined individually without reference to the others according to subjective criteria. When a satisfactory choice is arrived at the search is stopped and any remaining choices are not analysed. This heuristic is fast and uses minimal information.

"Minimalist" heuristic

Similar to Take the Best but, in this heuristic, options are searched in a random order. No subjective criterion is used to order the search. This may appear a strange rule but it is a very frugal approach that quickly arrives at a decision as long as the list of choices is not excessively long.

"Equal Weighting" heuristic

Rationalistic approaches to complex decision making employ differentiated weighting for criteria. In the illustration of choosing a car, for instance, price and car colour would have different values and so on for the other criteria. It is clearly much easier to apply equal weighting to all criteria. Although one would expect performance to drop using equal weighting, proponents of this heuristic claim that *"these simple models can outperform multiple regression" (Goldstein et al, 1999, p.175).*

To understand these heuristics better, a practical example might help. Someone choosing a restaurant for an evening meal might use the recognition heuristic to choose a certain restaurant on the basis of having often used it in the past. Alternatively, they might use the imitation heuristic in choosing a restaurant that a friend of theirs often frequents. Turning to the Yellow Pages they might start searching the Chinese restaurants (having selected Chinese as their subjective criterion) and choose the first that appeals (perhaps it is the nearest). Using the minimalist approach they would search the restaurant section of the Yellow Pages at random until an acceptable venue was found. Alternatively, they might just go to the first restaurant that comes to mind. Finally, if they had more time they might list the restaurants and weight them against a single criteria (such as type; Indian or Italian) with equal weighting.

These processes may all appear to be crude but it is argued that they are habitually used because they are effective and timely. Todd (1999) has shown how simple heuristics such as "Take the Best" and "Minimalist" can outperform much more rational and analytical approaches such as multiple regression:

"Despite (or often because of) their simplicity and disregard for most of the available information, these two fast and frugal heuristics can make very accurate choices. A set of twenty environments was collected to test the performance of these heuristics ...The decision accuracies of Take The Best and Minimalist were compared against those of two more traditional decision mechanisms that use all available information and combine it in more or less sophisticated ways: multiple regression, which weights

and sums all cues in an optimal linear fashion, and Dawes's rule, which tallies the positive and negative cues and subtracts the latter from the former. The two fast and frugal heuristics always came close to, and often exceeded, the performance of the traditional algorithms" (Todd, 1999, p.59).

The heuristic approach to problem solving also provides a legitimate role for emotions in the form of stopping rules:

"Emotions are often seen as obstacles to rationality. However, emotions like disgust or parental love can provide effective stopping rules for search and a means for limiting search spaces" (Gigerenzer & Selten, 1999, p.9).

INTUITIVE APPROACHES AND NDM

Natural Decision Making (NDM) theories are based on descriptive, rather than prescriptive models of the strategies employed by experienced decision makers in coping with real problems. Klein (1999, 2003), for example, bases assessments of the quality of decision making on the behaviours exhibited by experts rather than some formal model. In particular, intuitive theories dispense with the concept of optimising choice and assume that human decision makers use much less formal but much faster strategies.

NDM is essentially a fieldwork approach that tries to understand how expertise is demonstrated through decision making. It is based on observing experts in real life situations. Real life situations are often complex and "messy". They may have a

number of characteristics such as: ill-structured problems (not artificial, well-structured problems); situations that are uncertain, dynamic environments (not static, simulated situations); shifting, ill-defined, or competing goals (not clear and stable goals); numerous action/feedback loops (not one-shot decisions); severe time constraints (as opposed to ample time for tasks); high stakes (not situations devoid of true consequences for the decision maker); multiple players (as opposed to individual decision making); and organisational goals and norms (as opposed to decision making in a vacuum).

The work of Gary Klein and others strongly suggests that the model of decision making used by traditional methods is erroneous. In real life situations decision makers do not develop options and select from them – they characteristically arrive immediately at a decision without generating alternatives. Commonly, people working within these situations do not perceive themselves as ever making decisions:

"We asked the [fire] commander to tell us about some difficult decisions he had made. 'I don't make decisions' he announced to his startled listeners. 'I don't remember when I've ever made a decision.'" (Klein, 1999, p.11).

Clearly the mental processes which allow the fire commander to deny that he actually makes any decisions does not include elaborate investigation of options and then considerable thought given to the selection of the "best" option. Typically, people working under these types of real life stressful and demanding situations appear to come to a course of action without deliberation. NDM researchers emphasise the role

of mental modelling and imagery as the primary tool that decision makers use in these situations.

In contrast to the traditional notion of a general decision making process, all of the research undertaken by the NDM community points to the conclusion that decision making skills are strongly domain specific. There are no general decision making skills but rather domain specific expertise gained through long experience.

NDM also takes a more complex view of what constitutes a "good" decision. Because NDM models are domain specific and are based on real life situations, they can allow for situational factors in accounting for decision errors. They can acknowledge that human errors occur within complex decision making environments where multiple factors such as undefined objectives, missing data and uncertainty all play a part in what is perceived in hindsight as a decision error.

In the past there has often been a focus on the single human error that causes a catastrophe, i.e. an airliner crash or a chemical explosion. In reality, errors can often be traced back ad infinitum in these circumstances (the aeroplane crash could be blamed on the pilot's training rather than the fault of the pilot him/herself) and focusing on the individual human error can lead to a simplified understanding of the decision making sequence. As Lipshitz has commented; *"tracing bad outcomes to decision errors of individual decision makers produces erroneous conclusions"* (Lipshitz, 1997, p.152).

Although a field of research in its own right, some commentators have argued for NDM to sit within the domain of bounded rationality:

"Naturalistic decision making (NDM) falls clearly within the realm of bounded rationality – the art of making decisions with limited time, knowledge and other resources" (Todd & Gigerenzer, 2001, p.381).

Certainly NDM has many characteristics associated with bounded rationality, but bounded rationality is essentially a theoretical approach, whereas NDM is purely descriptive. That is its strength but also its weakness.

In summary, the main characteristics of NDM approaches are that they are descriptive rather than prescriptive, they take ill defined goals as normal, they emphasise the importance of perception, satisficing is considered more relevant than optimising, mental modelling is an element in decision making, and decision making is essentially domain specific and therefore accumulated experience (expertise) is essential.

THE METADECISION

The NDM model developed by Gary Klein is based on his observation of people working in time constrained and stressful situations. Under these circumstances, Klein and other researchers have proved that people do not pursue a rational traditional approach to problem solving involving the generation of multiple choices. However, in circumstances where there may be more time available, or where the problem is not deemed very urgent it may be possible and even desirable to adopt a more traditional

approach. So a key issue for anyone faced with a problem is "how to decide how to decide". This is the metadecision:

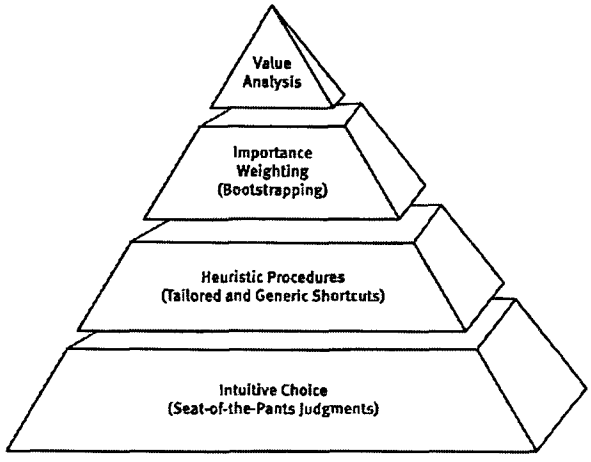
"Expert decision makers .. know that they must devote a portion of their time to making choices about the decision process itself" (Russ, & Schoemaker, 2002, p.21).

Because of the nature of Gary Klein's research situations the issue of the metadecision has not reared its head. However, this is likely to be a key issue in looking at decision making within educational leadership. There are likely to be many situations where head teachers have to make decisions under severe time constraints and poor information such as those situations experienced by Gary Klein's research subjects, but equally there will be other situations in which head teachers can take their time and gather information.

CONTRASTING AND COMPLEMENTARY APPROACHES

In this chapter the contrasts between rationalistic and intuitive approaches to decision making have been outlined. In doing so, the impression may have been given that these approaches are mutually exclusive and possibly that one particular strategy is superior to another.

Some commentators have an unambiguous bias towards one approach or the other. Russo & Schoemaker (2002) present different decision making strategies on a clear hierarchical structure:



It is clear from their text that Russo & Schoemaker consider intuitive approaches (at the bottom of the pyramid) to be far inferior to more rational approaches:

"To those who study decision-making, the most striking feature of intuitive judgement is not its occasional brilliance but its rampant mediocrity" (ibid, p.136).

As we shall shortly see, this is not an assertion that all people who "study decision making" are in agreement with.

It would not be sensible, however, to give the impression that rationalistic approaches should be rejected outright. Simon, in developing his theory of bounded rationality, is not attempting to dispose of rationality but is rather outlining the limits of rationality within real life settings. It is the Platonic view of "pure" rationality that must surely be questioned.

It would seem common sense to suggest that both approaches may have validity and that the appropriateness of a particular approach is likely to depend on a number of contextual factors, such as time constraints, complexity and uncertainty. But we can go one stage further and suggest that it is not simply a choice between one approach or another. Rather, we may be able, and be well advised to use aspects of both approaches. In this sense, we may consider the approaches outlined here as complementary rather than starkly contrasted.

In chapter one, the structure for decision making strategies and Beach & Mitchell's (1998) paper "A Contingency Model for the Selection of Decision Strategies" was considered. Their structure does not imply a bias for any particular approach but it does place the different approaches on a spectrum from non-rational to rational. The key element in their format is therefore rationality itself.

It may be possible to construct criteria spectra which highlight the distinctions between rational and intuitive approaches. It would then be possible to consider where on a spectrum would be the most appropriate place for any given decision making scenario.

For example, it would be possible to develop a spectrum with optimisation and satisficing at each extreme:

Optimisation ---------- Satisficing

The advantage of this presentation format is that it would allow us to envisage a progression from satisficing to optimisation. In other words, it is not a straight choice between either but there is possible middle ground, for instance, limited optimisation. Full optimisation would imply an endless search for options and is therefore an unlikely strategy to be used in its purest sense within a real life situation.

In a similar manner it is possible to construct a spectrum based on the number of comparisons:

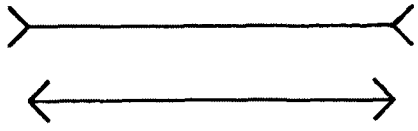
Many comparisons----------Single comparison ----------No comparison

This would enable the possibility of choosing whether to seek a wide range of comparisons for our decision or indeed none at all. For example, someone considering making a decision about installing double glazing in their house would probably not just accept the first quote given (the no comparison end of the spectrum) but would also be unlikely to seek fifty different quotes (the many comparison end of the spectrum). The most rational choice would be to obtain at least two quotes so that a single comparison can be made.

In his book "Intuition at Work" Klein (2003) identifies what he calls the "zone of indifference". This is where we have to choose from options which are very similar, for which there is very little to distinguish between them. This is a reworking of "Buridan's Ass", a paradox of medieval logic concerning the behaviour of an ass that is placed equidistantly from two piles of food of equal size and quality. If the behaviour of the ass is presumed to be entirely rational, it has no reason to prefer one

pile to the other and therefore cannot reach a decision over which pile to eat first, and so remains in its original position and starves. A simple everyday example of this paradox and the zone of indifference might be choosing which tie to wear with your clothes for work. In practice it doesn't matter which you wear. Klein makes light of the zone of indifference suggesting that we should just "accept it" and move on. However, a decision still needs to be made. In practice, very few of us find this difficult because we are used to making these kind of quick intuitive decisions and do not even notice we are making a decision. To attempt a highly rational and detailed analytical approach to choosing your tie in the morning could be considered absurd but it is worth considering how quickly people may decide things such as the criteria to use for a rational analysis (in the car choosing example, for instance) without considering that these are in fact intuitive choices. In this way, much intuitive decision making may be hidden, unrecognised and latent.

However, intuition cannot be relied on alone, just as neither can pure rationality be relied upon. We need to find the way in which these two approaches can complement each other. Perception can, as we have seen, have a powerful influence on our intuition. But perceptions can, and do, mislead us:



The top line appears longer to our perception. However, a ruler reveals the error. Here a rational, objective measure enables our intuition to be fully informed. So it is important that we make decisions using informed intuition. We need to *"recognize that our initial, automatic response may be incorrect" (Dawes, 2001, p.196).* The

form that this informed intuition needs to take is likely to vary considerably depending on the circumstances in which we find ourselves and the expertise that we bring to bear. In an area where we have considerable experience we may well be happy (and be well advised) to make a decision based on our gut feeling. However, in a novel environment in which we have little experience or one with extensive complexity or uncertainty we may be well advised to support our intuitive judgements with considerable amounts of rational analysis. We will need to use our expertise to make a judgement on the level of rational analysis needed for each decision making scenario. In this way, rationalistic approaches and analysis are an aid to intuitive decision making and in this sense the two approaches can be viewed as complementary.

SUMMARY

This chapter has attempted to outline the main differences between rationalistic approaches and what can broadly be described as intuitive approaches. The problems associated with rationalistic approaches have been considered and some practical examples to illustrate these have been used. The role of biases, perception and emotions has been enumerated and the ideas proposed by proponents of "bounded rationality" have been discussed. This has included the consideration of some of the heuristic approaches that have been uncovered by these commentators. A brief introduction to the area of Naturalistic Decision Making has been given and this will be explored in much greater depth in the next chapter when Gary Klein's work and his model of decision making is considered.

Finally, this chapter has ended with a consideration of the issue of the metadecision and the potentially complementary nature of rationalistic and intuitive approaches, suggesting that we should consider the need to use rationalistic approaches to support and inform intuitive decision making.

3
The work of Gary Klein

"Intuitive decision making improves as we acquire more patterns, larger repertoires of action scripts and richer mental models" (Klein, 2003).

INTRODUCTION

In this chapter the work of Gary Klein will be explored. Klein's work is of interest because he has developed a coherent view of decision making that is very different from the conventional rationalistic approaches so often promoted and/or taken for granted. An exploration of how his ideas about decision making relate to the experience of primary head teachers may shed useful light not only on the value of intuitive approaches but also on the value of rationalistic approaches.

KLEIN AND NATURALISTIC DECISION MAKING (NDM)

Naturalistic decision making is a branch of research that has gained prominence over the past fifteen years largely due to the work undertaken by a number of researchers such as Gary Klein (1999), Caroline Zsambok (1997) and Marvin Cohen et al (1995). The term Naturalistic Decision Making (NDM) first appeared in 1989 at a conference organised for researchers who were interested in exploring decision making outside of the traditional paradigms. Their work has led to a greater understanding of how expertise is demonstrated through decision making and provides a different

perspective on human decision making from previous traditional analytical decision making models. Indeed NDM has partly arisen in response to concerns about the lack of progress and applicability of rationalistic approaches which have tended to emphasise human incompetence in the face of decision making.

Gary Klein has been a major researcher within this field since its inception. In his book "Sources of Power" (1999), he outlines how he has undertaken his research and the implications of his research findings for decision making in stressful situations. He peppers his book with numerous examples (sixteen to be exact). Some of these are taken from incidents he has studied as part of his research, such as examples from the field of neonatal care, the army and the firefighting service. Others are well known incidents which are chosen to illustrate particular points. For example, he devotes a whole chapter to the "Vincennes shootdown" – which refers to the shooting down of an Iranian Airbus 300 by the USS Vincennes during the Iran-Iraq war in 1988. He uses this incident to illustrate the power of mental simulations (in this case to mislead).

The sources of power to which Klein refers in the title of the book are those intuitive skills that decision makers use in real life contexts:

"We have found that people draw on a large set of abilities that are sources of power" (Klein, 1999, p.3).

This title is not wholly useful. The word "power" can have several meanings. It can refer, among other things, to authoritative power, political power or physical power.

Klein is using the word power in a very different sense and this possibly allows for some confusion. In his notes he refers to the phrase "sources of power" as a term originated by Doug Lenat (1984), a researcher working in the field of artificial intelligence. Lenat used the term to denote analytical abilities and problem solving strategies. Klein is using the phrase in a completely different way from Lenat and it is difficult to see, given the roots of the phrase, its helpfulness in supporting the arguments that Klein postulates. In effect these "sources of power" are intuitive abilities that people bring to bear when making decisions in real life situations.

KLEIN'S METHODOLOGY

Gary Klein started working in the field of NDM after winning a research proposal in 1984 from the USA Federal government to look at how people make decisions under time pressure. The proposal was a response to a published notice from the US Army Research Institute for the Behavioural and Social Sciences. The location of Klein's research within the military/government establishment provides both a positive aspect, in that it allowed him access to demanding real life decision making environments, but also a negative aspect, in that it opens up the possibility of detractors making claims of vested interest and subsequent bias. The lack of an academic background to his work can also lead to claims of lack of academic rigour in some of his work.

On winning the research project Klein immediately set to work generating a research plan. That research plan was based on a number of features. It concentrated on the work of fireground commanders and used a participant observer approach, basing

observers in the midst of the "action" to observe actual behaviours. Most importantly, the research plan was based on two hypotheses:

Klein hypothesised that the fireground commanders would use a two-option approach. He worked on the assumption that, under time pressure, the commanders would not be able to consider a wide range of options. Instead they would have to consider only two options: one arrived at purely intuitively and the second used as a comparison to, in effect, test the initial, intuitive response. Klein expected to see analogical reasoning used extensively. He believed that commanders would be able to use their experience as a memory bank of instances that could be drawn upon in terms of how analogous they were to the immediate situation.

Klein explains how these two hypotheses or assumptions turned out to be false. Commanders did not use a two option approach – indeed they did not seem to be comparing options at all. And he found little evidence of analogous thinking. On the few occasions where it was used, it related to certain discrete aspects of the situation rather than the situation as a whole.

Klein has used his research findings to develop a coherent model of decision making which he refers to as the Recognition-Primed Decision (RPD) Model. This model is essentially descriptive rather than prescriptive in nature – it describes how the fire commanders made decisions without prescribing an ideal decision process. However, Klein uses the model to explore aspects of decision making that distinguish between the performance of experts and novices. This clearly has implications for training and professional support.

Klein's findings spurred him on to develop a new methodology to explore the area of decision making. He quickly decided to concentrate on commanders' stories of difficult scenarios they had worked on. He found his subjects more than willing to participate and relate their experiences to a receptive audience, but also states that *"it is important to select the right incident to study"*. We are told in his book that he often used two interviewers, one to lead the interview and the other to take notes but, unfortunately, we are not told what were the critical characteristics of the incidents that made them appropriate for interviewing. This could be perceived as a weakness in Klein's methodology.

Klein provides an insight into how he managed the interviews themselves and what tools he developed:

"The method we have found most powerful for eliciting knowledge is to use stories. If you ask experts what makes them so good, they are likely to give general answers that do not reveal much. But if you can get them to tell you about tough cases, non-routine events where their skills made the difference, then you have a pathway into their perspective, into the way they are seeing the world. We call this the critical decision method, because it focuses attention on the key judgments and decisions that were made during the incident being described"(ibid, p.189).

Klein goes on to describe a four pass process he developed for eliciting and analysing stories which involves firstly hearing a brief version of the story, to see if it has good possibilities, and to prepare to probe the important sections. On the second pass the

full story is heard and, at this point, details can be pinned down to a time line. The timeline can help get a sense of what happened and to visualize when and how long things took as well as catching inconsistencies.

During the third pass the thought processes are probed to see what a person noticed when assessing the situation and what alternate goals might have existed at a certain point. In the fourth and final pass each choice point is examined to understand how the situation was interpreted and how a course of action was chosen. This four pass system described by Klein can be shown diagrammatically:

Pass 1	Initial hearing of the story to see if it is likely to provide worthwhile material
Pass 2	A full retelling of the story including timelining
Pass 3	Probing the story for further information and illumination of key factors
Pass 4	Detailed examination of data and induction

In essence what Klein is describing is a narrative enquiry approach. Narrative enquiry has a number of positive benefits but also some problematic elements. For example, a narrative enquiry approach allows freedom for issues to emerge from the data and for the research to be rooted in real life situations. It can discern the meaning that interviewees ascribe to events and can take account of soft data such as body language. However, it can be argued that a narrative enquiry approach is inherently subjective, with the possibility of bias. In addition, it is an approach that requires a large amount of effort, with complex analysis and time consuming coding and

transcribing. This will often limit the number of participants that can be interviewed, reducing the sample size and creating difficulties with generalisation.

Klein and other NDM researchers have undertaken research into decision making in a wide number of domains including: the health care services (Bogner, 1997), firefighting (Klein, Calderwood & Clinton-Cirocco, 1986), military command and control (Kaempf, Klein, Thordsen & Wolf, 1996), the navy (Schraagen, 1997), aviation (Orasanu, 1993), the nuclear industry (Roth, Mumaw & Lewis, 1994) and business (Schmitt, 1997). To date, there appears to have been no research within the educational sector. Most of the research that has been undertaken has concentrated on how experts make decisions in critical and often life threatening situations, i.e. nurses, army commanders, fire workers. An area of expertise that has not been researched is decision making as it relates to personnel management and leadership within an educational environment.

KLEIN'S CRITIQUE OF RATIONALISTIC MODELS

Klein provides some critiques of the rationalistic models of problem solving that have historically been used by decision makers. In discussing these issues he proposes a generic four stage model of rationalistic decision making: define the problem, generate a course of action, evaluate the course of action and carry out the course of action.

This is, of course, a simplification of what could be described as stage models of rationalistic decision making and, as such, may leave out essential key elements.

Klein's first criticism of these stage models is that they are basically deconstructive in nature:

"Traditional approaches to problem solving treat the process as open to decomposition into component elements that are relatively independent of each other" (ibid, p.127).

The basic notion that rationalistic approaches are deconstructive is hard to dispute. However, many would argue that it is possible for rationalistic analytical methods to take account of independent variables. Regression analysis is such a methodology that is based on weightings and assignments of values to independent variables. There is no inherent reason why rationalistic models cannot take account of such components effectively. Of course, this may make them complex and possibly unwieldy but that is another argument.

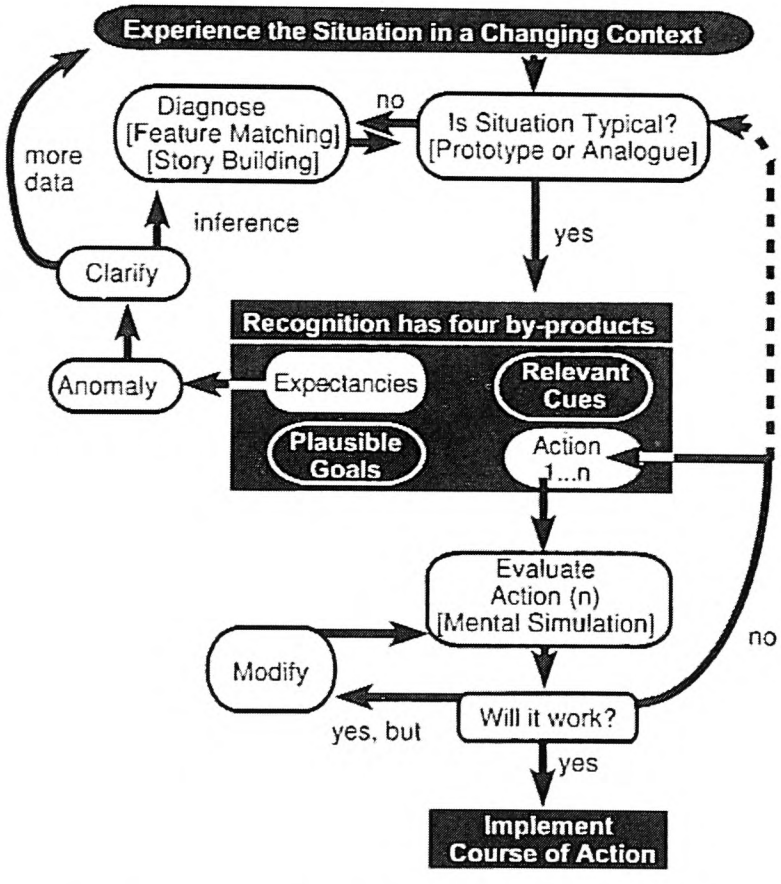
Although the deconstructive aspect of rationalistic models is a problem, it is also an advantage. It allows for the simplification of complex scenarios and provides a tool for understanding. Although Parsons recognises the problems inherent with rational models, he states that they provide a *"way in which ... complexity can be reduced to a more manageable form" (Parsons, 1995, p.80).*

Another criticism that Klein levels is that rationalistic models are linear in structure and that this does not match real life situations. However, Klein's own RPD model is basically linear in nature as it is represented as a flow chart (see below). It has a

number of iterative elements within it but these are not an uncommon feature of more traditional methods. Rationalistic/analytical decision making processes are often represented as flow charts for this very reason.

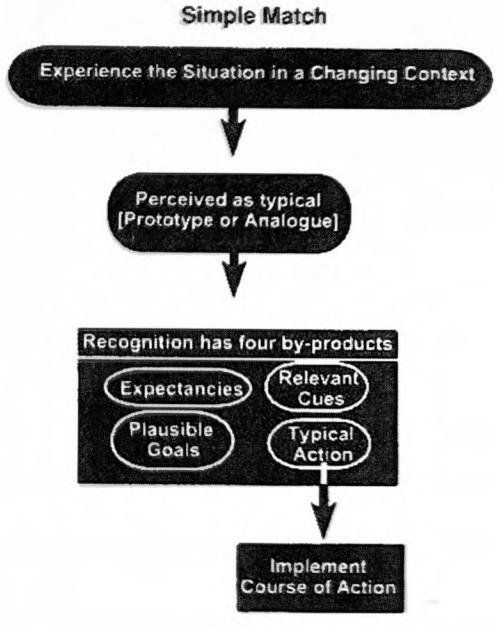
KLEIN'S RPD MODEL

Klein has used the research evidence and experience he has gathered to create a model of decision making that he called The Recognition-Primed Model. An illustration of his full model is shown below:



The Recognition-Primed Model from "Sources of Power", 1999

This full "integrated" model has undergone a number of changes and developments over time as Klein's researches highlighted new issues and concerns. The model originally arose from research observing urban fire commanders in action (Klein, Calderwood & Clinton-Cirocco, 1986) and was first described as the Recognition-Primed Decision (RPD) Model in 1989. The basic model was designed to describe how a simple match was undertaken by people faced with a known situation in a different context (such as experienced by the fire commanders). This basic model includes the four "by-products" identified by Klein as expectations, relevant cues, plausible goals and action:

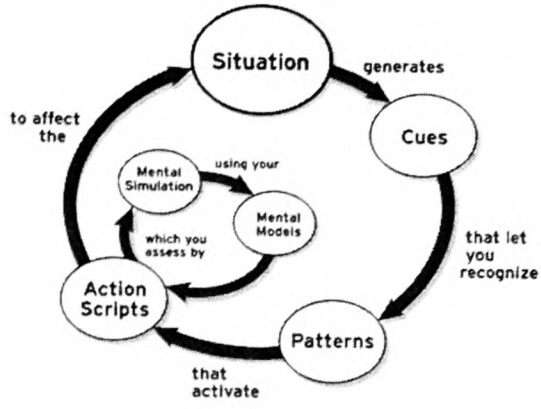


Simplified RPD Model Model from "Sources of Power", 1999

The full model expands the link between recognition, actions and implementation to cover situations where more detailed diagnosis or generation of other action plans is

needed. In particular, a major addition is the use of mental simulations to evaluate actions.

It is probably true to say that it is still subject to further development. In addition to creating the more elaborate "integrated" model from the basic design, Klein has also provided a simplified version of this model (2003) primarily aimed at applying his ideas to training and development:



RPD Model from "Intuition at Work", 2003

One point to note is that Klein's initial simple model is linear in structure. With the development of the "integrated" model Klein introduces cyclical elements and the simplified version used in "Intuition at Work" (2003) is entirely cyclical in structure.

As the title of his model suggests recognition is an essential element in the process of decision making as described by Klein:

"The commanders' secret was that their experience let them see a situation, even a non-routine one, as an example of a prototype, so they knew the typical course of action right away. Their experience let them identify a reasonable reaction as the first one they considered, so they did not bother thinking of others. They were not being perverse. They were being skilful. We now call this strategy recognition-primed decision making" (ibid, p.17).

As recognition is such an important element in Klein's model it will be examined in more detail in the next section of this chapter.

Klein distinguishes between a "singular evaluation approach" and a "comparative decision approach" in his work. He uses two examples to illustrate the difference between these approaches. Choosing items from a menu is an example of a comparative approach – where the decision maker compares the food items on the menu to select the one that is tastier or possibly lower in calories. This comparative approach is clearly closely aligned to rationalistic approaches and can be also described as an optimisation approach. The example that Klein gives of a singular evaluation approach is the car driver who finds himself low on petrol in an unfamiliar neighbourhood. In these circumstances he will stop at the first petrol station that is available, rather than the best station in town. This process is therefore very close to a Simon like "satisificing" process.

Klein claims that almost universally the subjects in his research study (fireground commanders) use a singular evaluation approach. They may consider different decision options but they do not compare them. Instead they consider each one in turn

and select the first one that, to their expert eye, has the possibility of success. This "singular evaluation strategy" is presented by Klein as an explanation of the ability of fire commanders to arrive at appropriate decisions so quickly.

This, however, provides the problem of how exactly they went about evaluating the selected option. Klein's answer is that they use the power of mental simulation:

"To evaluate a single course of action, the lieutenant imagined himself carrying it out. Fireground commanders use the power of mental simulation, running the action through in their minds. If they spot a potential problem, ... they move on to the next option, and the next, until they find one that seems to work. Then they carry it out" (ibid, p.21).

Klein's emphasis on mental simulations is a novel and a new contribution to our understanding of decision making. Mental simulations do not appear in traditional rationalistic approaches and yet we may all appreciate how we use mental simulations in making decisions. If we are given the task of preparing a presentation, for example, we will most likely mentally rehearse our presentation to evaluate its effectiveness and it is reasonable to suggest that when teachers prepare their lessons they imagine the likely response of their pupils. Novice teachers need to undertake detailed planning in preparation for lessons – older, experienced hands may need only a cursory mental simulation in order to ensure an effective lesson.

Klein also turns the cultural dominance of rationalistic methods (linked back in our western culture to Plato's Republic) on its head. Klein claims that novices use the

"comparative decision approach" so closely associated with rationalistic approaches whereas experts use the "singular evaluation approach" which would be much closer to what most would describe as an intuitive approach. This is because novices do not have any experience from which they can recognise relevant situational factors and therefore have to use a rationalistic approach as an inferior substitute for an intuitive response:

"logical thinking is a substitute for recognising a situation as typical" (ibid, p.23).

And later he asserts:

"The analytical methods are not the ideal; they are the fallback for those without enough experience to know what to do" (ibid, p.103).

It is therefore lack of relevant experience that can lead to excessive analysis, and the kind of analysis paralysis mentioned in the previous chapter.

It is perhaps important to note that Klein is not claiming that his RPD model is relevant in all circumstances. His work was specifically with decision makers working under highly stressful and time constrained situations. He does not make direct claims that the RPD model is applicable across a wider range of domains. Indeed, he does claim some advantages for rationalistic approaches when working with teams (ibid, p.29). However, it will be interesting to consider the extent to which the RPD model may be applicable within an educational setting.

Another major element in Klein's RPD model is the use of action scripts. In his model, once the decision maker has recognised key relevant features of the situation he will sensitise himself to the most important cues that the environment is providing, prioritise the goals that are capable of achievement and decide on a course of action. The chosen course of action will generate expectations of what will follow. Violation of expectations may prompt the decision maker to re-evaluate the situation. These action scripts are based on typical ways of responding based on prior experience. If the decision maker does not have an action script that matches the situation exactly he can quickly generate a variation from a script that is reasonably close to reality.

In summary the key characteristics of Klein's RPD model are that recognition is the initial stage in the decision making process, that mental simulations are used within a singular evaluation strategy to select the most appropriate option using a "satisficing" criterion, that the decision making process does not therefore generate a wide range of options and is as a consequence a very time efficient process, that decision makers use action scripts that are based on typical ways of working accrued through prior experience and that the decision maker is sensitised to specific cues in the environment and to violation of expectations.

Having identified some key aspects of Klein's RPD model, these will now be explored in further detail.

RECOGNITION AND INTUITION

Recognition is a key human ability. Pattern matching is an all pervasive human skill that we often take for granted but is essential for day to day living. We need to be able to recognise faces and places almost instantly and our ability to recognise similarities across time is fundamental to our effective functioning. The very ubiquity of this facility makes it difficult to analyse; it defies our analysis as it is probably the most potent tool in that analysis.

Klein sees intuition and recognition as intimately entwined if not the same. This is not an uncommon assertion. Earlier in this thesis DeBono's comment that "perception is intuition" was quoted. Simon has said:

"In any field of expertise, possession of an elaborate discrimination net that permits recognition of any one of tens of thousands of different objects or situations is one of the basic tools of the expert and the principle source of his intuitions" (Simon, 1982, p.26.)

Klein defines intuition as: *"recognising things without knowing how we do the recognising" (Klein, 1999, p.33).*

Klein argues that because intuition is based on "unknowing" recognition it has suffered from a bad reputation compared to judgement that comes from careful analysis in which the thought processes are accessible to all. The hidden nature of the process behind intuition makes it appear mysterious and therefore untrustworthy to

modern western eyes. Skilful decision makers may know that they can depend on their intuition but at the same time they may feel uncomfortable trusting a resource that seems so accidental. And indeed, intuition can be wrong. Our recognition abilities are not infallible. We can perhaps all recall instances when we have mistakenly recognised what we thought were friends in a crowd.

Klein recalls an interview with a firefighter who related a fire fighting incident where he believed he had used extra sensory perception (ESP) to save the day. This only seeks to highlight the mysterious nature of intuition and recognition. However, Klein was able to show that he was in fact using effective pattern recognition.

Klein is clear that recognition is a skill developed through experience and real life interactions: *"intuition grows out of experience" (ibid, p.33).* This means that at least some element of recognition can be developed through expanding the decision maker's experience base. One possible way of doing this is through the use of simulations. Repeated exposure to simulations and scenarios can aid pattern recognition abilities at least of the characteristics of the scenarios encountered. However, it also provides a problem. If intuition is based on recognising without "knowing" then it follows that experts will find it very difficult to articulate rationally the processes they undertake in making their decisions. This is in fact what we find. It is not uncommon for experts to make poor teachers because they do not "know" what it is they do to be effective and therefore find it difficult to pass their expertise on.

One implication of this may be that it would be more effective for novices to learn through observations of experts in action rather than dialogue with them.

Klein claims not only that expert decision makers have better recognition abilities than novices but that the expert has a completely different perspective:

"Experts see the world differently. They see things the rest of us cannot. Often experts do not realize that the rest of us are unable to detect what seems obvious to them" (ibid, p.147).

Klein proposes eight areas of recognition where experts show abilities that novices do not possess. He has described this ability of the expert as *"the power to see the invisible":*

Patterns

Experts can see patterns where novices cannot. Situational cues that appear obvious to experts are not immediately apparent to the novice. This perceptual sensitivity allows the expert to sum up the situation quickly and move on to deciding on appropriate actions.

The big picture

A phrase that Klein commonly uses is "situational awareness". Novices have poor situational awareness, experts have strong situational awareness. Novices can be confused by details because they do not know how they fit together. The expert's view of the "big picture" enables them to make sense of the context and impart meaning to the situation.

Anomalies

Experts have developed expectations of what will happen and are sensitised to violation of these expectations. Negative cues can be important. What is not happening is just as important to the experts as what is happening. Novices are not sensitive to negative cues.

The way things work

Experts have an awareness of how the different components of a situation work together. They have a holistic understanding gained through experience. The novice can have a good understanding of separate elements but is not able to develop a synthesis that explains how the separate elements interact together.

Opportunities and improvisations

Because experts have a holistic understanding of situations they can improve and discover "leverage points" to generate positive outcomes in new and novel ways. Novices are trapped into set rules and procedures and so are much less likely to be able to generate new ways of working.

The past and future

Experts can refer to situations in the past and use them to predict outcomes in the future. Without a sense of likely future outcomes the novice is only able to take one step at a time. This can enable experts to take intuitive leaps of understanding.

Fine discriminations

Experts can notice and take account of details that novices cannot. They have the ability to finely distinguish key features of situations and use this information to inform their decision making. Novices do not have these discrimination facilities and therefore can be easily overwhelmed by information when making decisions.

Managing personal limitations

Experts use meta-cognition. They can think about how they think about things and this gives them insights into their own limitations. They are sensitive to their own potential limitations and can therefore take timely steps to remediate the situation – by calling in another expert opinion, for example.

These recognition abilities are still purely descriptive but they are useful in discriminating some key differences in recognition between experts and novices. They are potentially observable. It will be interesting to see the extent to which head teachers show these abilities in their decision making. Analysis often starts with deconstruction and this is as true in education as in other domains. There are now many examples of deconstructive analysis of teaching used, for example, in Ofsted inspections of lessons and checklist of teacher behaviours such as used in a new teacher's induction period. There have been fewer attempts to synthesise these elements into a holistic picture that makes sense and illustrates the synergy in teaching and learning environments. The expert head teacher's ability to have a holistic perception of the dynamic nature of teaching and learning may be essential in developing a complete picture and deep understanding of the nature of educational practice.

Although Klein devotes a whole chapter in his book to *"the power of intuition"*, he fails to cast any new light or insights into the fundamental nature of recognition. His observations remain within the realm of the purely descriptive. In a later chapter on hyper rationality Klein unwittingly provides a model for recognition by using peripheral vision as a metaphor. He describes how "retinitis pigmentosa", a disease that impairs peripheral vision, has a disabling impact on the patient's life. He is suggesting that hyper rationality leads to a metaphoric loss of peripheral vision and so impairs one's ability to perform appropriately in the environmental context. Too much focus on data leads to an inability to understand context. However, this can also be used to aid our understanding of recognition. The expert is so good at recognition (or intuition) because of the strong peripheral vision that enables the expert to understand the relevance of situational cues.

Klein acknowledges that experience does not automatically translate into expertise. In his book "Intuition at Work" he states that *"experience is a powerful teacher, but experience by itself is not the most efficient way to learn" (Klein, 2003, p.47).* He outlines the major elements we need to put in place to ensure effective learning of expertise:

"To build up expertise we need to have the following: We need feedback on our decisions and actions. We need to actively get and interpret this feedback for ourselves, rather than passively allow someone to tell us if our decisions were good or poor" (ibid, p.52).

This makes sense if we accept DeBono's analogy. We need feedback in order to ensure at the earliest possible stage that we avoid developing mental tracks that literally lead us down the wrong path. Feedback will enable us to avoid poor mental habits and instead develop good ones.

Klein's emphasis on feedback and reflection also chimes in with Schön's (1982) view of the reflective practitioner. For Schön, action and reflection are not separate skills or events, instead they dynamically interact to create "knowing-in-action". In this conceptualisation of professional behaviour, reflection is an essential element, for without it there can be no interaction between action and knowing in the broadest sense. In terms of decision making Schön's notion of the reflective practitioner would not see recognition and then action as serial events but rather interacting elements within the problem solving setting (and this is similar to some other NDM models discussed later).

Schön uses the metaphor of the jazz musician to illustrate his idea of the reflective practitioner:

"When good jazz musicians improvise together, they also manifest a 'feel for' their material and they make on-the-spot adjustments to the sounds they hear. Listening to one another and to themselves, they feel where the music is going and adjust their playing accordingly ... each of the musicians has at the ready a repertoire of musical figures which he can deliver at appropriate moments. Improvisation consists in varying, combining and recombining a set of figures within the schema which bounds and gives coherence to the performance. As the musicians feel the direction of the

music that is developing out of their interwoven contributions, they make new sense of it and adjust their performance to the new sense they have made. They are reflecting-in-action on the music they are collectively making and on their individual contributions to it, thinking what they are doing and, in the process, evolving their way of doing it" [my underlines] (Schön, 1982, p.55).

Like the jazz musician, experts recognise and respond to the cue from the context they are working in (listen to the other players), develop actions (improvisations), notice sudden changes in rhythm or harmony (violation of expectations) and modify these according to the overall context (reflection). It seems that Schön's metaphor of the jazz musician can also be a description, at least in part of Klein's RPD model.

Although highly influential, Schön's ideas have recently come in for some criticism. Gilroy (1993), for example, has argued that Schön's conceptualisation of reflection-in-action generates a problem of infinite regress which Schön does not adequately address:

"The 'knowledge' produced by reflection can only be recognised by further reflection which in turn requires reflection to recognise it as knowledge, and so on" (Gilroy, 1993, p.138).

Yet other commentators have attacked Schön's work on logical and philosophical grounds. Newman (1999, p.153), for example, suggests that although Schön recognises the paradox of learning as expressed in Meno's paradox (an ancient paradox discussed by Socrates amongst others which questions how we can search for

knowledge of something of which we have no knowledge), he *"has neither properly identified nor resolved it"*.

Eraut has felt that Schön has not paid enough attention to the effects of context and time as a constraint on the reflective process which makes any claims for Schön's model of reflection-in-action and reflection-on-action to be generalisable across the broad spectrum of reflective practice to be suspect:

"Professional processes like situational analysis and decision making are so strongly influenced by the time frame and context in which they occur that they require an analysis which differentiates them according to these factors" (Eraut, 1995, p.18).

Eraut provides an analysis and simple model of cognition modes based on time:

Process	Speed		
Interpretation of situation	Instant recognition →	Rapid interpretation →	Deliberate analysis
Mode of decision making	Instant response →	Rapid decisions →	Deliberate decisions
Reflectiveness of action	Routinised unreflective action →	Action monitored by reflection →	Action following a period of deliberation

However, Schön's work and the role of reflection in developing expertise remain useful in trying to understand how experience can be translated into expertise. His emphasis on reflection as a mechanism for professional learning is widely accepted

and used to inform professional development particularly within the field of teacher education.

Klein claims that experts can see cues in the environment that novices will not notice. He calls this "the power to see the invisible". Experts, he asserts, can perceive fine discrimination, hidden or underlying patterns, alternative perspectives, and even surmise missing events or past events. They are able to call on these recognition skills when they generate mental simulations.

MENTAL SIMULATIONS

Klein believes that mental simulation is a key factor in successful decision making under stress. He defines mental simulation as the ability to *"imagine people and objects consciously and to transform those people and objects through several transitions finally picturing them in a different way from the start" (ibid, p.45).* Mental simulation is a process that Klein claims keeps recurring in his observations of expert performance and behaviour.

At one level, mental simulations can be considered synonymous with having a mental plan. This may consist of a very detailed visualisation or just a general idea of the major elements of a task. When deciding to decorate a room in our home, for example, we might mentally go through some of the steps (buying paint, wallpaper and preparing the walls for painting) and imagine the end result. Although we may formalise this by writing up a list of items to purchase, we more commonly just generate a general idea of what we need in our minds. The key characteristic of

mental simulations is that they are fast processes that require relatively little cognitive effort and rarely, if ever, involve choosing between a variety of courses of action. But Klein's contention is that the mental simulation that he observed among the firefighters, nurses and soldiers is more than just mental planning. Its purpose is evaluative. When making decisions under stress a proposed plan can be accepted, rejected or modified in the light of a mental rehearsal of that plan in action. This type of fast mental rehearsal or simulation can only be accomplished by someone with extensive experience of similar situations. It is the power of mental simulation to be evaluative that explains why the singular evaluation approach can be timely and effective.

Klein provides a number of examples of mental simulation in his research. For example, he relates a car rescue incident in which the head of the rescue team visualises how the roof will be removed and the driver removed carefully without further injury from the car. Klein claims that mental simulation can not only be used to understand the present but also to interpret the past. Accidents are often investigated by imagining what preceded and lead up to them.

Klein noticed two interesting common features of mental simulations he observed. Firstly, the simulations were not elaborate. They seemed to rely on just a few factors - rarely more than three. This may represent the limitation of working memory and the time pressure of making decisions in situations of imminent danger. Secondly it seemed that none of the simulations they observed had more than six steps or transition phases. Three factors and/or six steps – these seemed to be the mental constraints on mental simulation.

Klein fails to draw out the obvious issue here. If working memory capacity is the limiting factor in the number of factors and steps that can be accommodated within a mental simulation, then it would make more sense to use a rational analytical approach where human memory was not a limiting factor. Formal analytical methods could deal with many more factors and steps than seem possible using purely mental processes. Within the time constraints that Klein's participants were working, it is unlikely that they could have used formal methods. However, the issue is that decisions makers with fewer time constraints or demands would be advised to undertake a rational analytical approach if the problem they were grappling with had more than three factors and/or six steps.

Klein argues that relevant experience is necessary to be able to generate mental simulations and this seems very plausible. It would be difficult to understand how someone without any experience in, say, car mechanics could create a mental simulation explaining an anomalous noise from an engine. However, experience can also lead to over confidence (see biases in chapter 2) and as Klein himself acknowledges:

"The biggest danger of using mental simulation is that you can imagine any contradictory evidence away. The power of mental simulation can be used against itself" (ibid. 1999, p.65).

Given this observation it is difficult not to be reticent about the power and use of mental simulations.

Klein proposes an interesting and positive application of mental simulation which he refers to as a "pre mortem". This is an application that is used when an individual or team has chosen a course of action that is based on the notion that people select a plan on the obvious basis that they believe will work. However, that belief may blind them to overlooking contradictory evidence (an important bias). So when the course of action has been decided upon, the individual or team is asked to imagine that they are transported months into the future and that their plans have been carried out. And it has failed. The team is now challenged to consider reasons why it has failed. By taking failure as a given, it forces the decision maker to consider evidence that might have been overlooked or not considered in the past. Its success is based on the power of imagination to gain a new perspective on an issue.

One of the major benefits of mental simulations is that they can help to generate expectations, and violation of expectations can be a spur to further investigation and analysis. This is shown explicitly in the RPD model flow chart. In addition, mental simulations can act as a means of evaluating a course of action. It is possible to "run" a number of action sequences in our minds like a film repeat sequence in a short space of time to evaluate the possible benefits and pitfalls of the actions.

THE POWER OF STORIES

Klein devotes a whole chapter in "Sources of Power" (1999) to the use of stories. This is a clear indication of the importance he attaches to stories. We need to be clear here that the "stories" to which he is referring are accounts (verbal or written down) of real life events as related by the participants. They are not works of fiction in the normal sense of the word "stories". They are, of course, generated from the perspective of the participant and so we would expect accounts from different people relating to the same event to be different. However, we are not talking here about fictional narrative. Throughout this chapter the word story shall be used to mean narratives of real life events in the same way that Klein uses the word.

Klein considers the different elements in stories such as agents, predicaments, intentions, actions, objects, causality, context and surprises but concludes that there are three key features of "good" stories:

"Drama, empathy and wisdom are key. Stories are remembered because they are dramatic. They are used because we can identify with one or more of the actors. They are told and retold because of the wisdom they contain" (ibid, p.180).

Klein uses a "story" based on nursing care within a neonatal intensive care unit to illustrate these elements. The story in question revolves around how a nurse used her intuition based on experience to reach an accurate diagnosis of a baby's serious life threatening condition despite misleading signs from the heart beat monitor. The story

does contain all the key features that Klein describes. But the story only makes sense and has impact on practice because *"afterward the team talks about why the monitor had fooled them"*. In other words, for stories to have any impact on future behaviour they have to be told. It is the telling of stories that is crucial. It is only in the process of telling that stories enable others to integrate the "lessons" of the story into their own experience.

This is particularly important as the need for stories to be told is the major distinction between mental simulations and stories. Mental simulations by definition exist purely inside someone's head. Mental simulations that stay inside someone's head cannot assist novices in developing expertise or understanding contextual cues. When mental simulations become stories they become a powerful means of communicating expertise and experience. Klein describes stories as similar to mental simulations because they are evaluated using similar criteria but does not provide a deeper distinction. What he does claim for stories is that they link cause and effect and are a form of *"vicarious experience" (ibid, p.179).* This is an important point as it would suggest that stories could form the basis of effective training for head teachers in decision making.

In terms of linking cause and effect Klein contrasts reports of experiments with stories and argues for stories to be considered more seriously by researchers as sources of information. He asserts that reports of experiments can only comment on a restricted and controlled context whereas stories illustrate rich real life contexts. In a similar way, reports of experiments account only for a small number of restricted variables whereas stories involve multiple variables interacting dynamically. Whilst these

claims are true it is more difficult to see how this makes stories a more valid means of arriving at unambiguous cause and effect relationships. It is the ability of experiments to control the context and variables that make it possible for their conclusions to have scientific validity. Klein points out that although stories present a "trade off" between objectivity and subjectivity that *"for most purposes, the trade off is worthwhile" (ibid, p.182).*

Klein also claims a diagnostic function for story – how they can be used to help explain why a failure occurred or why results were not as expected. In this sense they operate in a similar way to mental simulations but their evaluative function is enhanced and brought to greater prominence.

The argument that Klein presents for the value and efficaciousness of stories is important for a number of reasons. Firstly, Klein uses story telling (or narrative enquiry) as his basic research methodology and argues strongly for stories to be more positively regarded by researchers. Secondly, he claims that stories can provide insight into the decision making strategies used by the story teller and, thirdly, his claim that stories provide *"vicarious experience"* has implications for designing decision making training opportunities for head teachers. However, stories need careful inspection and cross examination if they are to reveal their potential for casting light on the story teller's thinking and actions, and providing potential guidance for other head teachers. In other words, the lessons to be learnt from stories may not be self evident.

DECISION MAKING WITHIN TEAMS

Although the primary focus of Klein's research has been on observing individual decision making within stressful environments he does give consideration to how decision making strategies are used in teams. This is significant given the topic of this thesis, as increasingly head teachers are making decisions within a team working framework. There is considerable focus within current educational thinking on the value of what has become known as "distributed leadership". Although the term has a wide range of definitions it clearly implies an understanding of leadership that views it as a function of a team as opposed to a single leader of an organisation. In a major review of the literature on distributed leadership undertaken for the National College of School Leadership (NCSL), Bennet, Wise, Woods & Harvey comment that:

"... numerous, distinct, germane perspectives and capabilities can be found in individuals spread through the group or organisation. If these are bought together it is possible to forge a concertive dynamic which represents more than the sum of the individual's contributors". (2003, p.7).

This is a positive view of leadership that has a lot of currency at present and may reflect the increasing complexity in education and the consequential need to distribute leadership tasks widely across an organisation. However, we should note that Bennet, Wise, Woods & Harvey use the word "if". There are real problems with the current conceptualisation of distributed leadership. Some commentators have started to unearth some of these issues through analysis of the meaning of this relatively new concept. Bottery (2004, p.21), for example, argues that:

"... visions of distributed leadership need to take fully into account the asymmetry of power between different actors, which continues to be determined in large part by their formal positions within the organization. It is simply not the case that all actors have equal power or influence in decision-making situations".

It can be argued that the increasing levels of accountability within the educational system have had the tendency to concentrate and focus leadership tightly within the role of the head teacher. External inspection arrangements and other accountability measures habitually hold the head teacher solely to account for the performance of the school. Regardless of any well meaning aspirations for "distributed leadership", head teachers know that it is "their head on the block" if anything goes wrong. In such an environment it may not be realistic to suppose that decision making and leadership can be widely distributed across the school.

It is within this context that head teachers are making the key decisions for their schools. In his work Klein attempts to describe how team work can be strengthened through the leader sharing intent and how teams think, function and develop.

Klein points out that we often make requests of people: to fetch us something, do an errand or find a piece of information. We can be disappointed when they appear to fail – they didn't get us the right thing, find the right bit of information or perform the errand we asked of them. When this happens it can be because we have not been clear not only about <u>what</u> we want but <u>why</u>. Klein gives the example of asking a spouse to buy some glue from the supermarket on the way home. It doesn't sound like a

difficult request, and yet it is unclear what sort of glue should be bought. What the glue will be used for is an important piece of information that is missing. Without being explicit about what the glue is to be used for the person undertaking the request has difficulty making decisions. So in order to assist people making decisions, it is not only important to know what is wanted but why:

"When you communicate intent, you are letting the other team members operate more independently and improve as necessary" (ibid, p.222).

Klein calls this the power to read minds, which is a rather florid way of saying let other people know what you are thinking. It appears self evident that letting others know why you want something is helpful but it is not clear how much information is useful. It would be easy to overload people with information that merely inhibited their ability to make decisions. Klein says that *"the art of describing your intent is to give as little information as you can".* By describing this skill as an "art" Klein is implying that judgement needs to be used in assessing the amount of information to share.

Communicating intent can be an essential element in army command structures. In order for their troops to respond to the situation on the ground as they see it, the general needs to communicate intent as well as outcome so that his troops can improvise and respond appropriately. This analogy can be well applied to a whole range of domains, including, perhaps, education. Weick (1983) developed a simple framework for communicating intent: here's what I think we face, here's what I think

we should do, here's why we should do it, here's what we should keep our eye on, now keep talking to me.

Schools with distributed leadership structures may well need to consider how intent is communicated and Weick's framework could be useful in this regard. The effective functioning of school teams is a topic of great interest but the notion of distributed leadership remains an ill defined term.

In considering how teams work, Klein uses the metaphor of the mind: *"Watching a team think is perhaps the closest we will get to being inside a mind" (ibid, p.253).*

Using the mind as a metaphor for teams is a strange choice, particularly as Klein himself notes *"the concept of the mind is a terrible metaphor" (ibid, p.233).* Yet he goes on to justify this choice by considering some possible characteristics of the mind that may be useful in considering how teams work.

Firstly, he claims that we infer mental processes from observable behaviour and that we can do the same for teams. We can gain an understanding of how teams "think" by looking at their behaviour. Secondly, he claims that we can understand a team's "consciousness" by observing the matters that the team discusses and the gestures of the team members. Thirdly, he suggests that it is possible to discover the "pre-conscious" level of the team mind by interviewing individual members of the team to elicit what thoughts/issues were kept individual and therefore never made it into the team's consciousness.

These are strong claims for the metaphor of the mind and there are many objections that can be made. The structure of the mind itself is the subject of considerable academic debate and little common agreement. Many different models of the mind abound and vie amongst themselves for credence. To use such a metaphor is dangerous and not likely to throw new light on the subject. Klein is not clear what model he is using to describe the mind in his musings.

The notion that a team can have a consciousness or even a pre-consciousness is not immediately obvious and Klein does not really elaborate on how he feels able to make such a claim. He also claims that concepts of long term memory, working memory and perception can be applied to the functioning of teams.

The use of the mind as a metaphor, although problematic, may, if not taken too literally, be helpful in thinking about the functioning of team. Unfortunately, Klein goes one stage further and claims that the development of teams can be likened to the development of a child in terms of such factors as developing identity, competencies and cognition. Klein does not claim in his book any special knowledge of child development, or make any reference to credible established child psychological theories (of which there are plenty). This makes his claims further suspect.

Although Klein's use of the mind metaphor within the context of team functioning has to be regarded with some suspicion as it lacks a clear theoretical base, he has some interesting things to say about the role of communication in decision making within teams. The current emphasis on distributive leadership within education will undoubtedly mean that more and more decisions will be made within leadership teams

of which the head teacher is just the lead member. The ability of the head teacher to communicate intent may therefore be critical in effective decision making.

DECISION MAKING MISTAKES

Defining mistakes within decision making scenarios is fraught with problems. However, it is an important task as, if one is considering different decision making strategies, it will be necessary to take into account whether they are more or less likely to generate mistakes. Klein defines mistakes in the following way:

"A person will consider a decision to be poor if the knowledge gained would lead to a different decision if a similar situation arose" (ibid, p.271).

Klein's definition is credible and it emphasises the temporal nature of decision mistakes – one can only label a decision as a mistake in retrospect. Nobody decides to make a mistake. The factors that are likely to lead to increases in mistakes and/or poor decisions are often poorly understood.

Some commentators have claimed that biases (see chapter two) are one of the reasons why people make mistakes. They overlook contradictory evidence (the Confirming Evidence trap) or are overly reliant on first impressions (the Anchoring trap), for example. Klein quotes work undertaken by Lopes (1991) that casts doubt on previous research that suggested that biases were strongly implicated in poor decision making. Klein also suggests that the research undertaken within the "biases" paradigm is in itself subject to bias in not paying enough attention to contradictory evidence.

From reviewing 25 research scenarios across a number of domains, Klein identified three factors inherent in poor decisions:

Lack of experience

Klein says that lack of relevant experience was a major factor in over half the cases of poor decision making. This would emphasise the overwhelming importance of experience in good decision making. Yet Klein himself says *"we can learn the wrong lessons from experience"*. He goes on further to state:

"Expertise can also get us in trouble. It can lead us to view problems in stereotyped ways. The sense of typicality can be so strong that we miss subtle signs of trouble. ... In general, these shortcomings seem a small price to pay; however, there may be times when a fresh set of eyes proves helpful" (ibid, p.280).

Novices can have the advantage of asking the naïve question that can lead to a new perception of an old problem and more creative problem solving. The problem with the quotation above is that we may often not know when the time is right for a "fresh set of eyes".

Lack of information

Without sufficient information, decisions are made in a vacuum regardless of the amount of experience in the decision maker. The issue may be more than just lack of information. In chapter two Klein's different categories of information problems (missing, noisy, contradictory) were explored under the issue of uncertainty.

Uncertainty is often inevitable in a whole variety of circumstances in which decisions nevertheless will need to be made. For this reason alone, decisions can never be perfect.

Explaining away disconfirming evidence

A number of the decision errors that Klein noted were due to the decision makers explaining away contradictory evidence, what he refers to as the "de minimus" error. When decision makers were subject to this error they overlooked relevant evidence and did not recognise analogies. They explained away important pieces of information and failed to consider alternative explanations and diagnoses. The problem with Klein's analysis here is that previously he has suggested that the influence of biases has been over-emphasised by previous researchers, yet the "de minimus" error is a very clear example of a human decision making bias.

The analysis of decision making mistakes is always problematic. Rational methods often seek to simplify this issue by using a crude means-end analysis approach but commentators such as Lindblom have highlighted the difficulty of such an approach. Klein's emphasis on expertise (as opposed to just experience) and the subtle impact of information in this context is useful but only takes us so far. This is an area of decision making where there is likely to be continuing debate and disagreement for some time.

PRACTICAL APPLICATIONS OF KLEIN'S RESEARCH

This chapter has concentrated on Klein's book "Sources of Power" as this represents his most comprehensive account of his research and findings. He has, however, written extensively on the area of NDM. This has included papers on the practical applications of NDM to aid decision making (1997), reflecting and reviewing the RPD model (1997) and suggesting further research avenues (1995).

Klein followed the publication of "Sources of Power" in 1999 with "Intuition at Work" in 2003. This book represents an attempt at a practical application of the RPD model to decision making in general and in the book he presents the following "tips" for decision makers:

Start with intuition, not with analysis

Klein claims that starting with analysis will suppress the intuitive response. He suggests that the first task is to get an intuitive sense of the situation and then proceed to analysis if necessary.

Accept the zone of indifference

The search for a "perfect" decision will make the decision making process unwieldy and unmanageable. It is better to make a decision that is the best option that you can arrive at within your timeframe.

Map the strengths and weaknesses of options without attaching numbers

Klein urges decision makers to avoid a reliance on extensive number analysis and weightings of options. Comparing options is fine but attempting to apply precise numerical values is time consuming and distorts the process.

Use mental simulation to evaluate the options

Decision makers should spend some time imagining how their preferred option will turn out in order to make a final decision. If you are finding it difficult to imagine the option in action it may mean that you need to do more information gathering.

Simplify the comparisons

Klein suggests using a face-off strategy in which you compare options two at a time, selecting what appears to be the best and discarding the other.

Bring in the intuition of an outsider to check on your analyses

It is not unusual for professionals such as doctors to ask for a second opinion or advice from a fellow professional. This can be a powerful way of validating the intuitive response.

Don't try to replace intuitions with procedures

Klein says that intuitions are not accidental but reflect the knowledge gained through experience. To ignore intuitions or to try to replace them with procedures effectively cuts off the decision maker from a valid and valuable source of knowledge.

The suggestion that decision makers should start with intuition demonstrates how different his approach is from traditional rationalistic approaches. The "zone of indifference" that he mentions relates to the notion that where there may not be that much to choose between decisions it is inefficient to seek the "perfect" decision. This is basically very similar to the notion of satisficing as opposed to optimising. The extent to which these "tips" are relevant to decision making within an educational context is open to question. This research may shed some light on this matter.

Another example of Klein's attempt at a practical application of his research is a number of tools that he describes as aids to decision making. One of these is the pre-mortem (mentioned previously), another is the use of decision games. These are essentially scenarios that are used as the basis for problem solving with teams. They contain details of the scenario, which is usually charged with uncertainty and ambiguity, and outlines of potential dilemmas. Then the team is charged to generate a suitable plan of action. Klein claims that *"well designed decision games can be surprisingly effective at capturing the essence of tough decisions without many of the costs or other overheads of more complicated simulations or exercises"(2003, p.36).* He also suggests that they can: reveal the limits of mental models; help in seeing the importance of critical cues and patterns; fill in gaps in experience bases; teach better ways to handle uncertainty; provide practice in resolving conflicting goals; instruct on how to spot leverage points; help in the detection of problems; show how to see a situation from someone else's perspective; provide practice in allocating limited resources; help learn factual and technical knowledge more quickly, by putting it in a practical context; and offer practice in giving directions or presenting clear statements of assessments or intentions.

These decision games are basically a way of providing simulated experiences and, as such, may well accelerate the development of expertise. However, Klein provides only anecdotal evidence that they are an effective tool and there is no evidence of their efficacy within an educational environment. In "Intuition at Work" he also offers practical advice on managing uncertainty, how to size up situations, how to improvise and adapt plans and how to communicate your intuitions.

TRENDS IN NDM AND OTHER MODELS

NDM is a relatively new field of research and at the moment the only critique of the work in this area is undertaken by members of the NDM community themselves. Lipshitz (1995, p.103) has reviewed the work of a number of NDM researchers and identified six emerging trends in NDM research:

Diversity of form

NDM is generating a number of different models (Lipshitz identifies nine). This emphasises the domain specific nature of NDM research and how it contrasts with rationalistic models describing processes based on optimisation or maximising expected utility that can be generalised across diverse domains. This does present a problem, however, for the NDM community – there must be some commonalities across models to allow some generalisation to occur or the benefits of the NDM approach will be questionable.

Situation assessment

This is a common element in all NDM models and can be described as the "sizing-up" of situations undertaken by experts. There are differences, however, in how situation assessment fits in within the various models. Klein is clear that recognition is the first stage in the decision making process. Others such as Rasmussen (1995) and Nobel (1995) suggest that recognition and action interact in a much more dynamic way influencing each other. Either way all models agree on the central importance of recognition or situational awareness.

Use of mental imagery

This is also a common theme in NDM research and models. Traditional decision making models, with their concern for choosing among alternative options, emphasises the role of cognitive processes. The use of mental imagery on the other hand emphasises the ability of the decision maker to construct reasonable scenarios in order to arrive at decisions about appropriate actions. Thus, imagination becomes a powerful human capacity used in decision making.

Context dependence

The importance that NDM research places on context is in strong contrast to rationalistic approaches. This is one of the reasons for the numbers of different models. However, NDM researchers also often see context not just as a background factor in decision making but a dynamic element in the process itself.

Dynamic processes

NDM researchers undertake observations within dynamic environments. They reject the idea that decisions are discrete, isolated events but see decisions as ongoing processes. This view allows them to see how decisions are reviewed and updated as more information is forthcoming within dynamic contexts. The decision made becomes part of the context that then informs further decision making.

Description based prescription

NDM research starts with observation and description. Traditional approaches have tended to be highly prescriptive and emphasise what decision makers ought to be doing rather than what they actually are doing. However, in order to justify this research work it is important to move from mere description into application. NDM research is still relatively young and there is still much work to be done on the application of NDM insights to aid decision making.

Klein's RPD model of decision making is not the only model generated from NDM research. In another review of NDM undertaken by Zsambok (1997), she identified four broad models:

Recognition Primed Model (Klein, 1999)

This is the model that has been the subject of most of this chapter.

Recognition/Meta-cognition model (Cohen, Freemen, Thompson, 1997)

This model identifies some meta-cognitive skills used by expert decision makers, such as generating alternative stories when too much conflicting information is encountered and checking stories for completeness and consistency.

Situational awareness (Endsley, 1997)

This model describes three levels of situational awareness: perception, comprehension and prediction.

Mental model theory of expert decision making (Serfaty et al, 1997)

As its name suggests, this model has generated hypotheses on the basis of observable difference in performances of experts and novices.

It is clear that NDM is providing a rich area for research into decision making. Although applications of NDM models and theories are still largely at an early stage, there is reason to be optimistic that they have the potential to generate useful aids to human problem solving in complex environments. Their potential application to educational environments has not yet been explored.

SUMMARY

This chapter has presented an overview of the main ideas generated by Gary Klein in his research into decision making in stressful environments, including his RPD model of naturalistic decision making. The role of perception has been considered and Klein's ideas regarding the use of mental simulations, stories, decision making within

teams and decision mistakes have been discussed. The chapter has concluded with a brief overview of the current state of NDM research and itemised some of the models that have been generated by that research.

This research thesis will consider how applicable Klein's ideas and his RPD model are to decision making within primary headship. At first glance, there would appear to be many differences between the decision making environments that are the focus of Klein's research (fire fighting incidents, military encounters and health care environments) and the environment within which head teachers operate. The job of the head teacher is surely an important one, but it is not one in which human lives are constantly at stake. However, the ideas presented by Klein with regard to the influence of perception, the use of mental simulation and the importance of teams may well be useful in gaining a greater understanding of decision making within headship. In particular, Klein's RPD model provides a template against which the real life experience of head teachers in making decisions can be compared.

The NDM research community emphasises understanding how people actually make decisions in real life situations rather than prescribing how decisions should be made. It is time now to take a close look at how head teachers actually go about making decisions in real life. Klein's choice of methodology has implications for choosing an appropriate methodology for this thesis and this is the subject that is discussed in the next chapter.

4

Research methodology

"When undertaking research of any type or scale, planning is a vital preliminary" (Johnson, 1994).

INTRODUCTION

The purpose of this research thesis is to investigate how primary head teachers make decisions within their schools. More specifically, it attempts to consider the decision making approaches that head teachers use and the extent to which they habitually rely on intuitive or rationalistic methods, or a combination of methods, to arrive at decisions. The research therefore seeks to explore the thinking that head teachers employ. This is no small task.

It is unlikely that observations will yield the type of material that will provide significant insights into the subject of this thesis. Observations of head teachers may be able to provide a description of, for example, the range and breadth of decisions that head teachers make. Such information may be useful but it is not the subject of this thesis. This research does not attempt to provide a broad and sweeping overview of decision making within headship. Rather, it seeks to develop an understanding of how head teachers approach decision making and what strategies they employ. It will require in depth study and analysis of the thinking employed by head teachers on an individual basis. To achieve this it will be necessary to ask head teachers to reflect on their decision making and articulate their internal thought processes.

The consideration of the best way to undertake this task is important as is the methodological approach that is most likely to elicit the data needed to answer the research question. The approaches used by other researchers within the field of Naturalistic Decision Making (NDM) will be useful to consider and the issues of reliability and validity will need to be tackled, as will the extent to which it will be possible to generalise from any findings. The remainder of this chapter will attempt to answer these questions by firstly considering the issues of quantitative and qualitative methodological approaches and their underlying paradigms (i.e. positivism and phenomenology), then looking at the methodological approaches used by Klein and other NDM researchers and, finally, considering the issues of reliability, validity and the extent to which the ability to generalise can be assured.

QUALITATIVE AND QUANTITATIVE RESEARCH

Quantitative research can be defined as research that is seen as *"concerned with collecting facts and studying the relationship of one set of facts to another"* (Bell, 1999, p.7). The quantitative research tradition has therefore exhibited a number of favoured approaches to data collection in pursuing its aims. The survey has been a major data collection tool used by quantitative social scientists to consider trends and potential causal relationships. Examples of educational research surveys in the first half of the 20th century include; Thorndike's 1907 survey of dropouts, the Cleveland Schools Surveys in 1915 and 1916 into different aspects of urban life. Experimental approaches have also been popular, particularly with social psychologists, mimicking the well established apparatus of the natural sciences. Although surveys and experiments have probably the most common data collection methodologies used by

quantitative researchers, other approaches have also been used. Structured observation, for example, has been used to explore the interaction between teachers and pupils.

These data collection methodologies not only reflect the aims of quantitative research but also its underlying philosophical foundation. Quantitative research is closely associated with a view of science often referred to as positivism. Bryman (2004) identifies five characteristics of positivism:

1. The methodology of the natural sciences can be appropriately applied to the social sciences. This is contingent on the notion that people's feelings and personal preferences are largely irrelevant to the study of people as research objects;

2. The belief that it is only by the consideration of directly observable phenomenon that knowledge can be gained;

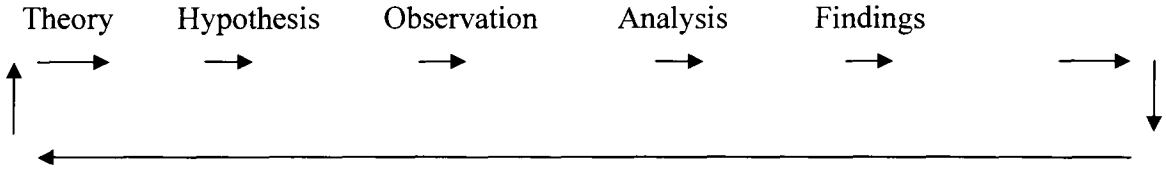
   > *"This means that phenomena which cannot be observed either directly through experience and observation or indirectly with the aid of instruments have no place"* (Bryman, 2004, p.14).

3. The notion that knowledge is arrived at through the accumulation of facts, leading to the development of theory. This theoretical conceptualisation is often expressed in terms of "laws";

4. The ability to deduce other facets of reality from established facts usually based on causal connections. Theory is then used to hypothesise and search for further observational data;

5. Finally a value system that is based on the ideal of objectivity.

One of the problems of a positivist approach is that its emphasis on observable data is somewhat contradictory. Much quantitative research seeks to explore expected causal relationships. The first impulse to research is therefore a theory which generates a hypothesis. Data collection follows and the analysis undertaken and findings generated all feedback into the theory. The process begins and ends with theory which is not an observable phenomenon. Bryman (2004) shows this *"logical structure of the quantitative research process"* as follows:



Therefore, theory "frames" the research and provides a template for understanding and interpreting the data. This implies that theory also may have the potential to predetermine the analysis.

Strongly linked to positivism is the notion of objectivity. Objectivity is a common ideal in quantitative research: *"Objectivity is one of the most cherished ideals of the educational research community" (1992, Eisner, p. 49).*

Quantitative researchers have often presented the issue of objectivity as non-problematic, but some commentators have queried the ability of any research to be truly objective. Eisner (1992) distinguishes between two types of objectivity: ontological objectivity and procedural objectivity. Ontological objectivity is the ability to comprehend things as they really are. This means that our view of reality and reality itself must correspond (correspondence theory). However, if we were able to comprehend reality directly we would not need a view in order to create a correspondence. Ontological objectivity therefore provides us with a problem and this can have practical implications. For example, there is a tendency in quantitative research to avoid studying what cannot be measured as it is measurement that we use for correspondence.

Procedural objectivity also has its problems. Procedural objectivity refers to methods that seek to eliminate personal judgement or bias. The development of testing at the beginning of the 20th century is a good example of procedural objectivity. As Eisner says:

"One of the most common examples of [procedural objectivity] is the objectively scored achievement test. Once the test has been constructed, identifying a correct or incorrect response does not require interpretation. Although there are interpretive issues at stake at the level of test construction, at the level of scoring, the optical scanner will do. Since no judgment is needed in scoring, the procedure is procedurally- objective – hence, we say that we have an objective test or an objective method for scoring responses" (Eisner, 1992, p.51).

Eisner suggests that all such tests *"provide no purchase on reality"* and Phillips (1989, p.61) that *"objective seems to be a label that we apply to inquiries that meet certain procedural standards but that does not guarantee that the results of inquiries have any certainty."* Designing and developing procedures that can truly be described as without bias is inherently difficult. The desire to remove cultural bias or gender bias from tests, for example, may perhaps say more about social-cultural context than "objectivity". What is considered a bias in one cultural context may not be considered so in another context or time.

If the most dominant paradigm associated with the quantitative research tradition is positivism then qualitative research has been strongly influenced by two major philosophical stances: phenomenology and symbolic interactionism

Early proponents of phenomenology include Husserl (1859-1938) and Heidegger (1889-1976). Phenomenology is concerned with our first hand experience of things, and the meanings that we ascribe to them. The main focus of our conscious experience of things is what Husserl called "intentionality", that is, the directedness of experience towards things in the world. It is through directedness that meanings are created. Literally, phenomenology is the study of "phenomena", the appearances of things and the ways we experience those things. Unlike positivism, phenomenology asserts that it is possible to know and study things which are not directly observable such as ideas and concepts.

Symbolic interactionism can trace its origins back to the works of Max Weber (1864-1920) and George H. Mead (1863-1931). Symbolic interactionists see humans as

active actors in their own experience. People interpret the reality they experience in the light of a wide range of factors such as the social cultural context, their personality traits, the behaviour of others and even their own behaviour. Symbolic interactionists are more concerned, therefore, with the interactions between individuals than the larger macro structures in society at large. Symbolic interactionism shares some characteristics with phenomenology, but both contrast in many fundamental ways with positivism. This can be demonstrated by contrasting Bryman's (2004) five characteristics of positivism, with those of phenomenology and symbolic interactionism:

POSITIVISM	PHENOMENOLOGY SYMBOLIC INTERACTIONISM
The methodology of the natural sciences is appropriate to the social sciences.	The methodology of the natural sciences is inappropriate to the study of society or man as it cannot take account of meanings generated by humans (the subjects of natural sciences such as molecules and atoms do not have feelings or generate meanings).
The belief that it is only by the consideration of directly observable phenomenon that knowledge can be gained.	Experience encompasses more than that which is observable so it is possible to study and explore things that are not directly observable such as ideas, feelings and concepts.
The notion that knowledge is arrived at through the accumulation of facts, leading to the development of theory. This theoretical conceptualisation is often expressed in terms of "laws".	Knowledge is individually constructed through "intentionality" and is continuously negotiated through interaction with reality, which includes other human actors.

The ability to deduce other facets of reality from established facts usually based on causal connections. Theory is then used to hypothesise and search for further observational data.	Theory should arise from the research findings not precede it in the form of hypotheses. Findings should be "grounded" in the research evidence.
A value system that is based on the ideal of objectivity.	A value system that is based on the impossibility of "pure" objectivity.

The theoretical basis of qualitative research in phenomenology and symbolic interactionism has lead to a number of characteristics of qualitative research identified by Bryman (2004) as:

Participant observation

Qualitative research has emphasised the need for the researchers to attempt to see the world through the eyes of its participants. Participant observation and anthropological approaches have therefore dominated much of qualitative research methods and approaches to data gathering.

Description

Qualitative researchers have often seen their main role as providing detailed descriptions of the contexts in which they are working. This often manifests itself in attention to mundane detail and the minutiae of everyday life as potential harbingers of deep understanding of social contexts and meanings. Analysis always follows detailed description.

Contextualism

Qualitative research often focuses on the contextualisation of data in order to extract meaning. It takes a holistic stance, looking at the relationship between the subject of the research and wider social entities such as community, tribe or school. Interpretation only becomes possible through understanding individual events in the light of their wider social context.

Process

Qualitative research has often focused on the processes involved in events studied. Rather than viewing events as static objects, the qualitative researcher sees them as part of a process embedded within social structure. This reflects the view of society as an interactive and dynamic entity often in a state of flux and change. In order to collect data that would throw light on these processes, many qualitative research studies have taken a longitudinal approach.

Flexibility/ Open structure

Qualitative researchers prefer an open structure to their research which allows for considerable flexibility in order not to impose pre set frames of reference on the data or the context they are researching. An open research strategy has the advantage of being able to explore areas of interest that arise from the research project itself. It also means that the researcher can allow for a change in focus as the research progresses and indeed the degree of initial focus for qualitative research can be quite tenuous at the outset.

Theory

Whether theory or the data should come first is a question that delineates much quantitative research from qualitative research. As already shown by Bryman (2004), quantitative research nearly always starts from a theoretical perspective. Qualitative researchers, however, taking a phenomenological approach, prefer theory to arise from the data. Glaser and Strauss (1967) epitomise this approach in their ideas that have come to be known as "grounded theory". In their approach a theory should not be superimposed on the data at the outset but arise from the researcher's immersion in the data and its context.

Charmaz (2005, p.508) suggests that the application of grounded theory leads to data collection and theoretical analysis going hand in hand, to support each other in an interactive process: *"Grounded theory methods consist of simultaneous data collection and analysis, with each informing and focussing the other throughout the research process."*

Easterby-Smith, Thorpe & Lowe (1991, p.76) see the possibility of using grounded theory to develop theory from the data through comparisons made by looking at the same event or process in different settings or situations. Regardless of specifics, the qualitative research tradition in contrast to the quantitative research tradition opposes the imposition of theory before data collection.

It can be seen then, that quantitative and qualitative research methodologies not only differ in the way that they collect and go about the research process, but also differ in their fundamental philosophical basis. However, in reality, there has been much

research that takes facets of both schools of thought into account and synthesises the methodologies effectively to accomplish research ends.

Having considered the distinctions between quantitative and qualitative research, their underlying paradigms and the distinctive nature of much qualitative research, the next section will consider how Klein and other NDM researchers have employed and combined methodological approaches.

NDM RESEARCH METHODOLOGIES

It is perhaps not surprising that NDM researchers have favoured a participant observer approach in much of their work. For example Di Bello (1997), undertaking research into the work practice of electricians maintaining the New York subways, sited herself and her co-workers amongst the technicians, donning overalls and being in the "thick" of the action. Where direct observations may not be appropriate or practical, simulated environments and scenarios have been used. Stokes, Kemper & Kite (1997) used flight simulators as the basis for their research into decision making of US Air force pilots and Roth (1997) used simulation scenarios to observe decision making in action amongst nuclear power plant workers.

Such qualitative methods often have a high cost in terms of data collection and analysis. For example in Xiao, Milgram & Doyle's (1997) research into decision making within anaesthesiology at a teaching hospital, 800 episodes were subject to analysis and 30 hours of audio recordings were generated.

Klein also started his early research into the decision making process used by fire commanders by adopting a participant approach:

"We planned to train college undergraduates as observers and put them in firehouses or in radio communication with the fire dispatchers, so they could quickly get to the scene of new fires and observe the decision making on the spot. We planned to observe the commanders during the fires and then interview them after" (Klein, 1999, p.8).

Two issues arose quickly from this research approach as it was adopted in relation to his study of fire commanders. The first issue related to being forced to wait around for the critical fire incidents to occur so that they could be observed. There is no clear control over when a fire incident will arise that make such events convenient to the researcher. The second problem was that when the fire commanders were interviewed following an incident they claimed not to have made any decisions at all. As Klein recalls *"for researchers starting a study of decision making, this was unhappy news" (ibid, p.11).*

Klein quickly shifted from a purely participant observational methodology to adopt a narrative enquiry approach:

"Rather than wait for the tough cases to happen, we asked the commanders to tell us about the big fires they had worked on during the previous few weeks or months. We treated each critical incident as a story and made the interview flow around the storytelling of the commanders" (ibid., p.13).

Apart from the obvious advantage that using a narrative approach enabled Klein to access immediately a wide range of experiences on demand rather than wait for those experiences to occur naturally through emergency incidents, it also enabled Klein to consider how the fire commanders were thinking about the incident they were involved in and that *"person's understanding of the situation"*. It is difficult to gain insight into the thought processes used by decision makers on the basis of observing them in action alone. Some discussion and dialogue is needed to tease out the thought processes employed by the decision makers in those situations. It was the information about the fire commanders' thought processes that led to Klein to develop his model of recognition-primed decision making:

"The commanders' secret was that their experience let them see a situation, even a non-routine one, as an example of a prototype, so they knew the typical course of action right away. Their experience let them identify a reasonable reaction as the first one they considered, so they did not bother thinking of others. .... They were being skilful. We now call this strategy recognition-primed decision making" (ibid., p.13).

All the considerations undertaken in this chapter lead to the conclusion that a narrative approach would be an appropriate methodology to use in investigating the thought process used by head teachers in making decisions within an education environment. Stories can provide a rich source of information that can throw light on human events and aid our understanding;

"Stories are like searchlights and spot-lights; they brighten up parts of the stage while leaving the rest in darkness. ... Stories aid the seekers of comprehension by separating the relevant from the irrelevant, actions from their settings, the plot from its background, and the heroes or the villains at the centre of the plot from the hosts of supernumeraries and dummies. It is the mission of stories to select, and it is in their nature to include through exclusion and to illuminate through casting shadows" (Bauman, 2004, p. 17).

But before proceeding further, it is necessary to consider some key features of research methodology.

RELIABILITY AND VALIDITY

Before considering to what extent it may be possible to ensure reliability and validity in undertaking qualitative research, especially research based on a narrative enquiry methodology, it will be useful to consider some definitions of these words.

Reliability can be described as *"the extent to which a test or procedure produces similar results under constant conditions on all occasions"* (Bell, 1999, p.103). In contrast **validity** within the context of qualitative research can be described as the extent to which a procedure *"measures or describes what it is meant to measure or describe"* (ibid. p.104). It is possible for a procedure to be reliable and yet still be invalid.

In terms of a narrative enquiry approach, reliability is largely a function of the interview schedule, procedures and questions. Arguably, the most reliable process would be to have a set of questions from which the interviewer does not deviate. However, within the context of this research thesis such a rigid approach is unlikely to uncover the information needed. It will inevitably be necessary to ask supplementary questions to probe further into the participants' thinking about a decision making scenario as each scenario is likely to be unique. However, this does not mean that reliability has to be abandoned. A clearly delineated structure of questions or probes will ensure that the interview process is capable of eliciting reasonably reliable data. Clearly the nature and structure of the questions and probes is of paramount importance and needs considerable thought and reflection. For this reason, it will inevitably be necessary to trial the interview process to ensure that the question structure does indeed elicit the information needed to answer the research questions. Although a difficult task that requires care and thought, it is by no means impossible to design an interview schedule that is capable of ensuring a reasonable and robust positive response to the question of reliability. By further ensuring that the conditions pertaining to the interview process, i.e. similar time frame, environment considerations, it can be possible to argue convincingly that the process does indeed have an acceptable degree of reliability.

Much of the discussion undertaken in the earlier part of this chapter helps to answer the challenge of validity as it is appropriate to this research topic. A participant observer methodological approach is unlikely to be valid within this context as it will not describe or measure what is necessary to describe and measure, namely the thinking processes and decision making strategies employed by head teachers. Klein

decided to abandon a participant observer approach in favour of a narrative enquiry precisely because it was a narrative enquiry that had validity within the context of his research.

However, even when the questions of reliability and validity have been answered, there is still the problem of generalisability.

GENERALISABILITY

The ability to generalise research findings across populations and groups has long been considered an appropriate and worthy goal in the field of quantitative research. The sampling of populations using surveys is often used to make generalisable findings or recommendations on the basis of the logic of probability.

However, within the qualitative field of research, the issue of generalisability has been much more controversial. Some qualitative researchers have rejected the notion of generalisability out of hand:

"The interpretivist rejects generalization as a goal and never aims to draw randomly selected samples of human experience" (Denzin, 1983, p.133-4).

Although not all researchers in the qualitative tradition reject the issue of generalisability out of hand, many have, however, paid it scant attention. This may be because the very nature of qualitative research appears to be at odds with the demand for generalisable findings. For instance, within quantitative research, the ability of the

research to be replicable is an essential pre requisite to being able to generalise from the findings. However, replicability is not generally considered to be an appropriate goal for the qualitative researcher working within a case study scenario, for instance. He/she would not expect that his or her experiences, descriptions and perspectives would exactly match those of another researcher working within the same situation. It is accepted that, in qualitative research, the researcher's own individual attributes and perspectives would play an important role. It is clear that the rigid positivist conceptualisation of generalisability has little merit or use within qualitative research. Guba & Lincoln (1982) have suggested replacing the concept of generalisability with "fittingness". This requires analysing the degree to which the situation being researched matches other situations so that any findings can be useful in understanding those situations. This places an emphasis on the need for detailed, "thick" descriptions of the situation being studied so that potential inferences for other situations can be explored.

In order to increase the ability of qualitative research to be generalised Schofield (1982, p.97) suggests three themes for generalisability within the modern qualitative research tradition: 1) It is generally accepted by qualitative researchers that the classical, positivist conceptualisation of generalisability is of little value or application for qualitative research; 2) The rejection of a positivist conception of generalisability does not mean that studies in one situation cannot be used to speak to or help form a judgement about other situations; and 3) as a consequence of the above, it is clear that detailed descriptions of the situations studied is critical.

Schofield also offers some suggestions as to how to structure qualitative research in order to maximise the potential for generalisability. For example, he suggests that qualitative researchers would do well to focus their work on situations that are **typical**, thus increasing the ability of the research to speak to other similar situations. He also advocates **multi-site** studies and studies that are based on **current trends** or the leading edges of change, as in, for instance, the use of computers to support children's learning.

Schofield's suggestions are useful in considering the nature of the suggested methodology for this thesis. In studying decision making processes, this thesis is observing typical bahaviours – head teachers spend considerable time on making decisions as an everyday part of their job. In addition this thesis will study several head teachers through a narrative enquiry approach across a number of sites, i.e. schools. Finally, the issue of decision making and leadership within headship is a topic of current interest within education.

Bassey (1999) has also given considerable thought to the issue of generalisability and how it affects qualitative educational research. He identifies three sorts of generalisations that research is capable of generating:

Scientific generalisations

These are the classic generalisations of the physical sciences that are based on experiment and on absolute certainties, i.e. "if you do x then y will happen". These generalisations are exactly replicable in all similar situations and are the foundations of physical "laws".

Statistical generalisations

Statistical generalisations come from studies of samples where many variables may be present. They are typically the domain of the social sciences and are often extrapolations to large populations from relatively small samples. They do not carry the same certainty as scientific generalisations but can assert that on the basis of a sample that "if you do x then y will be *likely* to happen".

Fuzzy generalisations

These are generalisations based on small case studies in which the findings have acknowledged boundaries of certainty, i.e. instead of "if you do x then y will happen", "if you do x then y *may* happen". Bassey described fuzzy generalisations as:

"Fuzzy generalization is ... the kind of prediction, arising from empirical enquiry, that says that something may happen, but without any measure of its probability. It is a qualified generalization, carrying the idea of possibility but no certainty" (Bassey, 1999, p.46).

Schofield's ideas and Bassey's concept of fuzzy generalisations provide a firm foundation for asserting the ability of small scale qualitative research to be generalised in a positive and meaningful way.

COMBINING METHODOLOGIES

Although the two major philosophical approaches to research have so far been presented in this chapter as exclusive and mutually opposite paradigms, there has

been an increasing interest in combining them to create effective research methodologies. Although it can be useful to highlight the differences between these two schools of thought in order to more closely examine their characteristics, this differentiation is often artificial and unreflective both of research practice and need. A slavish addiction to one approach may blinker the researchers to the possibilities of the other approach adding and contributing to the research. It is possible to consider that *"both approaches have strengths, and that even greater strength can come from their appropriate combination"* (Gorard & Taylor, 2004, p.1).

The key focus of any research enterprise must be that research questions and methodologies should be applied, not on the basis of philosophical prejudice, but rather on their usefulness and effectiveness at answering the research premise. In designing research, the research question must be king:

"Quantitative and qualitative methods are,... merely tools for researchers to use as and when appropriate" (Gorard & Taylor, 2004, p.4).

It is clear from the arguments laid out in this chapter that the research question at the heart of this enquiry will need to be answered primarily through a qualitative approach, in this case narrative enquiry. But that is not to deny an appropriate, albeit minor role, for quantitative analysis. The discussion within this chapter on generalisability has made it clear that some basic quantitative data on the schools in which the head teachers to be interviewed operate needs to be collected and analysed. In addition, the following chapter will suggest that there is a role for a simple quantitative coding analysis of the interview transcripts. Moreover, it is important to

be open to the suggestion that a role for quantitative analysis may become apparent during the course of conducting the research that was not apparent at its outset. As Gorard & Taylor comment:

"Once on the road to conduct research, everything is potentially informative and the researcher becomes a 'Hoover' of data, as far as possible. The research starts with draft research questions, and continues with an attempt to answer them by whatever means it takes" (Gorard &Taylor, 2004, p.5).

SUMMARY

In this chapter the philosophical basis underpinning quantitative and qualitative research traditions has been analysed. Consideration has also been given to the approaches used by NDM researchers and the broad issues of reliability, validity and generalisability. All of these considerations lead to the conclusion that a narrative enquiry approach is the most appropriate methodology to use in pursing the research questions in this thesis. The next chapter will consider the practical implications of managing a narrative enquiry based approach.

5

Research implementation

"Asking questions and getting answers is a much harder task than it may seem at first" (Fontana & Frey, 2005).

INTRODUCTION

This chapter will look at the practical implementation of the methodological ideas explored so far. Consideration of the issues raised in the previous chapter such as the suitability of quantitative or qualitative approaches and the issues of reliability, validity and generalisability have lead to the conclusion that a narrative enquiry approach is both a valid and appropriate methodology for the research subject of this thesis. In this chapter the practical application of this conclusion is explored and some quantitative analysis is examined to provide a context for the qualitative analysis that follows in chapter 6.

RESEARCH QUESTIONS

In the introduction the key research "How do head teachers make decisions?" was identified, with a range of sub questions to be addressed:

What strategies do head teachers use in making decisions?
How do factors such as accountability, metrics, complexity and uncertainty affect decision making?
What is the impact of experience on decision making?

Does increased accountability lead to a greater choice of rational or intuitive decision making strategies?
To what extent do head teachers rely on their "gut feelings" in making decisions?
What mix of rational and intuitive strategies do head teachers use in making decisions?
Do head teachers make use of their staff to explore different perceptions and frames?

On reflection of the research literature review and issues addressed in the previous chapters, a number of new questions arise:

How important is problem setting for head teachers?
Do head teachers (either consciously or unconsciously) justify intuitive decisions as rational decisions in retrospect (post rationalisation)?
Do head teachers use a range of decision making strategies?
Do head teachers demonstrate flexibility, quickness, resilience, adaptability, risk taking and accuracy in complex decision making scenarios?
How significant are emotions and morals in head teachers' decision making?
Do head teachers employ an incrementalist approach to decision making?
Do head teachers use a single evaluation approach to decision making?
How significant is mental simulation to decision making?
Do head teachers demonstrate the eight areas of recognition identified by Klein?

These research questions formed the basis of the design of the interview schedules and the subsequent coding and analysis of transcripts.

DESCRIPTIONS

This research was undertaken through a series of interviews one to one with head teachers across nine primary schools. Interviewees were asked to consider a recent

major decision that they had undertaken as the initial subject of discussion. By providing a rich description of each school, setting and decision making scenario, it is hoped that the applicability of the research findings can be enhanced. The descriptions are essential in helping to ensure as far as possible that the research conclusions can speak to similar situations.

Schools are an environment where there is a considerable amount of data that can ensure a detailed description of the school. For the purposes of this thesis, the following data were obtained for each school environment: size of school (pupil roll), type of School (LEA, Church), phase of school (Primary, Infant, Junior), EAL (English as an Additional Language), FSM (Free School Meals Figure), area served (urban, suburban, rural) and Special Educational Needs (the percentage of children with statements of SEN).

In addition each head teacher was asked to provide a brief description of their school (no more than 500 words) outlining any particular characteristics that are noteworthy for the school and that would not be revealed by the statistical data. All schools are now required by law to provide a Self Evaluation Form (SEF) available to inspectorial teams. head teachers had the option of using the school's SEF form as the basis for their description.

It was also important to obtain some descriptive material on the head teachers' careers, namely: the number of years they had been a head teacher, the number of years they had been in the current post and the number of headships including the current headship that they had held.

Chapter one of this thesis has argued that accountability can have a marked influence on the decision making strategies employed by decision makers. It was, therefore, important to gain a sense of the level of accountability involved in each individual decision making situation. The first part of the interview schedule included an exploration of the chosen scenario that formed the basis of the interview.

SAMPLE SIZE AND RATIONALE

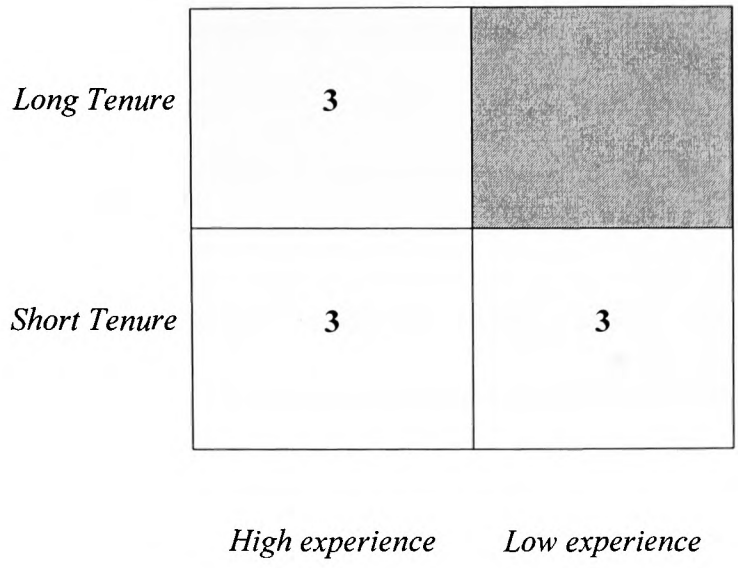
Interviewing as a methodology creates severe time constraints. Of necessity the workload associated with this approach limited the number of participants. It was therefore planned that interviews were to be undertaken with nine primary schools head teachers. This sample size was considered appropriate for the purpose of this research which is to study in depth the decision strategies of head teachers, rather than the broad scope of their decision making. There is, therefore, an emphasis on detailed exploration rather than broad reconnaissance.

A central idea inherent in this study of decision making is the role of experience. It was anticipated that experienced head teachers may have more effective decision making strategies than inexperienced head teachers. Inexperienced head teachers on the other hand, may not have had time to develop effective decision making strategies or influence the school context in which they find themselves. Therefore, the participants were split into two broad groups on the basis of experience. One group consisted of experienced head teachers and the other of inexperienced head teachers. Within the context of this research an inexperienced head teacher is considered a head

teacher with less than four years experience of headship and an experienced head teacher is considered a head teacher with over ten years' experience as head teacher.

Although the experience that the head teacher brings to their role may be an important factor in delineating decision making strategies, it is also possible that the school environment has an impact. The individual school's staffing structures, and in particular the senior management staffing structure, may have a marked impact on the decision making strategies employed by the head teacher. head teachers new to a school are very likely to be in the position of having to accept the established staffing teams, working practices and culture in that school as a given. The long tenure head teacher benefits from the opportunity of time to mould and develop staff in line with their particular leadership style.

For these reasons it was also necessary that the group of experienced head teachers was further sub-divided into two groups; those of long tenure and those of short tenure. Long tenure is taken to mean those head teachers who have been in their headship post within their current school for over three years and short tenure is taken to mean those head teachers that have been in their current post in their school for less than four years (regardless of whether this is their first appointment). This, therefore, split the total group of participants into three distinct groups which can be shown diagrammatically as follows:



The total sample group, therefore, consisted of experienced head teachers of long and short tenure and inexperienced head teachers. This enabled some judgment to be made regarding the importance of experience and the role of the school context in influencing decision making strategies.

RECRUITMENT AND CONFIDENTIALITY

Head teachers were recruited through the researcher's own head teacher network connections such as the National College of School Leadership (NCSL), London Leadership Centre and local LEA head teacher forums. The following prompt was used to attract participants:

Can you recall an important and difficult decision that you have made as a head teacher recently? Perhaps it was a decision that you found particularly challenging, complex or involved accountability to others (staff, parents, governors, LEA etc.).

I am undertaking a research project on decision making in primary headship and would like to hear from any head teacher about their experience of decision making.

Taking part will simply involve two face to face interviews (approximately two hours in total).

All discussion and dialogue will be treated in confidence and individual participants will not be identified in any final report. All participants will have access to interview transcripts and will be able to change or omit any items they desire.

This prompt provided potential participants with some reassurance in terms of confidentiality. The research took place under the remit and jurisdiction of the University of Hull's requirement for confidentiality and ethical research procedures. An ethical application was made to the University and was approved. Throughout the research process, high ethical standards were maintained.

In practice it did not prove difficult to attract candidates and all the interviews took place within a ten month period (July 2006 – April 2007). There were more potential candidates than required, so it was possible to choose schools to ensure that the sample represented as broad a range as possible. The following table shows the contextual information for each of the nine schools involved in the research:

School No.	Setting	School Roll	Forms of entry	FSM%	EAL%	SEN Statements
1	Urban	573	3	45%	70%	2%
2	Inner city	500	2	38%	42%	2.5%
3	Suburban	360	3	2%	54%	2%
4	Suburban	164	1	3.6%	3%	3.6%
5	Rural	190	1	12.7%	1%	2.2%
6	Urban	600	5	26%	68%	1.5%
7	Rural	84	>1	>1%	6%	3%
8	Suburban	420	2	12%	29%	4%
9	Urban	299	1½	46%	75%	1.3%

It can be seen that the sample group included large and small schools across a wide range of settings, including schools ranging from over 70% EAL to 1% EAL, and over 45% FSM to less than 1% FSM. In addition to the school contextual data, the following Ofsted grading for each school was gathered:

School No.	Status	Ofsted grade	Ofsted category	Last Ofsted inspection
1	Special Measures	4	Inadequate	April 2005
2	Normal	2	Good	September 2003
3	Normal	1	Outstanding	April 2005
4	Normal	2	Good	September 2006
5	Notice to improve	4	Inadequate	May 2006
6	Notice to Improve	4	Inadequate	May 2006
7	Normal	1	Outstanding	February 2005
9	Normal	2	Good	November 2005
9	Special Measures	4	Inadequate	October 2006

The sample included two schools in special measures and two schools judged to be outstanding by Ofsted.

Each head teacher was invited to add any additional comments or description of their school. Not all chose to do so, but some provided the following additional information:

School Comments

School no.	Comment
1	High mobility, school in special measures.
2	Significant change in intake over past five years. Temporary increase to three forms of entry in 2000. Now reverting back to two forms.
3	School considered to be in area of rapidly increasing deprivation.
4	*No comments.*
5	No nursery - three tier LEA system
6	Recent Ofsted - school had "notice to improve"
7	School has notice to improve. High pupil mobility.
8	*No comments.*
9	The school has high levels of social deprivation and one of the highest mobility rates in the borough (and nationally). It is currently on special measures for low standards and achievement. Subsequent HMI monitoring shows school making good progress.

Finally, crucial information regarding each of the head teachers' careers was collated:

School no.	Years in current post	Years as a head teacher	Current headship	Database category
1	1	8	3rd	B
2	19	19	1st	A
3	16	16	1st	A

4	6½	6½	1st	A
5	½	10	2nd	B
6	½	6½	4th	B
7	½	½	1st	C
8	1	1	1st	C
9	1	1	1st	C

The database category described to which sub group of the sample each head teacher belonged. Category A was assigned to experienced head teachers of long tenure, category B to experienced head teachers of short tenure and category C to inexperienced head teachers.

It can be seen, therefore, that the sample met the criteria in terms of head teacher experience, tenure and diversity of school context initially envisioned for the research. The range of head teachers includes several who have only been in post for less than a year to a very experienced head teacher who is on his 4th headship. The nature of the sample will provide reassurance regarding the veracity of the final research findings.

THE INTERVIEW SCHEDULE

In order to ensure reliability it was imperative for the interviews to have a basic structure and form. This ensured reasonable reliability across the nine interviews. However, it was also important to allow for the exploration of topics that are pertinent to the research outcomes of this thesis as they may arise through the course of the interviews. Fully structured interviewing will not meet this requirement as it will inevitably limit the response from the interviewees.

"In structured interviewing, the interviewer asks all respondents the same series of pre-established questions with a limited set of response categories" (Fontana & Frey, 2005, p.705).

It was important that interviewees were enabled to explore in depth their thinking, and a rigid structure would have inhibited this. A balance between rigour and flexibility was needed. One way to meet this requirement is to use a two part interviewing structure (such as that described by Klein in chapter 3). The first interview concentrated on generating a rich description of the decision making scenario chosen by the interviewee and was recorded through note taking. The second interview was intended to engage the interviewee in reflecting on the decision making process and was tape recorded for later written transcription. Rather than use a rigid set of unalterable questions, this second interview used a range of possible potential questions to "probe" for responses relevant to the research enquiry. Although the two interviews were separate, both in purpose and nature, they were undertaken contiguously.

First interview

The purpose of the first interview was to gather all relevant information about the decision making situation that the participant is describing. The important questions asked regarding the chosen decision making scenario were:

Who?	Who was involved in this decision making situation? Who had influence over the decision making process?

	Who was affected by any decisions made?
What?	What was the area of the decision making pertinent to? What did the head teacher do? What did other people involved do to influence the decision?
When?	Over what period of time did the decision take place? Can it be described as one decision or a range of cumulative decisions? What is the timeline for the decision making event?
Where?	Where did the decision making scenario arise from? Was it external to the school or internally generated? Where was the perceived problem located (staff, curriculum or other area)?

The answers to these questions provided a rich context for the decision making event, including invaluable information such as levels of accountability and challenge. In addition, it provided a clear timeline for the decision making scenario event that was important for the second interview.

Second interview

The second interview concentrated on exploring in depth the thinking and strategies used by the head teacher. Two "probes" were used to explore different aspects of the research query. These "probes" were sets of possible questions related to and drawn directly from clusters of research questions. They were designed to be employed by the researcher as and when appropriate during the interview to encourage and explore the flow of ideas and reflections from the interviewee. They provided a framework to ensure that the interview was focused on the research questions but also to allow flexibility, ensuring that responses were not stifled or suppressed.

The first probe explored in greater depth how the participant went about the decision making process and the range of considerations that the participants explored in arriving at the decisions. This is also the section in which the issues of accountability were closely explored:

PROBE 1 – HOW – Processes	
Purpose: To reveal how the participants made decisions	
Possible questions to ask	Research questions to be answered
1a) Can you describe how you went about making this decision?	Do head teachers use a range of decision making strategies? What are they? Do head teachers use a single evaluation approach to decision making? Do head teachers employ an incrementalist approach to decision making? What mix of rational and intuitive strategies do head teachers use in making decisions?
1b) What problems, barriers or challenges did you encounter with making this decision?	How important are biases in influencing head teacher's decisions?
1c) What was your "gut feeling" about this issue?	To what extent do head teachers rely on their "gut feelings" in making decisions?
1d) How did you consider the impact of your decision? What did you expect to happen?	How significant is mental simulation to decision making?
1e) If you were accountable for this decision, how did you report it? What did you tell people?	Do head teachers (either consciously or unconsciously) justify intuitive decisions as rational decisions in retrospect (post

	rationalisation)?
1f) How quickly did you make this decision? What were the risks associated with this decision?	Do head teachers demonstrate flexibility. quickness, resilience, adaptability, risk taking and accuracy in complex decision making scenarios?

The second probe consisted of questions designed to explore the head teacher's feelings and perceptions pertinent to the decision making event. They explored the "why" of the decision making process described by the participant, and how perceptions influenced the decision making strategies employed.

PROBE 2 – WHY – Perceptions and feelings	
Purpose: To reveal the participants' perceptions and feelings as they impacted on the decision making strategies employed	
Possible questions to ask	Research questions to be answered
2a) What were the key features of the problem/issue? Are there any other ways of perceiving this problem/issue? What cues led you to your perception of the problem?	How significant is perception for head teachers' decision making? How important is problem setting for head teachers? Do head teachers demonstrate the eight areas of recognition identified by Klein?
2b) Are there any cues that you believe others would not have noticed? How would you advise a novice colleague in similar situations?	What is the impact of experience on decision making? How is experience translated into expertise?
2c) Did you feel strongly about this issue/problem? Why?	How significant are emotions and moral precepts in head teachers' decision

	making?
2d) To whom were you accountable for this decision? How did this affect your decision? How complex was the problem? What were the areas of uncertainty in this problem?	How do factors such as accountability. metrics, complexity and uncertainty affect decision making? Does increased accountability lead to a greater choice of rational or intuitive decision making strategies?
2e) Did you involve other members of staff in this decision? What did you tell them about the problem and how did you involve them?	Do head teachers make use of their staff to explore different perceptions and frames? Are head teachers adept at communicating intent?

INTERVIEW PILOTING

Two pilot interviews were undertaken prior to the commencement of this research project in order to evaluate the adopted approach and methodology. The pilot interviews yielded useful information about practical issues surrounding the interviewing process and the question probes. The main findings were:

Decision making scenarios – Both head teachers interviewed had no difficulty in deciding on a context that was suitable for the purposes of the research. One of the head teachers chose the events surrounding the decision for the school to federate with another and the second head teacher chose to talk about a major, difficult premises issue. Both of these scenarios were situations of high accountability and provided rich evidence of decision making within highly complex environments. On

the basis of these pilot interviews, it appeared unlikely that participants would find it difficult to articulate appropriate decision making scenarios.

First Interview – It was possible to complete the first interview within thirty minutes. This proved to be plenty of time to gain ample descriptive material about the decision making scenario in order to provide a backdrop for the second interview. **Second interview** – Both interviews lasted an hour. In both cases, the head teachers interviewed said that they found it useful and helpful to reflect on their decision making and that they rarely had such an opportunity. They seemed to enjoy the chance to talk through an aspect of their job and were most forthcoming. Very few prompts were needed to maintain a steady flow of thought, comments and reflections. Both head teachers said that they found this interview tiring due to the depth in which they were exploring their own thinking.

Probes – The probes proved useful in providing a flexible framework in which to conduct the interview. However, the distinction between the two probes often broke down and although it was anticipated that the probes would be used quite separately, in practice questions and prompts flowed back and forth throughout the interview. The need to maintain flexibility in order to allow in depth exploration of ideas, concepts, perceptions and feelings was paramount. The structure of the interview was, and must be, subordinate to the need to explore the research questions.

Confidentiality – The head teachers interviewed appeared happy to talk about a wide range of confidential issues regarding their role, including referring to other staff and associated problems. It was clear that their confidence in the security and

confidentiality of the interview was essential. It is difficult to believe that they would have been so reflective and forthcoming if they felt that they would be identified through the process.

DECISION MAKING SCENARIOS

The head teachers in the sample chose a wide range of scenarios for initial discussion at the narrative enquiry interviews. As in the pilot interviews, none of the interviewees found any difficulty in identifying a decision making scenario which met the criteria of challenging, complex and with high levels of accountability. This included head teachers who had only been in post for six months.

The scenarios chosen by the head teachers were:

Scenario - school 1 - Dealing with a failing teacher

The school was in special measures. The head teacher had a failing EAL teacher who Her Majesty's Inspectors (HMI) had identified as failing. The head teacher was under a lot of pressure to resolve this issue quickly in order to get the school out of special measures.

Scenario - school 2 - Amalgamating three classes into two

In this three form entry school, it became apparent at the end of the summer term that there were not enough pupils in a particular year group for three classes to be viable. Therefore, the year group needed to reduce to two classes. But this presented a number of problems in terms of deciding how the new classes were to be formed and

especially which children would have to change class. There was also the problem of how the decision could be "sold" to staff and parents, particularly as the head teacher's preferred option was not the most popular amongst the staff.

Scenario - school 3 - Reorganisation of the curriculum

The head teacher decided to overhaul and completely change the curriculum on offer at this first school. This involved all staff, although the head teacher was the key driver. The head teacher took a strong lead with staff training to ensure this project succeeded. The main impetus to change came from a delegation of staff who expressed their concerns about poor presentation, handwriting and lack of pupil perseverance.

Scenario - school 4 - Pursuing the "creativity" agenda

This scenario involved changing the curriculum to introduce planned "theme" weeks once a half term. This change was initiated by the head teacher and was a response to documentation ("Excellence and Enjoyment" and other official documentation that encouraged the "creativity agenda") and the head teacher's direct experience of talking to children and taking classes.

The head teacher felt that children were not able to generalise across subjects and that the creativity curriculum was underdeveloped. There was some resistance from staff and the head teacher was heavily involved in staff development and training.

Scenario - school 5 - Organisation and promotion of staff

This small school was put in special measures in May and the head teacher appointed shortly after. The decision scenario involves how best to reorganise staff. In

particular, how best to appoint to the post of Keystage 2 leader (Keystage 2 was noted as weak in the Ofsted inspection). There was a member of staff that had been overlooked in the past and which most people in the school perceived as a "blocker" but which the head teacher considered to have potential as a school leader.

Scenario - school 6 - Setting key priorities

This was a very large primary school with "notice to improve" following a recent Ofsted inspection (May) before the head teacher's appointment in September. The decision scenario involved the setting of key priorities identified by the head teacher in the first few weeks in post. His decision to undertake a staff training day in the autumn term on effective learning and what makes a good learning environment is discussed in the interview. There were several agendas for the INSET day.

Scenario - School 7 - Introducing a new timetable

The decision scenario concerned the introduction of a new timetable and structure to the school day. This included starting school five minutes earlier, extending the morning sessions, ensuring the core subjects were taught in the morning with more "creative" subjects in the afternoon and "activity" sessions for Wednesday afternoons. This change was instigated due to concerns surrounding the behaviour of children in the afternoon. These concerns were expressed in an Ofsted report two years earlier, by governors and were experienced directly by the new head teacher (who was an internal appointment with a ten year history at the school). This change was introduced whilst the head teacher was in the acting post prior to appointment following a successful interview in October.

Scenario - school 8 - Developing ICT resources

The decision scenario involved the creation of an Information Communication Technology (ICT) suite. The genesis of this decision went back to the last Ofsted which was critical of ICT. However, the context for the decision includes the fact that the room identified for the ICT suite is currently in use by the Professional Development Centre which shares the building with the school. Another contextual aspect is the sale of the caretaker's house. The school wanted to use the money raised to fund the ICT suite – however the LEA wanted a cut of the sale. This decision was made whilst the head teacher was in an acting position which was two terms prior to being made the substantive post holder.

Scenario - school 9 - Reorganising the planning, preparation and assessment (PPA) timetable

The school is in special measures. The head teacher decided to completely alter the way that PPA was being timetabled. Prior to appointment the head teacher was presented with a timetable for PPA time but decided to radically alter it. The head teacher saw this as an early win-win situation with staff and an opportunity to instil a teamwork approach across the school.

It is important to note that the decision making scenario provided the initial subject for discussion at the interview but the interviews themselves ranged much further than the chosen scenario. Through a discussion of the specific scenario, head teachers were led through the interview process to reflect on their general decision making strategies that they use as a rule to solve problems within their school.

CODING ANALYSIS

It was anticipated that the interviews would provide ample data to be analysed. Indeed, manageability concerns have been the main deciding factor in arriving at the sample sizes. In analysing the transcripts it was important to bear in mind the purpose of the research. The interview transcripts were therefore coded directly against the research questions to ascertain the extent to which they provide evidence to support or refute the research questions.

It was necessary to maintain flexibility in the analysis to identify potential issues or concerns that may fall outside the questions, but still provide answers that may be relevant or potential further avenues for enquiry. It was also possible to undertake a quantitative analysis using the research questions to ascertain the strength of the evidence base for each question or cluster of questions.

QUALITATIVE ANALYSIS

The majority of the analysis undertaken was qualitative in nature. It involved studying the transcripts in detail in order to understand the thought processes and strategies employed by head teachers. Robson suggests that an essential part of a documentary analysis should be to *"construct categories for analysis"* which should be *"exhaustive and mutually exclusive" (Robson, 1993, p. 241).* Four categories for analysis are proposed:

Context – This category explores the background to the quotation in the interview, whether, for example, the result of a direct question from the interviewer, a musing over issues previously discussed or a sudden revelation.

Reference – This category looks at what cluster of research questions the quotation has reference to and is able to throw light on.

Direction – This category looks at the extent to which the quotation provides evidence to illuminate the research question or support/refute the research question.

Confirmations, contradictions and further questions – This category considers whether there are any other examples in the interview that tend to confirm and strengthen the particular quotation and whether there are any contradictions arising within the quotation or with other sections of the interview. An example of the analysis possible with these categories can be shown by this quotation from an early interview:

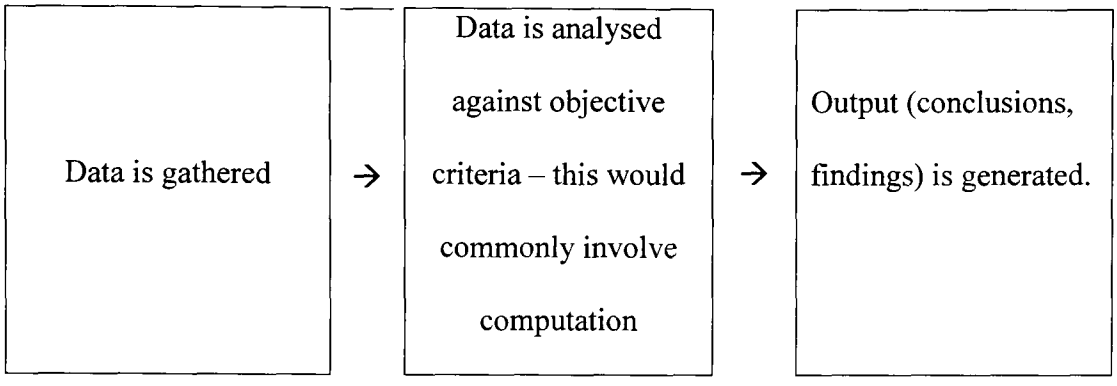
Quotation
"I think mostly out of school on my own. You know, when you're driving or lying in bed when you can't sleep and things like that. I do tend to think out of school. I don't think as much in school."
Context
This quotation was in response to a direct question from the interviewer about where decision making is undertaken.

Reference This quotation can refer to the following research questions: 1a) Do head teachers use a range of decision making strategies? What are they? 2d) Do head teachers make use of their staff to explore different perceptions and frames?
Direction This quotation would support the idea that this particular head teacher made decisions over a wide timeframe – i.e. "mulling things over" and that this may be the head teacher's preferred style of decision making. It also provides some evidence that the head teacher preferred to make decisions on his/her own without the involvement of other staff - *"I think mostly out of school on my own"*.
Confirmations, contradictions and further questions In another part of the interview, the head teacher refers to how s/he actively involves senior staff in decision making. This is an apparent contradiction to the claim that the head teacher makes decisions *"on my own"*.

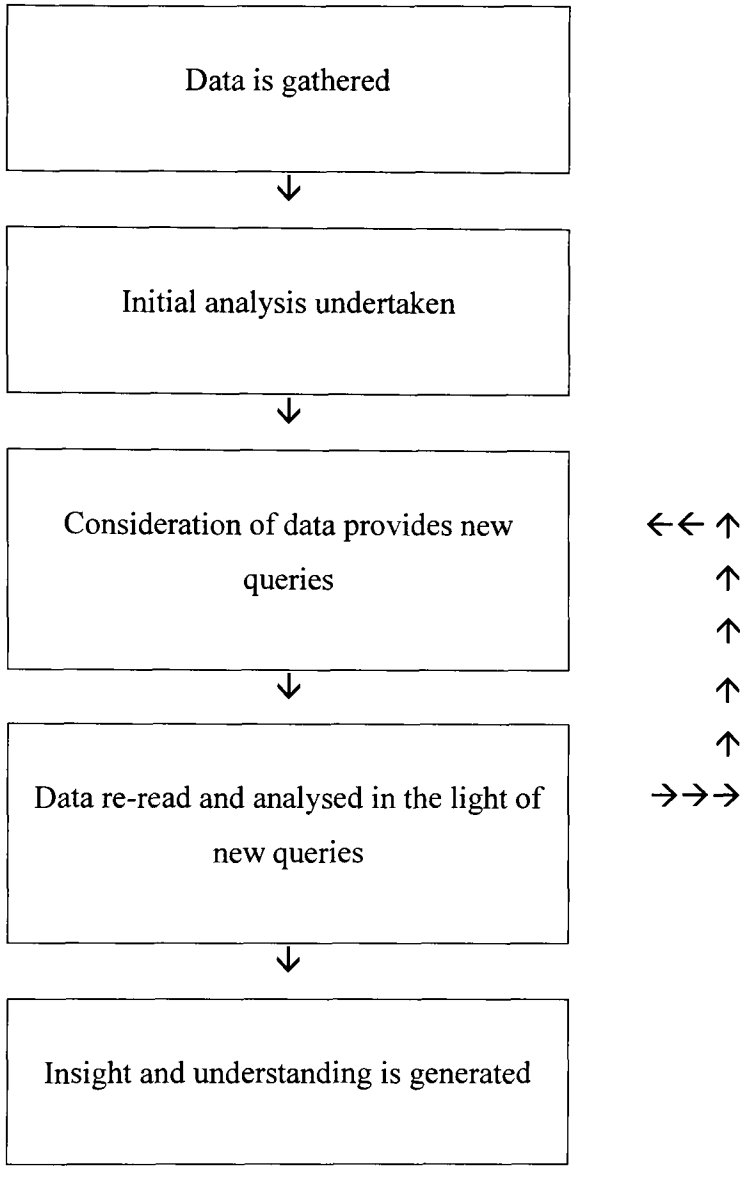
However, it is important not to provide too tight a straightjacket on the analysis of the interviews. Rather than match the interview transcripts against a pre determined set of criteria it proved more useful and productive to allow the issues to arise naturally through the analysis. This ensured that any conclusions or insights were grounded in the research evidence rather than a reflection of any predetermined structures.

Analysis in quantitative research is often straightforward. The research commonly starts with a clear objective query to be addressed and clear criteria to be answered. Use of a computer to analyse research data is common and the role of the computer is

clear – to aid the statistical analysis of raw data which is normally numerical in nature. The whole process can be seen as linear in form and basically takes these steps:



Although this is a simplification, it does demonstrate the basic linearity of quantitative research. The function and purpose of the computer is fairly clear – it is to provide computation and also presentation of final results, for example, in the form of charts or graphs. The process of qualitative analysis is quite different. It is characterised by an iterative approach. Once the data is gathered it is then reviewed again and again, each iterative loop adding to the interpretation of the data. The essential task is to observe key themes and issues arising from the data and this cannot be accomplished in one single round of analysis of computation. A more appropriate structure for this research process would be:



In order to support this process the computer was used to browse the data collected. The interview transcripts were initially studied and reduced to 356 research transcript quotes which were entered into a Microsoft Access database. Using the database it was possible to "browse" the quotes and undertake the kind of iterative process identified above. These included coding analysis and qualitative analysis. In addition, each quotation was tagged with a keyword so that a keyword analysis could also be undertaken.

Any iterative process provides an inherent problem – when to escape the iterative loop and move to formalising results. As often with decisions, time is a factor and provides an external prompt for exiting the iterative loop. However, saturation is also an effective stopping mechanism. By this is meant the stage at which further iterative loops are felt unlikely to yield any more substantial insights and that the useful information within a particular data item has been "mined" thoroughly and is exhausted. In practice, this research had enough time for full reflection and the researcher feels that all the research data was fully exhausted.

Through the process of sifting through the interview data it was possible to identify and expand on some key themes related to the research questions and generate insights grounded directly in the research data. It is this process that has formed the basis of the findings and conclusions for this research.

REFLECTION AND NOTE TAKING

A research diary was maintained throughout the process to facilitate reflection and enable the research methodology to evolve through experience. As a novice researcher it was recognised that I needed to immerse myself in the research process and become familiar with the data to develop and hone my research skills. Interviewing skills were developed over the period of the research as interview probes became more closely honed to the research questions. Reflective notes assisted the process of development and provided the seeds for further understanding and insight.

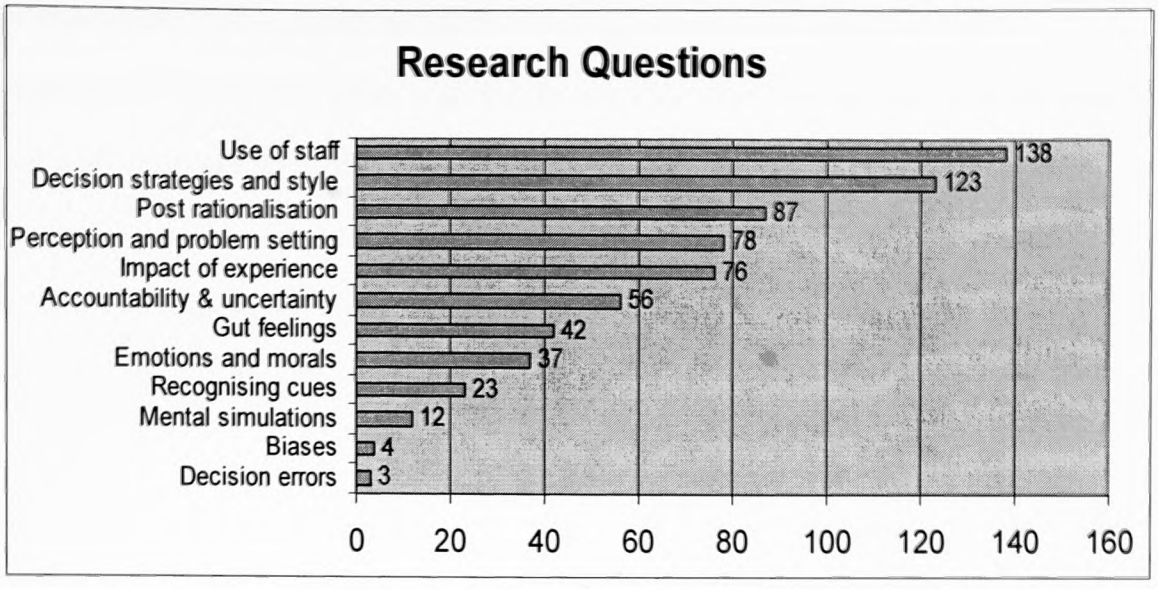
QUANTITATIVE ANALYSIS

A reflection on the coding analyses and the keyword analysis is presented here with the purpose of enabling the reader to gain an understanding of the weight of evidence relative to the research questions. Where there is little data to support or throw light on a particular research question, it can be interpreted either as providing negative evidence for questions or as reflecting on the nature and limitations of the research methodology. For example, if there was little evidence to support the question as to whether head teachers justify intuitive decisions as rational decisions (post rationalisation), it could be taken as evidence either that this is an activity that head teachers do not engage in or that the methodology has not been able to uncover information relevant to this research question.

It is always dangerous to conclude that lack of evidence disproves a point and certainly is an untenable position to take without any confirming evidence. It is much more likely that lack of evidence is a result of the limitations of the research methodology employed. Therefore, this chapter provides information regarding the veracity of the research rather than analysis, which is very much within the realm of the following chapter.

RESEARCH QUESTION ANALYSIS

Each of the 356 transcript quotes were coded against the research question foci and the cumulative results are shown in this graph in descending order:



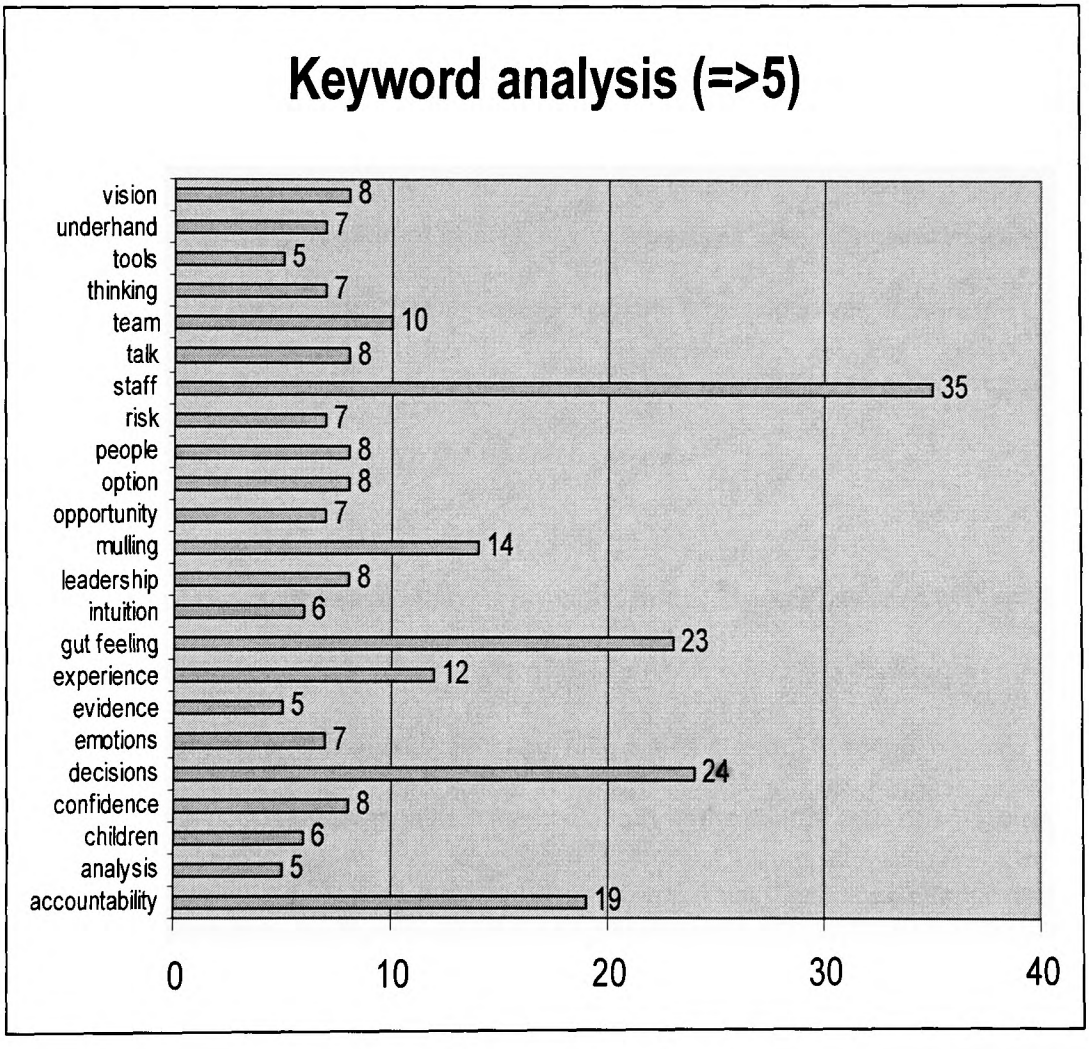
From the graph it can be seen that 138 transcript quotes were coded against the research questions related to "use of staff", 123 against "decision strategies and style", and so on. It should be noted that transcript quotes were often coded against more than one research question.

It is clear that there is considerable evidence to answer many, although not all, research questions. There would appear to be particularly strong evidence for questions related to the use of staff and decision making styles. Both of these areas have large numbers of coding against them indicating that there is enough evidence in the interview data to form an opinion on these issues.

KEYWORD ANALYSIS

Each transcript quote was also given a keyword reflecting the quotation's content. A full listing of the keywords and their frequency can be found in the appendix. It could

be argued that this is a highly subjective process. However, the strength of this approach lies in the accumulation of specific keywords across the database rather than any individual allocation of keyword to quotation. Keywords that appear infrequently are unlikely to have any relevance but keywords that appear very frequently are likely to be a good indicator of issues and weight of evidence. The following graph shows those keywords that appear five or more times:



There are some clear areas that emerge from this analysis. Key issues such as staff, decisions, gut feeling and accountability are clearly shown in the graph. Other issues such as experience, intuition, team, confidence, mulling things over are also well represented and will be delineated further in the next chapter.

SUMMARY

The practical implementation of the qualitative research methodology used by this research thesis outlined in this chapter provides reassurance that the generic research issues of validity, reliability and generalisablity can be answered appropriately. The particular methodological approach of narrative enquiry outlined in this chapter enabled an in depth exploration of how head teachers think about decision making and the strategies they employ. Analysis of interview transcripts was undertaken against the research questions, whilst allowing for new questions and other avenues to be explored as they arose through the research process.

The purpose of the quantitative analysis provided in this chapter has been to provide the reader with an insight into the weight of evidence on which the findings in the next chapter are made. The quantitative analysis, whilst starting to identify issues arising from the data, merely provides the backcloth to the central task of analysing the data on a qualitative basis. A quantitative analysis of the data against experience or tenure has not been attempted in this chapter due to the relatively small size of the sample, but is considered in the following chapter.

6

Qualitative analysis

"The important thing is not to stop questioning"
(Albert Einstein, 1879-1955).

INTRODUCTION

This chapter outlines the key issues identified from the interviews through the process of iterative review outlined in chapter five. The previous chapter has provided a quantitative background to the data but this chapter now undertakes the central task of analysing the data on a qualitative basis. Many of the issues raised are strongly linked and interact with each other. One of the complexities of the head teacher's role is drawing together a synthesis of skills to meet the needs of the school. Although the key issues are of necessity presented separately, it is hoped that a sense of the synergy of skills and attributes will be appreciated.

This chapter contains substantial verbatim quotes from the interview transcripts which are always shown in speech marks. Where extra words have been added to clarify meaning these are shown in square brackets. Each quote is followed by two figures in brackets. The first figure is the school number from 1 to 9. It is therefore possible for the reader to see if the quotes are from different schools. The second figure is a letter that represents the group into which the school and head teacher are placed. Group A represents those schools where the head teacher is experienced and of long tenure,

group B represents those schools where the head teacher is experienced but of short tenure and group C represents those schools where the head teacher is inexperienced.

The following sections are rooted in the evidence from the interview data. They are cross-referenced directly to the research questions as shown in opening boxes. Some of the issues raised by the research questions are explored in more than one section, demonstrating the complex interplay between the issues raised.

HOW DO HEADTEACHERS MAKE DECISIONS?

Do head teachers use a range of decision making strategies?

Do head teachers demonstrate flexibility, quickness, resilience, adaptability, risk taking and accuracy in complex decision making scenarios?

Do head teachers employ an incrementalist approach to decision making?

Do head teachers use a single evaluation approach to decision making?

How significant is mental simulation to decision making?

The favoured strategy adopted by all of the interviewees in making major decisions across a wide range of areas such as personnel, premises and curriculum was to take things a step at a time:

"you do it in little ways"(2, A)

This suggests that head teachers favour an approach to decision making akin to Lindblom's description of an "incrementalist" approach in which *"inquiry mixes and*

advances through action" (Lindblom, 1990, p.30). head teachers clearly favoured trying things out, piloting initiatives, rather than planning initiatives in great detail in advance:

"because you can either talk to people about something that hasn't yet happened but is all in the planning stages ... Or you can try something out and then think, having talked with the staff, [ask] was that a success?" (4, A)

As well as echoing Lindblom's ideas regarding decision making it confirms Simon's ideas of satisficing often through trialling rather than advanced planning:

" ... when you make any particular decision, even an important one, you probably do not work out detailed scenarios of the future, complete with probability distributions, conditional on the alternative you choose" (Simon, 1982, p.18).

The interviews described a decision making process that involved thinking about the decision over a considerable time frame:

"It has been a gradual process." (3, A)

"Things that had been mulling over a bit – you've already given it thought haven't you?" (2, A)

"I was thinking about it over the three months." (7, C)

"there were some decisions that I had mulled over the summer." (9, C)

There was little evidence to suggest that mental simulation, an important feature of Klein's RPD model, was used extensively by head teachers. However, even though mental simulation did not appear to be a key element in head teacher decision making processes, part of the "incrementalist" approach and taking time was certainly supportive of thinking through possible scenarios and anticipating problems:

"... and thinking the repercussions through. You know the what ifs."
(2, A)
"Don't necessarily go for the first option that you might just think. I'll test a few ideas out first." (5, B)
"There are few decisions you make that are just a decision on its own ... All the time as a head you're thinking about how your school is working." (2, A)
"I think there's going to be teething problems." (3, A)

By anticipating problems and taking things one step at a time, headteachers are more able to control and steer the situation. They can tackle problems as they appear, particularly when possible outcomes are not always clear and the situation may be complex and uncertain. Two schools of thought were discussed in chapter two regarding the role of uncertainty in decision making. Russo & Schoemaker (2002) extol the virtues of a rational analytical approach when faced with uncertainty (see page 33) whilst Hogarth (2001) provides three reasons why decision makers are more likely to rely on non-analytical approaches when faced with uncertainty. The reasons he outlines are: the problem of simplifying complex decisions necessary for analytical purposes, the explicit assumptions needed for rational analysis and the opportunity for mistakes to arise from minor errors in analysis (see page 34). Certainly, the situations

that headteachers were dealing with were complex and not easily simplified and the evidence from the interviews would tend to confirm Hogarth's hypothesis rather than Russo & Schoemaker's.

Schools are in a constant state of flux, with new directives from the government or staff movement and, in such circumstances, a stepwise approach as opposed to a very detailed planned approach is probably far more effective. Before a decision can be made, the complexity of the situation must be fully grasped and the characteristics of the problem understood. It is clear that a key task faced by head teachers in the chosen scenarios was not just problem solving but what Schön has described as "problem setting" (see page 15). A cautious incrementalist approach enables solutions to problems to be fully digested and consequent decisions to arise over time:

"The idea sort of starts off as a germ." (5, B)
"What I tend to do is think things over. I do this mulling a lot and talking." (5, B)
"That is me mulling it over, thinking."(1, B)

It is significant that head teachers consistently talked about long thinking – "mulling it over" without any prompting in the interviews. This is good evidence to suggest that this is the favoured decision making strategy of the head teachers interviewed. Head teachers actively seek time for long thinking. They make time to consider, not just at a conscious level, all the issues regarding what were often multi-faceted problems. They consistently raised the benefits of long thinking during the interviews:

"You can mull things over and come up with practical solutions." (1, B)

"I like to think things through rather than react immediately." (1, B)

"The more I thought about it ..." (5, B)

Timing is everything. The solution to a problem may not be just what to do but when is the most opportune time to do it and how to do it. This is particularly true when dealing with personnel issues:

"It's knowing when to react and how." (1, B)

"It's who you tell first." (2, A)

"I'm going to handle it carefully, because there are some staff I know who will say ohhh, I can't do this, this is too much of a change. And there are other staff who will say yes – let's have a go." (4, A)

One head teacher reflecting on timing pointed out that anticipating staff's potential negative reaction led to the postponement of the implementation of an initiative that had already been decided upon until after the summer holiday:

"If I'd have said at the end of the summer term this is what I'm thinking of doing they would have thought, oh well this won't work and that won't work."(7, C)

It was clear that the majority of head teachers' long term thinking was undertaken away from school, often at apparently inappropriate and inopportune times:

"It usually starts in the middle of the night." (2, A)

"I just really brainstormed these thoughts when I was at home." (7, C)

"A lot of it is sort of going on in my head at all odd times like when you are driving along or whatever, in the bath." (5, B)

"I don't sit and write anything down, it's sort of there at the back of your mind – so you know – when you're washing up or doing the garden – or [having] a drink with a friend, partner you say well if this happens, this and this and then this could happen ..." (5, B)

"I very rarely can think in school." (5, B)

"When I'm at the gym or I'm washing up or I'm watching something you mull over decisions." (9, C)

This would imply that the school environment is not necessarily conducive to decision making either in terms of time or demands. Head teachers often appeared to make major decisions away from the school environment: at home, in the car, or even whilst washing up. Perhaps this is not surprising as the process that head teachers refer to is not a directly conscious one. Long term thinking or "mulling it over" can be seen as an intuitive process that may not be directly under conscious control. The whole process of "mulling things over" can appear opaque, vague and impossible to quantify or measure. This is partly due to our cultural stance with regard to the overwhelming higher status given to the rational and also because the vocabulary resonates with issues surrounding conflicting views of the mind within western society. To clarify thinking on this matter, it may be useful to adopt the definitions of different "intelligences" suggested by Epstein (1998). He proposes two types of intelligences which he describes as the "rational mind" and the "experiential mind". Using Epstein's typography it is possible to suggest that "mulling it over" is an effective strategy for accessing and utilising the experiential mind.

This issue of different levels of thinking is particularly apparent in phrases used by a number different head teachers in a number of instances:

"It's something that's always been in the back of my head." (7, C)

"... it had been in my mind for a few years." (7, C)

"... that was at the back of my thinking." (4, A)

"... these things were rolling round in my mind." (4, A)

"... behind my thinking." (9, C)

All of these phrases, such as "at the back of my mind", "behind my thinking", are clear indications that there are powerful mental processes at work and that it is this "back of the head" thinking that is being used to generate viable and effective decisions. The context for these phrases strongly points to mental processing that is generally hidden from conscious awareness but which, at certain times rises into full consciousness at those moments of sudden insight.

The phrase "rolling around in my mind" appears to be another reference to mental processes happening in the background. It implies an iterative process where ideas and thoughts are constantly being "turned over" and reappraised. It comes as no surprise, therefore, that head teachers appear to "mull" problems over a considerable time and that solutions often appear to arise unbidden from the depths of the mind. It may appear a vague or even mysterious process but it is clearly a powerful one.

This process of mulling things over could be described as a "reflective" process. The role of reflection has long been established within education largely based on the work of Schön and in particular his highly influential book "The Reflective Practitioner". However his work has received criticism and reappraisal from writers such as Gilroy (1993) and Eraut (1995) (see page 116). It is probably true that the word "reflection" has been so widely used that it has become abused and distorted. Gilroy certainly sees the term reflection, in as much as it is used in education, as problematic and points out that there are a range of possible definitions for the term "reflection" leading to potential confusion:

"The use made of the concept [of reflection] and therefore its perceived meaning, is in no sense a unitary and straightforward one" (Gilroy, 1993, p.125).

The process described by head teachers as "mulling things over" would appear to chime well with "action following a period of deliberation" as described by Eraut in his model of cognition modes based on time (see page 116). Eraut comments further on "deliberation":

"Deliberation requires time ... analysis may be an essential component of the deliberative process but it is not the only component. Most deliberative decisions require judgements to be made after analysis has been conducted about the best fit between the situation as currently understood and the range of possible responses that have been developed." (Eraut, 1995, p.20)

Eraut points out that analysis is not enough and rejects the dichotomy presented by the *"long standing debate about the respective roles of intuition and analysis in professional decision making" (Eraut, 1995, p.19)*. However, the research data in the interview transcripts points out that intuition is not only used post analysis but also pre analysis, often as a spur to investigation. As one head teacher said:

"I go on gut instinct first and then I gather up bits and pieces of evidence to see whether it backs up my gut instinct." (4, A)

However, the commentators and critics of Schön may not have paid enough attention to the distinction between the rational and the experiential mind. They have framed their arguments around conscious deliberate reflection. But that does not appear to be the nature of the kind of reflection or deliberation described by head teachers. "Mulling things over" as described in the interviews would appear to have two main characteristics. It takes place over an extended period of time – hours, days and weeks rather than seconds or minutes – and it is largely an unconscious activity. The first characteristic marks it out from Schön's reflection-in-action which is seen as a form of reflection that occurs almost contiguously with the activity. However head teachers describe themselves thinking about the decision scenarios at odd times and places, clearly divorced from the immediacy of their context. The process described as "rolling around in my mind" is clearly one in which ideas, impressions, feelings and solutions arise sometimes unbidden from immediate conscious control and is a process that can appear opaque or even mystical in nature.

However, it is not just the solitary nature of the "mulling over process" that creates difficulties but also the implication that it is a mental activity engaging the experiential mind. Beyond perhaps identifying the process of "mulling things over" as a process that is crucial to head teachers' decision making ability, it may be difficult to come to any further conclusions purely on the basis of the data in this research. Clearly, this is an area that would warrant further research and study. The possible implications that might be considered to support this mode of thinking will be discussed in the next chapter.

Given the emphasis in the interview data on "mulling things over" it is worthwhile considering what would happen in those situations where head teachers were not given the opportunity or time to "mull things over" due, perhaps, to external pressures of accountability. Many head teachers could relate to problems they had encountered when they felt that they had had to make decisions too quickly:

"... sometimes when you've been pushed into doing something quickly." (2, A)
"I think maybe I've done things occasionally too quickly." (8, C)

Klein identifies three factors that are closely related to poor decision making: lack of experience, lack of information and explaining away disconfirming evidence (see 3.10,10). However, the evidence of this research points to lack of time to "mull things over" as an additional factor in poor decision making. This would imply that attempts to foreshorten the mulling over period will quite likely lead to a deterioration in decision making quality.

The overwhelming evidence of the interview data is that "mulling things over "is the favoured decision making strategy of the head teachers in the research sample. However, this conclusion provides a problem of its own. The process of "mulling things over" is potentially endless. How do head teachers know when to stop ruminating and move to action?

As well as clearly showing a preference for taking time to "mull things over" head teachers demonstrated in the interview data a remarkable "bias to action". This is the characteristic that Peters & Watermen in the book "In Search of Excellence" describe as "action orientation":

"They don't give in and create permanent committees or task forces that last for years. They don't indulge in long reports" (1982, p.154).

There appears at first glance a conflict between the long, slow deliberative process inherent in "mulling things over" and the hard hitting fast paced emphasis of a bias to action. It is not immediately obvious how these can be reconciled.

Faced with problems, head teachers were able to sustain a positive outlook. They actively sought for positive opportunities in all the situations they faced. They maintained a positive attitude and a strong belief in the ability of any situation to yield new opportunities. This enabled them to be creative and responsive in the face of difficulties:

"I think that to make a good decision you have to look for those opportunities don't you? You don't see a decision as just being a yes or a no." (2, A)

"We tried to make it in a more creative, imaginative way .. Open opportunities to do other things." (2, A)

"I didn't see it as a problem. I saw it as something that was going to enable me to move things on in my school and I saw it as an opportunity rather than as a problem." (3, A)

"... there are opportunities as well." (8, C)

"It's an opportunity, yeah without a doubt." (5, B)

Maintaining a positive perspective on what could appear intractable problems was a feature of the head teachers interviewed. However, maintaining a positive personal viewpoint in the face of complex problems is clearly not enough to explain how head teachers move from cogitation to action.

A notable aspect of head teacher's behaviour with regard to the transition from deliberation to action was that although they often took a long time to make major decisions, once decisions were made they very quickly committed themselves to the chosen course of action. There were quite specific moments when head teachers were clear that the time for thinking had passed and the time for action had come. They were well aware that "mulling things over" could become an endless process and lead to procrastination. One head teacher commented that although he spent time considering various options he was keen that the time spent delaying an actual decision was "not too long though" (1, B).

When the time for action arrived head teachers threw themselves wholeheartedly into the fray and at that point switched quite dramatically from a broad process of considering all options to a single minded and highly focussed approach to the task in hand. All doubts are cast aside (at least to staff) as the school moved into a "go for it" stance:

"I believe once you make the decision you have to believe it's the right one, don't you? All my energies are in justifying to my own head." (2,A)
"I was still quite determined to go ahead with it." (5, B)
"... there are times when I maybe have doubts but I feel in order for it to work I've got to be positive with them." (2, A)
"I think you have to consider the negatives otherwise you can't make a sensible decision. But having considered the negatives in your own mind or wherever, and decided on a particular path then I think I kind of discount any of those negatives." (2, A)

The ability of head teachers to balance time taken to consider a course of action and the need to commit to a course of action is a most interesting aspect of head teachers' work. At times they appeared to cope with this conundrum without any problems.

However, it is still not clear how this is accomplished. In order for head teachers not to sink into endless procrastination there must be a stopping mechanism. This problem has been discussed and explored by researchers in the field of "bounded rationality" who have considered the kind of heuristics and stopping rules habitually used by decision makers:

"Heuristics are composed from building blocks that guide search, stop search, and make decisions" [my underline] (Gigerenzer, 1999, p.37).

Some of the stopping rules include stopping mechanisms based on imitation and recognition. However, none of the rules identified seems to match the evidence of the research interviews. So what stopping mechanism are head teachers using?

It is here that the head teacher's vision for their school comes to the fore. A strong sense of accountability to the children and "meeting the needs of the kids"(1, B) and a clear and unswerving commitment to a compelling school vision was a powerful factor in maintaining a bias for action. The head teachers' commitment to their vision enabled them to skilfully manage the balance between long thinking and action:

"I think I had in my mind when we started talking about it a rough end point in view. Because- it could have dragged on for ages." (4, A)
"... you're thinking about how can I achieve what my bigger picture is?" (2, A)
"I feel that I'm accountable to the children." (2, A)
"I'm quite clear our core purpose in school is about pupils' learning, so of course it was the right decision." (3, A)

Although the importance of head teachers possessing a clear vision for their school is clearly recognised within education, the consideration of this research data provides a rationale for that importance. This research data would suggest that it is the headteacher's vision that provides a driving force for change and pushing through

initiatives. Without a clear vision headteachers could find themselves caught in endless procrastination as they consider all options. Their need and overwhelming drive to achieve their vision provides the stopping mechanism that propels the school from "thinking" mode to action mode. The power of the head teacher's vision to drive through action was emphasised in a number of interview quotes:

"... because it's very important what your vision is and what you believe is important in education otherwise - because every school is like a different country isn't it?" (8, C)

"... we were driven by the need to address the pupil's learning." (3, A)

"I have a really strong identity and ethos of where the school's going to go." (7, C)

"what we should be doing is not necessarily wondering about the problems we've got but spend all of our time making sure that we are engaging and empowering people with the vision in order to work round those." (6, B)

The bias to action was so strong that it was clear that head teachers would not lightly give up on a course of action that they had decided on and committed themselves personally to. When faced with opposition from staff, they would begin a process of intense dialogue:

"I would have asked why? And I would have probably said you know where else could we have it? What are we going to do if we don't go for that? I might have said well if we don't do that are we going to think of another project." (8, C)

"I would have stuck to my guns. I do like to sort of see what people might think but that doesn't affect my decision making process." (9, C)

"I'm going to do it anyway because this is what we have identified and I know the reasons educationally, why we need to do it. I was quite clear it was going to be what I wanted." (3, A)

Clearly head teachers not only need to have a vision but also have the skills to be able to communicate it effectively and engage staff and other school stakeholders to "share that vision" (1, B).

It is useful now to return to the research questions associated with this section. The evidence presented here would strongly indicate that mulling things over is the preferred decision making strategy employed by head teachers and that this is the primary strategy used. This approach is clearly incrementalist in nature, associated with making small increments towards a desired goal rather than making dramatic leaps or strides forward. This approach enables head teachers to be flexible and adaptive to the context in which they find themselves and allows them to control any potential risks. Like a gunnery officer on a warship firing shots to get the right range, head teachers use small steps to "test the water" and evaluate the possible impact of any decisions before implementation. It appears to be a strategy that has stood the test of time and is resilient in the face of an increasingly complex working environment. Although the evidence for this decision making strategy is strong, there was little evidence to suggest from the interviews that mental simulation, a key component of Klein's descriptive model of decision making, is a substantial element of head teacher's decision making processes.

Although "mulling things over" is an inherently slow process, head teachers were able to balance this with a strong "bias to action" which ensured that they did not get caught in endless procrastination. The head teacher's vision was a powerful heuristic device to ensure productive action was always the end result of any decision making process.

FORMAL DECISION MAKING STRATEGIES

What mix of rational and intuitive strategies do head teachers use in making decisions?

An emphasis on informal strategies for making decisions was echoed in all the interviews. The use of formal methods of decision making such as using a prescribed process like a SWOT analysis or brainstorming or simply noting different options and ideas on papers was uncommon. Most head teachers quite readily stated that they did not use any formal methods as part of their general decision making strategies:

"I didn't do any formal [strategies]." (7, C)

"I do keep a lot of it in my head." (5, B)

"[I don't use formal strategies] as such [but] I suppose you draw on elements of them don't you?" (2, A)

It is not clear in the last quote what is meant by "draw on elements of them". Head teachers seemed very aware of the range of formal tools that they could apply to

decision making but clearly relied more heavily on informal approaches which may be shaped or influenced by more formal structures. As one interviewee said;

"We did talk about the strengths and weaknesses of various approaches. I don't think we actually use a document like a SWOT analysis – in effect we were doing a similar sort of thing." (4, A)

However, it would be wrong to suggest that head teachers did not make use of some formal methods when deemed appropriate. The strong emphasis on informal methods did not stop head teachers employing a sometimes quite wide and eclectic mix of methodologies in order to ensure that they are monitoring the impact of a decision:

"Feedback from staff questionnaires, formal questionnaires and from speaking to staff." (9, C)
"I knew what was going on all the way through, through formal communications as those evaluation sheets and the informal." (3, A)
"I did sort of a SWOT analysis on the strengths and opportunities." (5, B)

In addition some head teachers do use written notes to assist them although these often appeared to be unstructured in form. In this first example the head teacher also uses writing things down to "buy time" to think, an issue that we shall return to shortly:

"I wanted to listen to what they were saying and I said, let me just write these down, so I can make sure I've understood what you're saying to me. I always do that. Sometimes it gives you time to reflect." (3, A)

"I took a book with me - even on holiday I had my book with me thinking about all the different ideas." (7, C)

Informal approaches often hid a quite clear process of decision making. In the following quote the head teacher describes a clear three step process for reviewing the school although it requires minimal formal written procedures:

"So first of all you do is you dump down any [information] – what does the evidence tell us? We've then got what is good, what are the things we need to do, what are our areas for improvement?" (6, B)

Even when head teachers did not rely on formal methods it is clear that they did consider a range of different options available to them, and often talked with senior staff about them. It would be wrong to imply that head teachers' decision making was chaotic and lacking in structure – rather that they informally wove together different approaches. Developing different options to assist decision making was a key skill even if it did appear to happen in an informal way:

"When I'm ready I will sort of write down the options." (5, B)

"Another option that I considered and talked about .." (2, A)

"The two options were .." (5, B)

Generating a range of options has been identified as a characteristic of rational/analytical approaches (see page 55). It is clear that head teachers' decision making is a complex process drawing on many sources and relying heavily on dialogue as opposed to written processes.

There was evidence of differences between experienced and inexperienced head teachers in regard to their use of formal decision making strategies. Experienced head teachers appeared to be the least likely to use any formal decision making processes. The only direct reference to the use of a formal written approach was from an inexperienced head teacher: "I did a SWOT analysis" (5, B).

This would match Klein's notion that analysis is very much the province of the novice and is a direct symptom of lack of experience: *"analytical methods are not the ideal; they are the fallback for those without enough experience to know what to do" (Klein, 1999, p.103)*

It is possible to conjecture that experienced head teachers have internalised over time formal processes and so can weave them effectively into informal structures. In reference to the research questions it is possible to note that, in general, head teachers did not extensively rely on formal approaches to decision making but rather developed an eclectic mix of strategies designed to meet the requirement of their particular context. It is also notable that more experienced head teachers were more willing than inexperienced head teachers to rely on informal processes.

GUT FEELINGS AND INTUITION

Do head teachers habitually rely on their "gut feeling" when making decisions?

What mix of strategies do head teachers use in making decisions?

Do head teachers (either consciously or unconsciously) justify intuitive decisions as rational decisions in retrospect (post rationalisation)?

To what extent do head teachers rely on their "gut feelings" in making decisions?

Head teachers' attitude to their gut feelings could be ambivalent. Certainly the experience of having gut feelings was common:

"You often get that gut feeling."(1, B)

"Gut feeling can sometimes be right."(1, B)

"You know instinctively whether you need to follow something through or not." (3, A)

"Sometimes you do rely on your gut and you hope that your gut 99% of the time is right." (9, C)

"Some of it was a gut feeling." (5, B)

Some head teachers reported situations where they had gone against their gut feelings and regretted it:

"I have had a case where my gut told me one thing, the logic told me another and I went with the logic and actually my gut was right and I could have kicked myself." (9, C)

This would suggest that gut feelings are both useful and authoritative in at least some situations. Where head teachers reported their gut feeling being effective it was commonly related to situations dealing with personnel, i.e. interviewing and promotion. However, head teachers also often felt that gut feelings could be misleading and were often not prepared to take them on board without questioning or further exploration:

"I think gut feelings can be dangerous." (1, B)

This ambivalent relationship with gut feelings was commonly expressed as an unwillingness to accept their gut feeling at face value. Most head teachers felt that gut feeling had to be balanced with "hard" evidence to validate it:

"But if you've followed it out and you've checked out your gut feeling and you're right, then go with it." (1, B)

A problem that head teachers appear to encounter with regard to using their gut feelings was the problem of accountability and explaining a decision to others, such as staff, governors or parents made on the basis of a gut feeling. Our current culture is often not sympathetic to the validity of intuition and often head teachers felt the need to wrap their decisions in a cloak of rationality in order to maintain credibility. This is echoed in Morgan's comment that:

"Modern organizations are sustained by belief systems that emphasize the importance of rationality. Their legitimacy in the public eye often depends on their ability to demonstrate rationality and objectivity in action" (Morgan, 1986, p.39).

Morgan's comment can be re-interpreted through this research to apply directly to head teachers themselves at a personal and professional level rather than just at an organisational level. The "legitimacy" at stake is not just that of the organisation but more pertinently that of the individual head teacher. It is no surprise therefore that head teachers felt it was important that decisions made were expressed within a rational context for external consumption:

"[the decision] was very logical." (3, A)
"The actual basis of the decision is probably sound and rational." (2, A)
"You have to be really clear that the decisions that you're making are made for a good reasons."(7, C)

It was clear that head teachers were very aware and sensitive to the issue of credibility. Loss of credibility was seen as a major block to professional authority and head teachers worked hard to ensure that their credibility was never undermined. It was therefore essential to ensure that in external eyes any decision they made could be justified on rational grounds:

"Say I'm going to make a decision on emotion and the hard evidence says something else I think people may well question my credibility" (9, C)

One head teacher describes how a formal method (a rare occurrence in itself) was used to support the gut feeling:

"I suppose the SWOT analysis was done on the three options and the more I thought about the options – I was convinced and used my gut, used my intuition, that that was going to be the one." (5, B)

This all raises the problem of what comes first and the quotations presented would suggest quite high levels of post rationalisation. The interplay between gut feelings and rational analysis is often complex with head teachers moving between the two strategies in a quite fluid manner. It was clear that often a new initiative or problem to solve was identified through a general gut feeling which then prompted rational analysis and exploration. The following quote makes this clear:

"I had a strong feeling that there was very hard evidence." (9, C)

Some head teachers recognised this process explicitly. The following quotes from three different head teachers (one experienced, the others inexperienced) demonstrate this clearly:

"I would be lying if I said that I didn't go on gut as well and then hope that the evidence either proves or disproves my gut feeling." (9, C)

"I do go on gut instinct. I have to say. I go on gut instinct first and then I gather up bits and pieces of evidence to see whether it backs up my gut instinct." (4, A)

"I think right well let's delve some more to see how we can get evidence that supports my gut feeling." (9, C)

Gut feelings can be described as an element of an intuitive approach to decision making. The characteristics of an intuitive approach were defined in chapter two as embedded in direct experience, unconscious, emotionally associative, effortless and very quick – appearing as it would seem instantaneously. Some head teachers were quite comfortable to describe themselves and their decision making style as intuitive:

"Well I would say that I was fairly intuitive." (3, A)

Experienced head teachers were more likely to be comfortable with the description of themselves as intuitive decision makers – inexperienced headteachers were much more hesitant to do so. In their model of expertise, Dreyfuss & Dreyfuss (see page 27) identify one element of the transition from novice to expert as a journey from a reliance on analytical thought to intuitive thought. The research evidence would appear to support their assertions in this regard, in that the experienced head teachers in the research sample were less reliant solely on analysis than the inexperienced head teachers in the sample.

As already noted, the main area of work where gut feeling appeared to be particularly authoritative was in personnel issues. Head teachers deal with personnel issues on a daily basis and have developed high levels of expertise in dealing with people. The relationship between intuition and dealing with personnel was summed up by two head teachers:

"You have to have a feel for things, and you have to be able to read body language and look at the eyebrows and look at the sign. So I suppose that's intuition." (3, A)
"You do build up as you gain experience is you develop other emotional cues body language cues, things that you pick up that are almost intangible." (9, C)

However, once again, although many head teachers acknowledge the power of their intuition, they were nevertheless anxious to balance an intuitive approach with rationality:

"You need all of those things as a leader. You need rationale, you need intellect, you need intuition, you need it all. See like my gut feeling might be to do something. That's intuition. But my wisdom might actually say, hold back a minute, this might be the wrong time." (3, A)
"Its going to be a balance between what you feel is important in education and also your own research and what work you've done." (8, C)

Gut feelings are just one of the aspects of head teachers' work that support their decision making process. The interaction between intuition and rationality was seen as both necessary and capable of generating a kind of powerful synergy:

"I think your feelings, your experiences, the opinions that you have do influence the way you look at the world." (8, C)

Intuition was often expressed in different ways than as "gut feelings". When talking about a scenario in school and the decision made to change the curriculum one head

teacher said that "deep down I knew" (7, C) it was the right course of action. Another head teacher talking about a member of staff who the head teacher believed had hidden talents:

"And I just knew, I just knew that she'd been overlooked." (5, B)

It is interesting to consider what the phrases "deep down I knew" and "I just knew" tell us about how the head teachers were thinking and approaching the problems they faced. The phrases seem to refer to a kind of "knowing" very different from knowing facts. It would not be appropriate to say "deep down I know that Paris is the capital of France" for example. That is a fact and so you do not need to know it "deep down". The reference in the phrases to "deep down" implies powerful processes at work that at some point give rise to knowledge that appears almost unbidden from the experiential mind in the form of "insights".

The emphasis in the phrase on the words "I knew" can also be seen as an indicator of certainty. The interviewee is not just saying that they know something but that they know it definitely. This feeling of certainty was quite common and was often a spur to action:

"Sometimes you've got a gut reaction, you've seen something that you just know shouldn't happen .. and you think no that's got to be rectified or changed or spoken about." (9, C)

It is clear that, regardless of head teachers' ambiguous feelings about intuition and their concern to retain credibility, gut feelings do play a big part in head teachers' decision making processes:

"I do use evidence. But I'm – within myself." (4, A)

It is clear, therefore, that head teachers do use their "gut feelings" when making decisions although they are at times rather hesitant to own up to this fact. Although head teachers do mix rational and intuitive approaches, the reality is that the intuitive "gut feeling" is a powerful determinant of decisions and actions. The evidence presented here would suggest that, partly as a result of this ambivalence, there is considerable evidence that head teachers do engage in substantial amounts of post rationalisation.

ACCOUNTABILITY

How do factors such as accountability, metrics, complexity and uncertainty affect decision making?
Does increased accountability lead to a greater choice of rational or intuitive decision making strategies?

Chapter two clearly outlines the increase in accountability in the head teacher's role over the past quarter of a century or more. Head teachers felt the weight of accountability very clearly. All the head teachers interviewed were very aware of the accountability pressures on them and felt this keenly:

"I felt more under pressure in that last HMI visit than I've ever done in my career ... for me it's a case of this is high risk." (1, B)

"I'm really worried about the results going down." (3, A)

"There's been enormous risks." (8, C)

"There's lots of things that could have made it go horribly wrong." (9, C)

"It was going to be the most important thing that I had to do to date." (5, B)

The pressure on head teachers was at least in part due to the fact that they felt solely responsible for decisions that were made. They experienced uncertainty related to what were perceived as high risk situations. The risk experienced by head teachers was often a direct risk to their professional credibility and thus they experienced uncertainty not just about the context they were dealing with but with regard to their own professional status. This was summed up by one inexperienced head teacher:

"If it had gone wrong I could have completely messed up my chances of being a head." (7, C)

One way of reducing the high levels of professional uncertainty would be to delegate responsibility. Although head teachers did indeed delegate a lot of responsibility for a wide range of school affairs to their staff, they were also keenly aware that in the final analysis it was them that would shoulder the burden of responsibility:

"Ultimately the decision's going to be mine." (1, B)

This is, of course directly reflected in the National Standards for Head teachers (see page 19). Despite the overwhelming burden and pressure of accountability head teachers interviewed did not suffer from an induced paralysis but were often able to maintain a clear personal drive and focus in the face of high levels of accountability. Some were able to make light of external pressures:

"We're not governed by Ofsted. We're governed by teacher's professional judgments." (3, A)

However, this kind of bravado was exclusively expressed in those schools that were not in special measures or undergoing intense external scrutiny. A strong element of accountability within the current educational context is the very strong emphasis on metrics in the form of Standard Assessment Tests (SAT) results. Another head teacher in a successful school was perhaps more honest when responding to a question about the reaction to a fall in SATs results following the head teacher's decisions:

"Oooh. Tricky one that one." (4, A)

The truth is that the burden of accountability weighed heavily on all head teachers interviewed. Dealing with accountability often required courage and high levels of conviction. Even when the possibility of making mistakes was clearly in the head teacher's mind it did not discourage experienced head teachers from taking bold action:

"I knew that our standards were dipping whilst the teachers were experimenting. And it was quite a vulnerable position to be in." (3, A)

When asked what motivated them to make a decision in the face of external pressures and sometimes opposition, head teachers often placed the decision firmly within the context of the overall vision for the school. This vision always contained a strong element of concern for the children's welfare and learning:

"[we undertook this initiative] because of the children's learning. Because the children weren't – working to the way we expected them to work. They weren't happy. They were bored and they weren't enjoying themselves. And school should be a happy place to be." (3, A)

The evidence of the interviews clearly shows the awareness of accountability amongst head teachers and their perception of the pressure they are under. But the key question is "does the pressure of accountability affect the way that head teachers make decisions for good or bad?" One head teacher said:

"I think that I'm still making quite a lot of quick decisions because of the situation at the school." [school in special measures] (9, C)

Head teachers strongly associated making quick decisions with making bad decisions and so it is reasonable to suggest that high levels of accountability may lead to poorer decision making due to the pressure of time. This may become an increasing problem

as the government seeks to pressure schools in special measures to improve at increasingly accelerated rates.

Clearly the high levels of accountability experienced by head teachers did have an effect on their decision making strategies, and not necessarily a positive effect. In chapter one, two views on the likely effect of accountability on decision making were presented. Beach & Mitchell (see p. 20) have suggested that increasing accountability will lead to increasing reliance on analytical strategies. However, Hogarth (see p. 34) suggests the opposite effect, with a greater reliance on intuitive methods under pressure. The evidence presented here would tend to favour Hogarth's view.

WORKING WITH STAFF

Do head teachers make use of their staff to explore different perceptions and frames?

How important is problem setting for head teachers?

How significant is perception for head teacher's decision making?

The use of staff to support decision making is a complex issue. Head teachers spent a lot of their energy investing in relationships which they saw as the key to the school's effectiveness:

"I think the key thing in any school is the quality of relationships." (6, B)

Invariably head teachers expressed decisions made in corporate terms, i.e. "we decided that ...". In reality, it was at times difficult to see how staff were directly

involved. This is partly due to the fact that social interactions within the schools operate on a variety of levels, many of them informal and difficult to describe. The formal contact between staff, at meetings for example, probably represents the fruition of a large number of informal conversations and dialogue over a considerable period of time. Although it was clear that head teachers placed great value on the need for ownership of any decisions, it was sometimes obvious that the decision itself was entirely the product of the head teacher and any ownership was the result of a good "selling" job by the head teacher or even quite explicit manipulation:

"A strategic leader knows where they're going, what they want. The art is to get people to come with you. So you've made your decision. You know where you need to go. The skill is getting the people to come. And that takes time." (3, A)
"If the staff didn't believe it could work it was never going to work really." (7, C)
"The next thing was to convince everybody that this was going to be the right decision." (5, B)
"I like to make sure that people almost think that ideas are coming from them." (4, A)
"Where it doesn't work is when people feel that things are being done to them" (6, B)
"You can only take people with you if they believe it's going to be OK." (2, A)

Head teachers often started the process of change or introducing a new initiative well in advance of any formal or explicit discussions by entering into gentle dialogue with a range of staff :

"I had spoken to them about this notion of the possibility of doing something along the creative lines with the curriculum – hadn't gone into great detail." (4, A)

"I do know it's a collective decision because it's the result of a series of discussions, it's like the right strategy emerges." (6, B)

"I didn't just take it to SMT – I'd actually been talking to people about it." (8, C)

In convincing staff of a course of action it was paramount that any doubts that the head teacher might have were not shared. Head teachers were keen to present a uniformly positive outlook on an initiative presented to staff:

"There are times when I maybe have doubts but I feel in order for it to work I've got to be positive." (2, A)

Most head teachers were very concerned that staff had what was described as "ownership" of any major decisions made:

"I want people to have ownership of things." (6, B)

Ownership was a term employed by all but one of the head teachers to describe the willingness of staff to accept responsibility for supporting change. It was a concept that had wide use but was often unclear exactly what it meant. In reality, most decisions appeared to originate from the head teacher or senior staff and efforts were then undertaken to convince staff in retrospect that they had been involved in the decision. One head teacher, however, preferred to use the term alignment rather than ownership representing perhaps a more accurate appraisal of the real situation pertaining to strategic decision making within the school:

"So if as a staff we've got alignment which is what our goal is – alignment isn't [the same as] agreement." (3, A)

However nearly all head teachers strongly emphasised a collegiate approach to decision making emphasising "team work":

"That is the way I work, try and make people work as a team, work together, make them feel ownership of something like this." (4, A)
"As a staff we make the decisions all together." (7, C)

The reality, however, was often that head teachers made decisions quite independently of staff, governors or anyone else. Experienced head teachers were most likely to recognise and identify this fact:

"I usually make decisions quite quickly in my own head. When I should choose to share them, that I will decide at a later date." (3, A)
"The governors don't know this yet – nor do anyone else really." (1, B)

There are clearly a number of tensions surrounding decision making and involvement of staff. On the one hand head teachers were at great pains to convince staff that they had "ownership" of decisions and that team work was encouraged and nurtured whilst, on the other hand, acknowledging that most major decisions were in reality made by the head teacher. Head teachers did engage in staff discussions and dialogue but this was often after the decision had been made and was primarily focussed on

details of implementation. They rarely appeared to involve them in the initial stage of coming up with options:

"I only start to seek advice and ideas once I've narrowed things down myself." (2, A)
"I did have a preconceived notion that what I wanted ... But how we did it ... was definitely open for grabs." (9, C)
"when I've made the decision I am also open to hearing other sides ..." (3, A)

One exception to this was an inexperienced head teacher who clearly involved senior staff at the initial stage of generating options:

"We literally sort of sat round here in my office with large bits of sugar paper and played around different scenarios." (9, C)

The same head teacher however, also made it clear that as a head teacher "there are decisions made that you can't debate." (9, C)

Head teachers appear to be very skilful at gaining commitment from staff for decisions that have been made. One of the key skills used by head teachers appears to be the ability to have empathy with teachers, to be able to see the issues from their point of view:

"I think you've just got to see yourself as a member of staff going through it." (7, C)
"Some people are seeing it for the first time so you've got to remember that." (8, C)
"Putting myself in their shoes." (9, C)

This ability to empathise with the class teacher's position also enabled head teachers to have a clear perception of what the issues looked like from the teacher's point of view. In this way, they were able to have a wider perspective on any problems faced. This provides strong evidence to support our current cultural model of head teachers having direct and extensive experience as class teachers as opposed to a managerial model with schools being led by "Principals" with little classroom experience. Such persons would have an impoverished perspective compared to the wide perspective of a head teacher rooted in classroom experience.

Head teachers were very clear about the informal networks at work within a school. They were sensitive to the feelings of staff and the general mood of the school. They actively sought contact with staff and confirmation of perceptions of staff mood. They knew that dialogue with a member of staff would be reported back and may well affect other people's opinions and stances:

"And you know that it's not just that person you're dealing with, is it, it's everybody else." (8, C)

The ability to maintain a firm awareness of staff's feelings was essential in anticipating reaction to decisions and how best to approach staff to ensure effective implementation. The highly effective personnel skills developed by all head teachers were clearly in evidence in the interview transcripts. Amongst those skills were the ability to listen to others, to "take on board people's views" (8, C) whilst being "very clear exactly what you want" (7, C). The need for clarity can be seen as echoing the

emphasis that Klein places on the "sharing of intent" as a key factor in effective team working. Klein said that *"the art of describing your intent is to give as little information as you can" (Klein, 1999, p.229)* and so head teachers need to make fine judgements about releasing information to staff.

It is clear that the relationship between head teachers and their staff is an immensely complex one. Although head teachers habitually claim that decisions are made corporately, the evidence to support this is less clear. Indeed the interviews revealed many occasions where such claims were plainly false. The reality is that the majority of the decisions made were in fact made by the head teacher although their implementation was often very much open for discussion, debate and modification.

This is initially a puzzling finding, particularly in the light of the current emphasis on "distributed leadership" and the head teachers' common reference to corporate decision making. The solution to this conundrum may be related to the issue of "problem setting" as put forward by Schön and outlined in chapter one:

"In real-world practice, problems do not present themselves to the practitioner as givens. They must be constructed from the materials of problematic situations which are puzzling, troubling, and uncertain. In order to convert a problematic situation to a problem, a practitioner must do a certain kind of work. He must make sense of an uncertain situation that initially makes no sense" (Schön, 1982, p.40).

Although it is common to link decision making with "problem solving" it may be that we underestimate the role of the head teacher in "problem setting". Without the head

teacher setting the problem by being able to describe its context and meaning to the school, it is difficult to see how any "problem solving" or decision making can be initiated. On the other hand, once a problem has been "set" by the head teacher it is possible for a wide range of staff to engage with the problem positively, including making decisions related to implementation and detail. A key factor in understanding any problem within the context of the school must surely be the head teacher's vision for the school which acts as a filter and lens for understanding the significance of any issue. This will vary from school to school and depend on the particular vision held by the head teacher. The evidence of this research would point towards problem setting being a key role of the head teacher.

THE ROLE OF EMOTIONS AND MORALS

How significant are emotions and morals in head teachers' decision making?

The tensions described in the last section often led to head teachers struggling with moral dilemmas with regard to managing staff. Head teachers need to make a judgement about how much to tell staff and where the fine line between pragmatism and honesty lies. Whilst recognising the problem, most head teachers were very anxious to be seen to be honest in their dealings with staff: "My style would be at least fair and just." (1, B)

This need for honesty often came into conflict with the need to manipulate situations for the benefit of the school. This was recognised by most head teachers as an inevitable facet of their role:

"You have to be a fairly good manipulator. I don't think being devious – because that sounds as if you are being dishonest." (1, B)

"You're having to be underhand." (8, C)

"I rarely would lie .. I would manipulate the truth." (2, A)

"I think there's degrees of honestly." (9,C)

"But then you're also plotting against them aren't you in a way?"(8, C)

"I'd like to be fair and honest with everybody and but it's sometimes awkward isn't it?" (8, C)

"I wasn't completely transparent about the purpose of the day to my staff." (3, A)

All the head teachers found these situations uncomfortable and there was often deep internal personal conflict between their need to be fair and do the right thing and to pursue relentlessly the vision for the school. There was explicit recognition that at times there are ethical issues:

"There is a real ethical issue there about doing the right or wrong thing." (1, B)

In one account, a head teacher talked about a decision that was made but the management team had a different option in mind. The head teacher described how the situation was managed. The headteacher initially accepted the opposing idea presented by the management team and then, by careful manipulation, pointing out the problems with their option got them to agree with her initial option:

"I went with their idea and I said yeah that's a really good idea ... as I talked to them, the problems I've put in their scenario would be resolved by mine ... So I created problems with theirs, offered a solution ... and suddenly it was agreed and done." (2, A)

This kind of skilful management, one might say manipulation of meetings was not uncommon. head teachers' strong bias to action and drive inherited from their vision meant that they would not give up on a decision to which they had committed themselves. It is easy to imagine that the management staff in the quote very likely left the meeting feeling that the decision was actually arrived at by themselves.

It is clear that moral and ethical considerations weighed heavily on head teachers' minds and were indeed "*significant in head teacher's decision making*". All the head teachers interviewed struggled and wrestled with these issues at school as part of their working experience.

In a similar way, emotion had a part to play in head teachers' decision making. As an experienced head teacher commented:

"I think that we all make some decisions based on emotion." (9, C)

Despite this quote, most head teachers were unhappy to be seen as making "emotional" decisions which was clearly perceived as being irrational and therefore, within our current culture unjustifiable. In commenting on the role of "gut feelings" one head teacher said:

"What I don't want to do is just purely rely on gut because then that's perhaps relying on emotion rather than rationale or logic." (9, C)

This quote identifies emotion as a reason to consider a course of action to be suspect and clearly reflects Gigerenzer & Selten's statement that *"emotions are often seen as obstacles to rationality" (Gigerenzer & Selten, 1999, p.9).* However, most head teachers were happy to acknowledge the role that emotions play in their interactions with staff:

"You do build up as you gain experience - you develop other emotional cues body language cues, things that you pick up that are almost intangible." (9, C)

It is clear that emotions do play a role in decisions that head teachers make although cultural norms make it difficult for head teachers to acknowledge fully how significant a role they do play. Within the realm of interpersonal relationships it was easier for head teachers to acknowledge the role that emotions play.

EXPERIENCE

What is the impact of experience on decision making?

How is experience translated into expertise?

Head teachers valued experience in themselves and others. When asked where they would go for advice on a difficult decision, they invariably mentioned more

experienced head teachers and actively "seeking lots of advice from past heads" (7, C). When asked what they would advise an inexperienced head teacher faced with a difficult decision one interviewee replied:

"Ask them to seek some advice from somebody that's a bit more experienced." (8, C)

This was a common response. Head teachers realised that although a problem they faced may appear unique to them, there was probably someone who had relevant experience of the same or similar situation:

"There aren't any brand new scenarios are there. You know it's not – you're not going to have a situation really that's not really been come up before." (8, C)

This clearly implies that the skills necessary for the role develop through extensive experience over time. All of the head teachers interviewed valued experience and tacit knowledge over overt knowledge. Klein claims that experience enables the expert to access a number of characteristics such as the ability to see patterns and note anomalies. The evidence of the interview transcripts is that experience enables head teachers to take risks, to be more creative, to be bolder in their actions and sometimes to accept the need to proceed without a clear plan of action. Inexperienced head teachers often found it more difficult to deal with uncertainty. Experienced head teachers on the other hand were often quite willing to accept and deal positively with uncertainty:

"If you are not confused you're not thinking straight and actually you need to go through that a period of confusion and be quite happy with that period of confusion - and it's by going through that process that the right strategies are the ones that then emerge." (6, B)

"You cannot control every single thing ...I might get things wrong – I don't know what's going on but I'm just going to go with the flow." (3,A)

"We all know you learn through your mistakes." (5, B)

"It's okay to take a risk, and it's okay if we get something wrong." (3, A)

Confidence was a key factor in the effectiveness of head teachers' decision making. This was emphasised by several interviewees:

"The main thing I think you learn, is the confidence." (5, B)

"It's confidence isn't it." (5, B)

Confidence was seen as a developing as a direct result of experience. One head teacher expressed the growth in confidence that came with experience by saying:

"So I think with time I had become more confident in what I could and could not do. What I could and could not pull off." (3, A)

"Certainly the confidence in handling staff ... is learnt over time." (5, B)

Clearly not all experience may be positive. Bad experiences may dent a person's confidence. Head teachers were well aware of this and were anxious that this didn't

happen. One interviewee reflected on how it would have been a dent to confidence if the decision had gone wrong:

"If it hadn't worked out it would have knocked my confidence a little bit, I would have had to go back to square one and so you had to really be sure about what you were doing because if it had gone wrong then we would have been in a muddle." (7, C)

So there is a very delicate balancing act to be undertaken by head teachers between being bold or cautious. The benefits of experience were summed up by one head teacher who when asked how she had developed her decision making style said:

"With experience - with knowledge – with being a practitioner – with listening – and with time. I think experience has a lot to do with it." (3, A)

However, despite the value given to experience, head teachers were also aware of the problem of jaded perceptions that might arise from long tenure. They acknowledged unprompted that perception was important and that the new, inexperienced head teacher could be in a position to see things in a new and illuminating light:

"I think especially being a new head you see certain things." (8, C)
"… to see the school through fresh eyes." (9, C)
"I think it probably needed someone new to come along and see a different way of doing it." (7, C)

Head teachers valued this ability and had a clear understanding of the importance of perception. They appreciated that perception was not *"unproblematic" (Claxton, 1997, p.7)* and actively welcomed the opportunity to have a fresh perception of the school or problem. Head teachers new to a school were anxious to use this facility whilst it was available before their perception became jaded and there is some evidence that they actively sought different perceptions from senior staff around them.

New head teachers often felt there was a "honeymoon" period when first appointed to a new school. This was time for accessing new perceptions but also a period of opportunity to take bold steps:

"... it was easier to do being a new head and coming in." (7, C)
"I was in a golden opportunity being absolutely new where I could make my mark." (9, C)

However the "honeymoon" period also had its problems. It was perceived as a period of high stakes and accountability. This was the time when the head teacher's credibility in the eyes of staff, governors, parents and all school stakeholders was seen as being established. The importance that head teachers place on professional credibility has already been discussed:

"You've got to establish your credibility, because immediately you go into a new school you have to say I have arrived, look at me, follow me, I am this inspirational person."(6, B)

Not surprisingly, the issue of gaining credibility was particularly evident in schools which were in special measures. Experience was also seen as the key to developing intuition and gut feelings. This is particularly true for dealing with personnel issues. Experience gained in dealing with staff over time enables the experiential mind to be developed and used to best effect:

"You do have that as a gut feeling and usually if you develop your experience you find that you're not often wrong." (9, C)
"That [intuition] comes with experience with headship." (5, B)
"How do you intuitively feel ... I think perhaps it's something learnt more with experience." (5, B)

Head teachers were therefore clear that experience was important and indeed vital to their role, but from the interview data it was not always easy to ascertain the mechanisms for *"how experience is translated into expertise"* other than through accumulated experience in the role itself. However, head teachers did value contact and networking with other head teachers as a source of support and a pool of accumulated professional knowledge. As one head teacher is already quoted as saying: "There aren't any brand new scenarios are there?" (8, C).

It was also evident that head teachers valued and used their deputy as a support; this will be mentioned in a later section on head teachers' development needs. Although deputies did not offer the same access to accumulated experience as offered by other head teachers, they were able to provide the head teacher with a valuable sounding board for ideas and perspectives.

INDIVIDUAL SCHOOL CONTEXT

In deciding on the constitution of the sample, the issue of school context was an area of potential concern. It was not known to what extent the school context would have an influence on the decision making strategies employed by head teachers and, if so, how strong was this influence.

It is clear from the interviews that all the head teachers put great store in knowing and being familiar with the context of their school. They were at pains to develop subtle strategies to understand the context they were working in and took time and effort to deepen their understanding of the individual school environment in which they were working. This was seen as essential to their ability to make appropriate decisions:

"I think school context has a huge amount to do with it." (3, A)

There is currently within the education system a large amount of what might be described as hard contextual data. Discussions about school context commonly use indicators such as English as an Additional Language (EAL) and/or Free School Meals (FSM), and these are used and quoted in government school performance documentation such as "Raiseonline" and in so called "league tables" of school results. These contextual items are used by the government to generate "value added scores" and performance indicators against which schools are judged. However, it is clear from the interviews that the main contextual factor affecting schools, and therefore head teachers' decision making strategies, was staffing. This included the

personal and professional strengths and weaknesses of the staff but also the general culture and ethos of the school:

"Bits of paper that don't necessarily mean much until you have caught the culture of the school so your first priority over the first few weeks is to see and be seen – to catch the culture."(6, B)

Culture is a diffuse concept but many definitions emphasise the role of values, beliefs and norms of behaviour:

"Organisational culture is the characteristic spirit and belief of an organization, demonstrated, for example, in the norms and values that are at generally held about how people should treat each other, the nature of working relationships that should be developed and attitudes to change. These norms are deep, taken-for-granted assumptions that are not always expressed, and are often known without being understood" Torrington & Weightman (1989).

Head teachers employed a range of strategies to keep themselves informed of the school's "culture". These strategies were commonly informal in nature and difficult to quantify. They operated at a subtle and on-going level. However, it was clear that head teachers saw these functions as an important and perhaps essential part of their role:

"It was important to put out the feelers." (9, C)

"I do try to keep my ear to the ground." (9, C)

"I think as I get to know the school and individuals or groups of people my gut feeling will be better." (9, C)

"Constant talking - but not just with individuals - but as a whole staff." (3, A)

"I share ideas in a sort of an informal way and see how people feel about them and then maybe throw up ideas afterwards." (3, A)

Phrases such as "putting out feelers" and "just talking to staff" were common. The direct face to face interaction of head teachers with their staff was clearly seen as important and, although there is some evidence of formal measures in the shape of staff questionnaires, the primary and overwhelming strategy was informal face to face contact.

This focus on staff as the central defining context of the school was often repeated when interviewees were prompted to offer advice to a less experienced colleague. As one interviewee advised:

"I think I would ask first, right what's your staff team like? Are they up for a challenge?" (4, A)

This is a good indication that head teachers consider staffing to be a major contextual factor in any decision making scenario. Head teachers often felt the uniqueness of their school setting very strongly:

"I think what we've done here you couldn't automatically put into another school." (7, C)

It is possible to consider that head teachers may, in fact, overemphasise the individual school context. Their efforts and focus on getting to know their school context in minute detail may lead them to an exaggerated consideration of the school's uniqueness. The following quote about interviewing for staff is revealing:

"I could tell whether a member of staff was right to be here, whether they'd fit in with our ethos really, although I've never met anybody that doesn't fit in with [our school] having said that." (7, C)

In this quote the head teacher seems to be saying that the school's context is so special that only a certain type of person would fit in. In the conversation that followed on from this quote, the head teacher described the required person as someone with commitment and a professional attitude. Clearly, this is what every head teacher would want from staff so it is not surprising that in reality the head teacher has never met anyone who wouldn't fit in. In claiming that only a certain and special type of member of staff could work in the school the head teacher may be overemphasising the uniqueness of the school.

The problem with overemphasising context is that it may convince headteachers that their skills and the skills of their staff are specific to the school they are working in and not necessarily transferable to another school setting. In reality, it is the strategies that head teachers employ to understand their school context that are important and clearly transferable between schools.

HEAD TEACHERS' DEVELOPMENTAL NEEDS

One of the issues that arose from the interview evidence that was not directly a part of the original research brief was the way in which head teachers actively managed their own development needs. They were often acutely aware of their strengths and limitations and were constantly reflecting on their own performance. They understood their own personal leadership and decision making style:

"My preferred leadership style is that of corporate leader." (6, B)
"How effective [am I] at what [I] do?" (1, B)
"For me I think it's a learning process." (1, B)

This recognition by head teachers that they are still in the process of learning enabled them to identify specific gaps in their knowledge or experience and seek support or situations to develop that experience.

"I felt that finance was something I wasn't so good at or didn't have as much experience on." (8, C)

Equally, head teachers had a sense of their strengths:

"It is a particular strength of mine to see organisation, to see resources and to find the best, I'm known for that really." (7, C)
"I happen to know one of my strengths has always been growing people." (5, B)

They could also describe their leadership style and identify those aspects of leadership style that they found most challenging. This was often associated with a very authoritarian style:

"[I'm] finding the more assertive leadership harder." (7, C)
"Seeing the very different leadership style [needed] – it was a very direct approach – authoritative. And that's probably not the [my] natural style." (1, B)

Through this awareness of their preferred leadership style and monitoring of their performance, head teachers were able to identify their own professional development needs. Head teachers actively sought to appoint senior staff close to them who would support weakness in their own approach and leadership style:

"You want somebody that's different and bringing new experiences in but on the other hand you don't want someone so different to you that you end up clashing or having conflicts with you." (8, C)
"I want somebody who challenges my ideas." (9, C)

A major source of support was often the deputy. Although head teachers actively sought professional advice from more experienced head teacher colleagues, this took time and effort. The deputy and other senior staff, however, were a readily available source of support and reflection and many head teachers actively sought the views and perceptions of senior staff, especially the deputy to support them:

"[a] major source [of support] has been with the headship team – in particular my deputy." (1, B)

"Even at the stage of 'is this a good idea that I'm thinking of', I spoke with [my deputy]." (2, A)

The choice and appointment of the deputy was clearly therefore an important element in supporting the effectiveness of the head teacher. One of the key professional development tasks that head teachers identified in the interviews was the maintenance and nurturing of a clear vision for the school. The head teacher's vision was not just a one-off product set in stone, but rather an ongoing process of reflection. The need for a vision and the nurturing of that vision was clear:

"I have to have my own personal clear direction."(1, B)

"I have got a vision of a culture I want to establish." (6, B)

Head teachers showed an understanding of the need to manage their own time and workload. They were understandably concerned about workload and potential burnout:

"I'm probably giving too much of myself, I think – I've been told that I'm going to burn out." (7, C)

To support their professional development, head teachers often sought and developed powerful and positive images of their role. This enabled them to manage their responsibilities without being overwhelmed:

"I see myself as the conductor of the orchestra. Actually I'm the person who makes sure that everybody is then playing the same tune at the same time rather than somebody who's playing every instrument." (6, B)

The metaphor employed by the head teacher in this instance is surprisingly similar to Schön's metaphor of the jazz musician (see page 114).

SUMMARY

The interview transcripts have provided extensive and compelling evidence of head teachers' decision making strategies. One head teacher summed up three key elements for decision making: time to think, exploration of options and consulting other people:

"you do need time – and I do think you need to consider the scenarios – and I think talking with other people." (2, A)

7

Findings and implications

"Human decisions are subtle and complicated and not very well understood"
Malcolm Gladwell, 2000, p.223.

INTRODUCTION

The aim of this research project has been to throw light on the strategies that are employed by head teachers of primary schools in making decisions. Chapter one has made a case for the significance of this area of head teachers' work – namely that effective decision making is a key characteristic of good head teachers. This research has taken a naturalistic approach to the exploration of decision making. It concerns itself with discovering how head teachers actually go about making decisions rather than formulating preset criteria for decision making against which the practice of head teachers can be measured. Naturalistic Decision Making (NDM) is a relatively new research approach led by researchers such as Klein working in very different fields from that of education. To date, there appears to have been no attempts to apply NDM approaches to the work of head teachers or other practitioners working within the education environment.

It may be that the aims of this research project are over-ambitious. However, the research data has yielded useful information on a number of the key research questions raised. It may be that the analysis has not produced startlingly new perspectives on headship but it has certainly reinforced some views surrounding the

role of the head teacher such as the importance of vision and provided further colour and finer detail to these issues.

The following sections succinctly list the major findings gleaned from the analysis undertaken in the previous chapter. It is followed by a section considering the possible implications of these findings.

KEY FINDINGS

Preferred decision making style

It was clear that head teachers preferred to take an incrementalist approach to decision making often described by the interviewees as "mulling things over". The advantage of such an approach is that it utilises head teachers' intuitive abilities as developed over time and experience. It allows head teachers to be adaptable and flexible in the light of an increasingly demanding and complex environment.

However, this approach could lead to endless procrastination. Head teachers avoid this by maintaining a strong "bias to action" which ensures forthcoming action. They were all able to carefully balance the need for long thinking time with the demand for action. It was clear that the head teacher's vision played an important part in this process, providing a powerful heuristic stopping mechanism. The head teacher's vision, driving the impetus for change, balanced with an incrementalist type of "mulling it over" was a powerful combination. This will be discussed more fully later in the section on "Understanding Decision Making".

In general, head teachers did not place much reliance on formal approaches to decision making although this should not be taken to mean that they did not make use of such processes when they felt it was appropriate. In practice, head teachers used an eclectic mix of formal and informal decision making strategies although the emphasis was always on the informal processes. This was particularly true for experienced head teachers.

Gut feelings and intuition

Although head teachers were ambivalent with regard to the efficacy of "gut feeling" it was clear that it had a critical impact on their decision making. Most of the interviewees could recount times when they had gone against their gut feeling only to regret it. Dreyfus & Dreyfus (see page 27) have generated a model of the journey from novice to expert and suggest that, in contrast to novices, experts learn to balance any analytical process with strong intuition. The evidence from this research would tend to support their model. Experienced head teachers were more confident in acknowledging their gut feelings and using them effectively. As already mentioned, it is within the sphere of people inter-relationships that gut feelings and intuitive approaches came to the fore.

School context

All head teachers made strenuous efforts to know and understand their school context. The primary element of school context that concerned head teachers related to personnel; issues of staffing competence, history, tradition and culture. The strategies used were largely open and informal consisting of continuing dialogue with staff and alertness to changes and trends: i.e. "sending out feelers".

Head teachers felt the individuality and uniqueness of their school very strongly but it may be that they overestimate this and underestimate generic skills that they have developed that would be applicable in any school scenario. It was in the field of working with staff that head teachers demonstrated "intuitive" skills developed over many years of working with personnel. Although head teachers were sometimes ambivalent about their gut feelings, most recognised dealing with personnel as an area where they had developed skills and where intuitive strategies were probably most applicable.

Accountability

All head teachers reported high and increasing levels of accountability which increased the risk associated by many decision making scenarios. A major threat was to the credibility of the inexperienced head teachers, at least in their own eyes (as this research does not provide any evidence to consider whether this is viewed the same by other staff and stakeholders, it may be that head teachers overestimate this issue). Many head teachers felt that external accountability was forcing them to make decisions more quickly than they would have liked. It is evident that head teachers associated quick decision making with decision errors – most could report a situation where they felt they had been pressurised into making a poor decision.

Involvement of staff in decision making

The clear implication of this research is that strategic decision making is primarily the province of the head teacher. Despite claims otherwise, most major decisions were generated by the head teachers themselves without the direct involvement of other

staff. This is not to suggest that the head teacher did not engage in intensive on-going dialogue with staff prior to making decisions and use the information gathered in the process of making their decisions, nor that they did not enable and develop mechanisms for staff to be involved in details regarding the implementation of initiatives, but rather that the initial genesis of any major decision originated almost solely with the head teacher. This provides a challenge to the current orthodoxy of "distributed leadership". The extent to which is it possible for the head teacher to delegate responsibility for major decisions is clearly open to question. The evidence presented here would suggest there is little scope for this, partly because, whatever might be said, head teachers are only too well aware that it is their "head on the block" at the end of the day. Although there is indeed more to leadership than making decisions, a basic premise of this research has been that making decisions is a major element of leadership and an important element in the successful performance of the head teacher. It may be that the influence and impact of distributed leadership has been over-estimated. Much more research needs to be undertaken here.

A suggestion arising from this research is that "problem-setting" (re. Schön, see page 16) is an important function of the head teacher and an explanation for the head teacher's role in strategic decision making. The primary task for the head teacher is not to ask "how can we solve this problem?" but rather "what does this problem mean for us?" It is the head teacher who provides the meaning and context which is essential in understanding and therefore being able to tackle a perceived problem. Indeed the head teacher may define and prescribe problems that are not perceived as problems by the staff. In a school that may be failing, it may be that the staff do not perceive, or do not want to perceive, quality of teaching, for example, as an issue. It is

the head teacher who establishes the importance and meaning of the school's priorities and issues. Once the head teacher has defined the problem and its importance, the staff can start to problem solve and bring the school's resources to bear on the issue. This research suggests the issue of "problem setting" as an aspect of head teachers' performance has been underestimated.

Differences between experienced and inexperienced head teachers

All the head teachers interviewed valued experience amongst their peers. They actively sought the advice from other head teachers and appreciated their colleagues as a source of professional wisdom. They were highly reflective of their own development needs and the styles of leadership they were adopting either through their choice or through circumstance. Sometimes this provided the head teachers with a challenge. However, it is clear that they looked to their peers for appropriate models of school leadership as well as using their deputies as "sounding boards" for ideas and perceptions.

One of the aims for this research project was to see if there are any substantial differences in the decision making strategies employed by experienced and inexperienced head teachers. It was also intended to consider differences of tenure in order to isolate strategies that were specific to the school context rather than head teacher preference.

There were no apparent differences that could be ascribed to differences in tenure. This may, of course, reflect the fact that the sample size is quite small – a larger sample size might reveal subtle changes. However, the lack of any discernable

differences from the interviews regarding head teachers who were long or short in tenure appears strong evidence as far as it can go. It would appear, therefore, that decision making style and strategies were influenced and largely defined by the individual head teacher's experience and personal preference.

There were, however, some differences between head teachers according to experience although these were often subtle. They can be summarised as: experienced head teachers were more confident in dealing with uncertainty; experienced head teachers were least likely to use formal rational methods of decision making relying more on intuition balanced with analysis, and experienced head teachers were more confident and less concerned with their "credibility". This also enabled them to be bolder in their decision making.

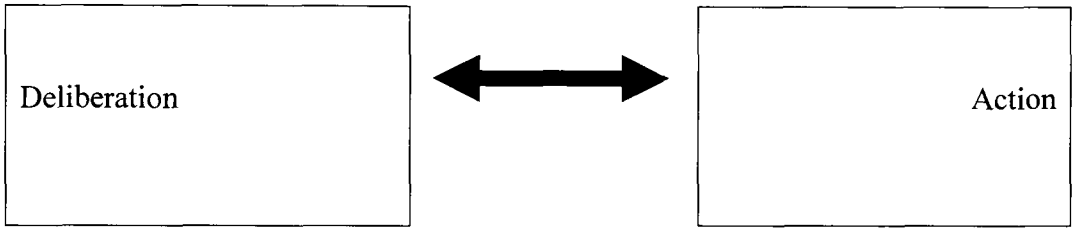
All head teachers regardless of experience had a powerful vision for their school. This vision appeared to be a pre-requisite for headship and an essential element in effective decision making.

UNDERSTANDING DECISION MAKING

Models are beloved by researchers and with some justification. They can aid our understanding of complex processes and also provide a mechanism for predicting outcomes. However, they also have disadvantages. They can also oversimplify complex situations and, as most tend to be presented as flow chart (as indeed Klein's RPD model is), they can have the fatal flaw of assuming a static rational linear process. This research has pointed out the strong element of intuitive thinking

apparent in head teachers' decision making. This will defy any attempt at presenting the process as a neat linear flow chart where one point leads on to another.

However, it is possible to describe the decision making process as a dynamic tension between two contrasting modes of behaviour namely, deliberation, described by head teachers as "mulling things over", with its emphasis on long thinking as opposed to the need for action, described by Peters & Waterman as "bias for action" and the imperative of the head teacher's vision:



These two behaviours work in opposition, pulling at each other. Deliberative behaviour emphasises the need to take time and indulge in long thinking whilst the need for action demands an immediate response. Without this tension, "mulling things over" will produce endless procrastination and "bias for action" will produce hasty, ill thought out and potentially disastrous action. Like a mental version of tug of war, this struggle produces an outcome when the need for action overcomes the need for long thinking and the linkage between them "snaps". The point when the need for action forces a resolution is clearly an intuitive process as one can imagine the imaginary tug of war rope being pulled first one way then another as new information is gained or the need for a decision becomes imperative, mimicking a real tug of war match.
This way of viewing decision making accurately describes the process as described by head teachers in the interview data. Moreover, it is possible from the research analysis

to conclude that each opposing mode of behaviour is driven by the attempt to achieve different outcomes. Deliberative behaviour is driven by:

The need to reduce uncertainty

Long thinking enables the head teacher to consider all the variables inherent in a given situation and come to an understanding of the areas of certainty and uncertainty. Long thinking gives time for head teachers to review the available information, gather new information and consider the credibility and therefore weight to be given to any particular piece of evidence.

The need to understand complexity

The environment and decision making scenarios that head teachers operate within are inherently complex, primarily as personnel issues figure larger in the variables within the situation. Taking time allows the head teacher to gain a deep understanding of the situation which may be critical in arriving at an appropriate decision.

The need to manage risk

The decision making scenarios that head teachers encounter are often of high risk; as one head teacher commented: "There's been enormous risks" (8, C). The risks are many and varied but are a real threat to the professional credibility of the head teacher. These risks can be mitigated and to some extent controlled by taking time to consider the potential outcome of any course of action.

The action mode of behaviour on the other hand is driven by:

The vision imperative

A vision that is not implemented is a "fantasy". As American business writer Danny Cox (2007) has said:

"The greater the clarity of your vision, the more focussed and efficient your efforts towards it will be. ... If you don't know what to do on a daily basis to achieve your goal then it is not a goal – it's a fantasy" (pp.58-59).

Head teachers are very well aware that their vision needs to be implemented and they engage with all the stakeholders in the school to implement their vision and work to make it a reality. This provides a key and powerful imperative to their work.

Professional accountability

Head teachers know that they are responsible for the school and its performance. There is clear evidence that head teachers feel the burden of accountability very heavily. However, the major driving force for action does not in fact appear to be "external" accountability in terms of SATs league tables and Ofsted, but rather "internal" accountability that head teachers feel towards their school. This is at the heart of head teachers' professional identity and is most often firmly focussed on the perceived needs of the children. In a real sense, head teachers feel themselves accountable to the children in their care:

"I feel that I'm accountable to the children." (2 A)

This focus on the needs of children is paramount in driving through reform and action and is often clearly articulated in the head teacher's vision.

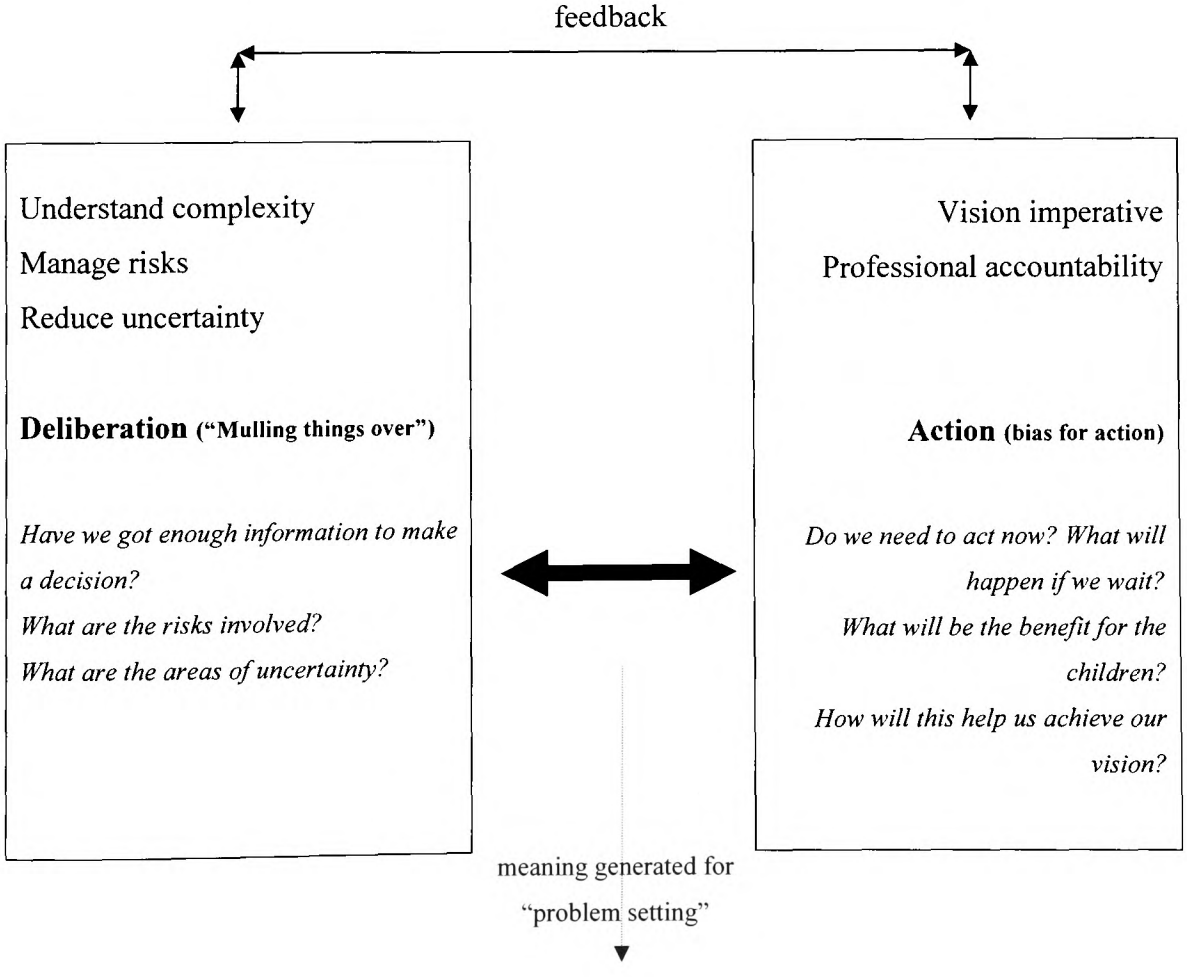
These two modes of behaviour are attempting to achieve different ends and consequently are prompted by different questions. Deliberation is primarily concerned with questions such as: have we got enough information to make a decision? what are the risks involved? and what are the areas of uncertainty? In contrast "bias for action" is primarily concerned with questions such as: do we need to act now? what will happen if we wait? what will be the benefit for the children? and how will this help us achieve our vision?

These question prompts could form a useful framework for decision making. Both elements contain strong intuitive elements. "Mulling thing over" is largely described as an intuitive process by head teachers although it should be noted that rational formal methods do have a role to play. Likewise, the head teacher's vision is largely generated through internal intuitive processes.

So far this description has treated both of these elements as separate boxes, sealed from each other, but clearly there are feedback mechanisms involved. New information gained through thinking and reflecting on the decision scenarios may lead to a renewed emphasis on the need for action. In a similar way, the vision may be modified in the light of new circumstances leading to the need for more reflection. Head teachers often purposely take action to "test the waters" in anticipation of providing further information to assist and influence future action. Although the head teacher's vision must be fairly consistent over time, it is equally true that it is a dynamic process itself. Indeed the whole process of decision making described in this way is highly dynamic and fluid reflecting the real life experience of decision making.

It is through the interaction of these two modes of behaviour that an understanding of the meaning of a given decision scenario is generated, so essential to the task of "problem setting". Without the opportunity to mull things over a clearer understanding of the complexity, risks and uncertainty associated with a problem will not be realised but equally without a clear vision that also provides a lens, template and framework for viewing the scenario meaning will not be clearly understood.

Putting all these elements together provides a compelling description of the decision making process to aid our understanding:



This description emphasises the dynamic and fluid nature of the processes involved as focus shifts from analysis to action and back and forth. It is not a prescriptive model, identifying a rational stepwise process but describes the process as reported by head teachers in the interview data.

IMPLICATIONS

A number of implications arise from this research and the analysis, and these are outlined in the following paragraphs. They cover a wide range of areas such as intuition, visioning, problem setting, distributed leadership, accountability, empathy, school context, emotions, morals and professional development.

Head teachers' intuitive responses need to be valued, both by head teachers themselves and by others. Head teachers' judgements are based on more than mere analysis, which will always have limitations. Head teachers bring to bear the weight of their experience on any issues affecting the school and their intuition should be respected. Experienced head teachers need to know that their "gut feeling", particularly with regard to personnel issues, is likely to be right and is a highly valuable source of professional wisdom, as is that of their peers. This is not to suggest in any way that head teachers should abandon analysis in exchange for "wishful thinking", but rather that the intuitive voice, which is often quiet and easily drowned out by the busyness of school life, has something of value to say. head teachers need to find, and make time to nurture and listen to, the voice of experience.

Visioning is critical. This is not new but the interviews show that it is a clear vision for the school focussed on children's learning that drives head teachers and enables them to steer the balance between a prudent incrementalist approach to decision making and a bias for action that is a critical element of leadership at this level. The head teacher's vision is not just an image or description of a goal but rather a force to be reckoned with. The head teacher's vision and the commitment to the vision is the engine that pushes through change and overcomes obstacles in the way.

Problem setting is a key task for the head teacher. Making sense of issues for the school is an essential requirement before effective action can be initiated. It is the head teacher that provides the filter and lens through which the school views problems and challenges. It is the head teacher who prioritises what is important for the school. Without these essential tasks it is not possible for staff to effectively engage in problem solving across the school. This powerful aspect of the head teacher's role needs to be considered in any references to notions of "distributed leadership".

Distributed leadership is too broad a concept and too blunt an instrument to be particularly helpful in understanding how schools work. Head teachers are all too well aware that it is they that are finally accountable for the school and its performance. The unique leadership position of the head teacher needs to be recognised – there are leadership tasks that the head teacher undertakes that cannot be delegated. In particular, the role of the head teacher in terms of problem setting is crucial. The need for a pre-eminent and authoritative perspective on the problem or issue faced by the school is an essential pre-requisite for effective problem solving.

There is some evidence to suggest that high levels of accountability, such as being in special measures, forces head teachers to make decisions faster than they would otherwise like. Many head teachers associated quick decision making with decision errors. This has implications for the government's insistence on turning round special measures schools quickly.

A key skill for head teachers is empathy which would suggest that other models of school leadership that do not require the head teacher or Principal to have been a teacher are quite inappropriate. Having empathy enables the head teacher to have a broad perspective on what is happening and how to react. It is clear that head teachers have highly developed interpersonal skills and that the relationship between head teachers and their staff is often very complex.

The key contextual factors that affect schools and their performance are primarily related to concerns pertaining to personnel matters and the social functioning of the school. Issues of history, tradition and culture may have a larger impact and prove to be more formidable barriers to an individual school's improvement than measurable contextual factors.

Head teachers struggle with emotional and moral issues on a daily basis. Their vision is driven by a powerful sense of what is right and their personal accountability to the children in their care. They often walk a precarious tightrope in dealing with staff regarding how much information to divulge and how far to involve staff.

This research would suggest that head teachers are well aware of their development needs. They tend to be highly reflective and critical of their performance and perceived failings. They use their deputies to sound out ideas and gain a broader perspective. They often have clear notions of their preferred leadership "styles" and the extent to which these styles are supported or not by the context they work in. The primary source of learning and professional wisdom for head teachers will be through networking or other similar mechanisms rather than through taught courses. Opportunities such as peer mentoring and coaching are potentially powerful mechanisms for the transfer of expertise. Simulated vicarious experiences can also be supported and developed. However, the fact is that experience itself is vital and cannot be short circuited. This may be grim news for policy makers who are looking at a generation of head teachers approaching retirement age.

SUMMARY

Some of the analysis of the research evidence confirms what has already been considered important aspects of leadership at head teacher level (i.e. vision) but it also provides new perspectives (i.e. why visioning is important). In addition, it poses some questions on established ideologies such as distributed leadership.

The research provides a greater knowledge of decision making and the role of intuitive processes as experienced by head teachers and enables us to be more confident in our understanding of what can appear an obscure process.

Postscript

A critique and a personal reflection

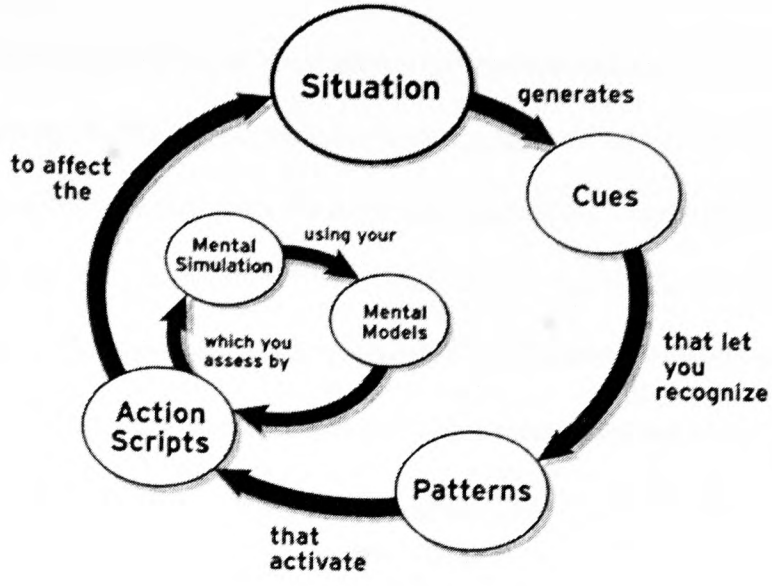
"I do not resent criticism"
(Winston Churchill in Collins Dictionary of Quotations. 1995, p.164)

INTRODUCTION

This thesis has provided a whole chapter on the work of Klein. His work has been important to this research because an initial reading of his book "Sources of Power" was the inspiration for this research and its focus on a naturalistic approach. It was hoped that his model would have some direct application to the work of primary school head teachers. It is, therefore, appropriate at this stage to consider Klein's model in the light of the research evidence and findings.

KLEIN'S MODEL

It is possible to take each element of Klein's model and critique it against the evidence from the interviews. It is best to work from Klein's model as presented in his book "Intuition at Work" as it is the model that he believes is most applicable to a wide range of work environments.



RPD Model from "Intuition at Work", 2003

Situation

In Klein's model the situation is presented as unproblematic. Within the context of working with fire fighters this is probably true, i.e. the house is on fire. But even at this first stage, the situation itself within the educational setting in which head teachers work is complex. There are clear examples of external sources of pressure that formed the basis of the decision making scenario, particularly in the case of schools in special measures. But equally there were plenty of scenarios that were clearly initiated entirely by the head teachers. Schön identifies the issue of problem setting as a concern as opposed to problem solving where there is clear understanding of the situation. The research evidence would suggest that problem setting is indeed an essential element in head teachers' decision making processes and that this is a much more critical issue for head teachers than for the participants of Klein's research, which has concentrated on emergency and critical services.

Cues

It is clear that head teachers put great efforts into understanding the particular context in which they are working. This includes scanning the environment for cues. However the majority of the cues that form the contextual pattern for head teachers relate to personnel. References in the interview transcripts to "keeping one's ear to the ground" and other similar phrases are clear evidence that head teachers actively search for cues to understand their context better. In terms of personnel, being sensitive and able to interpret interpersonal cues such as body language was critical. This can be seen as similar, for example, to the fire commander's ability to interpret physical cues in buildings that are on fire.

Patterns

Although head teachers are sensitive to patterns within the context in which they are working and one of the ways in which head teachers are able to generate meaning for the school, it is likely that this process is not the same as that described by Klein in his model. Klein is concerned with the ability of his research subjects to quickly grasp a current and immediate situation through patterning that then prompts action scripts. Head teachers are more concerned with patterns of behaviour over extended periods of time. Although head teachers are able to refer to similar situations in their past experience to help them manage and understand a current problem they are more focussed on the shifting patterns of interpersonal interactions than an immediate pattern of physical events.

Action scripts

There was no evidence in the research to suggest that head teachers had preset action scripts that they had learnt over time and experience. Each problem encountered appeared to be dealt with on an individual basis. Head teachers' preferred style of "mulling things over" enabled them to be adaptable to the circumstance they were in and able to be creative at arriving at solutions. However, it is likely that people working within the kind of environments that Klein studies are required to respond very quickly and, under such circumstances, action scripts may well be essential. Head teachers preferred style of decision making is much more thoughtful and spread over time, an approach that has proved itself successful within the particular environment that head teachers find themselves.

Mental simulation

There was very little evidence to suggest that head teachers engage in mental simulation as a major element of their decision making processes. Mental simulation is a key element of Klein's RPD model and the lack of evidence for its existence within the domain of head teachers' decision making strategies makes it difficult to see how the model can be realistically applied within the educational context.

OTHER ASPECTS OF KLEIN'S WORK

Beyond Klein's RPD model there are aspects of his thinking as outlined in his "Sources of Power" and "Intuition at Work" that are potentially worthy of further consideration. Klein has emphasised the importance for leaders of sharing intent within their team. It is likely that this notion is worthy of further investigation. It has

already been suggested that the relationship between head teachers and their staff has only been touched on in this research and how head teachers work with their teams, including sharing intent and enabling teams, would probably be a fruitful area of research. Given the current notion of distributed leadership which does not appear to be underpinned by any theoretical foundation or substantial body of research, it would seem that such enquiry would be both timely and opportune.

Klein also places great store on the efficacy of stories for embedding good practice, developing professional knowledge and as a store house of professional wisdom. He claims that stories can provide "vicarious experience" (1999, p.179) and they could provide the basis for simulated decision making training situations, for example. There is a history of case studies used within education but they are rarely used as the basis of training and this may be an area that could be further developed.

REFLECTIONS

It may be useful at the end of this thesis to reflect on the experience of undertaking this research. Certainly the aim of this research has been ambitious. In order to understand how head teachers make decisions it is necessary to make inferences about how head teachers are thinking from their comments during the discussion of decision making situations.

The research has yielded new light and perspectives on an important element of head teacher performance and so, from that point of view, must be viewed as having some success, however modest. Certainly the methodology employed did not prove useful

in obtaining credible data on some of the initial research questions posed. Examples include the limited data on the role of biases in decision making and decision errors. In retrospect it may be considered that these were areas where the limitations of the methodology might be apparent. Interviewees may not be forthcoming in relating errors in decision making and may not be able to identify biases which, by their very nature, operate surreptitiously. The use of additional methodologies alongside the narrative interview approach may have yielded more comprehensive results – this is a question for future research speculation. However, these limitations do not render the positive aspects of the research findings invalid.

Indeed, those areas that have perhaps not been answered as forthrightly point towards potential future areas of research endeavour. The research merely touched on the issue of the relationship between the head teacher and staff, which would appear to be a major area for further enquiry. Issues surrounding the notions of distributed leadership still need to be investigated more thoroughly and the influence of factors such as personal biases is worthy of more study. The way in which experience is turned into expertise is also an area of that could form the basis of further research enquiry.

It is perhaps therefore not surprising that as well as questions answered there are new questions posed.

SUMMARY

The main conclusion of this chapter is that Klein's RPD model has shown little direct relevance to the work of primary school head teachers. This in no way invalidates

Klein's work which is rooted in very different decision making environments and, indeed, even if the model as a whole is not particularly applicable to the educational environment there are still some common elements, such as the importance of cues.

Moreover, some of Klein's other ideas, such as the importance of communicating intent and the use of stories, is likely to be of more value and may be worthy of further study.

As regards this research, Klein's work has been crucial in that it was the initial impetus for this research and was the primary reason that a naturalistic approach was undertaken. For this alone, I am greatly indebted to Klein.

APPENDIX

Keyword Summary

KEYWORD	*NO.*	*KEYWORD*	*NO.*	*KEYWORD*	*NO.*
academic	1	engaging	1	people	8
accountability	19	ethical	1	perception	3
action	1	evidence	5	personal development	3
ambiguity	2	expect	1	personal reflection	1
analysis	5	experience	12	perspective	3
barriers	1	fair	1	preconceived	1
believe	2	formal	1	problems	1
better	1	governors	4	professional	1
change	1	gut feeling	23	professional development	1
children	6	honesty	1	radical	1
coaching	1	idea	2	rational	1
commitment	1	ignore	1	react	1
communication	1	incrementalist	2	reflect	3
complexity	1	information	4	repercussions	1
confidence	8	intuition	6	resistance	1
conflict	1	knowledge	1	right	2
context	2	leadership	8	risk	7
contingency	1	learning	2	scenarios	3
control	4	logical	1	share	2
creative	1	mental simulation	1	staff	35
decisions	24	mistakes	3	strategic	1
deep	1	modelling	1	talk	8
deputy	4	monitor	1	team	10
determined	1	mulling	14	thinking	7
dilemma	1	need	1	tools	5
disagreement	1	negatives	1	trust	1
disaster	1	opportunities	1	uncertainty	2
discreet	1	opportunity	7	underhand	7
distributed leadership	1	option	8	vision	8
doubts	1	originated	1	wishful thinking	1
drip feeding	1	ownership	1	workload	1
emerge	1	parents	3		
emotions	7	patterns	1		

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GLOSSARY

DFEE	Department For Education and Employment
DfES	Department for Education and Skills
EAL	English as an Additional Language
FSM	Free School Meals
HMI	Her Majesty's Inspector
ICT	Information Communication Technology
LEA	Local Education Authority
LMS	Local Management of Schools
LPSH	Leadership Programme for Serving Head teachers
NCSL	National College of School Leadership
NDM	Naturalistic Decision Making
Ofsted	Office for Standards in Education
PANDA	Performance AND Assessment Report
PPA	Planning, preparation and assessment
RPD	Recognition-Primed Decision Model
SAT	Standard Assessment Test
SEF	Self Evaluation Form
SMT	Senior Management Team
SWOT	Strengths, Weaknesses, Opportunities, Threats
TTA	Teacher Training Agency