

Styles
of
Effective
Heads of Mathematics
in
Secondary Schools

Ph.D. Thesis

by

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A handwritten signature in black ink, appearing to read 'A. Eales', with a long horizontal stroke extending to the right.

Styles of Effective Heads of Mathematics in Secondary Schools

Abstract of a PhD Thesis by Alan Eales, Leicester University, 1991

***'It ain't what you do it's the way that you do it.
That's what gets results.*** (Cy Oliver, 1939: song title)

Heads of department are in pivotal positions in secondary schools. Their tasks are well documented but it is not the tasks themselves that are critical for effectiveness but rather HOW the tasks are carried out. This research investigated the styles of effective heads of department and how these styles can be developed.

For the first study a panel of judges was used to select seven effective heads of mathematics and, following interviews with each one, pen-pictures of their style were drawn up.

The second study used four heads of mathematics who were by reputation regarded as effective and were well known to the researcher. Each head of mathematics nominated four colleagues and from interviews with these and the heads of mathematics themselves, extensive pen-pictures of the professional life of each of the heads of mathematics were drawn up.

Comparison was made to some leadership theories and it is possible to suggest some generalisations, for example that potential styles are limited by behavioural or affective aspects which suggests that the professional lives of middle-managers are crucially influenced by their personal lives.

There was no 'style for all seasons' but the pen-pictures showed the heads of mathematics to be:

- 'people-centered' - supporting teachers and pupils through highly-personalised, professional help;
- efficient administrators;
- open about their aims - idealistic but pragmatic;
- extremely hard working - accepting responsibility for their subject;
- members of personal and professional support networks - and involved in the mathematics education debate, both locally and nationally.

INSET and appraisal are increasingly school-focussed and school-based. This research trialled aspects of appraisal such as the use of a colleague who can listen, reflect and draw up a written record. Processes such as these are crucial for the development of middle-managers in secondary schools.

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Thanks too for a final critical reading to Andrew Bolton.

ABBREVIATIONS

ACAS:	Advisory, Conciliation and Arbitration Service
ASE:	Association for Science Education
ATM:	Association of Teachers of Mathematics
CSE:	Certificate of Secondary Education
DES:	Department of Education and Science
GCE:	General Certificate of Education Ordinary Level (O-level) Advanced Level (A-level)
GCSE:	General Certificate of Secondary Education
HMSO:	Her Majesty's Stationery Office
INSET:	In-Service Training or In-Service Education
LEA:	Local Education Authority
LMS:	Local Management of Schools
MA:	The Mathematical Association
NATE:	National Association of Teachers of English
NFER:	National Foundation for Educational Research
PGCE:	Post Graduate Certificate of Education
RoA:	Records of Achievement
SDES:	Special Diploma in Educational Studies
TVEI:	The Technical, Vocational and Educational Initiative

Chapter One - Introduction

It ain't what you do it's the way that you do it.

That's what gets results.

(Song written by Sy Oliver, 1939).

Initial Thoughts

A head of department in a secondary school, particularly of a major subject area studied by all pupils, is in a key position of influence. All pupils are affected through the teachers of that subject and these have in turn been affected by the head of department. Also, as a member of middle management, the head of department affects school policy. I was just such a head of department for over ten years at Beauchamp College, a 14 - 19 Upper School in Leicestershire. This was a very fulfilling and enjoyable job; it had great variety and throughout the ten years I was always learning more of the complexities of such a post.

Middle-managers in large secondary schools carry out many different tasks which demand a very wide range of skills. I was led to believe that I was effective but what was it that I did that was considered to be effective? And how was this effectiveness produced? I tried to ensure that the department administration was carried out efficiently, but clearly this was not sufficient in itself. I tried to promote mathematics in the school and I tried to support and encourage the teachers in the department, but this in itself was not exceptional. I noticed that for very few obvious reasons

other heads of department were not as effective and the seed was sown that here was an area worthy of research.

There were at least two directions such research could take. One was to determine how it was that heads of department came to be regarded as effective - (and could this regard be spurious?). Another was to find out more about how effective heads of department carried out their professional life. The former was rejected since, although a study of the reputational aspects would be fascinating, it was not potentially as helpful to existing or aspiring heads of department.

If being an effective head of department was primarily due to inherited or unalterable characteristics then the benefits of its study might relate to selection of candidates at interview but not to training. From my own experience it seemed that there may well be attributes and skills that could be acquired as indeed I had done over the years. I had learned to think hard about mathematics education and reflect on my own performance - thanks to Ray Hemmings, my PGCE tutor; I had learned that there were professional aspects to being a head of department quite distinct from merely being a good classroom teacher - thanks to Laurie Adkins, ex-Principal of Beauchamp College; and I had learned more about mathematics and issues related to running a mathematics department - thanks to Stewart Friis, the ex-Adviser for Mathematics in Leicestershire. So my effectiveness was a product of my own on-going professional education: it was not completely 'natural'.

It seemed that there was a quality about the way some head of departments acted which was different from others. There was perhaps a difference in style: the way in which things were done rather than the things themselves. This research was conceived out of a personal fascination in the way heads of department behave and the desire to find out more about how it is that some heads of department are more effective than others. What then are the styles of effective heads of mathematics in secondary schools?

Some History

The heads of mathematics who took part in this research were part of the educational scene in England in the nineteen-eighties. In order to understand their role it is useful to trace a few of the relevant key events which had contributed to the educational scene in which they worked.

The last fifty years or so has seen rapid and continuous change in what society demands of education and consequently changes in the institutions which provide it. In the secondary phase the grammar school tradition was recognised as being inappropriate for the majority of children and so secondary modern and technical schools, and later bilateral and comprehensive schools, were introduced. It may not have been strictly necessary that schools grew in size but they did. It became common for the department base, rather than the staffroom, to be the focus of the teachers' professional life. The 'fraternity' in which the young teacher could learn to teach no longer consisted of experienced teachers from all subject areas but rather the smaller family of the department. The head of department

took on many of the responsibilities that in a smaller school would be taken by the headteacher.

The post of head of department was created, but not fully defined, by the Burnham Committee in 1956. Subsequently many tasks were devolved from headteachers to heads of department. The head of department could provide a department with a sense of purpose; the head of department could promote the needs of the department so that the subject prospered in the school. The many changes in education - teaching method, in-service provision, administration - needed to be implemented and the head of department acted as interpreter and guide to the members of the department.

It is only relatively recently that everyone entering teaching has been required to have a professional training and indeed it is still not necessary that heads of department should have specific training or qualifications. (Although some courses such as the Mathematics Association Diploma do exist.) Until the recent emphasis on school-focussed or even school-based INSET, the courses for heads of department were usually 'off-site' - at a college or a teachers' centre. These courses were normally related to tasks and rarely to the more expressive elements of being a head of department. The Department of Education and Science (DES) ran a subsidy scheme for certain courses, particularly for a term or a year, so that secondments could be taken, but this system of 'poolable' courses came to an end in the late 'eighties.

Appraisal or annual review, very much linked to performance and pay, has been a feature for many years outside of education but it was only in 1989 that the DES built appraisal for teachers into the new contract. Although self-appraisal is very valuable, so are the suggestions made by the appraiser. The nature of the written report and its subsequent use are also important. The early work and pilot studies concentrated on the main professional grade teachers and the headteachers. There is little known or proposed about the special aspects of appraisal relating to middle-managers in education.

The Research

Heads of department in secondary schools are in key positions and even simply through their day-to-day existence they can be a force for good or bad both for the department itself and for the management of the school.

Some heads of department are particularly well regarded and highly respected and although it is not at all clear why or how this regard and respect is accrued, nevertheless it is clearly there; they are considered to be effective.

The in-service needs of existing and aspiring heads of department are not well established which is hardly surprising if the nature of the effective department head is not known. Job specifications consist largely of tasks and duties and these can be communicated and practised, but this leaves a shortfall in relation to how the head of department can become effective.

This research explores those aspects of the head of department's professional life which complement the lists and descriptions: the essence of the successful head of department. The word 'style' is used in an attempt to summarise these complementary qualities. The style of a head of department may involve the tasks themselves, but it is more likely that style will involve how the tasks are carried out; an attitude or approach to the task rather than the task itself.

Because I was a head of mathematics, it was convenient and natural to choose heads of mathematics for the research. This minimised the time needed to set contexts; to explain perspectives. Conversations could quickly settle on the nub of the work. Also using heads of department familiar to me increased the immediacy and strength of the responses. Nevertheless, the research has relevance and validity to all heads of departments, particularly those in large secondary schools.

As the research developed it became clear that the methods used cast considerable light on elements of appraisal of middle management. For proper appraisal the duties and role of the appraisee must be accepted and understood; information about performance must be collected. Finally, some sort of description or record of the review must be drawn up. Various aspects of this research echo parts of these processes.

In order to throw light on the styles of effective heads of mathematics I took the simplistic, almost naive, view that the most productive approach

would be to identify a number of effective heads of department and ask them to talk about their 'style'. It should then be possible to learn from the study of their 'good practice'. The central method of data-collection became the interview and the chief outcome its write-up.

This simple design needed to be carried out in a carefully considered way. When I had interviewed teachers as part of my research for the OCEA project it became clear that they held valuable professional opinions and that these views were too rarely reported in research. If interviews were highly structured then few of the interviewee's perspectives were allowed expression; on the other hand given no structure the interview might include much irrelevant material. For this research a lightly structured schedule was chosen for the interviews, the purpose of which was declared beforehand. Thus the interviewee could prepare in advance and needed only to be guided through appropriate areas of interest.

The choice of heads of department for the first study was by a 'panel of judges' and partly for convenience all seven heads of mathematics used were from Leicestershire. There were telephone calls and briefing letters before each interview and then the write-up of the interview was returned for negotiation and confirmation before being finally written-up. This interaction established that the write-ups were a true reflection of how the heads of mathematics saw themselves.

I already knew these heads of mathematics. The risk that this was prejudicial was far outweighed by their frankness and readiness to talk. It was not my intention to collect data in the form of lists of routine tasks; that was more appropriate to large scale surveys by bodies such as NFER. The seven heads of mathematics proved to be for a first study only, establishing that the interview method worked and that the write-ups were informative and considered valid by the heads of mathematics. Some of them, however, suggested that the research should take into account the views of others in and around the department.

For the second study four heads of mathematics were used: two were carried forward from the first study and two were added, this time from outside Leicestershire. All four were very well known to the researcher. Each of these four heads of mathematics nominated four colleagues who were asked for their views on the style of that head of mathematics. Since it was the purpose of this research to form a view of what these heads of department did well, only positive statements were encouraged. This also avoided any nervousness nominees might feel about being critical of a colleague. The write-ups of the interviews with these nominees were again negotiated and confirmed before being used.

The information gained was then woven into pen-pictures of the professional life of each head of mathematics. These extensive pen-pictures illustrate how effective heads of mathematics carry out their professional lives and so constitute the chief outcome of the research. Whereas in large scale

research the results may already have been 'generalised' by the size of the sample, in this research the readers will be able to 'generalise' into their own experience by empathy felt when reading the pen-pictures. So, rather than test any existing or proposed theories or models this research looks for 'grounded theory' (Glaser and Strauss,1967) and intends to 'illuminate' in the sense used in 'illuminative evaluation' (Parlett and Hamilton,1977).

I also hoped that clues would emerge as to how best to develop actual or aspiring heads of department. In the event, much insight was gained concerning the nature of the reflection and review processes which are an essential part of any appraisal.

The Research Questions

The research questions are discussed more fully in Chapter Three, but briefly they are:

What are the styles of effective heads of mathematics in secondary schools?

How do effective heads of mathematics go about their work?

and

How is it best to develop heads of department?

How can heads of department become more effective?

Chapter Two - Literature

2.1 Leadership and Management: Style and Effectiveness

"We're all seamen here, I should hope," said young Dick.

*"We're all fo'c'sle hands you mean," replied Long John Silver. "We can sail a course but who's to set it?" Robert Louis Stevenson, Treasure Island.**

*The manager has the task of creating a true whole that is larger than the sum of its parts, a productive entity that turns out more than the sum of resources put into it. Peter F. Drucker.**

Leadership has a rather dated air about it. (Handy,1981:507)

This chapter will argue that heads of department fulfil a leadership role and are increasingly to be regarded as managers. Their style and effectiveness is the focus of this research.

Literature reviews of leadership are difficult because leadership studies feature in many disciplines: for example in psychology, sociology, business studies and organisation theory. Furthermore the sources tend to use different perspectives and terminology making analysis and comparison problematic, if not hazardous. This section attempts a brief and inevitably partial, but catholic, review of leadership, with a bias towards the psychological sources. Those wishing to read further can follow up one of the many references given.

* Footnote: Thanks are due to Hicks (1972) for these quotations.

There has been considerable fluctuation in the perceived usefulness and validity of the concept and terminology of leadership over the last thirty or forty years. Before the Second World War it was largely accepted that certain people showed characteristics of good leadership and that these characteristics were inherited, or at least were a fixed quality of the adult personality. During the war, however, there were many acts of heroism, initiative and valour by 'ordinary people' and conversely manifest lack of leadership by some officers. So it was realised that leadership was not necessarily uniquely the preserve of the Upper/Officer Class. Forty years later the literature is still very much influenced by early work on the qualities of a leader: the traits associated with good leadership.

Stemming directly from reactions to performance by officers in the war, Lewin (1944) used the typology of democratic, autocratic, and *laissez-faire* to describe leadership. The Ohio State Leadership Studies, initiated by Dr Carroll L. Shartle, sought to find out which traits were attributed to good leaders. This series of studies, by Halpin, Rush, Christner, Hemphill, Westhill and others, concentrated on the two categories of 'Initiating Structure' and 'Consideration'. The former category was associated with the Autocrat and the latter with the Democrat. Halpin (1966:86ff) describes how the various behaviours summarised by these categories were seen through the eyes of subordinates who were asked to associate stated characteristic behaviours with effective or non-effective leaders. Nias (1980) gives an excellent review of this aspect of the theories and uses

them in her research into Leadership and Job-satisfaction in Primary Schools. The traits of good leaders were considered to be present or not and remained static; they would prove effective no matter what the situation. One recent research project, studying the way that heads of department in schools operate, found that,

There is no single style that can be identified as the most appropriate for every person in every situation. (Early and Fletcher-Campbell,1989:203)

Much earlier it had been recognised that the context must, in part, determine the style and Fiedler (1967) developed the contingency theory of leadership. Here an analysis of the whole situation - the leader, the subordinates, the task, the environment - enables the choice of an appropriate style. Leaders may use any style, be it inherent or acquired, but they are more likely to be effective if they vary style according to the circumstance - context and personnel.

This was built on yet further by Reddin who specifically related his 3-D Theory to the style and effectiveness of managers (1970:13).

He used four basic styles:

Integrated, Dedicated, Related and Separated.

These in turn might lead respectively to the more effective styles of:

Executive, Benevolent Autocrat, Developer and Bureaucrat,

or to the less effective styles of:

Compromiser, Autocrat, Missionary and Deserter.

Thus the third dimension was the effectiveness which the manager displayed, and was related in the model to movement up or down to the two other sets of four categories. Additionally, flexibility of style was crucial, depending on the purpose and the specifics of the occasion. The manager who could assess each situation as it arose and move freely between the styles was more effective. The idea that a manager could move between at least two poles was explored by Tannenbaum and Schmidt (1973) when they suggested that leadership could move between being 'boss-centered' or 'subordinate centered' depending on what the manager hoped to achieve; not just in relation to the decision to be made but through the process by which the decision was made.

In line with other sociological changes during the sixties it became unfashionable to refer to leaders as such but rather to coordinators or chairmen/women. Handy noted the trend in organisation theory to play down the importance of a leader as such (1981:107), but no matter how titles like 'integrator', 'linking-pin' or 'catalyst' are used...

...there is a need in all organisations for individual linking-pins who will bind groups together and as members of other groups represent their groups elsewhere in the organisation. (Handy, 1981:87)

Gradually the concept of a leader had become linked with management so the study of organisations, rather than psychology, became the forum for its exploration. Leadership and management became regarded as inseparable. This is reflected in a title of a chapter in Buchanan and Huczynski (1985): 'Leadership and Management Style'. Managers do not automatically become leaders but effective managers must have shown leadership.

Similarly leaders are not necessarily managers. But by definition a more effective group is considered to have been better managed than a less effective one.

So no matter how detailed is the analysis of the tasks a manager carries out, there is still a parameter missing. 'It ain't what you do it's the way that you do it. That's what gets results' (Song written by Sy Oliver,1939). 'Style' has certain associations: something extra, something personal, something special, a cachet, an elan, something unusual: it can be associated with a person but is not the personality. Style cannot exist in a vacuum; style of itself is not worthwhile. Style carries a virtually subliminal connotation with leadership; if someone has an identifiable style they are noticed; they are individual; they lead. What is an appropriate style? What is a typical style?

It is the way in which (administrative functions) are discharged - in the style of the manager - that features of leadership are sought.
(Buchanan and Huczinski,1985:380)

Peters and Austin looked at successful companies and attempted to detect common features in the styles of the managers. On one level their approach seems simplistic, but on another it rings true. One identified aspect was MBWA: Management By Walking About. In this way the manager is always in touch and is always to be seen. Key notions that Peters and Austin used are Attention, Symbols, Drama, Vision - and Love (Peters and Austin,1985).

'Attention' refers to the need for the manager to follow things through and pay consistent and persistent attention to what is regarded as important. Memos *per se* do little good - but attention shown through MBWA as well ensures that the purpose of the memo is prosecuted through to its end. Effective managers will give their attention to what they see as key areas and so signal the importance they attach to those areas.

'Symbols' is the term used to describe the fact that all employees look to their managers for such signals eg the manager who uses the staff coffee trolley gives very positive signals about wanting to be part of the team.

'Drama' refers to the use of dramatic gesture. There is a sense in which managers are in show business, and this may be particularly true of teachers, heads of department and headteachers. When they are watched for the 'symbols' they can use a sense of drama to heighten any effect.

'Vision' is needed. Long term vision ensures that every little decision is a step on the way to some longer term goal; or at least the everyday decisions are consistent with the long term goals. Without this vision (and perhaps without that vision being conscious to the manager) the coherence of developments may well be lost.

The definitions and discussion develop through stories of specific managers and are, in effect, building up pictures of the styles used by managers who

are perceived by their peers (and through profits!) to be using effective styles.

(In the same book there is a rather disappointing chapter on leadership in schools but I hope that this research will demonstrate the relevance of such work to middle management in schools.)

Peters and Austin can use profit as a major guide to defining effective companies but similar criteria are difficult to describe for the school-based manager. Efficiency has a close association with effectiveness but effectiveness probably subsumes efficiency (Early and Fletcher-Campbell, 1989: pp 45 and 186). The word effective has a generally accepted meaning in relation to 'Bring about' or 'Accomplish'. A hockey team defence may be regarded as efficient if it concedes few goals, but is it effective? Only perhaps if a more complex view is taken so as to include setting up the forwards to attack. Efficiency is related to a task, or bundle of tasks, but effectiveness relates to much more. Perhaps efficiency is best applied to objectives and effectiveness to aims. Perhaps efficiency relates to tactics while effectiveness relates to strategy.

Halpin quoted Barnard (1938) when implying that the 'executive' should 'facilitate group action that is both effective and efficient' (Halpin, 1966: 87). The next question to ask is how this is to be brought about. What style is to be used?

2.2 Heads of Department

The position of Head of Department is now very much accepted as the norm in secondary schools in Britain. There have been experiments where departments have been run by coordinators or by the department teachers as a group, but by far the most usual arrangement has been the appointment of a head of department. This has not always been the case, however, and the post of head of department has been created and developed only during the last thirty years or so.

In 1956 the Burnham Committee, which at that time was responsible for teachers' pay and conditions in England and Wales, first gave specific allowances for the post of head of department.

In the secondary schools in which advanced work is undertaken....the Local Education Authority shall... establish posts of head of department....In other secondary schools, the Local Education Authority may establish posts of head of department. (Burnham,1956:10)

Before that date administrative tasks had been carried out by others than the headteacher, but it was in 1956 that a managerial role for other teachers became recognised. Even in the 'sixties it was still worthy of note that some of the duties of the head were being delegated to heads of department. Siddle (1978) reported that a group of H.M.Is in the early 1960s stated in an Occasional Paper A2/11 that:

The very rapid increase in the range and scope of the curriculum in all kinds of secondary school, and particularly in 11 - 18 comprehensives in recent years, has led to comparable developments in the degree to which it has been essential for Heads to delegate responsibility to department heads.

The new concept of relationship between members of a departmental staff which this has involved has been accepted; but there are wide

variations in the extent to which departmental heads are exercising their responsibilities.

By 1974 there were different grades of head of department and each had its own pay allowance. Primitive job-descriptions were beginning to appear, although these were somewhat vague, referring, for example, to the 'supervision' of the department (Hilsum and Start,1974:Chapter 3).

Pivotal Position

Heads of department came to occupy pivotal positions in secondary schools. The teachers in the department looked to them for guidance and support and to sift ideas from the national scene. The daily agenda for discussion in the department was set by the head of department. The day to day requisites, such as exercise books and chalk, were generally provided through the department. The everyday working conditions, particularly the working atmosphere, were determined by the head of department.

Without effective team leadership the individual teacher's professionalism and hard work cannot be brought together to provide a coherent and successful educational experience. (Marland, in the 1981 edition of the 1971 reference)

Schools increased in size making staffs of 100 not uncommon and the heads and their deputies could no longer be in touch with all the staff. Heads of department were expected to relay senior management views; they were the eyes, ears and voice of senior management. 'Effective departmental leadership is essential to the overall work of the school' (Marland,1971:3) and so the heads of department became middle-managers

By 1977 HMIs were 'more than ever convinced that the Head of Department is a key figure. ... His effectiveness is seen above all in the help and guidance he gives to his colleagues' (quoted in Morris,1984:1). Hargreaves noted that an 'effective head of department is able to create high morale among members of the subject team' (1984:102). And again in 1984:

There has been a growing realisation of the pivotal role of the Heads of Department.

The vital importance of the role of the Head of Department lies at the very heart of the educational process; it is directly related to teaching and learning; whether a pupil achieves or underachieves is largely dependent on the quality of planning, execution and evaluation that takes place within individual departments. (HMI(Wales),1984)

Morris and Murgatroyd (1986) regard the department as the 'primary' unit of the secondary school and they quote from a very useful series of writings from the Welsh Office.

...the effectiveness of a school will continue to hinge in certain fundamental respects upon the competence of its heads of department, and the quality of professional leadership demanded for success at this level is higher than is implied by the modest status often afforded to heads of department in school hierarchies. (Welsh Office,1981:13)

Warwick (1982:6) is clear that the new middle managers in schools, such as heads of house, year or department, were uniquely placed and if senior management in a school ignored this and kept these middle managers out of the policy making bodies then there could be considerable frustrations, difficulties and dissension and indeed this was borne out in research by Nias (1984). In the USA, from the perspective of a principal, Turner regarded heads of department as a 'Relatively Untapped Source of Instructional Leadership' (1983:Title). There was a general belief that heads of department have a key multi-purpose role. 'They are both members

of a higher-echelon management body and leaders of their own subsystem' (John, 1980:82).

Variety of Tasks.

There is considerable literature describing what heads of department do - or rather what the authors believe they could, should, or might, do.

Marland (1971) was one of the first to detail what at that time was the developing position of head of department. As might be expected from the nature of its birth it was at first an administrative post. It was later that the heads of department themselves became curriculum developers and middle managers with wider concerns such as staff development.

Perhaps not surprisingly considering the immense number of demands on their time, very few articles are published by actual practising heads of department. Morris, when a Head of Modern Languages, wrote *The Head of Department: A Guide to Good Practice*. Its contents list illustrated the variety that the post involved.

- Getting the best out of the department team*
- Departmental Management*
- Relationships with the Head*
- Departmental Staff*
- The New Teacher*
- The Probationer Teacher*
- Assessing the work of teachers*
- Delegation*
- Discipline*
- Support for In-service training*
- Students and teaching practice*
- Working with the assistant*
- Parents*
- Departmental records*
- Equipment and Rooms*
- Ordering Books and Equipment*

The Timetable
Departmental Meetings
Administration - made easy!
Liaison with Primary or Middle Schools
Putting the Department on Show
What can I do with my French, Sir?
Drawing up a Scheme of Work
Job Description. (Morris,1984:Contents).

Even from this long list there were omissions such as the importance of the head of department's own teaching; displaying the pupils' work in the classrooms; and more. The sheer number of objects to be kept in the air at the same time, particularly as the objects are of many different shapes and sizes, calls for great juggling, if not magical, skills from the heads of department. This variety, and the need to move swiftly from one situation to another, was shown through the very interesting diaries some heads of department kept as part of the NFER research conducted by Early and Fletcher-Campbell.

Middle managers spoke of the difficulties and stresses in doing so many different activities at the same time, and the need to have a grasshopper mind. Reference was also made to the frustrations associated with appearing never to complete a job - there were always matters pending. (Early and Fletcher-Campbell,1989:43)

Clearly some summary of the various aspects was needed and perhaps the best was provided by HMIs for Wales when they identified five broad categories as being the most common areas of responsibility:

1. *routine administration and organisation of the department;*
2. *the planning of pupils' learning experiences;*
3. *monitoring and evaluating the work of the department;*
4. *professional development within the department;*
5. *liaison with other departments, with the pastoral staff, the senior management, and with outside agencies.* (HMI(Wales),1984).

Particularly with the variety of the job in mind Lawley, another actual practitioner, (albeit a deputy head rather than a head of department), pointed

out the need to 'standardise expectations of the role of the departmental head in the form of a flexible job description' (1985:20). The need for such descriptions had been implied by Hall and Thomas in 1978 when they researched one hundred advertisements for the post of head of mathematics which appeared in the Times Educational Supplement. In response to requests for further details only 20% of the replies were considered fair or good by the authors. The rest included, for example, 13% which sent no details at all of the mathematics department - only details of the school. (There was an even worse category where 10% of the replies simply did not relate to the advertised post at all, except perhaps that a standard application form was sent!) (p38). By 1984 a similar study by Fellows and Potter found that the situation had improved but was still not satisfactory. Ernest remarked in 1989 that 'although no data are available, it may well be the case that the practice of providing heads of mathematics with job descriptions has been increasing in the last few years' (1989:330).

The provision of a job description may well be a necessary pre-condition to understand what a head of department needs to do, setting out as it does a baseline for reference, but it is certainly not sufficient. Early and Fletcher-Campbell stress that job-descriptions emphasise what they call the 'content', 'yet it is the *method* (combined of course, with content) which would seem central to effectiveness' (1989:38). Oxtoby notes that '...even when these responsibilities are spelled out in some detail, we are often none the wiser about what HoD's actually do and how effectively they do it.' (1979:46)

Working with pupils is hardly mentioned and yet heads of department are usually asked to teach well over half-timetable. Straker found a mean contact ratio of 0.819 for heads of mathematics compared with 0.85 for classroom teachers. That is for heads of mathematics about 33 periods in a 40 period week (1984:224).

Early and Fletcher-Campbell (1989) draw on Torrington and Weightman's work (1985 and 1988) to discuss the widening of the head of department's responsibility. A useful summary might be that in the 'fifties Burnham created an administrative post; in the 'sixties this widened to include technical and managerial roles; and in the 'seventies and 'eighties social and personal aspects were added. These had, of course, always been present but only became appreciated as the understanding of the post of head of department developed.

The Role of the Head of Department

Heads of department have acquired some of the responsibilities previously carried out by headteachers or their deputies. Particularly in large schools the heads of department became the day to day managers. Single large departments such as Mathematics or English would typically contain ten teachers and it became common for institutions to group smaller departments into faculties: a typical science faculty might have twenty teachers and six non-teaching staff.

The total role of the holder of a major departmental headship in this structure involves the development of corporate elements not dissimilar to those of the head teacher of a small ... school. (Morris and Dennison, 1982:42)

Writers have used many categories, and sub-categories to describe the role of the head of department:

Marland, by implication from nine chapter headings (1971);
Bailey gave four 'additional functions' (1973:2)
Maw used more than ten sub-sections (1977:97);
Lambert used forty eight functions (1975:30ff);
Dunham gave seven functions (1978:46);
Bloomer gave a checklist of nineteen responsibilities (1980:95);
Tyldesley had a list of twelve 'duties' (1984:262).

Ernest attempted a resolution of the complexity with four categories:

*Representational functions,
management of human resources,
management of the curriculum,
and management of physical resources.* (1989:325)

(perhaps rather unfortunately there were a further thirteen sub-categories).

One useful summary was by Morris and Dennison who distinguished four distinct, but overlapping, roles:

*Professional role,
organising role,
corporate role,
and a personal role* (1982:41)

In North America Hord and Murphy spoke of six roles:

*communicator,
coordinator-manager,
emerging assistor,
teacher improver,
program improver,
and evaluating administrator.* (1985:36)

The most thorough exploration of what heads of department actually do was carried out by Early and Fletcher-Campbell for the NFER. Their

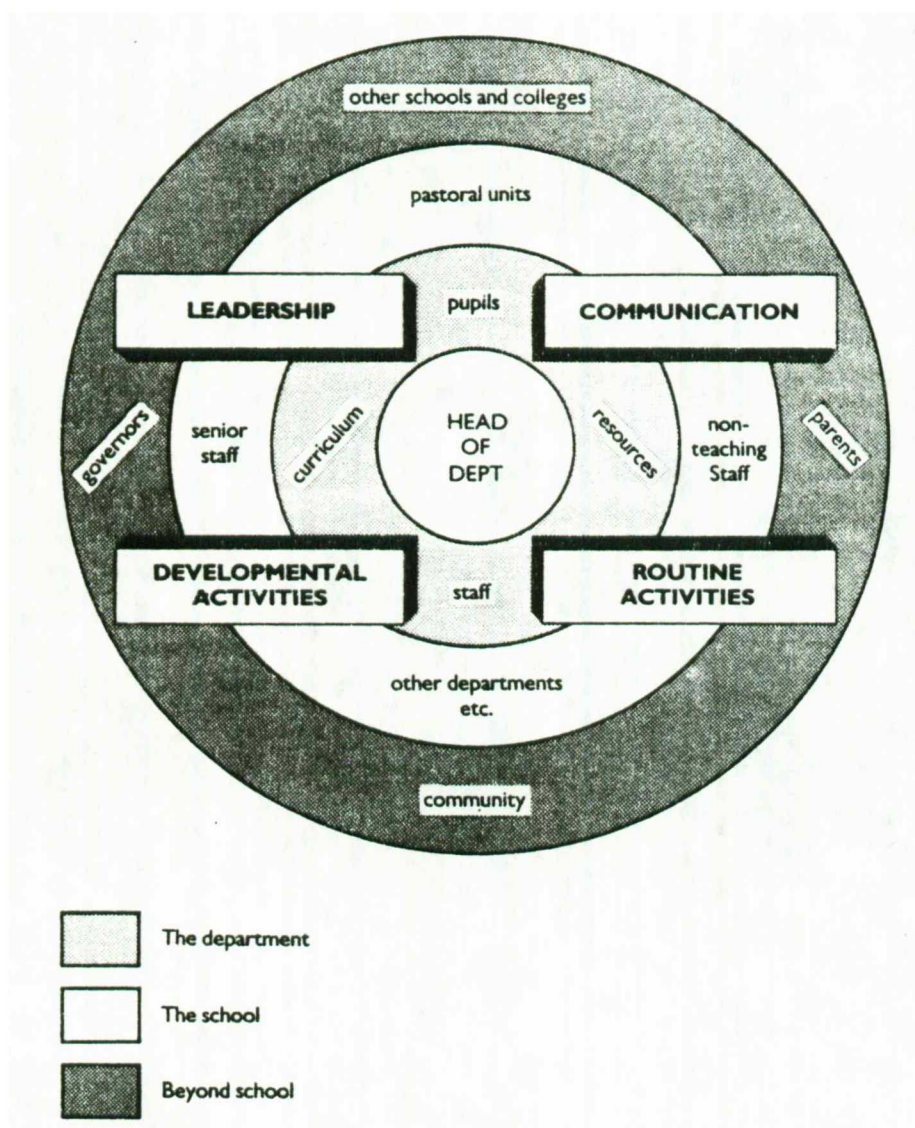
investigation pointed up very clearly the tremendous variety, in a natural and managerial-technical sense, of the professional life of a typical head of department (1989:Chapter Two). Their classifications for the concerns of a head of department were:

The educational progress of children.
The leadership of a team.
Staff development.
Resources. (1989:39)

The next page shows a diagram illustrating the interacting elements in the life of a head of department which they developed from Edwards (1985).

The emergence of the head of department who has an extreme variety of tasks and roles was echoed in North America as reported by Sergiovanni, at first in 1977 and then in an up-dated version in 1984. Interestingly the later version included a whole new section: 'Some Personal Dimensions in Successful Leadership - Politics, Power, and Leadership Effectiveness; The Importance of Personal Health; and Quality Leadership: Key Ingredient to Success'. This recognised that there is more to being an effective head of department than the efficient execution of tasks and 'In these circumstances the role of the head of department assumes a strong expressive content' (Morris and Dennison,1982:43). The existence of this expressive content is a key premise to the basis of this research. Although the specific tasks and activities carried out by a head of department make a contribution to style it is primarily the expressive content that defines the style.

This diagram was devised by Early and Fletcher-Campbell, but based on the work of Edwards (1985), to illustrate the various interacting elements in the life of a head of department:



Reproduced with kind permission of NFER-Nelson and is Figure 2.1 from page 34 of *Time to Manage?* by Peter Early and Felicity Fletcher-Campbell (1989), who in turn based it on the work of Edwards (1985).

Confusion and Stress

The complexity of the job, combined with how poorly it was defined and hence understood, has led to considerable confusion, and consequently stress, for the post-holders. Midgely (1980) explored the differences in the role-expectations of H.M.Is and headteachers and the role-perceptions of the heads of department themselves. (There was also an interesting comparison with similar positions in Canada.) Edwards (1985) stated that 'uncertainty as to the role is probably the greatest single obstacle to more effective department organisation'. Conflict may also be created when the same person holds two responsibilities; for example, a key post in the pastoral system as well as being a head of department (Randle,1984).

Early and Fletcher-Campbell stated that '..it would seem that there is some confusion as to the boundaries of roles in schools' (1989:42) and the response to any confusion clearly depends on the individual:

From a personal point of view any such job-holder must experience conflict between each of these roles when the role expectations are different, and these inter-role conflicts therefore form a natural part of the job to which the head of department must adjust and cope, with all the complementary tensions; particularly as the total role is not static but dynamic, changing according to personal, institutional and external circumstances. (Morris and Dennison,1982:41)

For some individuals this confusion stimulates and challenges, producing constructive tension but for others it produces disruptive stress. In a closing summary Marland stated his belief that some tension may be inherent in the balancing of a number of opposite pulls:

balance between the overall school requirements and the narrower subject needs; between organisational possibilities and theoretical ideas; between flexibility and rigidity; between teacher and teacher; between pupils and teachers; between encouragement and direction;

criticism and praise. Above all, the sharpest problem, of balance is between long-term planning and today's problems. (Marland,1971:99)

Dunham (1978) worked with nearly one hundred heads of department and found that the chief perception of stress for them was the role conflict and role confusion. This produced frustration and anxiety which in turn produced psychosomatic symptoms of stress. According to Marland these difficulties were faced by heads of department in very trying circumstances.

With the lowest auxiliary-to-professional ratio of any profession, with such dismally poor office equipment,...and in many instances ludicrous accomodation, the reality of management and leadership for many Heads of Department is a nightmare. Headmastering may be the art of the possible - but leading a department in a large secondary school is often the art of the impossible. (Marland,1971:6)

There has been little research on the difficulties faced by heads of department but Ernest (1989) devoted a paper to the 'demanding role' of being a head of mathematics, and argued that the problems centre on: a lack of clarity of job-specification, which leads to confusion; a continually increasing mis-match between the amount of work required and the amount of time available; and a lack of management training, which leaves the post holder unprepared (1989:pp329-335). In fact what preparation there is begins as soon as the (sometime) head of department enters teaching as a probationary teacher.

Qualities and Styles

Descriptions of tasks and roles are useful but beg the question as to the qualities needed to carry out the tasks and perform the roles. Whereas initially the post of head of department was defined as administrative (Burnham,1956) the stages of development of what was expected of the post-

holders can be summarised as starting with administration; then more complex tasks and roles; and, most recently, management. With respect to the appointment of heads of department they are, according to Shuard and Quadling, 'often appointed from outside the school and will be selected for ... personal qualities as well as for ... experience and knowledge of mathematics' (1980:43).

Marland gave a list of qualities needed by a head of department:

*experience of teaching at a variety of levels of ability;
wide knowledge of the subject area, and of other aspects of education;
the knack of relating well to people, and of being able to serve their
needs and their special qualities;
immense energy;
a highly developed sense of organization;*

and particularly

the ability to articulate points of view clearly and persuasively.
(Marland,1971:98)

These were developed and re-expressed by Bayne-Jardine as:

*to cooperate and communicate;
to observe and to listen;
to manage resources efficiently and without fuss;
to make plans bearing in mind the current climate;
to delegate.* (Bayne-Jardine,1981:40).

In addition Bayne-Jardine refers to Owen (1973:pp92-93) with respect to additional dimensions like openness, risk-taking, freedom from too much outside pressure, and freedom from heirarchical rigidities.

A good head of department must know himself, understand a complex task and be able to work in and to foster an open climate within the school. (Bayne-Jardine,1981:41)

Howson and Woolnough entitled a paper 'Head of Department - Dictator or Democrat' and reported the results from a questionnaire to eleven comprehensive schools about heads of department. Their analysis included

headings of: Personality of the Head of Department and Styles of Leadership. They conclude that the more 'democratic' style (as represented by the models they used) was thought to be more suitable (1982:41).

A few authors have tried to explore the area of style but mostly references to style are in passing, perhaps in introductions or summaries. They rarely form a major feature. For example Oxtoby:

Management styles and effectiveness also depend on the attitudes and personal qualities of the individual manager and so...we should be inquiring as to whether there are particular attitudes and personal characteristics which an HoD must have in order to perform effectively. (Oxtoby,1979:47)

There is a sense in which undue emphasis on personality may be unhelpful (Early and Fletcher-Campbell,1989:51) and it is almost as if in recent times discussion of leadership style has been taboo. It is safer to regard the attributes of a successful head of department to be related to carrying out of tasks which, with training, any of us could accomplish. Suggestions that effectiveness depends on personality traits is too close for comfort to the discredited 'officer' material theories. It may be possible, however, for successful styles to be mimicked or developed. It is worth quoting in full this list from Early and Fletcher-Campbell as it gives a good feel of what effective heads of departments may be like.

Warm; approachable; enthusiastic; 'rounded'; balanced; tactful and diplomatic; dynamic; strong but not authoritarian; prepared to make decisions; able to inspire, motivate and get people working as a team; ready to praise and show appreciation; able to criticize positively, without giving offence; able to recognize, analyse and come to terms with failure; open to change - has eye for development; clear thinker.

Well informed in subject area; well-qualified; first-class practitioner and able to lead by example. (Early and Fletcher-Campbell,1989:52)

The same authors provided an interesting insight on the previous page when they reflected that the heads of department they had met during their research were "friendly, accessible people".

INSET and the Head of Department

INSET can take the form of courses, perhaps set up by the LEA, or, more recently, special INSET days at the school. As teachers gain experience so their INSET needs may shift from acquiring classroom teaching skills to acquiring skills outside the subject area. There will also be INSET needs related to middle management. For seconds-in-department the focus can be even sharper in relation to becoming a head of department.

Formal courses have their place but if the appropriate attitudes are not fostered then the value of any INSET will be reduced. The most effective INSET is virtually coincidental, being formed from continual daily intercourse with colleagues. These colleagues will mostly be from the same department and the atmosphere and agenda can be considerably influenced by the head of department. As the first skills of teaching are learnt so perspectives and frameworks are set that influence the whole of that teacher's career. The head of department illustrates classroom methods; exemplifies approaches to administration; shows how to treat, and treat with, pupils and colleagues. All of these contribute to the development of the new teacher. 'The induction of these new teachers into the profession may be carefully planned by the HoD or headteacher' (Shuard and Quadling,1980:10).

The head of department may even act as mentor for members of the department, not only training them but guiding them through their career. When an NFER project-team asked headteachers and advisers for nominations of effective heads of departments the reasons for the nominations often cited 'preparing younger teachers and their reputation as trainers' (Early and Fletcher-Campbell,1989:87).

The head of department provides a role model for the new professional in many aspects of teaching, and also, particularly for more experienced teachers, a role model of a head of department. So how do heads of department prepare the next generation of heads of department? Elms wrote: 'Few books have been written or courses organized for new or aspiring department heads' (1982:126), and Straker noted that 'Heads of Department require in-service support...in the development of leadership and management skills' (1984:226).

The Marland books of 1971, 1981 (with Hill) and 1986 all described features of the head of department role, although significantly the last of these was called 'School Management Skills', addressing wider issues than running a department. There were also subject-based manuals sponsored by professional associations such as the National Association of English Teachers (NATE), the Association for Science Education (ASE), the Association of Teachers of Mathematics (ATM), the Mathematical Association (MA), the Geographical Association (GA) and the Modern Language Association

(MLA). In general these concentrated on the development of the teaching of the subject rather than the development of heads of department as such.

In 1978 Collins and Friis produced a handbook for heads of department which was derived from a Leicestershire INSET course (to which I contributed) for aspiring and existing heads of mathematics. In the mid-'eighties the Mathematical Association set up its Diploma for Heads of Mathematics and also produced 'Managing Mathematics', a handbook which took the newly appointed head of mathematics on from appointment through various areas of concern: Implementing the curriculum; Concern with pupils; Concern with colleagues; Administration; Beyond the department. There were also useful appendices consisting of articles, addresses, summaries of examination syllabuses etc. (Mathematics Association, 1988).

There has been even less work done on the role of second-in-department; Raleigh was one of the very few to consider this, and it is interesting to note that it was set in the context of a large secondary (English) department (1982:32).

So given the pivotal role of the head of department; given that there is opportunity for leadership; given that every leader has a style; given that the heads of department want to be more effective; then how are these heads of department to improve their effectiveness? As Early and Fletcher-Campbell so aptly put it, - 'Who develops the developers?' (Early and Fletcher-Campbell, 1986).

2.3 Heads of Mathematics and the Context of this Research

The literature reviewed so far is primarily concerned with heads of department generally rather than heads of mathematics, but there are some sources that relate specifically to mathematics. The mathematics department has a character which is distinct from most others because of demands peculiar to the subject itself and because of the perception of its importance in the curriculum. Although there are general trends in education there are also some that are subject specific.

The heads of mathematics in this study worked in the social context of England in the 'eighties and it is of interest to review some of the pressures and expectations which contribute to difficulties and stress (described, for example, by Dunham,1978). Job descriptions help the head of mathematics to know what is expected but these descriptions have in the past been very unclear (Hall and Thomas,1978). There is hope, but not evidence, that since then job descriptions have become more common (Ernest,1989:330). However, there are many external expectations made of schools: by government; by parents; by society in general; and even by educational researchers. The task of interpreting and responding to many of these expectations falls to the head of department. Howson and Woolnough (1982) found a disparity between the perception held by outside agencies and the post-holders themselves.

In order to understand the perspectives and perceptions of the heads of mathematics in this work it is useful to include a brief resumé of recent developments in mathematics education. The challenge of making mathematics enjoyable, relevant and useful has been the main concern of mathematical educational debate for at the last thirty years.

In 1961 the report on the Royaumont Conference opened by expressing interest in the 'possibility of radical changes and improvements in the teaching of mathematics' (OECE,1961:11). The conference sought guidance and their commissioned report (OECD,1961) set out the foundations for change. This change was seen at that stage in terms of the introduction of fresh content into the mathematics curriculum, and mainly with the top levels of ability.

By 1966 there was a consensus on new content and it was realised that some change in teaching method was also necessary. This was perceived as updating the didactic, expository methods so that modern content could be tackled by younger children (UNESCO,1966).

Freudenthal reflected in 1970:

...many mathematicians are convinced that the best way to learn mathematics is to create it anew; hence the large number of pilot projects in favour of active and subsequently creative learning.
(UNESCO,1970:Introduction)

So, not only was the content of mathematics under review but so were the methods used to teach it; or even the ways in which the learners learn it.

The Cockcroft Report in 1982 was a key publication in the development of mathematics in England and Wales. This report summarised and drew together the strands of the previous twenty years and laid down the ground rules for the next twenty years. The much quoted paragraph 243 is still very much the aim today:

- Mathematics teaching at all levels should include opportunities for*
- * exposition by the teacher;*
 - * discussion between teacher and pupils and between pupils themselves;*
 - * appropriate practical work;*
 - * consolidation and practice of fundamental skills and routines;*
 - * problem-solving, including the application of mathematics to everyday situations;*
 - * investigational work.*

The major curricular changes in the 'eighties for mathematics in schools, such as the introduction of GCSE and the National Curriculum, leant heavily on the Cockcroft Report, both for advice and as an authoritative source.

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Most of the proposals received general acceptance but the introduction of them into the majority of classrooms lags way behind the first promotion of the idea. Pressure can build up for the implementation of innovations and so heads of mathematics need to be agents for change not merely the administrators envisaged in the first Burnham proposals.

The Context of this Research

What was the working context for the heads of mathematics featured in this research which was carried out in the late 'eighties?

- Mathematics is taught in all schools in Great Britain and (almost without exception) to all pupils up to the statutory school leaving age of 16. So these pupils are from the whole ability range and have not opted into the subject. The only other subjects in a similar position are English, religious education and physical education.
- Mathematics is generally regarded as a hierarchical area of study where each new thing to be learnt depends on, and builds on, earlier work. This is not as true for many other subjects such as History for example where the pupil might engage afresh at any time even if the earlier work has not been completely understood.
- Mathematics appears to be psychologically difficult to learn; anxiety about learning mathematics affects the learning process and there are key concepts which were difficult to grasp.
- It is quite acceptable to admit in public that "I never could do maths" and this negative view is unhelpful. Headteachers might leave heads of mathematics to their own devices more often than heads of department of other subjects. The heads of mathematics might enjoy the autonomy but, conversely, it might represent an extra burden.
- Everyone seems to have the right to an opinion about the importance of arithmetic and mathematics and this puts more pressure on the teachers to

produce better performance in their pupils. Parents, industrialists, and politicians all exhort schools to do better.

- Pupils do not progress in mathematics evenly by age in their knowledge and skills and a typical year group contains pupils from across a 'seven year difference' in achievement'. For example in a group of typical eleven year olds there are pupils whose mathematical understanding is likely to be already greater than that of some pupils who have just left school at 16. (Cockcroft,1982: para 436 referring to research reported in Hart,1981). Thus it is not easy to place pupils in class ability sets of sufficient homogeneity. It had not proved as popular in mathematics as in other subjects such as English to move over to mixed-ability teaching.

- During the late 'seventies and early 'eighties gender became an issue; it was thought that females generally performed less well in mathematics than did males. It was shown, however, not to be as simple as that with different relative performance in different parts of the mathematics curriculum. Also, rather than an over-arching failure by girls in fact, they performed progressively less well than boys as they got older (Walden and Walkerdine,1982; Eales,1986).

- The way in which mathematics was assessed had changed considerably. Investigational work needed quite different marking than the tick and cross of text-book exercises or worksheets (Eales,1984). Oral assessment was becoming more acceptable (Fowler,1983). The value of being able to work in

a group was beginning to be recognised and so assessment of performance in groups was being explored (ATM,1986).

- The introduction of calculators had very much changed the arithmetic basis of much secondary school teaching. In theory the reduction in the amount of arithmetic to be taught was welcome but it also brought doubts and uncertainties. Computers brought changes other than to the approach to arithmetic; for example geometry could now be taught with the aid of programmes such as Logo (Papert,1980). The computer-in-the-classroom had also made more pupil-centered learning possible.

- Mathematics was now to be seen as a practical subject; resource-based and to be learnt actively. The teachers were mostly trained in traditional didactic methods and now they were being told that these methods were largely inappropriate. It fell to the heads of mathematics to help the teachers to adjust to different ways of teaching. As with many changes the production of text-books and materials lagged behind the need, particularly for schools in the vanguard of change. This meant that the heads of department needed to spend time writing worksheets and preparing packages of work.

- The Cockcroft Report was helpful in analysing the issues and in recommending policy but it was left to the heads of mathematics to implement change and there may be feelings of guilt, and then stress, if the issues, thus clarified, were not being tackled.

In a period of expansion, such as in the 'sixties, innovation can be exciting and challenging. There are resources available: money for materials; generous staffing ratios; supply cover for INSET; new base areas to be designed and built; new schools. And with the expansion of existing schools and new schools there are many career opportunities. Unfortunately the 'eighties were not only a period of change for secondary education but also a period of contraction: falling roles; reduced expenditure on education; closing and amalgamation of schools; redeployment or even redundancy; and very few opportunities for promotion. There were pay disputes, changes in pay scales, strikes and a general lowering of teachers' morale. When 'natural' progression atrophies then it falls to the head of department to maintain interest and staff development (Early and Fletcher-Campbell,1989:105).

The 'eighties were a period of proposals for change: General Certificate of Secondary Education (GCSE); the Technical, Vocational and Educational Initiative (TVEI); Records of Achievement (ROA); Local Management of Schools (LMS); school-based INSET; a national appraisal scheme; the National Curriculum;..... General changes, such as those related to GCSE and TVEI for example, always have a major impact on the core subjects such as English and mathematics whereas other subjects may be more or less affected by any given initiative.

Department heads have a central role to play in facilitating and managing educational changes, whether the origins of these be within the school, the LEA or, increasingly, central government. (Early and Fletcher-Campbell,1989:8).

Implementation

In general the responsibility for the implementation of the changes, or the knock-on effect of them, falls to the head of department (Smith,1984:146 and Ernest,1989:336). 'The question "How do you make it operational?" is nearly always answered in *departmental* terms' (Marland,1981 edition of 1971 reference:3).

For the 'ordinary' teacher the head of department is usually the first point of reference. The head of department acts as a first "sieve" (Gwynne James in Shuard and Quadling,1980:47) and then as the key figure in the implementation (Cockcroft,1982:para 507). There are a few occasions when training (such as the 'cascade' training for GCSE) is provided for heads of department but mostly they are left alone to work out how to cope.

Professional bodies, such as the Association of Teachers of Mathematics (ATM) and the Mathematics Association (MA), and the LEAs provide courses for teachers but there are very few courses for heads of department. One exception is the diploma course run by the Mathematics Association. In the early stages of this research I tested some exercises on such a course held at Avery Hill College. The sessions explored how the heads of department could use each other as sounding boards to draw out their feelings about their work.

Very large departments, now often called faculties, such as humanities and science, are different from single subject departments in that there are separate subject heads of department to be thinking of their own areas.

Mathematics and English departments are unique in the size and scope of responsibilities held by the head of department. Some of the research quoted earlier on aspects of the head of department role was in fact done with small departments. Morris and Dennison (1982), for example, used a head of chemistry whose department would have been likely to be two or three teachers. Communication and staff development in particular is far easier in a small department: the department of ten or so is a very different 'animal'.

Early and Fletcher-Campbell (1989), for heads of department, and Ernest (1989), for heads of mathematics, have written very useful reviews of the situation in secondary schools. Ernest confirmed that this view from over ten years earlier still held true:

A number of cases were reported where good leadership by the head of department had raised the level of teaching in a school substantially. The abilities of the teachers in the team had been so effectively coordinated that their performance was markedly higher than in comparable schools, and the only apparent explanation was the organising ability and enthusiasm of the head of department.
(DES,1979:144)

Ernest also highlighted the changing demands on the head of mathematics and stressed that since there is a (seemingly) perennial shortage of suitably qualified applicants for mathematics posts then the head of mathematics has yet more responsibility in training new teachers and in producing materials which needed to be constructed so as to be capable of use by the non-specialist teacher.

There has also been pressure on mathematics teachers to be in the forefront in the introduction of information technology into schools. This can deflect mathematics teachers from teaching mathematics and take potential heads of mathematics onto a career route away from mathematics. This may all cause additional staffing problems for the mathematics department. Even so perhaps 'the greatest increase in the demands on the head of mathematics is within his or her role as manager and leader.'

(Ernest;1989:322).

Everard had noted a marked difference in amount and quality of training for management between schools and other employers such as the Civil Service, the armed forces, industry and commerce. The few teachers that had had management training had come into education from elsewhere or were teaching in one of the few institutions that were enlightened in this respect (Everard,1986:64). In a large scale survey Harding found that about 50% of heads of department surveyed stated that they had received training. But this was of the 43% of institutions which responded to the requests for information. There may well be a higher rate of training in those schools that chose to reply and it may also be that the training was not specifically in management skills but for tasks. Harding suggested that this is a marked increase since a report of the Audit Commission in 1986 (Harding,1990:29). The optimism that might be generated by these relatively high percentages was not echoed by Ernest writing one year earlier:

There is no direct evidence of the extent to which heads of department receive in-service training in management skills. However, on the basis of the evidence on heads of departments' restricted perceptions of demands, and their lack of job specifications, it seems unlikely that

many heads of department have received management training.
(Ernest,1989:330)

The need for such training for heads of mathematics had been pointed out in 1982 in Paragraph 219 of the Cockcroft Report.

Ernest remarked that there is little evidence on the extent to which heads of mathematics fulfil their role as they perceive it themselves (1989:326). Enquiries rarely ask the heads of department themselves, rather asking others for their views on the role of heads of department. Shuard and Quadling (1980) related some very interesting stories told by heads of mathematics and Early and Fletcher-Campbell (1989) quoted some fascinating extracts from diaries of heads of department which gave some idea of the life they lead. It is the intention of this research that asking some effective heads of mathematics to describe their style will provide valuable insight.

Chapter Three - The Research

What are the styles of effective heads of mathematics in secondary schools?

How do effective heads of mathematics go about their work?

and

How is it best to develop heads of department?

How can heads of department become more effective?

Background

All researchers bring to their work a history of experience and knowledge. This will have a considerable effect in determining the way in which they go about their work including the values and judgements they apply when constructing the research design. It will help in understanding this research if I describe the experiences which I feel have contributed to the rationale of this research.

I was reluctant at first to consider a research design leading to results which were not measurable. Within my undergraduate psychology course there had been discussion of the paradox of studying only things that can be measured leaving other areas relatively untouched. Experiments are often carried out in limited situations and it is then difficult to apply the results elsewhere. This is especially true of educational research. Pupils and teachers operate in a complex environment in which it is very difficult to carry out controlled experiments: variables are elusive; matched conditions cannot be relied upon; replication is virtually impossible.

I had carried out some school-based research into question choice in 16+ mathematics examinations. This had been straightforward and successful and encouraged me to try more difficult areas. Next I explored various aspects of gender and mathematics, particularly the effect of single-sex class groupings on performance (Eales,1986). The reading I did for this included feminist and sociological sources and I began to appreciate more fully the value of alternative approaches.

I was then fortunate to be seconded full-time for two years to the Oxford Certificate of Educational Achievement (OCEA) project and as part of the research team I concentrated on 'Assessment through Mathematical Investigations' (Eales,1984). During the interviews with teachers I became convinced that there was considerable untapped knowledge and experience among teachers in general and among senior professionals in particular. Various data-collection methods had been discussed by the OCEA research team - questionnaires, structured interviews, observation, etc - and I chose lightly structured interviews. My pilot study convinced me that to ask very detailed questions left much valuable information on one side. Merely closing a long interview with "Any other comments?" does not do justice to the interviewees. Provided that the briefing letters are carefully worded only a little extra guidance through a lightly structured schedule is necessary. The interviewees could and should be trusted to cover what they feel is important.

For the conduct of the interviews I called on my counselling training and I was also reminded of a short investigation I had tackled during my PGCE year into non-verbal conditioning. Whether interviewers acknowledge it or not they must be an strong influence on the mood of the interview and hence on the nature of the view expressed. We have all taken part in those frustrating interviews when we feel that not only have we had little opportunity to bring our experience to bear but that we have had our views somehow twisted to fit what was needed.

There is a sense in which the design of this research was inevitable. I was fascinated by the role of Head of Mathematics. I was intrigued as to why some heads of mathematics were more effective than others. I realised that there could be much to learn by listening to heads of mathematics and that I could use my interviewing experience to enable heads of mathematics to tell me about their style.

The presentation of the results was also affected by my OCEA work. One key to that project was respect for the views and ideas of school pupils. Similarly, I wanted to show respect for the views of the heads of department. As much as was feasible I wanted to 'negotiate' the write-ups of any interviews so that they truly reflected the views of the head of departments and that my influence was constructive and kept to a minimum. I also hoped that the descriptions of the styles would be interesting and useful to the readers, particularly if the readers were existing or aspiring heads of department.

It is in the nature of writing that ideas must be presented in an order and so research designs are usually presented with what appears to be a logical chain of argument. In fact this argument is often constructed after the event giving a false sense of elegance and neatness. On the other hand a complete record of all ideas considered would be a research project in itself and would be a distraction to the reader. In fact the design for this research came together piecemeal over a period of about a year, with various aspects of my experience being called upon as needed. Avenues were explored and ideas discarded, sometimes with great reluctance. For example I have taught statistics for many years and would have loved to have used some sophisticated analysis to tease out great truths. However in this case the resolution of the questions was best tackled through verbal rather than statistical analysis.

Research Design

Classical science reports should include a precise description of method so that replication of the experiment is possible. It is, however, possible that, although much detail of method is given, the background and starting points for the research are missing and so understanding of the method is partial. This can beg questions, particularly as to why the researcher became interested and involved in that field, and about the 'mood' of the research. All research reports should include an account of how the research arose; why the researcher was concerned to do it. It is not simply the detail of what was done that describes and defines the research.

This research was born from a fascination of being a head of mathematics. I had been a head of mathematics in a large comprehensive school for over ten years and had found it stimulating. I was led to believe that I was effective but why? I worked hard, tried to do the job well and tried to learn with and from my peers, but there seemed to be more to it than that. How was it that some heads of department were more effective than others? Was it perhaps the way they went about it rather than what they actually did?

The rationale for the design of this research depends on arguments very similar to those rehearsed by Parlett and Hamilton (1977) in their discussion of Illuminative Evaluation. Although this research is not an evaluation, 'illuminative' is a very appropriate term. This research seeks to throw light onto the styles of effective heads of mathematics. Only very rarely can a research design be taken directly 'off the shelf'; each design is 'bespoke', and the demands of the research questions will, in effect, determine the research design. Methods which in terms of evaluation are typified by Parlett and Hamilton as the agricultural-botany paradigm (1977:7) may be simply inapplicable in some situations. Carrying out research using inapplicable methods may lead to false, or irrelevant results.

In educational research, monitoring the variables has proved quite difficult enough let alone controlling them or isolating one from another. The causal links are far too deeply embedded to be found as yet in many

educational studies. Indeed it can be argued that the only questions worth answering in educational research are likely to be those that are not susceptible to measurement.

Fortunately, this does not mean that the interesting questions cannot be explored at all, rather that the methods available produce understanding rather than knowledge. Particularly in education the 'experiments' need to be carried out in their environment, or 'milieu' (Parlett and Hamilton,1977:11), and this environment must be acknowledged and studied along with the 'variables' or 'subjects'. The role of head of mathematics and the particular post holders studied in this research have developed in a particular historical context. They are to be observed against a particular backcloth fixed in time and space, and they perform in dynamic milieux.

There is no particular theory of 'leadership' which is being tested but I hope that some common elements of effective styles will emerge; ie this research may lead to 'grounded theory' (Glaser and Strauss,1967). There is no particular 'style' which is being sought or observed. There is no technical definition of 'effective' which is being proposed. The consensus understanding of these terms will suffice. What this research will present are examples of style employed by heads of mathematics who are generally considered to be effective. The validity of this research hinges on the quality of the reporting and analysis of the styles. The design of this research is constructed so as to present, as helpfully and accurately as

possible, pen-pictures of the professional lives of some heads of mathematics. It should be possible to find out some very interesting things about - to throw light on - the styles of effective heads of mathematics in secondary schools.

It would have been possible for this research to consider heads of department, or heads of faculty, rather than just heads of mathematics. One feature of normal conversation is scene setting as each person establishes where they are with respect to the item under debate. What sort of garden they have and why they favour roses or heathers. If the listener has never gardened and has no idea at all of the sort of problems faced by a gardener then the conversation is more likely to rest at a trivial level. Since I had been a head of mathematics there were considerable advantages in keeping to heads of mathematics.

If I approached, say, geography teachers about their work then they would probably feel the need to explain aspects of geography teaching. When, on the other hand, I approach a mathematician who shares much of the same background then the conversation is more likely to be useful. The possible loss in applicability by restricting the research to mathematicians is that there may be key features of being a head of mathematics which do not apply to other heads of department; and vice versa. When weighed against the potential benefits I felt this reservation was acceptable so I decided to use only heads of mathematics.

Style and Effectiveness

The title of this research suggests a question. How do you know an effective head of mathematics when you see one? If effectiveness is defined without reference to style then maybe it is not an adequate description. If effectiveness is defined using style then the research has less point because it supposes that the answers to the research questions are known. A way into this circle had to be found. I decided to use reputation for the selection of effective heads of mathematics whose style could then be studied. Even if there were elements of chance in how these heads of mathematics had come to be regarded as effective, much could be learned through a consideration of their styles.

Using Effective Heads of Mathematics

In some studies it is appropriate to consider contrasting features eg female/male, pupil/teacher, pre- and post-training trials, etc. For this research it might be possible to look at effective and ineffective heads of mathematics; to contrast ineffectiveness with effectiveness. However, it did seem invidious, almost mischievous, to search out heads of mathematics thought to be ineffective. It would be extremely difficult to regard their participation in the work in an open, enhancing way, unless perhaps 'remedial' courses could be run and the attenders studied.

On balance I decided to study heads of mathematics who were generally considered to be effective. The use of reputation to govern choice has its difficulties since no matter how effective heads of department may appear,

there is always the risk that the effectiveness is not so strong in daily workings: they may be casual about day to day administration; they may be idle; they may be poor at leading a team. Conversely, quiet, efficient, effective practitioners with no public persona might be overlooked. In the event I decided to work in such a way as to maximise the chances of gaining insight and accepting the risk that those chosen would not be a representative of all the ways in which heads of mathematics in secondary schools might be effective.

Large Scale or Small Scale?

One approach could have been to survey a relatively large number of heads of mathematics and draw up a detailed picture of their work - what they did, how they spend their time. Such a study was carried out by NFER largely concurrent with this research (Early and Fletcher-Campbell, 1989). Another approach, used by Ernest in 1988, would be to study complete departments. Yet another possible approach would be to ask people in various positions in education what they considered to be important in an effective head of department. This is the 'wise-person' approach, (used for example by Marland, 1971, and in part by Howson and Woolnough, 1982) and would tell us no more from the perspective of heads of department, but rather what others think about them. A study of how reputation is accrued would be fascinating but was not followed up here. A large-scale approach is better suited to a team, such as NFER, rather than the lone, part-time, researcher. Also with large numbers of respondents there is a danger that the significance of individual professional opinions might be lost, although

Early and Fletcher-Campbell (1989) have done their best to avoid this. More crucially it is debatable whether the large scale approach, probably using questionnaires, can be made to address 'style' in any but a superficial way. A better route for this research was to explore 'style' by listening to the heads of department themselves (and, in the second part of the study, to those around them).

Written Questionnaires or Interviews?

There are advantages to using questionnaires over interviews: more ground can be covered in a given time; the questions are put in the same way to each person; analysis of the results can be straightforward; statistical analyses can be carried out. But, although the questions are presented in written form, there can be few checks on whether the meaning is commonly understood. It is also difficult to judge whether the respondents give the questions proper consideration; the respondents may well not feel at all involved or committed to the task; the respondents are rarely expected to justify the responses in any real sense. So some surface reliability can be achieved but on occasion the conclusions are presented with a false sense of validity since the distance between the research questions and those conclusions is too great for safety. It cannot be assumed that conclusions drawn from quantified results necessarily have greater validity than conclusions drawn from other types of results.

I considered the possibility of shadowing heads of mathematics but this would either be extremely time-consuming or very partial. They could be

observed in various situations: running department meetings; teaching; talking with probationers; at senior staff meetings etc. With preliminary work on how to observe and what to look for this may well be a useful approach. I felt, however, that so little was known about 'style' that groundwork needed to be laid. Perhaps follow-up research could observe facets suggested or highlighted by this research?

I decided to use lightly structured interviews. These interviews would be focussed through briefing letters and by the interviewer making occasional prompts but the heads of mathematics themselves could be left to determine the agenda. So as to increase the chances that singular insights would indeed be offered by the heads of mathematics it would be important not to over-structure the interview. Also, in order to reduce intrusiveness during the interview, I would have to take care over prompts and encouragement.

Choosing the Heads of Mathematics

A judgement had to be made as to which heads of mathematics were to be interviewed. Some studies have called on local education authorities to nominate schools or individuals with whom it would be useful to work but even with well stated criteria there is still uncertainty about what will be found at the end of what can become a long chain of referral. So for this research I decided to use personal contacts, who were advisers and lecturers, as 'judges' to nominate a group of 'effective' heads of mathematics.

Good research designs draw on the strengths of the researcher and in this instance I had excellent relationships with many heads of mathematics within Leicestershire. I had been working in this area for over twenty years, most recently in trialling materials, and was well-known and respected as an experienced professional. By choosing people with whom some rapport already existed it was more likely that useful conversations would occur and hence that the research would succeed. I considered the possibility that the evidence would be prejudiced and thus to some extent invalid but on balance felt that this was outweighed by the advantages gained by using existing contacts. For the first study I decided not to go outside the immediate geographical area.

The Interviews

An essential aspect of this research was to be the immediacy with which those being interviewed would respond at the interview. If, before the interview, there was already a confidence shared by the interviewer and the interviewed then it was more likely that insightful things would be found out. Time is always precious in interviews; it is all too easy to collect tape recordings as if they are good luck charms and lose sight of the reflection and analysis. Returning to one's desk with armfuls of cassettes is all very well but the time needed for transcription, reflection and analysis is often grossly underestimated. As a result the most valuable part of the work is often rushed and inadequate, whilst the primary data rests gathering dust. This research would depend on the interviews being efficient and effective.

The conduct of interviews would be crucial: it was important that they should be set up and conducted in a careful, well-considered way. The initial approach to each potential interviewee would be in person or by telephone and then confirmed in writing. The purpose of the research would be explained and it was important to set out exactly what was expected and what the minimum commitment would be. Everything would be done to try to ensure that the interviews were productive.

The heads of department might be coy about considering their own style or effectiveness and feel reticent about discussing them. The expression of their own views on their own style might seem too egocentric. The mood of the interviews would need to be friendly but to the point; encouraging and business-like. When being interviewed the heads of mathematics would need to feel relaxed and be ready to share their views. Care would need to be taken over the physical environment at the interview: the inconspicuous placing of the tape-recorder, the seating and lighting arrangements. The conversation needed to be virtually one way and yet this could be unnatural, rather like a radio talk. Any prompt would necessarily encourage or discourage some aspect; turning the conversation one way or another. The interviewees, not unnaturally, would be seeking my views on style, perhaps in part to avoid a difficult task. The early interviews could serve as a pilot of the procedures and at the end of each interview there would be a brief discussion about the conduct of the interview.

Respect

Many of my considerations in designing this research reflect respect for the views of the heads of mathematics involved. They will have agreed to help; they will be interested in the outcome of the research. They must not be treated as research fodder; as a means to an end. This research should involve them as much as possible. It may be that this concern stems from my poor experiences when involved in other people's research and also from the fact that I had very recently been a head of mathematics just like them. Here was an opportunity for some research to be carried out by and for a particular type of educational professional - the head of department.

Pen-Pictures

Reading about colleagues in a similar role to oneself can give tremendous encouragement and this method of learning is not perhaps fully appreciated. Blumberg and Greenfield certainly found that there was great interest in their book *The Effective Principal* (1980) which presented biographies of the professional lives of school principals in the USA. They used reputation in order to select their principals and after getting to know them in a number of ways they wrote colourful reports on them which were full of flavour and character. This book had a great impact on me and was highly influential in many aspects of this research. Similarly Peters and Austin used stories about real people from the business world for their influential book *'A Passion for Excellence: The Leadership Difference'*.

I can still recall when I was a boy how I enjoyed reading pen-pictures of the footballers from Bristol Rovers in my local sports newspaper. In those days it was not sensationalist reporting but rather their background; their views on football; how they enjoyed playing in this or that position. I learned about them and football. In an exactly similar way I believe that reading about heads of mathematics would help other heads of department to learn about being a head of department.

It was vital that the interviews should be reported in a way that reflected accurately the views of the heads of mathematics. Every researcher necessarily selects, edits, sifts, chooses; every experimenter interferes with what is observed, but this interference can be monitored and kept to a minimum. A write-up of the interview would be made and returned to the head of mathematics for comment and amendment. I might change the order of thoughts; I might change some of the expressions used in an attempt to clarify meaning. If an error was made this could be corrected, but a bare transcript would be indigestible and not carry the meaning intended. Transcripts of conversations do not carry the same meaning as the original conversation. They pretend to be 'accurate' but can rarely be so except in a limited, sterile sense. It might be possible to write pen-pictures in such a way as to mimic the behavioural style of the head of department but I decided that this was too ambitious and used quotations to build up a feel for that personality.

INSET and Appraisal

This research is not only concerned with exploring 'style'. It is also aimed at finding ways to increase the effectiveness of heads of department. How can those who develop others be themselves developed? (Early and Fletcher Campbell, 1986).

At first I saw the answer to this question in terms of in-service courses (INSET) typically held at a teachers' centre, but as the research progressed it seemed that the relevance of the methods used in it were more applicable to school-based activities, and that these activities were closely linked to appraisal. Coincidentally, during the time span of the research a change was occurring in the funding of INSET away from 'off-site' courses towards school-focussed and school-based INSET. It also so happened that the new teachers' contract included compulsory appraisal. So far the proposals for appraisal have concerned the appraisal of classroom teachers and headteachers. The interviews and write-ups used in this research should help fill the need for appraisal procedures for middle managers in schools.

The Research Questions

What are the styles of effective heads of mathematics in secondary schools?

How do effective heads of mathematics go about their work?

- How will heads of mathematics and, in the second study, those who work with them, describe their style?
- Will the descriptions of the professional lives of heads of mathematics lead perhaps to recognising similarities? Are there commonalities between

the styles of effective heads of mathematics which may well be generalisable?

- Will it be possible to relate what is found to leadership theories?. This research is not testing any particular theories but will the findings be consistent with at least some of the theories?
- Will the heads of mathematics acknowledge style? Will they merely describe what they do or will they be able to distance themselves and describe how they go about their work?

How is it best to develop heads of department?

How can heads of department become more effective?

- Will the methods used in this research suggest any ways to develop existing or aspiring heads of department?
- Will the interviews suggest any exercises which could be used as part of in-service courses?
- What are the connections between the processes used for the research, particularly the interviews and use of nominees, and appraisal or review?

Chapter Four - The First Study

4.1 Methodology for the First Study

In order to gain insight into the styles of effective heads of mathematics it was first necessary to identify some effective heads of mathematics. Seven heads of mathematics were selected using a panel of judges. This is essentially the same method as used to investigate heads of department in a recent NFER study (Early and Fletcher-Campbell, 1989). The heads of mathematics were then interviewed using a lightly structured schedule. A draft write-up of the interview was then presented to that head of mathematics for comment and amendment in order to ensure that it was a true reflection of what was intended. This ensured that the bias of the researcher intruded as little as possible into the final pen-picture.

All the heads of department were invited to a de-briefing session at which they could share their feelings about the experience of taking part in the research.

Aspects of this study provided a sound basis for the second study and paved the way for the later shift of emphasis from INSET to appraisal. Key features were: the preparation that the heads of mathematics made for the interview; the conduct of, and participation in, the interview itself; the construction of the write-ups; the reflection by the heads of mathematics on their write-ups; and the de-briefing meeting.

In the event two of the heads of department were used in the second study and so only five pen-pictures are presented in this chapter.

Selection of the Sample

There was an inherent difficulty in that effective heads of mathematics were to be used and yet the nature of effectiveness was not fully understood or defined. Heads of mathematics do, however, gain reputations of effectiveness and so the opinions of a panel of judges familiar with the local heads of mathematics were sought. The judges were asked to nominate heads of mathematics from Leicestershire since if no restrictions were made there might be very little overlap in their lists. Also my prior acquaintance of the heads of mathematics was thought to be of potential benefit. The research design did not depend for its validity on a wide cross-section but rather on the immediacy and richness of response from those interviewed.

Five judges were approached. They were either advisory staff with the local education authority or lecturers at a local initial training institution. They were asked to make lists, of no particular length, of those local heads of mathematics who they considered to be effective. The rejoinder of: 'What do you mean by effective?' was deflected and all of those approached agreed to make such lists.

The five lists contained six names in common and one other name was added. This name had been mentioned by three judges only, but was of a head of

mathematics whom I felt would have a significant contribution to make.

(There was also the suspicion, confirmed later by one of the judges, that he had been forgotten because his school was right on the edge of the county!)

The Sample

It was fortunate that the sample was balanced in a number of respects and no further additions were needed.

Of the seven chosen:

Four were women, three were men.

One was from an 11-14 school, two from 11-16 schools, one from an 11-18 school, and three from 14-19 schools.

One was from a boys school, the others from mixed schools.

All were from well established comprehensive schools.

Ages ranged from around 30 to 45.

Two had been heads of department for less than five years, the others for more.

The department sizes ranged from the full-time equivalent of three to ten teachers.

All the heads of department were known to the researcher in a professional capacity and most were known personally.

Preparing for the Interviews.

The initial contact was by telephone with a request to 'help me with my research'. This could be much less formal than would otherwise be the case

because of the previous acquaintanceship. There were questions from the heads of mathematics, particularly in terms of the commitment and time needed, but much was taken on trust. Of particular note was the trust they had in me with respect to confidences that might be exchanged and how professional the write-ups would be.

A letter was then sent which gave full details of what was expected. This written confirmation of the telephone call was essential so as to avoid misunderstandings and to clear the ground for the interviews. The heads of mathematics would be expected to think about the interview before it took place and to consider the write-up, amending it if necessary. It was also hoped that they would attend a de-briefing meeting. All the heads of mathematics agreed to take part. The letter was piloted with two of them before being sent to the other five, but in the event did not need any alterations. The smoothness of the arrangements owed much to my previous experience with the Oxford Certificate of Educational Achievement (OCEA) project.

Four heads of mathematics chose to be interviewed at their schools; two at their homes; and one at my home. It was important for the heads of mathematics to be able to choose a quiet environment where they would feel relaxed. One interview suffered from interruptions and at one interview the interviewee was too casual. Each interview was recorded using a C90 tape which acted as an alarm after 45 minutes. After 35 minutes or so I prompted for reflection over what had been said and for comment on the

conduct of the interview. There was, in effect, a rolling piloting process and my techniques were continually refined.

It is all too easy to gather vast amounts of recordings which then cannot be adequately analysed. Forty minutes was ample to provide what was required, so long as the interviewee had prepared in advance by selecting and pre-editing what was to be said. Only one of the interviews lasted over 45 minutes and that finished inside the hour.

Conducting the Interviews

My research as part of the OCEA project convinced me that the professionalism and experience of those being interviewed is often undervalued. Too often the interviewee is fodder for the research and the final 'Is there anything else you would like to add?' at the end of an hour of close questioning does less than service to the interviewee's ability to sift and help on the researcher's behalf. My OCEA research included talking to teachers about their experience in trialling materials and I had found that so long as the pre-interview briefing letter was well written, and focussed attention properly, then there was really little need for specific prompts. All that was needed were occasional interjections to shift from one area of interest to another and occasional encouragement to demonstrate that the I was alert and interested in what was being said. For this type of research there is great virtue in a lightly structured schedule rather than a highly-detailed schedule which has to be obeyed come what may.

As part of my PGCE course I had carried out an experiment into non-verbal conditioning derived from the work of Greenspoon. My interest in personal reactions was built on during counselling courses and proved invaluable in enabling me to give sufficient encouragement and prompting without prejudicing the outcome. This meant that the interview had pace and fluency and that the subsequent write-ups needed little amendment.

At the start of the first two interviews I gave virtually no preamble, merely 'You have read the letter so off you go', but I soon recognised that this was too terse. It was also unreasonable to expect someone to talk non-stop for over half an hour, so occasional interjections were introduced. Although the interviews were taped I found it useful to make notes as well. This helped the interpretation of the tape and put the interviewee at ease. Towards the end of the interview questions were asked about the interview procedures and the responses were invaluable in what was for me, in effect, a continual training programme. Typical remarks were to the effect that the note-taking showed interest better than mere nods and grunts; and that whilst I was completing a note the interviewee could relax a little and gather thoughts for the next comment. (Such points of detail are not always noted in research reports and yet they serve to help other researchers to improve their techniques.)

Writing-up the Interviews

Creating each write-up was an iterative process, particularly for the first few interviews. First I listened the tape all the way through once; this

reminded me of the general tone of the interview. Then a rough long-hand version, which was not a transcription, was made, although there were occasions when sections were written verbatim. From the long hand version a typed draft was composed which tried to draw together various themes but not to distort what was said. This is a critical stage: ensuring that what was written reflected what the head of department meant to say even if it was only tentatively expressed. This was particularly difficult if the same theme was returned to at different stages of the interview. One way in which a write-up could fail was in producing a pale image of what was intended and a false, perhaps stronger, image created by the researcher. There is always a risk in any synthesis or precis but transcripts are often unreadable and too difficult to digest. The first typed draft gave an outline of the arguments but contained very few actual quotes. Brief biographical notes were added and this version was sent to the head of department for comment.

The head of department then stated whether the draft was on the right lines or not; and if there were any major errors. If there were significant misgivings then further interviews could be arranged. Three heads of department felt that only minor comments were necessary; two felt they had minor comments but they would prefer to make them personally; one felt that a further interview was necessary; and one failed to reply, (or to attend the de-briefing meeting). (In this last case further enquiries were made and in fact there were no problems with the write-up; there had simply been a mis-understanding over the need to reply). In the case that would have

needed re-interviewing it was decided that, since this head of mathematics would be used in the second study, there need not be a second write-up at that stage. The problem in that interview had arisen because the head of mathematics in question had been too relaxed and not mentally prepared for the interview. Greater care would be taken for the second study interview.

Once agreement had been reached with a particular head of mathematics then the next version of the pen-picture was made, this time using quotations to bring the text to life. One final check was made before the versions which follow were regarded as finished.

4.2 The Heads of Mathematics - five short portraits

Head of Mathematics F

At the time of the interview F had been head of mathematics for eight years in this boys' comprehensive school and had been appointed internally having taught there for three years. She had come directly into teaching from university, initially teaching biology and chemistry, but quickly settling to mathematics. She had earlier had a five year break in her career, after having reached second in department status.

Who Knows?

Feeling very uncertain about what to say at the interview F had sought the views of her colleagues. Their comments were kept at hand during the interview and were of great help. F found it an unusual and testing experience to be asked to review her own style, and also felt that she was not the right one to ask. There had been some resentment in the department when she had been appointed and she was still conscious of the attitude of the department towards her at that time.

The Department, Discipline and Support

The welfare and nature of 'the department' was central to F's thinking. There was much discussion, usually informal, within the department, mostly about individual pupils. F considered that effectiveness would be brought about through working together as a unit and so she concentrated on the creation and maintenance of the department. The focus for the department

was the well-being of the pupils and this produced a sense of working together for common aims. Although effectiveness was not seen wholly in terms of examination results, success in the 16+ examinations was important and played a considerable part in the high reputation that the department enjoyed within the school. This success was attributed, by and large, to the high motivation of the pupils. This in turn was achieved through supplementing exposition in setted classes by extensive individual support for each pupil. Most teachers had their own rooms and were given the freedom to use whatever teaching methods they wished. Until recently the norm had been didactic exposition using text-books and worksheets but these methods were currently under review.

I see one of my main jobs as getting the department to work together as a department - to be seen as a caring department and to work together as a unit. We have arguments and we get over them. We care about each other and talk a lot.

F carried considerable responsibility as the first reference point when there were problems of class control or when individual pupils disrupted lessons. The main sanction was to keep pupils behind after school and it was mainly F who talked to them. In this way they realised that someone was concerned for them as individuals.

Things like homework persistently not done, bad behaviour, cheekiness, being turned off - they get sent to me. I will counsel - for up to an hour, usually I see someone at least once a week. The pupils appreciate

this and see that a lot of caring goes on. Back-up work. (All of the staff I asked) referred to this on their sheet.

The fact that F could handle any class had built up respect from her colleagues. It was difficult for some of the teachers, perhaps particularly the older men, to feel happy in referring pupils to her. There had been an initial reluctance by some of the older male members of staff to admit to the need for assistance from a woman head of department in what was a traditionally male domain in an all boys school.

There was clearly a sense of purpose - concern for the pupils and their development; concern for their success in 16+ examinations and later at their chosen Sixth Form or Further Education Colleges; concern for the appropriate development of public examination syllabuses. F, however, found it extremely difficult to express all of this in a neat package.

I don't see forward many years. I like to think we are raising standards somehow, getting each kid to do their best.

Although F expressed no long-term vision there was a confidence that the concern for the children and their standards would prove of perennial worth. Since staff were encouraged to follow their own ideals, even to the extent of different teachers using different public examinations, then the notion of overall policy did not arise. As one deputy at the school commented "there are clear ideas of what is being sought without any formal objectives being expressed"

Administration

F made a somewhat reluctant admission that administration was necessary and the allocation of resources was made through discussion. F also felt open to the criticism of her own work being disorganised but this was mainly in relation to filing worksheets etc and not true of record-keeping or turning round forms. The second in department was used extensively to balance what F recognised as a weak point in her work.

He gets through lots of work - checking text-books in; numbering new books. It's not what I'm strong at but I do what needs to be done.

Staff

For each of the previous three years there had been a member of the department out on secondment. The response that F makes to the Head when asked about a prospective secondment is unequivocal.

I say for God's sake it's their careers! We can't put ourselves first.

If any member of the department was unjustly treated even over relatively mundane matters like cover then F intervened and tried to sort things out; and normally succeeded!

A feature of recent years had been to convince some teachers that it really was in their best interest to leave teaching. Together with the allocation of teachers to the various classes this had been the hardest part of the job. F thought that convincing some teachers that they should leave the

teaching profession was a success since they were clearly not enjoying the work.

It saves them - it saves the kids.

Comments from Others

F was seen as supportive, particularly to newcomers. She believed that this stemmed from her own bad experience on her first day at the school when nobody had spoken to her. No-one had told her where to have lunch; no-one had showed any interest. She was determined that that would never happen to anyone in her department. She was regarded as skilled in using the various strengths of each individual and this echoed her approach to the pupils. Nearly everyone referred to the excellent relationships she enjoyed with each member of the department. This gave her considerable pleasure as she tried hard to be attentive and concerned for each one's problems. She enjoyed welding the differing elements into a team.

I choose to get people working for me; to make things work as an entity.

Whilst not attempting to be more than professionally friendly, the whole department met to celebrate birthdays and about once a term they met at F's house.

I suppose my style is just chatting to people. It is as simple as that: knowing how to handle people and getting the best out of them. And it comes down to personality more than anything. People management - I have no structure, yet it seems to work. Is that very naive?

It's not pure chance, yet I do not have a strategic plan behind everything. It is very much ad hoc. It seems to work. It is all gut, but it works.

Whether in conversation with the pupils, the teachers, or the Head, F relied heavily on the personal approach. It was this ability to deal in an open, direct way that was the hallmark of her style.

Head of Mathematics G

At the time of the interview G had been head of department for two years and was still reacting to the style of the previous head of department. G was appointed from within the department and referred often during the interview to his experience in the department before being made head of department. On the other hand he did make some conscious choices when he was appointed and started his interview by relating some of these. His department was in an upper school for pupils aged 14 - 19 and usually had 14 teachers.

Autocratic/Democratic/Laissez-faire

As soon as he was appointed but, ironically as G reflected, not before, G set out to determine the basic style he wanted to adopt. This was to some extent limited by the style of his predecessor in that G felt that too rapid a change, too great a contrast would be counter-productive. He considered a scale of Autocratic to Laissez-faire and decided to be somewhere in the middle. He gave the title 'Democratic' to this but admitted that he veered towards the 'Autocratic'. Although those were his choice of words the tone of what he said in the interview suggested that he does in fact take a great deal of notice of the views of the teachers in the department.

I do not think that it would have been very successful to have adopted a particular style of leadership that was diametrically opposite to that which pertained before I took over. I thought I should operate

..(by).. trying to change things very gradually, building up my own style. Everyone in the department has views and opinions which are taken into account.

There were, however, some teachers who preferred to be told what to do and to have the head of department make the decisions.

Actually involving them in the decision making process where they are required to make positive statements ... is hard to come to terms with for some people.

G felt that so far his style had proved successful and he intended to continue to increase the involvement of all the teachers.

Administration and Areas of Responsibility

G did not see the point in sharing the administrative load without sharing the responsibility. There were some jobs that he wanted to keep for himself but wherever possible he tried to involve others by allocating what were, by and large, distinguishably separate responsibilities. Two of the main areas were the development of Sixth Form courses and liaison with the feeder schools; these were looked after by senior members of the department. On the other hand even the probationary teachers were looked to for significant contributions. Once a responsibility had been allocated G tried as far as possible to stay out of that area. There was a need for him to keep in touch and to hold the whole thing together, but it was

important that the person in charge did not feel that there had to be one eye looking back over the shoulder.

Ironically this may involve G in more work than if he did it all himself. He used his non-teaching periods to carry out some administration but chiefly to keep in touch with everything. One area of recent common policy had been the discipline structure. He had a key role to play in this and one of the early discussions he promoted within the department was to evolve a common approach to classroom difficulties.

As far as possible the people who have delegated duties do keep me informed of what they are doing, and I would not want to delegate duties and not know what was going on. I feel strongly about that. I have to keep my finger on the pulse.

Meetings

The normal pattern of department meetings was once a fortnight using a different day of the week in a five unit cycle. G felt that this was about right. There would not be a full attendance of all fourteen staff everytime but even if one teacher missed a meeting they could still keep in touch. There was a history in the departemnt of informal coffee-break meetings. There was no proper mathematics area or office for G but all of the department took tea/coffee in a 'room' that was cramped but served a purpose. Twice a day the majority of the department met and had the opportunity to seek advice from each other. At the fortnightly meeting minutes were taken and circulated. Staff were encouraged to present their

ideas in the form of a paper for discussion. A probationer had recently presented a paper on allocation of stationary which had been very well received.

To me, creating a situation in which that can happen is part of the style of the head of department. It is very encouraging when a person new to the department can feel happy to put forward an idea and see it through.

Timetable

One specific example which was very important to G in relation to his style was the method he had instituted to deal with the allocation of teachers to classes and rooms, ie the timetable. As an addition to the fortnightly meetings there were in this case daily lunchtime meetings for about a week. When G had shared the notion of a public discussion of the timetable with one of the vice-principals he had been warned that it would backfire on him and be far more trouble than it was worth. Since it was important to him he persevered and it had been very successful. The meetings were very well attended - there was no acrimony, and everyone now had a much clearer understanding of each others problems. It was clear that G needed to use a lot of tact to achieve this and he regarded the success of these meetings as one of the clearest signs that he was on the right lines with his style.

If such meetings appeared to be going round in circles then G did not hesitate to step in, rehearse the arguments, and make a ruling. He did not shy away from making decisions. His recognition that the personal

timetable of each teacher was very important to that person was an indication of his regard and sympathy for each teacher as an individual. It is this empathy that enabled him to succeed with the 'autocratic' overlay which would otherwise give the lie to his use of the term 'democratic'.

It is of key importance to keep those in my department as happy as possible. By giving them the support they need when there is a crisis - being aware of the timetable they are going to have - and all the things spill over from that

If at all possible every member of staff taught the full age and ability range.

What is not negotiable is opting out of teaching the lower ability groups.

Other Heads of Department and the Head

They give and take as far as I am concerned and I give and take as far as they are concerned. but I'd certainly say that where it is something that is going to affect the mathematics department then I would put the mathematics department first because I see that as part of my job.

Having been in the school for over ten years before being promoted to head of department G had, in effect, grown up with the other heads of department or was already there when they were appointed. He had an easy going, friendly personality and relied on the strength of the relationships he had

with his peers, rather than specific strategies, to get what he wanted. His decision to share responsibilities with others in the department meant that they might represent the interests of the mathematics department at meetings instead of him and so he did not see so much of his peers than would otherwise be the case. When he did need to be involved he put the mathematics department first and believed that he should fight for whatever they needed.

Head of Mathematics H

At the time of the interview H had been head of mathematics for four years in this comprehensive high school for pupils aged 11 to 14. After attending a girls grammar school in York she refused the offer to read for a university degree preferring a Certificate of Education course at Homerton College. She then taught for two years at a 2000+ girls' comprehensive school in London. After various posts, including supply teaching in Nashville (USA), and having children, she took on her present job. Since joining this school she had read successfully for an Open University Degree in mathematics, computers and education.

The Mathematics Teachers

Although only stated briefly at the beginning and end of the interview, H stressed that loyalty was the most important single feature of her style. She stressed that she did not expect or demand loyalty, nevertheless she hoped for it.

I am presuming that by style you do not mean the role of the head of department, it's how I operate within my own department - and the first thing I wrote down as a note was LOYALTY.

Each term there was a get together, perhaps a dinner or a buffet, at H's home. Although there was the need for only four full time equivalent mathematics teachers, recently there had been up to twenty teachers involved in teaching mathematics, each one with a few classes. This

continual lack of qualified staff had had a considerable affect on H's attitude. At the time of the interview there was only one other mathematician and he was about to leave. This had led to a heavy reliance on materials and the need to take specific account of creating high department morale.

I don't particularly choose teachers as friends but I have to get to know them to some extent. Perhaps a drink at lunchtime or at home.

The dependence on H of so many teachers made great demands on tact and this might not be one of her natural strengths. Yet she realised that this quality was vitally important.

I've got in big letters here - TACT - I always try. If there is anything I disagree with I try not to come the heavy person.

A great deal of time was spent on encouraging her far flung department. She had arranged to keep certain periods free so that any of the teachers could come to see her when they were free. They did not all make use of this and H wished that more of them would.

Since there was so rarely a qualified mathematics teacher with whom to work, the usual interest that a head of department might take in staff development had been a somewhat theoretical concept! Nevertheless H had been keen to encourage young teachers. She wondered if her attitude to organisation and preparation of materials (ie she did it all herself) militated against staff development and may have contributed to the

disappointment she felt when promising young teachers had not fulfilled their early promise.

They work with me enthusiastically but ... their interest wanes after a while ... maybe because I don't give them enough leeway.

Resources and Back-up

During the course of the interview H frequently referred to the department 'resources', by which she meant the collection of worksheets and materials that she had produced. She was extremely hard-working and , particularly in the early years, she had spent many hours producing resource materials. Recently these had been put together as a 'Teacher's Guide' which, for her, constituted to a considerable extent 'The Department'. She looked for, and appreciated feedback on these materials - how they went down with this or that group - and then she modified them accordingly.

If the head of department is preparing resources, filing everything, keeping a careful watch on everything, then I expect my department to do the same.

But this was not always so and she felt that too often she ended doing it all herself. She made every effort to provide all the support and back-up she could for her teachers; this also included support with any discipline problems.

Teachers have a great worry about being seen to cope in the classroom. I see this as nonsense myself and have a lot of arguments about it. To me we all have problems in the classroom.

When there were difficulties, for example with pupils, other staff or parents, then H supported that teacher so long as they had been open with her. She became frustrated if the teacher just clammed up and maintained that there was nothing to discuss.

I'd like to think that the department would always ask for help - in whatever capacity. Sometimes I think I go wrong because I protect them above and beyond everything.

H believed in organisation. The snag was, however, that to achieve the sense of order that was necessary for her to feel happy, she ended up doing all the work herself. The 'Teacher's Guide' was very detailed and made heavy demands on the use of equipment. If a teacher decided to try something, particularly for the first time, and yet organisational difficulties hampered this, then H felt responsible.

If it is a pain to get the computer programme - if it is a pain to get the video and the TV - if the filing cabinet is locked - then they may never bother to try again.

Mathematics, Other Departments and Senior Management

The heads of department in the school were a close knit group who always helped each other out. H was keen to share her experience and resources with others and did so at every opportunity. It was the Design and Humanities department with whom there was most contact and, as with her relations with the teachers of mathematics, she relied on her personality rather than on formal liaison.

If we need anything, for example, the globe, then I would borrow from the humanities department. Then I develop resources they can borrow - bearings for example. And it is getting more like that - to get together and talk about subjects we overlap on and what we can do about it.

Formal meetings did not feature in H's view of the school. Her relationship with the Head was direct. He was very approachable and once more H relied on her personality. She had been disappointed that, despite the interest that senior managers had expressed in what the mathematics department did, only very rarely had anyone actually been down to see what was happening.

And after I had spent every night and every weekend for three years. Always saying 'What a great job you are doing. We will come up and see what it is all about' - but they have not done so and I am a little sad.

'My department' said H was the whole of teaching mathematics. This centred on resources but was also concern for staff and children. H can be aggressive in defence of her realm and had done much to raise the image of the department both inside and outside the school.

When I first came here maths was mud. I don't think it is now.

Head of Mathematics J

At the time of the interview J had been head of mathematics for three years and before that had very little experience of teaching mathematics. Her main experience had been teaching music and she had been head of a music department. She took over as head of department when the then head of department was appointed as deputy head in the same school. The department is very highly regarded locally and is one of the departments that the local education authority encourages visitors to see.

Corporate Management

J was clear that 'corporate' was the term she wanted to use to describe her style. During the interview she returned often to the same theme of sharing responsibility with others; or perhaps more accurately, she encouraged the involvement of others but kept the final responsibility for herself, particularly if there might be a "can to be carried".

Leading by example was important for J. It was not reasonable to ask others, for example, to be punctual for lessons and yet be always late yourself. If you do have to start pushing people around then you must not be asking them to do things that you yourself do not do.

She strived for people to be involved in the decision making process and to be part of a team. There was, however, a strong sense of direction stemming from her, albeit in what she hoped was a subtle way. Although

initially there was a need to be forceful, for example, over the introduction of coursework into CSE, this is not so true today. There was discussion and a sense of group choice which had not been so pronounced in the early days. About the GCSE which the department will follow J said:

Most of the department are happy and feel that I have been open.

(Those) who do not see me as open have to accept some of the responsibility because I have to seek them out to get their views; they never come my way openly. I am never wilfully not open; I air my views and I dislike being devious. Like recently I called an open meeting and anyone who came chipped in and it moved from there.

This corporate management involved taking heed of what each person said and although J admits to being highly strung and emotional at times she had to keep this in check and not "ride roughshod over people".

It is trying to value staff....Making them feel they belong, making them join in. It sounds a bit pie in the sky but that is what I am trying to do. I probably fall short because I am not the best of communicators.

Mathematics Education

J did not see herself as someone whose strength was to think theoretically. In fact she rather derided herself in comparison to those locally who she saw as being at the forefront of mathematics education. She placed herself as being in tune with current trends but did not regard herself as pioneering but rather carrying out the inevitable. The fact that the

department tackled things ahead of most others was seen as the way of things - the way things must be, but not due to the imposition of her will on the world around her. She did not allow equivocation over issues such as, a few years ago, the introduction of calculators. If there was no doubt in her mind then the department was not allowed the choice.

I suppose certain things are not negotiable.

Within the practicalities of an innovation, however, there was plenty of scope for involvement and the staff were drawn into extensive discussion and planning.

I suppose I want them to go along my road but I want them to be part of deciding to go along that road rather than being dragged along that road. I hope that I am doing less dragging these days.

Administration and Resources

The comment used by J as an opening remark on administration and resources was "I like a tight ship". This sounded stark, suggesting draconian measures. In fact by apportioning responsibility for the various administrative tasks - books, stationary, coursework records, CSE test files, worksheet preparation - this was not the case. Each member of the team had a share of the load and so if someone was a little lax then it may be any of the teachers who reminded them. Over the last five years the number of people involved in running the department had changed from just one person to two people to nearly everyone having a part to play.

In order to jog memories there was an internal newsletter-cum-memo which kept everyone in touch with schedules etc. When there were new resources required such as worksheet packages then as far as possible staff chose to work on topics that interested them. So there was a team atmosphere and ownership of department resources.

Staff Development

For J the key to the successful development of each individual was to ensure that the task in hand for them matched their concerns.

Try to give the opportunity (for each one) to go slightly ahead of themselves.

J quoted a number of instances where the allocation of tasks had specifically fitted the bill at that time. One teacher had found difficulty with the change to investigative work but had been happy to produce a module on money management. Another teacher maintained the bank of resources ensuring that everything was stocked up. These tasks were re-allocated annually although it was usual for someone to keep a task for a few years. In all such areas of responsibility J kept a watching brief but very much to assist rather than muscle in on their patch.

I would not dream of turning round and saying 'you have to do it this way or that way' because I think it would be very demoralising.

One consequence of the delegation of responsibility was that each member of the department carried out any negotiations related to that issue; perhaps,

say, the curriculum for the first years. Only if there was a broad issue such as the introduction of the modular curriculum would J be involved. This approach was far more difficult than it might seem. It would be far easier just to rule from the top. It would be simpler for both J and the upper hierarchy in the school if J did all this negotiation herself.

It would be easier in some ways if I laid down laws: 'We are doing it this way - we do this, this and this'.

Daily Life

J felt that it was vital that she was free as often as possible simply to chat with anyone who might need her attention. Of course she had a full teaching load but her classroom was always open for anyone else to pop in. If she was to spend her time at school immersed in work such as marking then she would not be so accessible. It is very difficult for her to fit in her own day-to-day preparation and so most of this is done at home. Her style is very demanding of time.

I wonder what I do with my time. It is spent encouraging people to talk, encouraging people to think, encouraging people to grow or help me to grow.

I have just spent most of today talking. Now I call that my job.

J was out of school for about 20% of the time and yet in a strange way this added to the way she ran the department. It brought stimulus for her which she then brought back into the department. There were also many visitors to the school, and this was encouraging for the teachers, but also

necessitated much arranging. The teachers felt that their work was of interest to others and so they felt valued.

Throughout the interview J made reference to 'our' department rather than 'my' or 'the' department. When challenged on this she acknowledged that she did think of the department as 'we' and that was also true of a choir she ran out of school. On the other hand J did feel that she had overall responsibility. She was an advocate when the department needed one and she was ready to face challenges if they were made. Although decisions were shared she would accept blame if need be.

It seems all right. I often ponder processes of change and how you get people to change and I do wonder how successful I've been. I wonder if I've just done a lot of running on the same spot - but then I wonder if I haven't - I don't know.

Head of Mathematics K

K had already been a head of mathematics and science in an inner-city school before he had been appointed to this 11-16 school some five years before the interview took place. He had brought experience of a number of different schools and was soon making contributions to mathematics across the local education authority. The geographical position of the school, which is very much on the edge of the local education authority area, had meant that he had had to make great efforts to keep involved with developments outside the school. What for other teachers might be popping out for an hour or so would, for K, be very nearly a whole day out. Meetings after school at the University entailed arriving home an hour later than for most other teachers.

Humanistic/Mechanistic

K had prepared for the interview by reflecting on his style and had organised his thoughts. He felt he could sum up his approach to all aspects of style by declaring his intentions to be humanistic rather than mechanistic wherever this was possible. He had reservations about attempting to describe himself, wondering if it might not be more appropriate to ask colleagues instead. He had a clear aim to avoid bureaucracy and to deal with the person direct. This was as true for teachers and senior management as it was for pupils. He could sit at his desk all day issuing memoranda and indeed this might present an image of efficiency but issuing an instruction was not related in any simple way to

its effectiveness. The only way to be effective was to deal with the individuals.

I try to do things on a personal basis, through dialogue, through consensus where possible, through discussion, through joint decision making, rather than issuing memoranda which I often feel are very ineffective anyway.

Administration

There was, however, a need for some paperwork and some formal meetings. For the sake of the kids it was essential that stock and stationary were ordered well in advance and that text-books were available when needed. At department meetings, matters of administration were held in check so that curricular issues could be given due importance. These might be:

How do we encourage sensible group activity?

How do we assess the effectiveness of that group activity?

What types of activity are best suited for that?

What types of questions - formats of questions - are best?

What classroom management creates the best environment?

Talk, dialogue and discussion formed the basis of his style. There could be people in the school who might think that he did not 'shove enough pieces of paper around'; these people might feel that the lack of paper indicated that he was not doing his job properly, but K stood by his approach.

Administration has to be done. Staff have to feel that it is being done but how it is achieved is less important than the fact that it is being achieved. So my style is not to sit at my desk.

I think you have a choice. You can sit at your desk and issue memoranda - organising things - everything to the book. Or you can spend the bulk of your time getting around, talking to people, involving yourself.

Classroom Teaching

K's own teaching style was closely linked to his management style. He felt that his own performance in the classroom was inextricably linked with how he was seen as head of department by both pupils and staff.

I cannot ask, or expect, staff to do things that at least I'm not prepared to have a go at myself. The way I teach in the classroom can be influential to others. Not necessarily that the way I do it is the best way but at least there can be discussion on the way I do it. I have an open door in terms of my classroom always being open to anyone just as I hope that they accept me visiting them in theirs. Your own performance in the classroom is very much a learning situation.

Whilst K was very sure of the way he sees mathematical education developing, he did not believe in telling teachers how they should teach. He puts himself in what he saw as the current trend of mathematics

teaching associated with such notions as process rather than just content; with the principles behind the GCSE; with involvement and discussion. He would prefer the teachers in the department to be moving in a similar direction and he accepted that it was part of his job to suggest and encourage this, but the decision was theirs. If he attempted to tell them how to go about teaching mathematics he felt that it would not be very effective.

If I am to encourage people to work in certain ways then I believe I have to convince them that they are the correct ways. They have to be with me because they want to be with me, not because I have told them.

Staff and Staff Support

K believed that the actual physical resources in the department, were nowhere near as important as commonly thought. For him in the first instance the effectiveness of any department hinged on the quality of the staff themselves. The amount of mathematics equipment, the state of the text-books, although important, was not of the essence. Some teachers with excellent progressive texts will fail to inspire and the kids will not learn. On the other hand battered old traditional texts in the hands of a good teacher can produce lively lessons. K believed that the main role of the head of department was to get the best from the teachers; to encourage them to be more aware of the pupil's needs. The children cannot be seen as out there - you must get around - you must get involved.

I try to get involved with both the children and the staff. If I keep a distance between either the children and myself or between the staff

and myself, then I don't believe that there is any way that I can expect them to adopt the sort of approach with the children that I want.

K's approach necessitated supporting and helping staff. Although the staff are in the end responsible for their own work and style, he can help them. This may include criticism as well as encouragement, but they should feel that the support was there whenever they needed it. This might be in terms of resources or discipline or advice. It might include help with personal problems but probably only if these were affecting classroom performance. His support had to be positive and personal.

I am supporting them not just as the boss but as a friend I hope. As a colleague not as the person in charge who writes references.

As Leader

It was important to K that for both students and staff that there was a figurehead out front to whom they could relate in terms of their mathematics. For the children the first person in this role was their classroom teacher but there would be occasions when it was useful for K to be on hand as well. He tried to get to know as many pupils as he could; always being ready to ask how things were going and being ready to have a chat. The pupils needed to know where they stood in relation to discipline and needed to know that their teacher was part of a team, led by K, that would back the teacher if necessary. Just as the pupils had their teachers to turn to so the teachers in the mathematics department needed to feel

that there was someone acting as their focus, as their resource.

Particularly for the younger staff K tried to fulfil this role. Sometimes K worked with particular members of the department so that they could get to know each other better.

In this context I would be very concerned if 'my' staff were having to go elsewhere for their help.

K felt that some departments spend so much time together that they lose touch with the rest of the school. The more there is a concentration on 'the' department or even 'my' department, the greater the danger there was of becoming isolated. There were heads of department who were very chauvinistic about their departments.

When working with other departments, in meetings or in negotiation such as over capitation or staffing, K always kept the pupils very much in mind. Too often there were bids that indicated empire building. If one department took more, then another had to take less. With this in mind K believed it best to make reasonable, well thought out, requests rather than artificially inflated ones. The allocation of resources was a sharing exercise in order to get the best education for each child.

I hope that I consider the school first and the department second. My strategy over the years has gained more than it has lost. I have fought my corner as hard as I can but sometimes I have to accept defeat. I very much believe in the sharing process rather than the survival of the fittest.

The Head

The Head could not be aware of everything that went on in the school and so K acted as a bridge between the teachers in the department and the Head. This was a two way process - and it was part of his job. It was up to heads of department to keep the Head in touch with the feelings of the school, particularly if there was a proposal that would affect the staff adversely.

Staff Development

At his previous school K had been Head of the Faculty of Science and Mathematics and he had used his second in department extensively. He had been unable to continue to do this mainly because the nominal second in department had other responsibilities as well. He now delegated much less of the workload than before but had attempted to involve everyone equally in the decision making. There were now newer members of the department who were beginning to take more responsibility. This helped their development which was increasingly important in a contracting service. Motivation was important otherwise people might drift along and lose morale. K felt that it was important for him to be ready to adapt his style to fit in with any changed circumstances in the department. For example in some instances full use of a second in department might be sensible but in others not.

I think that you have to be adaptable. To be in any sort of management there are two styles you can adopt. One is the style where you have structures and ideas and you come in and impose them. The other is the phenomenological approach where you look at what you have

got and make the best use of what is there. It calls for adaptability on your part as you have to build on what exists.

4.3 De-Briefing Meeting

This was held at Leicester University at 4.30pm on a school day. No expenses were available yet six out of the seven heads of mathematics attended. After the usual meeting and greeting and drinking coffee and tea the conversation turned to the research: finding out who the others were; whether they had any similarities (denied with laughter); whether working for the same local education authority had produced similarities; whether they had enjoyed the experience.

After a while I settled them down and put the first question. After each question was put the heads of department commented in turn before the discussion was thrown open. Attempts to summarise the discussion have not been successful and it seems better to present an edited transcript. This encourages the reader to appreciate the variety, spontaneity, openness and general high quality of the discussion.

Alan: How did you find the experience?

Threatening! The business of style did not effect me as much as effectiveness. I did not talk about (classroom) style - the way I barge in and out of rooms. What threatened me was looking at myself and looking at me and thinking what was effective. It made me think more. It has made a difference. Not that I will change but I am more aware of the processess.

[F]

This will probably produce change though. [C]

I had had to think very much - the sort of things I did - the way I managed the department - the fact that I had been considered to be effective. Someone else had said I was effective which quite surprised me. It was a useful exercise. Whether it will change me I don't know. I did not change as a person when I became head of mathematics but perhaps you do not realise that you are in charge. It was a worthwhile experience - just to sit there and talk. [G]

Interesting - I had thought about style before when I was head of mathematics in another school. I had been on a management course but had not thought about it lately. It made me think again. What did he mean by style? I decided I did not really care what he thought. I decided to talk about what I thought of style. I talked about how I saw myself relating to other people, to the school, to the rest of the department. One of the interesting questions that I had not really considered before was - What did the rest of the department think of my style? [K]

Challenging rather than threatening. Came at a good time for me. I was concerned about style and had been thinking about it. There are some uncomfortable things there so I will probably be trying to change. There were some surprising things that Alan perceived in a different way. I can't say that there's anything to disagree with. It was certainly useful. [C]

I had not thought about style. I lurch from one day to the next. I had not thought much before the interview. I was very much influenced by the previous week. Because I didn't think about it you very much caught the mood of the moment - a neutral experience? - I don't think I know. [D]

I enjoyed talking about it but there had been a lot of discussion in the department, so it just fitted in. To rattle on to Alan was fine by me. I felt that at the time I wasn't being very effective but, as you say, that has all gone away now - a more balanced view. I, too, would like to know what the department feel but I have not had the guts to ask. [J]

As I said I found the whole thing very threatening and what I did was to go to the department and ask them what aspects were effective and most of my comments to you were really from the department. A lot of what I said ran parallel and said the same sort of thing. [F]

Were you surprised by what was said? [K]

No, but Alan said that he was surprised at the lack of confidence I had in myself. Perhaps men find it easier to talk about themselves? There's nothing in here (the write-up) that wasn't me. This has captured most of my philosophy. It is most of my style here. I'm more than happy to share this with my department. [F]

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Following on from that I have shown this to two members of the department. It would be interesting for Alan to talk to members of the department. It would be interesting to find out what they think - what my weaknesses are. [D]

I raised that at the interview but I gather it is not the intention. [G]

Alan: What was the difference between this experience and those gained from in-service courses?

I would say I found it more stimulating for thought processes than most day courses - not more than any but more so than many. Not that it is necessarily a traumatic experience or one that will bring about any change. [K]

That was because you thought about it. Me being me I just chuntered on for an hour. [D]

I did not prepare my talk much. I only had main points. [K]

Are you saying you would have done that anyway, whether Alan had come or not? [D]

It is unlikely that I would have consciously thought about it. I was glad to have it brought up again. Even if at the end of the day I don't make any changes, it is still useful. [K]

I don't think about the style I am adopting but what I do do is think on the way to school how I am going to approach the issues of that day. [G]

I think in terms of an in-service exercise, getting the report back is the key. It would not be half as valuable as in-service without that report back. The key is reading it and then accepting it. One reason why it is more effective than lots of in-service was because of the tensions. I feel that without feeling uncomfortable you do not move forward. If you sit there ... and you feel comfortable - then you do not change. You have to actually get people to an uncomfortable state. (Is it a good thing if) your department (is) always feeling comfortable ... I guess there are times when they don't ... (maybe) because you have managed to move them forward ... there will be some tensions. [C]

It is about 'uncomfortable'. I think there is a level of tolerance about feeling uncomfortable. Too uncomfortable and you lose it. [J]

Certainly if I had to be appraised as part of my job then that is the sort of way I would like it to be done. [C]

It exposed my weaknesses. [F]

Alan: Should the person in my role be putting more in? All of you needed prompts but I was nervous of giving prompts in case it deflected you. Should I have guided you more?

<[J], [F], and [G] affirm that they needed that freedom to develop their thoughts.>

It was good to have someone pick up the points I had not covered and just ask me to comment in that direction. This set me going again. [K]

I think I would have probably got more out of it if you had pushed me harder. To ask me Why?, or to redefine something. [D]

Yes, I would have preferred to have been pushed harder. [J]

Alan: I felt I did push some of you but I tried to leave it till late on in the interview, and then I tried not to be too aggressive about it.

You said yourself that the sort of interview you were carrying out was a research interview in which you should not prompt too much. However, you could now suggest prompts as an in-service tool. And I do think it would be useful to challenge and to pick up on a point. The interviewer has to be experienced. It is no good saying "Here is an in-service pack" that you can pick up off the shelf and use. It seems to me that the technique could

be used so long as you had experience and some idea of the prompts you could use. [C]

Alan: I only half accept that. There is a risk. All of you had silences that you had to face and then go on.

I am not saying that silence is a cue for a prompt. I think that it might be where you genuinely say "Hey, just a minute". As an in-service tool you can do that but in the research role you cannot. [C]

Yes, but when you are in a counselling role you do not just sit there for an hour, not saying anything, and it is really turning the thing back on people. [D]

What has come out is the usefulness of having the other person there. I don't think I would have got anywhere near as much out of reading a heading on a checklist. There is no doubt that a listener can structure something far more than a speaker can. Alan can pick up things and maybe link things that happened maybe twenty minutes apart and say - OK. You said this - you said that - how do they connect?. [C]

That certainly worked with me. [F]

I think one of the most useful things was to get back a sort of resume of what you thought about. [G]

There were then some unstructured comments and discussion; everyone was getting tired. There was a suggestion that the criteria used for the selection of the heads of mathematics could be studied. There were comments about whether or not there was a best management style.

Chapter Five - Interim Evaluation

5.1 Review of First Study

The first study had been a success. The heads of mathematics had enjoyed taking part and the process had been enhancing for them. It is pleasing if research gives the participants a worthwhile experience. The heads of mathematics had been flattered to be chosen and had enjoyed being listened to by a fellow professional. They felt the pen-pictures were fair and interesting. It had been useful INSET for all of us.

The method of collecting data through interviews had worked well. The rolling pilot had enabled quite subtle changes to interview technique to be made. It had proved possible to construct pen-pictures and these were helpful as part of a method of analysis and synthesis. Various mixtures of text and quotations were piloted and the final format used my basic text enlivened by quotations to give a feel of that particular character.

Suggestions had been made at the de-briefing meeting as to how the research could be extended and I decided to follow them up. Before the second stage is reported the lessons of the first stage need setting out in detail. The rest of this chapter then looks at the additional literature studied with respect to appraisal and the design of the second study.

The Sample

The judges had agreed to nominate heads of department whom they supposed to be effective and their lists had contained significant overlap. The one extra name introduced provided valid and valuable additional data. The individuals all responded positively to their invitation. It may be misleading to draw too much from this: perhaps anyone approached would be flattered to take part. Although not crucial for this research it was nevertheless pleasing to have a mix of school types and backgrounds and also a balance of gender.

Preparation for the Interviews

The phone calls and letters did provide sufficient scene-setting for the heads of department to make a crisp start at the interview. Each individual had given the exercise the prior thought that they felt was appropriate. This varied between a few moments preliminary thought before talking, to asking a number of colleagues for their views and preparing written notes. One also drafted notes for the interview using headings and had clearly already carried out considerable introspection and analysis.

Conducting the Interviews

My previous experience in interviewing did indeed carry through successfully although adaptations were made possible by the use of a rolling pilot. At first very few prompts were given; later it proved possible to mention aspects (eg administration) and to give verbal and non-verbal encouragement without distorting the interview. It was occasionally useful to remind the

interviewee of a point mentioned earlier but perhaps not fully explored. The tape-recorder did not seem to intrude and the activity of the interviewer - making notes and demonstrating intelligent interest - was reassuring rather than off-putting. The use of a forty-five minute tape as a timing device encouraged the interviewee to use the available time effectively and there did not need to be any checking of watches; one interviewee needed more than forty-five minutes. One interviewee remarked that it was useful to have a little reflection time as I was finishing writing a note. The notes also helped me when I was constructing the write-up from the tape-recordings. Sometimes the notes were about the content but, more often, about trains of thought that occurred to me which could be borne in mind later.

The fact that the I was already known personally to each head of department was a considerable advantage; for example, some social preliminaries could be assumed. Background information, about the types of school, about the LEA etc., did not need to be rehearsed. The apprehension I had that our prior acquaintanceship might have had a negative effect was not justified. Everyone seemed more than happy to share professional confidences with someone they knew could be trusted. This is not always the case if the researcher is a stranger who arrives in a school only for the purpose of a particular research project.

Writing-up the Interviews

In order to remind myself of the interview I listened to the whole tape-recording once more. Then the tape was taken in stages with a mix of literal transcription, rough synthesis, and general ideas. This could then be organised under headings which were usually sequenced as they had occurred in the interview, but items could be juxtaposed for clarity and comments made later on could be brought forward. This is where the editing function of the interviewer is crucial. It is an oversimplification to regard transcriptions as objective truth since without the intonations, humour and 'feel' of the conversation the original meaning can be lost. A passing, light-hearted aside can appear, for example, cynical and cutting and far more definite than intended. The interviewer acts in place of the listener and interprets for the reader. Any loss in objectivity caused by my personal knowledge of the interviewees was much outweighed by the opportunities afforded for insightful interpretation. Of course the writer could play fast and loose with the intentions of those interviewed and that is precisely why a draft version of the write-up was returned to each head of department for comment. All of them made small alterations to clarify fact and meaning but they were generally pleased with the results. Quotations from the transcribed parts of the interview were then added to colour the text making it more readable and giving some flavour of the style of language used by that head of department. I did make some attempts at writing in the supposed style of the interviewee but the demands on control and use of language proved too great.

One head of department felt that the overall tone and impression given by the write-up was misleading. There was no dispute as to correctness in reporting what was said but rather whether what was reported was actually what was felt to be the truth. This was the head of department who had given very little thought to the interview in advance. A number of features had contributed to an unsatisfactory interview: it had taken place in the evening after a very long and tiring day; there had been no time for mental preparation for the interview; the head of department was perhaps over-relaxed when interviewed at home. The interview had been taken seriously but the 'stream of consciousness' form of the interview was very difficult to organise and present coherently. It was intended to have another interview but in the event this was one of the two heads of department used again in the second study so the interview was never repeated in the same form. (When it was held as part of the second study greater attention was paid to preparation by the interviewer and the interviewee and there was no repetition of the earlier problems.)

The biographical notes were sometimes compiled from what was said during the interview and sometimes by contacting the head of department later.

The Write-ups

The heads of department were happy with their write-ups. They felt that they gave a reasonable reflection of how they felt. The mix of text and quotes worked well, and the general approach of each head of department came through clearly. The detailed preparation for the interviews

undertaken by some heads of department was reflected in the pen-pictures. For example K had clearly put much thought into preparing for his interview. His well organised approach to the interview reflected his well organised approach to his job. F on the other hand relied heavily on her natural conversation skills and on keeping in close touch with pupils and teachers and this showed in her interview. She had been at pains to seek opinions of colleagues before her interview and was prepared mentally, but not with the same precision as K. She had been at pains to involve others in that preparation. The current mathematics education scene featured highly in the day to day work of J and this featured in her interview. G had had some access to management models and, being a new head of department, he was monitoring his performance in relation to these models; he saw himself in the context of the management structures in the school and his interview reflected this.

The write-ups described what happens through the eyes of the head of department but left a lot of questions rather hanging in the air; in particular what had those around the heads of department said when asked?

What had been learnt about the method?

Heads of mathematics were certainly capable of throwing light on their work. They could talk about more than just what they did and could approach some sensitive areas in a semi-public discussion. Although the interview and the tapes were confidential, the negotiated write-up was something with which they felt comfortable. My prior knowledge of the type

of work and the subject area obviated any need for lengthy explanations. My hope and judgement that previous acquaintanceship with each head of mathematics would be beneficial, was justified.

Towards the end of each interview the heads of mathematics were asked about the procedures adopted and from their comments certain conclusions can be drawn. The tone and content of the telephone conversations and letters had been satisfactory and the conduct of the interviews had been successful. Taking notes was helpful, both for the running of the interview and afterwards. My behaviour during the interviews had helped and been appreciated. The write-ups were received warmly (with the exception noted above). The idea of a rolling pilot was sensible: if the interview arrangements and interview technique can be continually improved then it is sensible to do so. Small changes were made throughout and there were also probably unnoticed changes related to my increasing confidence that the method was working well.

What had been learnt about Heads of Mathematics?

- Some heads of department discussed their own teaching; others did not.
- Some saw the role model they provided as a classroom teacher as vital.
- They all regarded efficient administration as necessary but there were various views on how to achieve this, and it was noticeable that concern for administration did not dominate their thoughts.
- Personal relationships were important but only one of them mentioned doing things with the department outside of school.

- Perhaps close professional - not personal - relationships are central?
 - Preparation of materials did not feature generally, although all heads of mathematics were clearly in touch with the schemes of work.
 - Some were active in mathematics education outside the school and some were not, but all were in touch with local and national developments.
- (These, and other observations, are discussed fully in Chapter Seven.)

De-briefing

The de-briefing meeting was attended by all but one of the heads of mathematics, my supervisor and me. The atmosphere was splendid: enthusiasm, slight embarrassment and coyness; excitement to see who the others were; warmth, friendliness, and willingness to listen. The discussion was considerate and considered. It was not a free for all but I used a technique which had worked well elsewhere (particularly in assessment agreement trials). After a brief, but specific, introduction I asked each person to comment in turn. Only then were others allowed to chip in for general discussion. This method ensured that everyone felt valued and also made it clear that listening to the others was expected. Very little chairing proved necessary because everyone was indeed more interested in listening to the others than in holding the floor. (Maybe this was an unusual group!) The report of the de-briefing (section 4.3) does not really convey this atmosphere and both my supervisor and I recollect the meeting as more meaningful and thorough than the tape-recording suggests. It is not clear why this might be. Naturally it is possible that our vested interest read more into the things than was

actually the case but it is more likely that the atmosphere of cooperation and participation was read through body language; the greetings made as people arrived and left (which were not on the tape) meant more than what was recorded on the tape. An argument could be made that a video recording would have been a more useful record but the camera would have needed to be unobtrusive and a separate, high-quality, microphone would have had to have been centrally placed. The use of video equipment might also have caused tension and embarrassment.

What Next?

The research could have carried through a longitudinal study of this 'family' of heads of mathematics and studied the inter-relationship of their personal and professional lives; their own development and their careers. What had led them to become effective heads of mathematics? Were there significant mentors or role models in their lives? This had some attraction but so did avenues suggested by the participants themselves. They had found the process very stimulating and also wondered if how they saw themselves was echoed and appreciated by their colleagues. These latter ideas were, however, closer to the original aims of the research.

The original context for this research had been the provision of central INSET courses for existing or aspiring heads of mathematics. It seemed by this time however that, primarily due to changes in funding, these courses were likely to dwindle or even disappear. The emphasis now was on school-based activities; school-focussed INSET and appraisal. The aspect of the

first study which appeared to be most useful was the attention given by one professional to a colleague and the sharing of a written description. These are key features of most appraisal schemes and so the emphasis shifted from INSET courses to appraisal.

There were limitations inherent in the design of the first study. Some aspects could be modified and improved and some needed to be re-thought, but in general much could be carried forward. The closed circle of finding who was effective if we did not even know what effective meant still had to be broken somewhere so I decided to use of heads of department who were by reputation regarded as effective and with whom I already had good rapport. This would not yield information about heads of mathematics generally but it would shed light on the way some heads of mathematics worked. It is reasonable to assume that, by and large, those heads of mathematics who are by reputation considered to be effective, are indeed effective. Of course there would be areas in which they were less effective than others but there would be features of their style which would be of interest.

The use of heads of mathematics already known to me had been beneficial in the first study and it seemed that if that relationships were even stronger then the results might in turn be even more interesting. This clearly had risks but it seemed that these risks were worthwhile in relation to the likely payoff. If I used heads of department that were unknown to me then it would be extremely hard to establish the necessary pre-knowledge and confidence. Time spent in preliminary conversation and visits would be

very time consuming and I would be less sure that the views were not being expressed in order to please or in order to look good. Of course these doubts would be there for any interview but by choosing close professional acquaintances or even friends, the trust which already existed should increase the chances of insight being gained: this argument was even more valid if such insight was to be into affective areas of behaviour.

The write-ups from the first study had been satisfactory but such write-ups would be better if a more rounded picture with some reflection and discussion could be given. Each head of mathematics could select colleagues who could contribute to the pen-pictures. Care would need to be taken over their briefing and the confidentiality of what they said. Detailed biographical notes would also help the reader to identify with the character.

The convention of anonymity in academic writing, presumably designed to protect the participants, would need to be considered. The biographies and the incidental details about size and type of school etc., together with my association with the head of mathematics, would make identification easy for anyone who cared to think about it. On the other hand if there were good things being said then these should be rightly credited to the head of mathematics and not assumed by implication to be the wisdom of the researcher. In the event I decided to recognise the heads of mathematics in the Acknowledgements section but leave each write-up anonymous.

5.2 INSET and Appraisal

The late 'sixties and early 'seventies were a time of expansion for education in England and Wales. Part of the expansion was the provision of extensive in-service education and training (INSET), which was often provided by the local education authorities at teachers' centres. There were also secondments and courses heavily subsidised by government sources such as the Department of Education and Science (DES). Then, simultaneously with an increase in new initiatives, there was a reduction in funding. 'A case for radically different forms of INSET provision can clearly be made to help deal with many of these changes (Hewton,1988:5).

The 'cascade' model of INSET was specifically designed to facilitate the introduction of externally imposed change; it was used for training prior to the introduction of GCSE. In this guise INSET is essentially concerned with inducting the participants into a new system so that they can inform their colleagues back in school. This is consistent with the notion of a 'problem solving paradigm' (Eraut,1985) whereby the INSET is not primarily concerned with the development of the participants but is intended to solve the difficulties associated with the introduction of an initiative in an institution or the impact of external forces on the institution. Typical examples were Records of Achievement, Local Management of Schools, TVEI, Appraisal, falling rolls, new technologies, and greater institutional accountability.

Another reason for a different approach was that teachers' experience of centrally provided INSET was often not good. Teachers often felt that there was a mis-match between what the course provided and their personal needs; and between what the course encouraged and the readiness of their institution to make those changes (Henderson,1981:8). Also when preparing the teachers for later stages in their career, perhaps by looking at management issues, the teachers are not suitably placed in their institutions to put the suggestions into practice. In theory one could postpone implementation but without immediate practice of the skills explored on the course the enthusiasm generated will soon dissipate. It is only the rare individual who can learn from the isolated INSET experience and store that learning for use at a later time. This is not to say that all off-site INSET was wasted but it had its limitations.

Some courses have been provided for existing or aspiring heads of department. In 1973, for example, I delivered some sessions on a course for existing and aspiring heads of mathematics in Leicestershire. The course took the form of sessions run by existing heads of mathematics on aspects of their work. These aspects were primarily task-oriented, such as running the stock cupboard, ordering books, timetabling your department, setting up a maths room etc. (Collins and Friis,1978). Originally one aspect of this research was to explore how interview techniques might lead to valuable activities and exercises that could be used on similar courses. Indeed I trialled some such exercises at Avery Hill College as part of the Mathematics Association Heads of Mathematics Diploma Course. Paired

participants listened to each other describe aspects of their style and the focus for the start of the 'interviews' was derived from features of the First Study interviews. Role playing of department meetings was also used to allow exploration of different styles.

One response to the recognition of the limitations of off-site INSET was the notion of school-based INSET. Here the institution identifies its needs and then designs its own INSET: school-focussed INSET (Bolan,1982). Even in large secondary schools the pool of expertise is limited, although it is possible to bring in 'consultants' or trainers from outside. There is though a risk of a parochialism with little institutional growth. A key question is 'What is the purpose of INSET?': to serve the needs of the institution or to develop the professional within it? (Hewton,1988:7).

Given that one need for INSET is to develop the middle-managers - their skills and their overall effectiveness - then how is this best done? Who develops the developers? (Early and Fletcher-Campbell,1986).

Appraisal

Appraisal of classroom teachers was mentioned in the Government White Paper 'Teaching Quality' in 1983, but it was only when the DES set up pilot schemes in six LEAs, and the new teachers contract proposals in March 1987 (DES,1987:12) included appraisal, that schools began seriously to consider implementation. In December 1990 the Minister of Education announced the details of what scheme would actually be introduced (DES,1990).

There is a considerable literature on appraisal in schools, but it was only around the middle 'eighties that it became more sharply focussed on the introduction and implementation of schemes of appraisal (Blackburn,1986; West,1986; Bunnell,1987; Kent,1987; Fidler and Cooper,1988; Heath,1989). The DES supported pilot studies in six local education authorities and soon reports relating to these were published, both overall (HMI,1989; Cambridge Institute of Education,1989), and some specific comments (Suffolk Education Department,1987; AMMA,1989; Routledge and Dennison,1990).

Broadly, appraisal can fulfil two functions: one in relation to the needs of the organisation and the other in relation to the development of the individual. Whereas in employment outside of schools the linking of an annual review to performance and pay is accepted, the linking of appraisal with accountability has made teachers nervous that frankness in appraisal interviews will somehow count against them in terms of promotion or job references. In a survey of independent schools Graham found that the most quoted reason in favour of appraisal was to 'assist staff with their professional development' (1989:344).

The DES provided funding for pilot studies of appraisal schemes in six local education authorities and these pilot studies followed the proposals laid down by ACAS (1986) and concentrated on the assessment of classroom performance and on the appraisal of headteachers. The evaluators quoted ACAS and stated that classroom teaching was seen as 'an essential feature of appraisal' (ACAS,1986:4) but that even if a headteacher actually taught,

such appraisal was probably not appropriate for them. Instead, for headteachers appraisal was put forward as a major professional development vehicle (Cambridge Institute of Education,1989:35). Just as in the original ACAS document (1986:87), there was no recognition of any special needs for middle-managers and yet it seems that for heads of department it is becoming more effective as a head of department that is of more concern than the further refining their classroom teaching skills. If, in a particular school, senior managers are concerned about the classroom performance of a head of mathematics then it seems unlikely that a formal appraisal process is the right way to tackle the problem. A similar, and stronger, argument can be made in relation to deputy heads.

A very different perspective is found when someone from industry, such as Everard, moves over to consider the management scene in education.

One of the obvious differences between the management of schools and most other institutions is that in schools systematic appraisal of staff is uncommon. It is seen all too often as a negative process aimed, like exams, at failing people. In the forces, the civil service and most of commerce and industry (at least for large firms), staff appraisal is such a well established process that many non-educationists cannot comprehend how educational institutions can be properly managed and developed without it. (Everard,1986:143).

He also noted that there was rarely any training at all for middle-managers in schools (1986:11). This failure to recognise the importance of the managerial functions of the head of department in education (schools and further and higher education) was also found in the post holders themselves.

...at this middle management level there is often little recognition of any real management responsibility for the members of staff in their departments. (Cooper and West-Burnham,1988:139).

The annual review in industry and commerce is an accepted event. To inform this research further, I visited the head office of a building society and also talked with a department manager from a major manufacturing company. Their appraisal packages appeared to be typical. A review process is triggered by the senior manager and a form is given to the appraisee. This form and its accompanying guidance encourages the appraisee to reflect on the previous year, consider afresh the job specification and to look to the coming year. An interview follows and a statement is drawn up by the appraiser and returned to the appraisee for comment (rather than negotiation). All managers of the company have an annual review by their line-manager except that at the highest levels the reviews are voluntary and the appraisee selects the appraiser. (A similar system also operates at Leicester University.) Perhaps the most memorable sentence from my visits was "There should be no surprises in an appraisal interview".

Such appraisal processes are not generally available in schools although there may well be particular institutions running similar schemes. It is of interest to note some differences between schools and industry/commerce. Job specifications/descriptions have been in use outside schools for some time and although their use may be increasing in schools the use of job-descriptions is not well advanced (Cambridge Institute of Education, 1989:25). The descriptions are primitive and after the applicant has been appointed may never be referred to again and they are certainly not, in general, under annual, or biennial, review. It may only be when an advertisement has to be placed that the job-specification is fetched out of

the filing cabinet. (The outgoing post-holder is commonly heard to remark 'Good grief! Was I supposed to do that?' or even 'I'm glad I got the job when I did because I certainly would not get it now'. The distance between the rhetoric and reality is often considerable.)

The line manager system in industry/commerce recognises that one person can only be the line manager for a limited number of under-managers, perhaps six. For the heads of mathematics themselves as line managers for departments of ten or so, appraisal could be an impossible burden for them. On the other hand it may be that when heads of department are asked to be appraisers this will bring about a more managerial outlook in them (Fidler,1988:21). For them, as the appraised, it may be that they are appraised by someone with whom they rarely work. The pilot studies and the literature have very little to offer on the appraisal of middle managers in schools. This is understandable historically as the first concern is to get an overall system for all teachers in place but if heads of department are to be helped to become more effective then they should be appraised as managers.

Through the second study the research was designed to provide some information as to how nominees, prepared interviews, and write-ups can help those heads of department wishing to become more effective, possibly through the use of a peer as the appraiser. Whether the notion of style is explored during this appraisal process would be up to those taking part.

5.3 Design of Second Study

The first study had been a success but the pen-pictures rather served to whet the appetite leaving the reader wanting to know more. The research methods had worked well and an extension of these would be appropriate in the context of appraisal, particularly with respect to middle-managers.

Possible next moves had already been suggested by the heads of mathematics themselves: one had spoken from notes given by various teachers in the school; another had suggested that it would be interesting to compare her views with those of the teachers in her department; and yet another had said that the validity of the pen-pictures would be greatly improved by involving others. Other participants had also said as much at the debriefing meeting. The pen-pictures could be much more interesting (and valid) if the comments of others could be included. To shed light on a subject it is useful to use more than one light source.

To extend the analogy further the extra lights in a studio portrait can be used to pick out features and to highlight. The final photograph has depth, feeling, atmosphere, texture, contrast, a range of tones and colours. The pen-pictures could now be longer, richer and communicate full-bodied images just like those of college principals in the 'The Effective Principal' (Blumberg and Greenfield,1980). Through consulting those around the heads of department there should be extra detail, perhaps anecdotes like those which had so enlivened the examples from the business world in 'A Passion

for Excellence' (Peters and Austin,1985). Hence readers should be able to recognise, and be encouraged by, features of styles similar to their own and to identify areas in which they could set targets.

The in-service benefit from the first stage had not been quite the one expected. The original aim had been to use the information gained about styles to inform the design of INSET courses, for example by local education authorities or training institutions. Perhaps the exercise of listening to a fellow professional could be replicated even without the use of specific interviewing skills. Pairs of heads of department could help each other: any teachers could agree to help colleagues by listening and writing up what they heard. This is very close to an appraisal model. Many appraisal models focus on classroom teaching and use observation to collect the data. It is far more difficult to collect data in a middle-management situation. Specific functions can be observed, such as chairing a meeting, but the essence of good management is much more complex and much more hidden.

Teachers interested in increasing their potential could set up their own programme of self-appraisal and reflection but institutional appraisal schemes can do much to facilitate good practice. INSET courses outside the school could still have their place and perhaps they should concentrate on tasks. These courses could also introduce skills in appraisal but the process itself could be carried on within the institution. The reflection, talking and write-up could significantly accelerate professional

development. This might well show itself through adaptations or even radical changes of style, which in turn could produce greater effectiveness. Appraisal is a continual process rather than a single event.

Most of the heads of mathematics had referred to their colleagues as people whose opinions they would appreciate when coming to a view of their own effectiveness and style, so it would be desirable to widen the trawl for information. The heads of mathematics would be asked to nominate about four colleagues whom I could consult. If only one or two colleagues were consulted then it might not add much and choosing them would be critical. Six or more could begin to overburden the resources of the research. Four would provide some variability and it would be of interest to see who the heads of mathematics would choose. Nevertheless rather than prescribe four the heads of mathematics would be asked to nominate 'about four'.

Care would be needed over professional and personal confidences shared in good faith for the purposes of the research. To assist this sharing, and to reassure all the participants, the briefing letter to nominees would emphasise positive comments. This was not to be an exercise in critical, balanced, assessment of performance. To do this many extra parameters would need to be included such as: attendance; punctuality; efficiency in making returns; drafting skills; teaching skills (in all their richness and variety); analysis of the depth of problems faced (reactionary staff, new staff, department conditions); etc. The design of this research would accept that the data would be partial: it would be focussed on appearances,

intentions and dealing with people. Consideration would be needed on how to share the nominees views with the heads of mathematics and how to take their reactions into account.

How should the heads of mathematics be chosen? The panel of judges can only work if there is a likelihood of considerable overlap and for the second study I did not want to be limited to Leicestershire. I decided to choose the heads of mathematics myself. In the first stage the dangers of over-familiarity did not seem to be a problem whereas a ready rapport was a definite advantage so it seemed a sensible idea to consider heads of mathematics whom I knew very well. Much background knowledge would already exist so the need for scene-setting would be minimal. Personal trust would exist and so professional trust should not cause a problem. Friendship could interfere but with careful briefing this need not adversely affect the research. Much would depend on my ability to read personal signals and it would be difficult or impossible to describe the nature of this evidence in this research. The trust that any reader of research has in the integrity of the researcher would be particularly needed here. Also great vigilance would be needed against the possibility of self-deception in the researcher. To be weighed against all these dangers was the declared aim to explore style and if professional style is bound up closely with personality and personal behaviour, then only research designs that acknowledge this are likely to succeed. Other designs involving surveys, public observation, questionnaires may be less helpful.

The possibility of including observation and questionnaires was considered. The heads of mathematics could be observed in various situations: conducting meetings; talking to teachers; attending senior staff meetings; teaching. If the science of observing teachers, particularly heads of department had been well established this might have been more possible, but in fact we are still at an early stage. It would not have been at all clear what to look for - what to record.

Questionnaires to the heads of mathematics would appear at first to be simple enough but they need time for the respondent and a sympathetic attitude even if basic facts are collected. In fact the time and goodwill element would be crucial. Time and energy are needed to complete questionnaires and the heads of mathematics would be giving a great deal of time and energy to the interviews and the consequent reading, let alone time for reflection. They would, it was hoped, be compensated by the benefits of taking part in the process but their goodwill should not be imposed upon any more than necessary. As well as considering their style they could and should be asked for comments on the process and on the write-ups but this need not be great in its time demands. On balance I decided against imposing additional burdens of questionnaires and against developing methods of observing middle-managers in schools.

The letters and arrangements for the nominees could be piloted on the first occasion and then other aspects, such as interviewing techniques could be continually refined. A write-up technique had been established but

modification would be necessary. For example, the nominees would need to see an absolutely final version of what they had said before their views were shared with the heads of mathematics. For the final pen-pictures far greater construction and editing would be needed to weave a coherent story from the various sources. The methods of preparation of all the participants would be of interest, particularly in so far as they related to appraisal programmes.

It is worth rehearsing the research questions and (now slightly adjusted) notes from the first chapter:

What are the styles of effective heads of mathematics in secondary schools?

How do effective heads of mathematics go about their work?

Insight will be gained by considering how heads of department and others around them see their styles.

How is it best to develop heads of department?

How can the heads of mathematics become more effective?

The procedures involved in this research will be considered as aspects of an appraisal process suitable for middle-managers.

Chapter Six - The Second Study

6.1 Methodology

The first study had established that the methods employed worked well. Well-briefed professionals could talk about their style and the write-ups were acceptable to them. A number of the heads of mathematics had either consulted members of their department or suggested that it would have been a good idea to do so. The method for the second study then could be derived from that of the first study. This time the pen-picture could be more comprehensive, taking the opinions of nominees into account. What was shown to the heads of mathematics from the nominees would need to be approved by the nominees. In general though the experience I had gained from the first study would be immediately applicable in the second study.

Choosing the Heads of Mathematics

The pre-existence of rapport between myself and the heads of mathematics in the first study had proved a great advantage. Some of the first-study heads of mathematics could be carried forward to the second study but since the trawl of information for each head of mathematics would be wider in the second study and the pen-pictures more comprehensive it would be necessary to take care not to overstretch myself. Four heads of mathematics seemed a reasonable number. If each one nominated about four others to talk about them this would give twenty interviews including four longer ones with the heads of mathematics themselves. As mentioned earlier it would be easy to underestimate the time needed for interpretation of the

tape-recordings and become overburdened; on the other hand four heads of mathematics should provide a variety of styles. It would not be simply that there were just four styles but rather that there would be many different style-elements applied to the many situations. Also the sixteen or so nominees should provide a variety of insight as it was unlikely that they would all be drawn for the same job positions.

I decided then to take two heads of mathematics forward. Of the original seven, one by now was a deputy head; another was in charge of special needs; another was seconded to the local education authority as an advisory teacher; another was just finishing a secondment and was not certain to return to school. That left three and somewhat arbitrarily I decided to approach the two whom I knew best. One of these two was the one whose first interview had not gone well so there was a slight risk, the third head of mathematics was held in reserve.

I had recently worked as a consultant on a pilot project for a GCSE syllabus to be assessed through 100% coursework. This demanding syllabus, set up jointly by the Association of Teachers of Mathematics and the Southern Examination Group, had attracted some excellent schools led by some very interesting people. When visiting the schools I had got to know the heads of mathematics themselves and their situations - teachers, materials, and pupils - and so it was natural to choose from them. One school was very small and the mathematics department of two teachers was not typical; in another school I had not really got to know the head of

department at all; in another school the head of department I knew had just been promoted to deputy-head. Of the others two stood out as likely to provide very interesting material, and were particularly good at personal reflection and analysis. I decided to approach them first, holding the others in reserve.

In the event all four approached not only agreed to take part, but did so with relish.

The Sample

Two heads of mathematics were female, two were male.

They were all in their late thirties/early forties.

All the mathematics departments were complex in terms of staffing, including senior staff, probationers, part-timers.

The schools were all mixed comprehensive; with pupils in age ranges 11-16, 13-18, and two were 14-19.

The catchment areas for three of the schools were a mixture of urban and rural in a roughly 50-50 mix and the fourth was urban.

Two of the schools needed to bus in some pupils from country districts.

Three schools had about a thousand pupils; one had around six hundred.

Two were in Leicestershire, one in Oxfordshire, and one in Shropshire.

The Nominees

Each head of mathematics received a telephone request to take part which outlined the hopes and purposes of the research and their minimum

commitment. This was confirmed by letter and they were asked to nominate about four people who could be approached to discuss the style of the head of mathematics. The heads of mathematics were provided with briefing letters that they could show the nominees to explain what was expected. This echoed the approach used throughout this research of the combination of personal and formal approaches. An initial approach, in person or by telephone, was then confirmed in writing. This maintained a personal contact and avoided misunderstanding. To ease the scheduling the heads of mathematics mostly set up the interviews for me, arranging them on one or two days to minimise my release from school. (Leicestershire LEA kindly paid for my travel and supply cover.)

Although the heads of mathematics were asked to suggest "about four" nominees all of them provided exactly four and the sixteen people chosen came from a wide spread of backgrounds. Three were the headteachers of the school; three were 'ordinary' teachers in the department; three were deputy heads or senior teachers; two were second-in-department; two were part-time teachers; one was a probationer; one was a teacher of computing as well as mathematics; one was from an initial training department at the local university. Seven were female, nine were male (although the six most senior were all male!).

The Interviews

All of the interviews took place in June 1988. The interviews with the nominees all took place in quiet areas of the schools - empty classrooms,

offices etc. They had prepared well for the interviews and did not need specially secluded sites. A small tape-recorder with an integral microphone was used. No particular interview techniques were needed other than to put each nominee at ease and to ask them to start. A few needed prompts at first but all but one talked freely for about twenty minutes or so. Occasional prompts were made to reassure and clarify. Some of the more senior nominees commented on the relevance of the process to appraisal schemes generally. I felt it was unreasonable to ask the less experienced nominees about this. One nominee was distinctly unhappy about the exercise and really should have refused in the first place. This nominee was unhappy to talk about any colleague and kept the comments quite factual; there was no sense of friction about the relationship between the nominee and the head of mathematics but perhaps a nervousness in general within the nominee.

Of the interviews with the heads of department three took place at their homes and one took place at school in a secluded office. These venues were determined by the heads of department but the need for an uninterrupted time of about an hour was stressed. The letter also stressed preparation to avoid the situation that had occurred with one of the first study interviews when one head of department had been psychologically unprepared which had resulted in difficulty at the writing-up stage. Only one interview suffered from interruption - a phone call at home; in retrospect I should have asked for the phone to be taken off the hook.

The interview techniques needed had been well rehearsed and needed little adaptation. Based on the first interviews I did ask for comment on certain aspects if they had not already been covered naturally: if no mention of administration, personal relations, or their own teaching had been made I asked about this towards the end of the interview. Also, experience of the first study interviews encouraged me to probe gently for inconsistencies or anomalies and try to get the head of mathematics to tie up loose ends. Towards the end of the time I made some references back to things they had said earlier where it appeared that they had intended to say more but had apparently forgotten to do so.

At the end of the interview I asked for comments about the interview technique; about the whole involvement in the research and its relevance to the appraisal of middle-managers.

The nominees' write-ups

A virtual transcription of the interview was made and returned to the nominee for amendment before being shown to the heads of department. Once the nominees had given their views they wanted them shared with the head of department as soon as possible. The interviews with the heads of department were held before they had seen what the nominees had said.

There were very few changes needed to the initial write-ups of the nominees' interviews. There were a few changes of fact; there was one nominee who withdrew a statement as it was too personal (a pity this as I

felt it was a very valid observation related to dress); one nominee made considerable criticisms of the write-up - not suggesting that the write-up was not what was said but rather whether the nominee had intended to say it (this was the one case of a nominee preparing thoughts in a general way but not organising what to say, making interpretation very difficult). In this last case approval of a second version was obtained.

The pen-pictures

As mentioned earlier I had been very impressed with a book by Blumberg and Greenfield (1980) which gave almost journalistic accounts of the professional lives of principals in colleges in the USA. Similarly the popular features in some Sunday papers, such as 'A life in the day of....' and 'A room of my own' suggested to me that here were ways of learning about other people and, through reflection, changing oneself.

To construct each pen-picture I first listened to the tape so as to remind me of the interview; next I devised categories and a first draft was drawn up. Finally the quotations from the nominees and the heads of mathematics were woven in. The nominees statements and the pen-pictures were then sent to the heads of department.

De-Briefing Questionnaires

When the heads of department received their package of nominees' statements and the pen-picture, I also enclosed a short questionnaire. The intention was to confirm that what I had written contained no errors of fact and to

get their final reactions to various aspects of the process. A series of questions were posed and they were encouraged to use the back of the sheets for extra comments. The heads of department all gave copious notes overall but in some sections there was not much said. This is a selection of their comments.

Form A: Reactions to the nominees statements

Are you surprised at anything?

That T found me supportive! [D]

C was surprised that he had not been seen as forcing change and that the head felt he was good at giving critical feedback.

E was not surprised but 'gratified' by the warmth of comments.

Are there some things that ring a bell for you?

Just about everything! I loved reading them and it made me feel good that such a variety of people were seeing all that I would like them to see. [B]

Using others as examples of good practice. About delegating and letting go. Accepting decisions and getting on with the job. [C]

That they do indeed find me supportive. and that meetings were not devalued. (As the Head had suggested she would, she laughed at being considered 'puritanical and austere'.) [D]

The nominees appeared to appreciate his single mindedness and yet he himself might have said 'headstrong or wilful'. [E]

Form B: Reactions to the Pen-pictures

Immediate reactions

C was impressed that I had been able to identify so much, particularly changes between the two interviews, which he had not himself noticed.

Its probably right. I enjoyed reading it. [D]

I think it is accurate. [E]

Do you think there are things I got completely wrong?
Are there any factual errors?

There were a number of factual points, for example about the biographical details. There were no major disagreements but there were some constructive criticisms of places where alterations would increase clarity. One person suggested wryly that I now knew them too well!

Form C: Reactions to the Process

Your interview?

The whole process was challenging and consequently enjoyable. I know it has helped me to develop personally. [C]

I got more out of the pen-picture. [D]

A very useful vehicle for appraisal - there seems to be something important here that the interviewee and the interviewer know something about each other. I enjoyed our interview - it felt good to verbalise my philosophy - and to feel I was sharing it. [E]

Reading what the nominees said?

Loved them! Did me a lot of good. I felt the job I had done had been recognised. [B]

A feeling of pleasure - then guilt at being pleased! Worry that it was too egotistical an exercise. Also worried that there was little criticism; was I too strong a character that all critical comments were submerged? [C]

Fascinating! [D]

(Useful to have something written since it then) gives time to reflect. [E]

Reading the pen-picture?

Interesting. It covers the main points and certainly paints a picture of me. I think I would be highly recognisable from this. Its formality is a bit off-putting but that's the way it has to be. [B]

The most striking feature was its clarity. You have been able to isolate the main points of my style which I would have thought would have been impossible in such a complex issue. [C]

*Interesting - I preferred the nominees' (statements) unedited. [D]
I like the way it has been set out in distinct sections - and the section headings chosen. [E]*

NB At this point the reader may like to read the pen-pictures presented in Chapter Seven. Next, however, I shall discuss the effectiveness of the methodology.

6.2 Retrospective Discussion of the Methodology

The methods were in general very satisfactory. Great care had been taken that at each stage those taking part in the research understood the purpose of the research and understood what was expected of them. Any arrangements made over the phone were confirmed in writing and a 'rolling pilot' was used wherever possible: all letters were sent first to one or two people only and confirmation sought that they made good sense; arrangements with nominees were made with one set in one school first; one write-up was completed successfully before the others were attempted. (See the Appendix for copies of the letters.)

The care taken with the letters paid off: they were forthright and made clear what was required ensuring that the interviews were valuable. It proved worthwhile to explain carefully at each stage what commitment was needed: everyone took part as promised and the heads of mathematics gave full attention to each aspect, right up to the last questionnaire. The nominees were articulate and had useful things to say. They had prepared well for their unusual task and in general enjoyed the opportunity, even relished it. It was very gratifying that, even in very busy troubled times, additional time was found and offered willingly when there was an opportunity to help colleagues - both myself and the heads of mathematics. The nominees seemed to enjoy the occasion, but one nominee was rather cautious and expressed this before talking: he declined the opportunity I

gave him to withdraw. His reluctance seemed to be based on nervousness at expressing any opinion of a colleague; perhaps this nominee should have refused to take part when first asked.

The decision to choose heads of mathematics I knew well was justified by the quality and detail of the views expressed and also by the intimacy of the confidences shared. There was no suggestion that participation in the research might affect the friendship adversely - quite the contrary in fact. Participation in the research by the heads of mathematics and sharing personal insight - followed by my declaration in writing of how I saw them - all strengthened our relationships. The methodology for this research did not necessarily require close friendships but outcomes are likely to be more relevant and valuable when such relationships do exist between the appraiser and appraised.

The final forms asking for comments from the heads of mathematics proved to be a satisfactory way of 'signing off' and provided useful additional comments to those made at the end of the interviews. The heads of mathematics very much enjoyed taking part in this research and looked forward to reading the write-up of their style. They are also keenly awaiting the copies of the final thesis which I shall provide. Too often the final research results are not shared with the participants.

For all of the heads of mathematics, taking part in the research was an enriching experience - they felt they had a clearer understanding of

themselves - particularly in respect to those around them. The consideration and selection of nominees was intriguing; the stimulus of the impending interview was challenging; the opportunity to talk to a sympathetic, interested, colleague was enjoyable. There was a fundamental curiosity to find out how your nominees see you and what the final write-up says about you. The first write-up took longer than I expected - one of the few times I failed to allow for the fact that I also had a full-time job (as A TVEI Coordinator in a large school). As a result it was several months before the first head of department received the pen-picture. For the last one it was six months between the interview and receiving the pen-picture. In one respect this was bad because the excitement generated from taking part had been dissipated; on the other hand the heads of department were able to be more objective and look back on themselves.

The pen-pictures proved to be readable, informative accounts which should help any readers to understand the styles of the heads of mathematics and to learn from them. The belief that others can learn from reading such accounts is a key element of this research. In case-study research the intention is that experiences are described in such a way that they can be extended by interested readers into their own particular situations. By doing so the researcher allows the readers to 'generalise' the findings at whatever level they think is appropriate. Large-scale research can lead to generalising, perhaps through statistical analysis, when a survey is carried out, but it is also possible to learn from a few cases carefully studied and described. Large project teams with greater resources of money and time

are better suited to find out what is happening over the country as a whole. A recent NFER project (Early and Fletcher-Campbell, 1989) did just that but the diaries and the three short case studies were also interesting. The discussion of Ernest (1989) brought understanding of the nature of being a head of mathematics department up to date. My research has provided insight into the lives of the heads of mathematics and this insight is equally applicable to heads of other departments.

There are parallels between generalisation from case-study research and generalisation in a mathematical study. When exploring a mathematical situation for the first time, one approach is at first to relate the problem to something known and understood - possibly by trying some simple cases that can be readily comprehended - by observing the behaviour of the elements being considered. This can lead to some valid conclusions, possibly limited but nevertheless useful, which can then be checked and built upon. The aim at some later stage may be a comprehensive generalised proof but this can rarely be attempted at the start and indeed may never be possible by the nature of the problem.

It is possible that educational research has been held up in the past by failing to recognise the importance of this type of research and this might go some way to explain the reluctance of teachers to value research findings very highly. Many of the questions that interest practising teachers cannot be answered by experimental methods and statistical analysis. This research was, in part, concerned with ways of portraying

experiences so that others could relate to them through their own experiences. No theory of styles of heads of departments was to be tested but 'grounded theories' might emerge (Glaser and Strauss,1967). This was an 'illuminative' exercise and proper consideration had been given to the 'milieu' in which the heads of department worked (Parlett and Hamilton,1977).

The late 'eighties was a difficult time for life in schools with much enforced change and low-morale. Industrial disputes in the schools may also have affected how the heads of departement operated: for example perhaps they have become more reluctant to delegate without financial reward (Early and Fletcher-Campbell,1989:108). It was very good of the heads of mathemtics to accept the additional load of participation in this research and it was very pleasing that they felt that they had benefited from their involvement.

Chapter Seven - Four Heads of Mathematics

7.1 The Caring Autocrat

B was born and bred in Farnborough, Hampshire, and attended a girls' grammar school which was direct grant and bilateral. She read mathematics at Lancaster University, gaining an upper second. She took a year away from academic study working on canal boats and visiting Finland before gaining a distinction in her Post Graduate Certificate of Education at Cambridge University. Her first teaching post was in a 13-18 comprehensive school where after three years she became second in department.

B was then seconded to Oxford University Department of Educational Studies for an M.Sc. in Educational Studies (Curriculum). At the end of her secondment she was appointed to her present school as head of mathematics. The school was a 14-18 comprehensive school with a mathematics department of the equivalent of eight full time mathematics teachers. Mathematics was taught in a particular set of rooms, but until recently there was no mathematics office.

B had always wanted to take a mathematics degree but only decided to take a Post Graduate Certificate of Education course during the final year of her degree.

Her detailed interest in mathematics education has led to involvement in a number of schemes such as the Oxford Certificate of Educational Achievement (OCEA), the Southern Examining Group/Association of Teachers of Mathematics GCSE and gender issues.

Quotations in the text are referenced in [] as follows:

[H] The Head, who is, coincidentally, also a mathematician.

[DH] A Deputy Head who was in his retirement year when the interviews took place.

[IT] A tutor at the local university education department.

[T] A part-time mathematics teacher in the department.

[B] The Head of Mathematics herself.

[Footnote: The letter A was not suitable to stand in place of a name as it made some sentences difficult to read. The fourth letter used was E.]

'My Department'

Amongst her friends B is sometimes teased about how often she refers to 'my department'. She is uneasy about what it might mean that she uses the possessive form so often, but recognises that that is indeed how she sees it. When listening to B it is clear that she cares for, and is concerned for, both the pupils and the mathematics teachers. She wants the best possible for all of them and accepts that a major share of the responsibility rests with her.

Her interests in education are broad but firmly based on the pupils - their education - their needs. B thoroughly enjoys mathematics and readily chose that as a focus for her degree and professional training. So it was clear that by being first a mathematics teacher, and now a head of mathematics, she could help young people. She feels comfortable as a head of department although this may pose problems for her in terms of career progression. She realises that wherever she goes next she may lose that sense of belonging to, and having responsibility for, a department, both its teachers and its pupils. She recognises that this suggests something akin to maternalism or paternalism.

It is about doing the job as well as I possibly can. It feels that in the end everything comes to rest at my door... it is my responsibility ... and I enjoy this. Even though I know it's impossible I would like to know everything that is going on in the department. I know it's impossible!

- every worksheet from every kid! [B]

I think she is very realistic about what she expects her department to do. She sets her demands high but I think she is quite prepared to adjust her sights. [DH]

She feels that the department is hers to manage and she makes her influence felt within the department. She runs a happy department - not uncritical - but happy. She has made it this way. [DH]

The head sums up the singular nature of her leadership:

Without a doubt B is an exceptional head of department. Someone for whom I have the greatest respect. I think as a department it is very much dominated by B. It is difficult to know what would happen in the event of B leaving. [H]

Because of a series of staffing coincidences B has not, so far, had a second in department and this has undoubtedly increased the impression that it is her department. In the near future there will be a second in department and it will be interesting to see what happens; B believes she may need to adapt her style.

Freedom of choice and fairness.

B wants all individuals to have the right to develop how they wish; to be autonomous, to have freedom of choice. For the pupils this is reflected in the choices they have, which are as wide as possible within the constraints of a mathematics curriculum. For the teachers it means involvement in the

decisions of the department and freedom to teach how they feel best within their classrooms. At the same time B has a strong sense of purpose and holds clear views as to what is right for her. There is team-work and the department is coherent and well organised. Within this framework the staff and then the pupils are given as much choice as possible. There is a paradox, and sometimes tension, when a strong leader with vision also wishes to encourage personal development and autonomy.

B has a deep sense of wanting to be fair in all she does: that people deserve consideration. This applies to all aspects of her professional and personal life. No matter who you are - pupil, colleague, parent - when you are with B you are made to feel welcome and you have her full attention. This readiness to put her own needs to one side can be very demanding on her and she takes steps in her personal routines for mental and physical recreation.

B listens hard to others and then makes a considered response which hinges on what she thinks might be the next step for them. She judges what would be an acceptable challenge or what would be a threat. In this way she tries to maximise development for those around her. This ability to listen and then have the confidence to act can at times be rather daunting to others, but generally it is appreciated.

My style is to think about people, the development of people, and to support them. To try to praise them. This is the same as in the classroom: show the kids I care for them, give them a lot of

positives, try to help them develop as much as possible, give them as much freedom as possible. Try to think about them individually. [B]

When I was having my staff appraisal/discussion with B she was very encouraging. I was a bit down actually. I was 58 and had just come back from a secondment. I had a few classes that I didn't think were going terribly well, and I had a discussion with B. She was much more positive than I was about what I had done. [DH]

She is good at deciding whether to ask for volunteers or whether to direct people. Although the direction is usually in the form of a request. "would you mind doing this? Would you mind taking this on?" [DH]

(She is) very supportive as a resort.... If you can't get any further with a pupil yourself and the help is given in such a way that it is not seen as your problem. It's not your weakness. [T]

For B there is a clear connection between the philosophy of freedom of choice and the classroom practice which she promotes. A major reason for the introduction of a particular 16+ public examination was that it provided the scope to give the pupils more choice. The resources of the mathematics department are used imaginatively to allow the type of classroom practice that she believes to be so important.

B above all, is not so much interested in the content of what she is teaching but in the process of learning. She seeks effective strategies to enable pupils to learn and to discover mathematics in the classroom rather than working to a preset agenda that they should learn algebra, geometry She has achieved a transformation of the department's teaching styles. [H]

Enthusiasm and Vision

There is an enthusiasm, an enjoyment, a craving, a thirst, behind B's work. She wants desperately to improve the lot of her students and of the teachers in her mathematics department. This strength of feeling might be squandered aimlessly; expending energy to little or no avail. But to this is added a vision about education, and more specifically about mathematics education. It is difficult to determine how important mathematics itself is in all this. B maintains that it is coincidental; that it is no more than a convenient vehicle.

Her verve and spirit are obvious when you meet her. She is aware of this and occasionally has to temper herself so as not to dominate and sweep through the people around her. Her self-control in running the department is not always evident to the casual observer but it is there; when she listens, when she weighs an argument, when she judges the next move. All too easily her sharp, quick intellect could destroy rather than enable.

B is determined; she knows where she is going, which I think is important. Committed, very enthusiastic. [T]

I think I'm impressed quite simply because of B and the things she has done. Her commitment, enthusiasm, hard work, dedication; but perhaps above all else it is her vision of what she sees mathematics education should be for pupils in a comprehensive school like this. I've seen so many people who don't have vision; heads of department who haven't moved anywhere, haven't done anything because "they" - whoever "they" are, wouldn't like it. But B has been dynamic; she has had a clear sort of vision of what she has wanted the department to be, of the sort of mathematical experience she wanted to give pupils. And she has actually gone and done it. I think that is amazing. [IT]

B is seen as a leader and she realises and accepts that. She is looked to for ideas and she provides them. The department recognise that she is looking further ahead than they are and they are reassured to know that B has the vision and confidence that makes progress possible.

(She is) very forward looking. She is always keen to improve what we are doing, wants to look around at what is happening elsewhere and is open to take new ideas on board. Open-minded and forward-looking. Looking for improvements in maths teaching. [T]

Well informed. This is not a sleepy backwater of a department that has been doing the same syllabus for years. Her style is to look for improvements. [T]

Above all the reason she is looked up to by her colleagues in the department must be because of her very passionate devotion to mathematics education. She has an intense commitment to mathematics education. She is a good mathematician as well... very able intellectually. She dominates the department intellectually and also sets a standard of workload and commitment which is very difficult for mere mortals to rival. It would be quite fun to remove her for a term to see what would happen. [H]

B has a very clear idea about how things ought to be. [DH]

High Standards

As well as having vision and energy, B has what by now is an in-built wish to perform at a very high standard in whatever she tackles.

She sets high standards for everybody and this can bring problems, but she sets amazingly high standards for herself. She does an incredible amount of work and although I would not suggest as a strategy for a head of department that you must work harder than your department, the fact of the matter is that she does so and sets an example. There's certainly no-one in the department who could say "She has all these ideals but it is all left to us". Quite simply she has the ideas, she has the vision, she tells them, she shares it. I don't know about their agreement with that vision but certainly they all move in the right direction, spearheaded by her ideas and example. I think that it is very impressive. [IT]

B strives to be the complete professional. Knowledge of mathematics education; knowledge of how people learn and grow; acquisition of the skills to put these into practice; sheer graft to see it through.

She is a professional, it is her career, she acts professionally. It is a vocation and that comes through in her style. [T]

B is prepared to shoulder major burdens. She does more than her share of work. On the other hand she encourages people to share in the work that has to be done. [DH]

Organisation and Administration

B is extremely efficient, leading by example with things well planned and organised. There is an exchange of information informally over coffee but also at department meetings and in the weekly department newsletter.

Once a week there is a department newsletter: what is coming up in the next week. You don't have to take it in just then but read it when you like. This is particularly useful if you spend most of your time away from the maths area itself. B makes a point of seeing me and keeping me in touch. [DH]

She is an extremely organised and efficient administrator and keeps us well informed. But still allows us the freedom within our classrooms to work how we want. [T]

Outside the Department

Despite giving so much attention to detail within the department B still plays a full part in life in the school and even outside. She has fought hard for extra funds, and takes an active role in any curriculum discussions in the school. She often stays late at school for discussions or to see students and then may return later the same evening for parents' evenings, open evenings or perhaps Sixth Form events. B has a reputation for being a tough negotiator, an able spokesperson for the needs of the students and of the mathematics department.

I know you are looking for what makes someone an effective head of mathematics, but I tend to have a slightly different perspective. I look for what makes someone an effective head of department. She contributes significantly to the running of the school. She has taken a leading part in the running of in-service training; for example the counselling session she ran for the staff. She has been chair of the staff committee and so is not an insular person. That is an important quality. [H]

In management meetings she makes her position known, through useful and interesting contributions. Not always comfortable contributions... arguments may well follow. In general she tends to be uncompromising about the positions she takes up, and she is respected for this. She is not completely intractable but she does take a very firm line. If she realises she is in a minority then she shrugs her shoulders... she

doesn't give up but rather reserves her position for some later debate.

[DH]

B has a direct line to the Head, and has no qualms about using it. She regards the appointment of mathematics teachers as if they are personal appointments to work with her as well as professional appointments to the department and the school. Similarly she regards her own appointment and role as a head of department as related directly to the Head. She is always ready to share and discuss her ideas directly with him as well as through meetings.

Perhaps others do it as well but I am aware that she is one head of department that will go to the Head. She will always support her department - over things like capititation, over things like time off for GCSE assessment. She pushes hard for the benefit of her department. [DH]

She responds rapidly to requests, puts things in writing, is always active in pressing the department resource needs, ensures that adverts for vacancies are placed rapidly. She is a good head of department.

[H]

Outside the school

B is involved in many aspects of mathematics education and one of her nominees was drawn from the local initial training establishment:

Now it's quite nice that she has taken the department to the forefront of maths education. It is perhaps the strongest department in (the county) and it is so because of her example - her sharing of that vision and her determination to move people along and achieve that particular ideal. [IT]

A quite different role is that with the students from the university. She has been Mentor for our interns on our internship scheme. What I have learnt from that is not only does she have a vision for mathematics but she also understands very well what is going on in classrooms: the needs of individuals. The quantity and quality of discussion she has had has helped the PGCE students enormously. The internship/ mentor scheme is different from just teaching practice and involves the teacher in the school, as mentor, in helping the students to develop. In this context I have realised that B has a good understanding of pedagogy, and of educational issues. Not just that but she can help others in a relaxed way. [IT]

She has good external links which have brought the school benefit. For example, she has been actively working with the University. It is unusual that she has been able to recruit nearly all of her department. She has done a certain amount of headhunting and the department has gelled somewhat more than might otherwise have been the case. [H]

The amount of external involvement is recognised and appreciated by the members of the department. There is a conscious policy of being open and welcoming to parents and other visitors. Effort is put into links with the feeder middle schools so that their staff and pupils feel confident about the next stage.

(She) creates an identity for the department. The school is known in the county and we are very open to visitors. [T]

Image as a teacher and importance as a Role Model

B is very definitely concerned with the position of females in mathematics education and women in society in general. She is aware of the important part she can play as a female head of mathematics. She is active in the field of girls and mathematics but more importantly recognises the significance of the role-model she portrays to the females around her. This awareness undoubtedly increases the pressure on her to be an effective professional.

Everything that B wishes to achieve for the pupils at the school and for mathematics education in general is reflected in her image, both as a classroom teacher and a head of department.

Part of her style is the role model of a classroom teacher which she sets. She definitely has a very strong identity (sic) of how she performs as a teacher and how she relates to children. That came over when I came for interview. An attitude of how the children are approached which tends to be firm but gentle coercion rather than

confrontation. The children have rights and these are respected. So the majority of kids enjoy their mathematics and have greater self-confidence in their ability. I think then children see her as quite an authoritarian figure but in a velvet glove. [T]

B is smart, personable, brisk and professional. She is careful not to appear rushed and whoever she is talking with at that moment receives her full attention. She does not brush off those embryonic conversations which so often lead to useful dialogue. This naturally means that during the school day she does little of her 'work' except that she sees these conversations, with pupils as well as teachers, as an essential part of her job.

In terms of administration there are so many things happening in the department that she has to be well organised. The amazing thing is she manages to look cool as well. She is not one of those heads of department that always look busy, rushing about, breathless, haven't got time to talk. I admire the characteristic that B has, that she seems to have all the time in the world for the person she is with, when there must be a million things pressing in on her that she has to do. [IT]

7.2 The Thoughtful Instigator

C was born and bred in Peterborough, went to a boys grammar school, and read Mathematics and Computer Science at York University gaining a BA Honours degree. He gained a PGCE at Bishop Lonsdale College, which he chose because of its computer education course. During his early teaching career he also gained an M Phil at Nottingham University. This was through part-time research on the topic of 'Oral Assessment of Process Aspects of Mathematics'.

His first and second teaching posts were at 11-18 comprehensive schools. He then became Head of Mathematics at a 11-14 comprehensive school, where he stayed for three years.

During the period covering the two interviews he was Head of Mathematics at a 14-19 comprehensive school. He took over from a much respected person who had decided to move to a smaller school. The department consisted of eleven, mostly well established, experienced teachers of whom eight were full-time. For some years the school had run their own mode 3 CSE examination by coursework, and the advent of GCSE brought the possibility of the extension of coursework assessment to all abilities. Much of C's work has centred around the introduction of a Group Mode 3 GCSE with 50% coursework.

C first became interested in the possibility of being a mathematics teacher when he was about twelve. His mother was a teacher, and it was already clear that his ability and interest lay, in the main, in mathematics.

He has for some years been an active member of the Association of Teachers of Mathematics, both at local and national level.

Quotations in the text are referenced in [] as follows:

[H] The Head of the school.

[N] An experienced teacher.

[O] An experienced teacher.

[P] A part-time teacher.

[C1] refers to quotations from the first interview with C.

[C2] refers to quotations from the second interview with C.

Introducing Change

C's first post as Head of Mathematics was in a new high school (for pupils aged between 11 and 14) with a department of only three teachers and so communication was not a problem. His present post is in a very different school, not just in age range (14 to 19), but also in the variety of courses offered, the number of pupils, and the number of staff in the department. The initial task C set himself was to introduce new ways of working into the classroom so as to benefit the pupils without at the same time antagonising the teachers. His natural tendency would be to get in there and change something, but it was clear that the department would not easily accept this.

When C came we were a close-knit department. He took over from a much respected head of department, so it was not easy. He came with new ideas at a time of change and people were naturally apprehensive. But what he has done has been gradual. He's obviously had an aim in view and he's worked towards it. There was no clean broom that swept everything out, so he has been able to take people with him. He has handled that very well. [P]

He has brought a lot of new coursework ideas with him which is important at the moment with GCSE. Without him we would have been panicking because we don't have the skills. He has been very good at helping us to develop those skills. He has pushed a lot of us forward.

[N]

After careful consideration C decided that rather than introduce changes *per se*, he would stimulate thought and offer fresh ideas. There was discussion about the introduction of a new examination but this was postponed when there was an unfavourable reaction from the department.

One analogy used by C in relation to floating ideas was 'setting off hares'. According to C, 'the hare' - the person with the new idea - should feel attached by elastic strings to all the other members of the department. It is necessary for 'the hare' to watch those around quite closely seeing how the strings are stretching and adjusting so that the strings do not break. Most times, particularly in the early days, C would himself be 'the hare', but as time went on he would encourage others to set off as 'hares' with an idea. There was a slight fear that others might resent this approach as being scheming but no-one said so.

The changes have come very easily, in part because of the GCSE course that he persuaded the department to chose. We needed to adapt quickly and he has taken the classroom away from chalk and talk to individualised study. He has tried without being forceful... through persuasion... through involving people... to bring about this change. To do things in the way he feels things should be done. He will not actually say "You will do this", "You will do it this way". Each teacher has his or her own style, but C will try to point out the good points of one teacher to another, without making it obvious. He recognises the individual qualities of each teacher. ... He won't force people to change. [N]

C encourages different, new ideas to be considered by the department. This is essential, particularly in the present situation. Grouped with this is the consideration of various learning strategies. We are looking very closely at individualised work, practical work, investigations, computers.. a whole range of things. It is vital that if the department is to go ahead then we need to look at all these aspects and evaluate them. C encourages us to do just that. [O]

The way in which C encourages the teachers to learn new skills is closely related to the way in which he wants pupils to learn. One important feature is the regard paid to the learner. This doesn't imply a close study of the personalities but rather being ready to give due respect to the learners' situation at that time. It is no good seeking to impose a pace from outside. Every opportunity must be taken to encourage the learners to develop, but at their speed, from their perspective.

He has been keen to develop a change of teaching style within the department. He is willing to come into your classroom, listen and then give pointers. He will also refer you to other members of the department who he thinks might help you to change your style. He feels that at the moment there needs to be a change in teaching style in the mathematics classroom. He hasn't said you must change, but he will help you if you want to. You are free to teach as you wish, but if you want help he will give it and is very constructive. [P]

For C, learning and bringing about change require active participation. Whether this is a teacher trying out a new pack of materials and then preparing a report for the others, or a pupil who is carrying out a personal investigation of an area of mathematics - the active involvement of the learner is crucial. For the pupils this approach can bring better motivation and hence learning; for the teacher a new approach in the classroom can grow at a speed that is acceptable. Such changes are then likely to be more resilient, more enduring, than externally imposed regimes.

Like, for example, a colleague I was quite worried about. He did not seem to be getting involved with the department at all... very quiet... seemed to want to be applying for jobs but once we looked at what the reference was going to be like... there were lots of things he had done within the school but not in terms of developing himself. [C1]

A particular pack of teaching materials was discussed and the teacher was asked to try it in the classroom. C also suggested that afterwards the teacher could report back to the rest of the department.

I'm hoping that this will be a trigger here, that the pack will be an agent for change [C1]

This approach echoes the way C bases all teaching on activities; on the involvement of the individual in his/her learning. C's role is to help the learner through this process. It is not necessary for the teachers to realise that this is C's strategy but if they do understand and appreciate it then they are likely to develop more quickly. The recognition that

professional life should have continual change and development pervades all of C's work.

C's attitude in the classroom is student-centered; developing the best in the student, taking each individual student separately, channelling each into relevant work. He encourages students to discuss things. [N]

C adopts the same approach when working with teacher-colleagues. If at all possible the first reaction that C gives to any suggestion, from pupil or colleague, is 'Yes'. When he took over the department he felt that the teachers were a little reticent to try things out or even ask about things; not out of fear but simply because it had not been the done thing. He has tried to encourage members of the department to talk more about their classes and their work.

If the staff are not comfortable with something then their pupils are not going to be comfortable. [C1]

He encourages people to try out different ideas, people are invited to try them. He respects people's strengths. When we ask him anything he shows a very supportive attitude. [O]

One of the things I have managed to do is give people more flexibility and freedom to say "Let's try this. Let's get something from it." [C1]

As yet there has been no circumstance where there has been a deliberate blocking of a suggestion; no deliberate refusal to even consider an idea.

If there was such a refusal, or less extreme, a dull, negative reaction to a proposal, then the responsibility would lie with C to communicate more effectively. Lack of progress is a source of frustration and may be caused by poor communication. To lessen the chance of misjudgements C uses one or two teachers as sounding-boards before floating ideas more openly.

I'm happy so long as people are changing but I get frustrated if I think that they are holding back or they are holding change back. [C1]

The Department

As C settled into the job there was an increasing awareness of the importance of developing the department, not only as individuals but as a group. It became less important to stimulate ideas and make changes, and more important to work with the personnel and help them develop. This was partly because some changes had actually been introduced, but also because of a change of perspective within C. He became more interested in the day-to-day rhythm and pattern of life in the department; more interested in the individuals and the group.

At the time of the first interview C was concerned to get the department moving and was very anxious about this. So he needed to do nearly everything himself to make sure that it was done right. At the second interview he reported far more involvement by everyone in the department.

C now worked consciously to promote a team atmosphere. It might be easier for him if he simply got on with it and hoped for the best but he tried to

involve everyone. Ideally the department would function just as well without him as with him. He is open about discussing department and school issues.

I think the team is far more aware of the problems around and are more supportive, more understanding. And actually think them through for themselves. [C2]

What I particularly like about C is that he always listens. When you have a department meeting he goes round and makes a particular note of what you think. So you all have the opportunity to pass comment. Having said that he then makes the final decision. [P]

I'm constantly delegating admin work and I'm often surprised that people turn it round so quickly. Sometimes I feel I want to say "look you don't have to do it right now" but they tend to do it by next morning. [C2]

When he delegates a job to you he leaves you to get on with it. He doesn't look over your shoulder; he trusts you to do it properly. He probably does keep an eye on things but you don't notice. [P]

The department has become less dependent on C in many ways. Initially they needed stimulation and lots of encouragement to believe that they could work in these new ways. As innovations were introduced they needed

C's constant attention to ensure success. By the second interview this was no longer true, even with regard to support needed within the classrooms.

My role has changed with respect to discipline in the classrooms. The atmosphere there is better. There is less need to call me in to help with difficult students. I feel quite chuffed about that. [C2]

He will pick up on problems... He is very supportive to staff .. [N]

As a part-timer you sometimes feel insecure, perhaps on a temporary contract, but C has always made me feel a full member of the maths department. He has often asked my views and sought out my ideas. Even during one term when I just did bits of supply, I still had a pigeonhole in the maths department because he said I was a member of the department who just didn't happen to be working that term. He made me feel I belonged. There is a very relaxed atmosphere in the maths prep room and that must to some extent be due to C. [P]

In order for C to effect these changes without appearing to enforce them requires a lot of hard listening on his part. He needs to understand each individual teacher. He sees this not so much as personal counselling but as professional counselling mixed with giving advice. This inevitably means implying a judgement, of appraising staff, but, if this is done in a caring, concerned way with plenty of allowance for the teachers to progress at their own pace, then all is well.

I think what distinguishes him in my eyes is his ability to appraise staff; to give them support, guidance, and where necessary, criticism. I don't mean that in a loose way. He can say the things that need to be said. The hard bit of management is not setting up the timetable, or allocating staff to groups, or helping staff to know what the work is, ensuring they have INSET,... the hard bit is actually doing the part of appraisal that requires a positive view of performance. That means that if things have not been as good as they might have been, then they are properly taken up. I think C does that and therefore, for me, he is a very good head of department. [H]

He encourages people to have a plan for their personal development. It is important to develop new skills and he encourages this. He will encourage us to go on courses, and to take part.... [O]

He is keen for teachers to take part in INSET and he supports your applications. He never says that this is difficult for the department to cover. He is always keen for you to go on courses and to do things. [P]

He has encouraged staff to broaden their horizons both within the College and elsewhere. Many staff in the maths department now take a lot of interest in other things ... computing, sport, music, working in a cross-curricular way. He has respected the fact that people have interests outside the department and the school. In a very quiet way

we have been encouraged in many directions. He will put things in your path and then leave it to you. [O]

"Is it protection or is it support?"

Support was a key concept for C. Change could be facilitated by supporting teachers according to their needs. C recognised that this could verge on a paternalistic approach but hoped that being aware of this might reduce the possibility. There was also an element of protecting the department, but on balance he felt that this was a justifiable approach. This was not a policy of 'Fortress Mathematics'; not an attitude of isolation or defensiveness. It was rather a recognition that there were occasions when any individual and every group could use support and assistance, and this included himself.

If staff up here are really complaining about something then I tend to say that I'll see what I can do about it... try to support their ideas.

[C]

C sees himself as being between the department and the rest of the school. He is sometimes uncomfortable when having to pass decisions or policy down from above. He did not like the justification that, although he disagreed with something, nevertheless, he was asking others to do it because of decisions taken higher up. He did not like passing the buck nor being passed a buck from elsewhere. He does not see himself as simply an agent for the hierarchy of the school.

Administration

I try to get my administration spot on and I help others to get their administration spot on even if it means me doing it for them sometimes. [C1]

All of C's intentions would come to nothing, he feels, if his administration was inefficient. His effectiveness depended on sound administration. There was the internal administration of the department: everyone knowing what they should be doing, having enough of the right equipment, etc. And then there was the relationship between the department and the rest of the school: capitation estimates, reports to be filled in on time, trial examinations etc. If the relationships and administration in the inter-department field were not up to scratch then the work of the mathematics department could be jeopardised.

Department meetings were used mostly for arranging the organisation of the courses run by the department, but even so C made room to provide INSET and to help in the development of staff. For example coursework moderation had provided the opportunity for fruitful discussion of the prescribed nature of the coursework scheme. It was realised that this prescription had been imposed by the department itself rather than being an essential part of the syllabus. C took this as an opportunity to loosen things up a bit and for staff to be more free to introduce their own ideas and those of their pupils.

I hope my style comes over as facilitating but there are times when it has to be more than that. [C]

Outside the department

It was clear that since the first interview with C he had been able to look increasingly outside the department. In the early days of his appointment he felt the need to be around the department. More recently he has been involved outside of the department in many ways,... in the move to local financial management, to the changed role of the school as an INSET provider,... he is more involved in the politics of the school.

C's role in INSET is critical. He may have difficulties in reconciling his INSET role, which he takes very seriously and does very well, with his head of department role. C has taken on a role which is shared with the professional tutor ... He is involved in many things... He is a better head of mathematics because of all of that. [H]

C is very good at seeing the need for a meeting and prompting people to see that it takes place. C is a good negotiator, he goes to see people; he is energetic, well organised. He also reads about management and is very interested in management as an art - that's unusual. [H]

Self-development

Trying to improve his personal performance is very important for C. He is always ready to learn and particularly enjoys INSET with colleagues who are facing the same problems. He recently attended a course for heads of

mathematics and found the dialogue with his peers extremely valuable. He feels that, as he has become more experienced, the number of colleagues with whom he can freely exchange views has reduced. He feels the need to have discussion without continual justifications; ideas can be tried out among friends in a robust atmosphere, no holds barred, but safe in the knowledge that the others appreciate the dilemmas held in common, and that the ideas will be treated as no more, no less than that - just ideas.

He is very professional. He is so devoted to his job, so devoted to teaching mathematics and trying to teach it in the best possible way ... he spends so much time on his profession, not just inside the classroom, not just inside the school but, for example in the ATM. He really does care about what he is doing. He takes on so very, very much. His level of commitment is quite frightening. [N]

It is noticable that C is particularly brisk and purposeful as he goes about the school; not officious, not cold, but very concerned with doing the job.

His personal image is part of his style. He wears a suit and tie and that makes him stand out. All this makes him a focus. [N]

C is young, very energetic,.... very forward thinking [N]

7.3 The Intuitive Pragmatist

D was born in London but moved to Norfolk at the age of three. She stayed there throughout her school life, latterly attending a girls grammar school. She read for a 'Special Honours' degree at Leicester University gaining an Upper Second. During her final year she tasted industrial/commercial mathematics during a holiday job but did not enjoy it. She decided to teach and went directly into teaching at a girls grammar school, but after a few years moved to a comprehensive school.

Whilst taking a career break she gained an M.Sc. at Nottingham University, concentrating on mathematics and computing. It was on this course that she developed a tremendous interest in mathematics education and began taking an active part in the Association of Teachers of Mathematics.

After some part-time work and a brief return to the same comprehensive school, she became Head of Mathematics at her present school. It is a 14 - 19 Upper School and Community College and she had been there for over ten years.

The department contained a number of older staff but the school itself had been involved in the very first stages of CSE and had a history of innovation. She continued using the established Mode 3 CSE course but exploited all of its coursework opportunities. She also introduced changes such as mixed-ability mathematics groups.

Her interest in mathematics education focussed on classroom methods and she was also involved in public assessment, at first for a CSE Board and then for GCSE with an examining group. She was seconded to the Open University for one year as a teacher fellow, working particularly on GCSE coursework materials.

She has also played a leading role in the national scene through the Association of Teachers of Mathematics and serving on the National Curriculum Mathematics Working Party

Quotations in the text are referenced in [] as follows:

[H] The Head of the school.

[S] The second in department.

[T] An established teacher.

[P] A probationary teacher.

[D1] refers to quotations from D's first interview.

[D2] refers to quotations from D's second interview.

General Management Style

D regards her approach to the job of being Head of Mathematics as being informal and intuitive. She expressed doubts as to whether she had any specific style at all, let alone whether it could be described in a meaningful way. She was rather uneasy about exploring the concept of management style as she did not like seeing herself as behaving according to patterns or design. She felt that it would be very hard to pin down any elements of her style.

Very little of what I do is premeditated. I am very much a reactor to what goes on around me. It is not necessarily very consistent. [D1]

Although she has read very widely in the mathematics education field, she claims that she has not found the consideration of educational theory very useful. So D's style is not derived from study and might be described as 'natural'. D, however, rejects this epithet.

I wouldn't use the word natural. I find theory unhelpful. Maybe it's a limitation on my part. I can generalise but rarely find it useful to do so. I once read a book on how to be a good head of maths and it was all alien to me. It was all about structure and organisation and not about people. In the end the quality of the department, at least the way we run it, is the quality of the teachers in it. [D2]

... she does not seem to have patience with educational theory in the rhetorical sense. She is perfectly capable of understanding it but it holds little interest for her. [H]

The second key to D as a head of department is paradoxically nothing to do with the department *per se* but rather to do with her feelings for, and approach to, adolescents and their work in the mathematics classroom. She has a great respect for others, and in particular for the rights of young people. This is shown in her approach to their mathematics. She is continually being surprised and impressed by the fresh mathematics they can produce.

She loves working with young people. She finds the students interesting and exciting. This tempers the softness that might appear in a professional who always puts human relationships first. The teachers in her department are always aware that they come second to the students! So the department is not run for the teachers' sake. [H]

Her enthusiasm with students is particularly important. Whatever her theoretical interest in mathematics education, (and indeed it is a very high interest), she almost accepts the rights of the students to reject what she offers. She pauses a long time before she passes judgement on students. She gives students a tremendous amount of space in coping with the demands of the department but at the end of the day she is prepared to be dismissive of them. [H]

The effect of her prioritising personal matters is that it makes her pragmatic. She does not have to turn her theoretical concerns for mathematical education into a lot of documentation. It is eyeball to

eyeball and it is a question of the staff matching up to her interest into what the students are doing. [H]

D is very aware of the major issues in mathematics teaching and keeps abreast of developments. Some heads of departments might keep this to themselves but D tries to disseminate her knowledge to the department... the implications of the developments. She makes an effort to involve us. [T]

A lot of us are young teachers and it is good to have someone who is well up on current trends. D is at the forefront of things in mathematics and as a new teacher I was trained in some of those new things, so it is very good to be able to work within a department that works that way. [P]

She is dynamic. She is so interested in what she does... like the ATN, the GCSE, the National Curriculum Working Party. She is into everything and she knows a lot about everything. You can ask her about all sorts of things and she will know. That's an inspiration and she just seems to keep me going. [S]

D talked very little about her wider role in the school. She is the professional tutor and has held prominent positions on various staff bodies such as the Finance Committee. She has applied for a few deputy headships but has little regret in not being successful.

She is far less blindly loyal to her department than some heads of department; she can distance herself from what they are doing; she admits the gap between rhetoric and reality. I welcome her as a sceptic and a pragmatic among the heads of department. She is actively involved in any working group in school management. [H]

Changing things

In contrast to being uncertain about her management style D is very confident in her views about the mathematics curriculum. She knows the direction in which she feels the department should go; she is unequivocal in her beliefs as to how the department should progress. What is less clear is the way in which she can bring this about. Over her time as Head of Department she has shifted in her view of herself; from being a facilitator who reacted to events to becoming an instigator who can produce change.

When I came here there were a lot of strong characters including one who applied for, but failed to get, the job. I wrote a paper outlining what I wanted to do. I gave it out in advance of discussion... I shifted ground a bit... most changes went through smoothly. [D1]

This provides the pattern for any change that D wishes to introduce. There is usually an informal sounding out, using one or two members of the department. At this stage the idea is explored informally and then D produces a paper. The system depends on the responsiveness of D at each stage. In fact D is extremely persuasive in an argument and will in any

case have things thought out well. She has an exceptionally strong personality and uses fluent verbal skills to her advantage. This means that she rarely needs to go back on anything she proposes but in the last analysis is always prepared to do so if necessary.

I haven't thought this out but most changes happen because

There is something wrong.

We talk about it.

I synthesise it.

It goes to a meeting and is amended.

It is written out.

That is the way it works. [D1]

When she first came she was very anxious to introduce changes quickly. Certainly her year out seems to have changed her perspective; she is more easy-going. She still has her ideas but there is a lot more consultation now she has mellowed. [T]

In the way D approaches the tasks of curriculum development - in the way she goes about introducing change - there is an openness; a sharing with the others in the department. This amounts almost to a naivety, and a complete contrast to any secrecy or guile.

Through her openness we are encouraged to work in a way with which we feel happy. As long as it fits into the ethos of the department that is....investigations and mixed-ability working. She is very happy for us to try out our own ideas and to experiment to a certain extent. She

is happy to share any ideas, say on class management. She creates a sharing atmosphere... individuals within a team. [P]

She shares out jobs in the department in a not too heirarchical way. Circumstances may have forced this on her a little bit but she would probably have done this anyway. She uses every opportunity available to involve everybody. Having spoken about her theoretical interests and about her concern for the students you might expect that she would approach the department in a theoretical or psychological way. This is not the case. In reality she is down to earth. [H]

Staff Development

D is aware of the development of the individuals within the department. This is particularly useful with the present situation in schools. She has helped me in this respect, discussing avenues for me, broadening my horizons. [T]

She is interested in you as a person not just as someone who comes into (school) and works every day. She is concerned for the people in her department - the state of their health, what's going on at home - a real interest in the actual personalities not just how you are at the job. [S]

She is prepared to sit and discuss my strengths and weaknesses and to follow up later to ask what has been achieved. No matter how busy she

is, time is found. She is extremely supportive. She has complimented me and said "Well done!". It is good that there are positive comments, reassurance. This was a useful continuation of the support I received on my PGCE course. [P]

Paradoxically D does not see much of her department out of hours; they do not meet at the pub. She does not socialize with them. There is a detailed personal/professional concern, but this is not to say that they are all friends who meet outside school.

When things need to be done they are not just delegated; people who are happy with those tasks just take them on. If one member of staff has a heavy workload at that time then that is respected. She takes into consideration other demands within the school, for example, tutor demands. [P]

Everything is shared. If people want A-level, team-teaching, various classes ... then they have the opportunity. Probationer teachers get very good deals. Throughout the years the probationers have not been thrown in at the deep end. We value the things we do, so we spend time making sure that people trying to put our ideas into practice are well prepared, can talk about things ... and we find time to do that.

[T]

Perhaps they feel valued. I do value them as professionals. They feel they have their say. ... Mostly they want to work as I want to work anyway. They are sympathetic to that way of working. It is something to do with mutual respect. I respect them and the way they want to work and they respect me. [D1]

All this support and openness may put the department under pressure to do what D wants without her actually having to ask for it.

(She) ... sets standards of engagement for her department which must put them under a kind of obligation to her. I say obligation rather than pressure because I don't think she puts them under pressure. But they must be well aware of the aims of the department which she embodies.

[H]

There is a consistency in approach that is provided by her underlying beliefs and determination, but this does not lead to a cold, calculated approach. This is then combined with a deep concern for each member of the department. This results in a reciprocal loyalty between D and the teachers. Particularly at first, D placed great importance on the loyalty she got from the department and the loyalty she gave them.

Over a period of time there has been a change in the way D relates to 'the department'. At first she tended to refer to 'my' department but now it is more often 'our' department.

I am very much in charge of it. I see it as my department. Like I'm the one who worries about the the walls, the posters, keeping it nice. I'm the one who cleans the graffiti off the walls. All the wall displays are mine. That has disappointed me. No one seems to take the initiative over the displays. They don't seem to notice when they are peeling off and need tacking back up, silly things like that. So in that sense it is my department..my rooms. (D1)

There have been many staff changes since then. In particular the older members of the department have all left and have been replaced by younger, inexperienced teachers. This has meant that D has had quite a different job to do. She feels in retrospect that all the staff who left had to some extent 'de-energised' the department and also that the new staff have all had mathematics as their prime concern.

Also D has become tougher, more assertive. She recalled a recent situation when she had realised that a cupboard needed to be cleared and cleaned out, and that it seemed that she would have to do it all. In a department meeting she said that it would have to be cleared and called for volunteers.

There was a long pause because obviously no-one wanted to volunteer to clean out the cupboard so I actually said "Look, someone has got to bloody well clear up this department before the end of term and it's not going to be just me!". Of course then people said Oh I'll do this and I'll do that. I'm sure I would not have said that a few years ago. I would have just done it myself. I'm willing to say this has to be

done and I don't mind whether they grumble or not. I don't care so much about whether people love me or not. [D2]

This change reflects how the personal relationships and personal balance of a head of department set limits on the styles that can be used. In the early days as head of department D was setting up her life again after a break-up of a long marriage. When she became settled into another relationship this gave her more personal balance and she no longer depended on her job for so much emotional support. The new relationship fulfilled her emotional needs and released her to be more direct in her job; enabled her to be more objective.

Yes, clearly my relationship ... has affected the way I see things.

Being satisfied about my life at home has given me a lot of energy. I used to get a lot of my emotional satisfaction from the job and I still do. But I am not so dependent on it as I used to be. I still get worked up about things, but not about the maths department. [D2]

D was anxious to eschew any notion that the responsibility for the people in the department was hers. The work of the department yes, but not the people themselves. She will help them professionally and even personally if they wish, but this is not one of her primary functions. They have their own lives - their own decisions to make. D referred to the nature of her relationship with the teachers in the department as 'mutually professional'.

They acknowledge me professionally and I acknowledge them professionally. In a sense I let them do their own thing. [D1]

Context, Personnel and Flexibility

It is not always recognised that context and personnel set limitations on the style that any head of department may use. This is both in the sense of choosing a style and in the sense that the environment and the characters necessarily, albeit subtly, effect the way in which a head of department operates. There is no abstract perfect style; a style for all seasons. If there is a commonality then it may be the flexibility to react to whatever the situation demands. D has changed her style and pinpoints the teachers in the department as a major reason for this.

I do think it depends enormously on the staff. So that it is so different this year. I also think that it is an improvement in me, but it is the staff as well. 90% it is the staff, but maybe I am in a position to capitalise on the new staff. [D2]

All this department has maths as their prime responsibility. They all live up here. When recently one person was Head of House they just came up here to teach. It had a negative effect on the department. [D2]

Its really very different this year having four new people . Its been like a new job, a new department, because you knew before that everyone had been here too long. [D2]

I think I am better at choosing my staff now. I have a clearer idea of what I want. I think I may have made idiosyncratic appointments in the past because people have appealed to me on a personal level. Eg I think he's an interesting character, we'll appoint him. But now I avoid interesting characters like the plague unless they have other things to offer. I suppose now I go for strong disciplinarians. You just can't cope the way we work unless you are in control. [D2]

I think it goes into a spiral. Once you are deemed to be effective which I think I am now, both locally and this year, nationally as well, you in a sense can't help but win. Next week we are interviewing and we have a very strong field. [D2]

Supporting staff

Good administration is rather taken for granted by D. It is necessary that course materials are well organised; that meetings are well planned; that meetings have minutes issued promptly; that capitulation, timetables etc are efficiently allocated.

D is also very good with administration and organisation. She will communicate regularly with me through clear written memos. She responds fast. [H]

She sees her role as facilitating, and ensuring that everyone is clear about what they need to do and when it has to be done. If extra resources are needed then it is her job to fight for these. This does not lead to a

regimented plan. An advisory teacher who visited the school happened to ask for the scheme of work and D suddenly realised that there wasn't one! Upon being shown the resources the advisory teacher remarked that it seemed more like a toy shop than a mathematics stock cupboard!

We probably have a lot of resources banked, but I don't think the new members of staff have used them. It's been people like me and the ideas that they have used. [D2]

D encourages the members of the department to be open and supportive about any difficulties they might have. There is an atmosphere of friendly cooperation that is soon apparent to any visitors to the department. When the teachers come back from a lesson they readily refer to any problems that have occurred and they quickly get suggestions from the rest.

And the day after someone will say.. "How was your... today?" Once someone has signalled that they are having trouble with a class, everyone rallies round. If I have had someone I cannot cope with then someone else will have them. [D2]

She has been a big help to me in so far as preparing topics to teach. We teach mixed-ability here and she has taught me by example. So she gives a lead to the department as to how to cope with certain things; problems that we all obviously face in mixed-ability teaching. D will have faced those same problems and so will produce things to help us all out with it. She has helped me think, for example, about where to

stand, how to control such a large group, how to project my voice. The detail as well as the theory. [P]

On a more personal level D is very supportive. She is aware of the classroom teaching problems that we all face, whether we are new teachers or more experienced. She is not afraid to admit her weaknesses in the classroom. She is happy to talk about them. You feel that if you have any difficulties then you can, to some extent, pass them over... you are not looked down upon. It's not thought of as a weakness. [T]

She is very supportive. If you have any difficulties with a class she will offer help and advice, and as a last resort with a difficult student she will take them out and tell them off. [S]

Hard Work

D works extremely hard and this is appreciated. She is, first and foremost, a classroom teacher, who is aware of the problems of the classroom teacher.

She is very well organised. If you ask for something to be done it is done straight away. Or if you are not sure about something she will find out about it for you. I do team-teaching with her in the double room and I've found out that she makes sure between us we get it sorted out about a week in advance. [P]

Again at meetings we are very clear and concise and we get things done as quickly and as efficiently as possible. Any jobs are discussed and shared out. [P]

She sees where the department wants to go, and she works very hard with the department towards achieving those aims. Department meetings are not devalued by her,... .It is not the case of "we have to do this", rather that there is business to be done, things to be sorted out. [T]

The thing that impresses me most is that she is just so hard working. If you have a head of department who is working really hard then it makes you work hard as well, especially since I am second in department so I feel I have to support what she does. [S]

This is not simply aimless hard work. She likes to see a purpose.

She is quite determined to select what she feels as a valuable way to spend her time. There has to be a positive outcome. [H]

It was only when D became involved outside the mathematics department that she really appreciated how high her own expectations of day-to-day professional organisation were. She had thought some of the mathematics department to be casual, but in comparison to other staff she realised that things were really tight. Her own standards of efficiency in completing tasks on time, of seeing things run smoothly are very high and perhaps unwittingly she had imposed those standards on the department.

D puts in a lot of time and thoroughly enjoys her work. It is probably not fair to refer to her as a workaholic since she is quite capable of taking time out and enjoying herself away from mathematics but it is clear that she gets a great deal of pleasure and satisfaction from her work in all aspects of mathematics education. She recognises that others may not want to spend a similar amount of time on their work.

I'm amazed how she fits it all in. She is a great example. I don't know how she does it. If she can do it then I'm sure I can. [S]

In some ways she is quite puritanical. For example she does not have time-wasting props, like television, that most of us have nowadays so this lends a touch of austerity as a professional which isn't immediately obvious because of her natural tendency to put people first. It just gives her a kind of standard which makes her extremely positive in her attitude to what can be done. Some of that of course is hidden in her personal style and I daresay that when D reads this, she will laugh heartily at being considered puritanical or austere. Nevertheless in professional terms that is what she is. I prefer to express it in those terms rather than portray her as a workaholic because I do not think she is a workaholic. She can clearly enjoy herself and is not wrapped up in professional concerns. But her idea of a really good weekend is an ATM conference. [H]

D works in a very personal style... fundamentally she puts human relationships first; she is totally committed to her subject in an

unusual way. It is the kind of commitment that frightens people. She puts all her thinking into mathematical education. Whereas other people might do a crossword puzzle or play a game of tennis as a way of relaxing, D will do something mathematical or related to mathematical education. [H]

7.4 The Cheerful Innovator and Role-model

E was born in Burnley, Lancashire. He was one of the typical casualties of the 11+ examination, failing because he misunderstood the rubric. So he went to the local Technical High School and then on to Bishop Grosseteste Teacher Training College in Lincolnshire. He had enjoyed his training, particularly the teaching practice, and completed his probationary period at a primary school in Cumbria. After two years he went to an 11-18 school in Cumbria where he was greatly influenced by a leading advocate of investigations in the mathematics classroom and stayed for over twelve years. It was here that he learnt the classroom methods which later influenced his work so much. In particular he gained experience of teaching in an investigative way and gained confidence and belief in what this implies about the autonomy and independence that he wants to give students in his classroom.

In 1986 he was appointed as Head of Mathematics at his present school, which is a fully comprehensive school situated on the edge of a medium sized town which was originally the market town for a large rural area. It is an 11-16 school with about 600 pupils and is broadly 'conventional' eg. the pupils wear uniform and the curriculum is recognisable as a standard 'seventies model. The mathematics department teaches in a particular set of rooms near to where E has created a resources area out of an unused cloakroom area. There are six members of the mathematics department

including a Deputy Head, a Senior Teacher and the previous Head of Department.

To a considerable degree he was chosen to do a specific task in a specific way. The Head recognised the need for someone with E's experience, beliefs and enthusiasm and so E started very much with permission to put into practice all he had learned and come to believe in for mathematics education. In relation to this, one early decision that E encouraged the department to take was to join a pilot scheme for a GCSE syllabus that was initially 100% coursework and provided a great deal of in-service support.

Quotations in the text are referenced in [] as follows

[DH] A Deputy Head who had been at the school for some time.

[ST] A Senior Teacher whose responsibility was mainly timetabling.

[SD] The Second in Department who had been in that role before E came.

[T] A mathematics teacher who was also in charge of computing.

[E] The Head of Mathematics himself.

Arrival at the School and Early Impact.

When E was appointed to this post as Head of Mathematics, he came with considerable experience of all aspects of investigative mathematics. His appointment gave him a direct mandate from the Head to encourage the introduction of those ideas which he had set out in his application and at his interview. His personal relationship with the Head has remained good and this underpins a lot of how E can go about his job and maintain his confidence.

Nevertheless, it would have been feasible for E to have settled rather complacently into a waiting game whereby he introduced change only very gradually. Inheriting, as he did, a very experienced department of which two members were in senior school positions, many people would have procrastinated. In addition the previous head of mathematics was still a member of the department.

E came with excellent experience and reckoned early on that he should get stuck in. Some people would have waited six months or so and valuable time would have been wasted. He used his judgement to say that, for example, we should start the A1M GCSE. He did not bulldoze things through but did a lot of groundwork early on. He simply got on with it. [SD]

Whereas it is true that when he arrived the climate was ready for change, and he was appointed to bring about change, it is E who has produced the change so rapidly. He has moved us all. We are light

years away from where we were. He has created not just another maths department. His success is demonstrated day in day out by the mathematics the kids produce in the classroom. [ST]

Notice the reference here is not simply to the mathematics produced by the pupils in E's own classroom, but to 'the mathematics the kids produce' in the school as a whole. As a teacher E is driven by his need to see that the life of the school pupil is enhanced. It so happens that E is a mathematics teacher and now a Head of Department. This means that he takes as his major role that of creating a suitable environment for learning in the mathematics classroom.

I am still being surprised by what my kids are doing; by the amount of mathematics they are learning. And this is down to E. It cannot be simply my teaching because... I have been teaching for over twenty years and yet this is the first time I have been released to teach in this way. [ST]

I suppose the time was right for change here, but the rapidity of the change has been due to his energy and commitment. He was, in part, appointed to bring about the change and he has carried this through. He has enabled us to change our teaching style, so instead of standing in front of a class telling them things, you are able to pose situations and problems and walk around the classroom. The children have choice... they can sort it out for themselves or they can dip into your memory banks. [T]

And I do not think those things would have happened without E. He brought a lot of expertise which enabled us to experiment with a sort of safety net. There was the feeling for change but there wasn't the will, the commitment, the expertise. [T]

For both me and other teachers it has meant that the tension that had been building up, all the suppressed energy, was now released. All the department are pulling in the same direction. At the very least he has allowed it to happen, but I believe that it is probably much more than just that. [SD]

Personal Teaching Philosophy and Its Impact on Others.

First and foremost E is a classroom teacher and so the changes he brought about in his own classroom were indicative of the overall changes that he wanted to produce in all the mathematics classrooms. He spends a lot of time producing materials of one sort or another and doubts whether any text book or published scheme of work would be suitable for his needs. This does not mean that he writes or devises all the material but he sees himself as a 'professional scavenger'. In this role he uses his contacts to bring the best ideas in front of his pupils.

He has tried to set an example towards the introduction of active learning in the classroom. When he arrived, the classroom practice, both for mathematics and other subjects, was exposition delivered to pupils sitting in rows with little encouragement to discuss or take an active part in the

lessons. Now the norm in mathematics is for the pupils to sit in groups and spend their time much more actively engaged in learning.

This change has affected all the members of the department. They recognised that E had so much to offer that they insisted that he timetabled himself on support for nearly half of his timetable. He has taken part in shared preparation and presentation of lessons and he is often in the classrooms of the other teachers where he can guide, lead, demonstrate and improve the atmosphere in many classrooms, not just his own. For example, the second in department says that he cannot remember the last time he spoke to the class as a whole; invariably he now prefers to move from group to group.

We as teachers should be trying as much as possible and wherever possible to find ways of bringing the subject matter to life for the kids. [E]

The mathematics in his classroom provides E with a professional focus and so the interpretation of his role as head of department derives very much from the work he does in his own classroom. He leads his department primarily by the example he sets in his mathematics teaching in his own classroom.

I don't think I talked much about being a head of department as such because I cannot divorce it from me as a teacher. I have strong views about the way we should be dealing with kids, about giving them space. Underlying all the whistling and smiling there is a fearsome desire for

kids to be released from the norms and to take themselves beyond where traditional syllabusses allow them to go. I very much want kids to take control of what they are doing - to be in the driving seat. [E]

(The 'whistling and smiling' referred to here is very much a deliberate construct of E's style, built on a natural cheerfulness. This will be discussed later.)

The style of mathematics teaching he encourages is bound up with his own style. He is doing in-service work with us all and he has influenced me far more than the four other heads of mathematics I have been with. He leads from the front. He has put a lot of energy into supporting members of the department and when he comes into the classroom he produces a relaxed, friendly atmosphere. This enables the discussion that he feels is so valuable to take place. [ST]

E is an excellent teacher. Not just of mathematics; he is simply an excellent teacher of children. He has proved a role model for us all. He is very relaxed in the classroom and when we work together in the classroom it is very easy for ideas to float between us. [T]

The in-service training that he is taking us through needs someone in the key role. He is the centre-pin of the development and although everyone else is picking up things around him; no-one else has that clear vision. [DH]

Organisation and Planning.

There is an administrative responsibility to being a head of mathematics; it is important that the mathematics offered to the pupils is a balanced diet and that the appropriate materials are available for staff to use when they want them. To this end E has provided a structure for the teachers in the department. This is by associating topics with skills and by ensuring a balance of areas of mathematics over the year. The structure must have sufficient flexibility to recognise each teacher's teaching personality. Mostly the system is designed in a circus fashion so that the development of materials occurs continually and cyclically. This avoids having to wait a year before that topic comes round again; as one teacher tries some ideas, so others are listening.

Because he determines how to use his own time then this has a knock on effect as to how the department uses its time. Having moved away from text books to resource-based learning means that you have to have an organisation so that you don't have teachers calling for the resources at the same time. Not just with one year but you can't, for example, do construction work with the first, second and third years at the same time. E is extremely efficient. [SD]

E is immensely hard working. He puts a great deal of thought into planning what might be, and is then able to ensure that disasters do not actually happen. There has been a concentration on teaching style rather than administration as such. The bureacracy should be subservient to the teaching. [SD]

E himself says that he likes to see himself as efficient and sets himself high standards. He likes to 'get things done properly - presenting things well'. In fact he spends a lot of his time working on his word-processor ensuring that documents are produced on time and to high standard.

The same high standards apply not simply to the presentation of memos, minute worksheets etc. but to all aspects of his professional life.

High standards in our conversations with students, high standards in the way we make reports on students. I try to set an example. [E]

Everything is documented; there are always notes before a meeting; there is plenty of discussion over the following year's timetable; if anyone is away that is very well looked after. There was very little before he came and E has done more than anyone else in setting up the resources room. [T]

His communication is excellent. We get regular bulletins, regular agendas. Things are not overlooked. He is sensitive to listening to peoples' ideas. He has brought an enquiring mind towards mathematics. Very often team meetings in any subject deal more with administration than actual content or the approach to the subject, but this is not so in E's department. [DH]

E sets a very high professional standard. He is very, very enthusiastic about being with the children and teaching them and he is

also very enthusiastic and dedicated about the philosophy behind mathematics teaching. He is always here and available. [T]

Somewhat reluctantly E acknowledged that 'as Head of Department I am in a more powerful position'. He can set agendas, both at formal meetings and in the informal daily exchanges. He can use his position to focus the attention on issues through which to challenge everyone in the department, including himself. For a consultative democracy to be effective then clearly the others in the department must have access to the relevant information.

Naturally there are daily conversations but these can be partial in critical ways, so I produce a weekly bulletin. This includes, for example, a diary for the following week as to visits etc. These bulletins also form a record, a history, of the department's progress.

[E]

Full and active participation by everyone is important, but this is not necessarily participation through public debate. Typical of the consultation is the individual discussions E holds with each member of the department when setting up the department timetable.

The relationship that E has with the second in department was established during the first six months or so when E was looking for a house and lived as one of the family with the second in department. This intensive induction period was very important and much department business is still

shared between E and the second in department out of school hours. The second in department commented on his involvement with E in deciding how best to work together:

E brought ideas into the school, the need for which I had already perceived. But as second in department I had been unable to introduce them, whereas with E's style of leadership I am able to use my influence more. One of the things we did early on was to sit down and sort out the tasks. This was far more than a job description. He is open, and he devolves responsibility to me. [SD]

He encourages participation in goal-setting and decision-making. He does this by describing what he feels and then involving you. He will always give a positive response to your contribution. [T]

E always tries to react quickly and efficiently to any queries from staff but admits that sometimes this may be a little counter-productive as they then lean too heavily on him and perhaps rely on him rather than think too hard about how to solve problems for themselves. This may be inevitable whenever someone with as much energy as E is involved. He is keen to see progress and is clearly willing to help in whatever way he can. He is also very approachable and friendly.

Their needs are as important as mine. Sometimes it rankles that they are asking at the wrong time, like the beginning of the lesson, but nevertheless I will do it. At least if they are asking me they are about to start teaching it! [E]

Role within the school as a whole.

E rarely discusses his wider role in the school outside the mathematics department. He is active in trying to bring about in all the school the same ideals of pupil involvement and active learning, but he focusses on mathematics and then hopes for a spread by example rather than political manoeuvrings. He is not nervous of stating his views at staff meetings etc. but this aspect does not feature highly in discussions of his role in the school.

E is a courageous head of department. If he feels that he has to put his head over the wall and say something that is unpopular then he does not hold back. He has chosen his timings well. He knows when to raise and press issues and he can be very dogged. He has the respect of the staff. [DH]

He promotes in the school as a whole those same kinds of ideas that he believes in for the department itself. He is keen, for example, to spread the active learning policy that we have, to the other departments of the school. [T]

He gives a lead in establishing aims. Not just within the department but in the school as a whole. He has a clear idea of where he wants things to go, but doesn't just impose those ideas. He makes it clear what he feels and listens to what others have to say [T]

E is a questioning person with a broad interest in education, not just the maths department. This is to the good of the whole school. [DH]

E also takes an active general teaching role with pupils, helping with basketball, volleyball, organising trips and residential experiences.

Personal and Professional Relationships

As a head of department E is always on the look out for ways to develop the members of the department both professionally and personally. This is done in day to day ways of showing interest in them but he is also ready to take opportunities from outside. A major reason for the adoption of a pilot-scheme 16+ public assessment was that participation offered a high level of in-service support for all the department; not, for example, simply 'cascade' training where he, as head of department, would learn first and then pass this knowledge on to the rest. Initially it also had 100% coursework assessment and a criterion-referenced grading scheme which encouraged active and independent learning. There were also residential weekend courses which provided INSET and dialogue with colleagues from other schools in the scheme.

E is habitually cheerful and as a matter of professionalism, believes in 'smiling and whistling'. He is adamant that an integral part of his style is that ever-cheerful, ever-whistling manner that he has around the school. He does have a naturally cheerful personality but he sets the tone for the mathematics department and tries to maintain that cheerfulness as an

essential part of his professional image. The pupils know when he is coming; the teaching and ancillary staff are always willing to have a chat; conversations are enjoyable and often helpful. E tries to create:

...a good, positive, caring atmosphere. We are all whistling and smiling at each other. The way that I am is implicit in the way I talk to everyone. [E]

He is readily available and approachable for any reason. If you need anything or want to talk to him about anything he always makes time. I feel I can talk to him about anything at all. [T]

He is interested in the development of individual teachers and in meetings he always makes you feel your contributions are valuable. When he comes in to do support it is tremendous because you feel you are developing. He does a lot of support work because we told him he has a lot to offer. [T]

He is extremely supportive. He has been tremendously helpful to me personally with my teaching. [T]

It is no accident that one quote includes the word 'always'. E is very conscientious and puts in a lot of effort to ensure that he reacts appropriately and consistently. He hopes that people will talk to him freely about anything, including making constructive criticism and comment

on the way he operates. He does very occasionally flare up when he feels that someone is being very negative but regards this as a weakness.

E has vision. He came with revolutionary ideas and the sheer guts and determination to carry those through. He is a thinker and has considerable strength of character. He inspired confidence in the department so that at the end of the day we had confidence that what we were doing was indeed worth doing. If he had been a weaker character we would have had doubts, people looking over their shoulders. [DH]

Because of his personality, there is little effort needed to maintain the 'whistling and smiling'. He is naturally cheerful and accepting of others. His style is such that his enthusiasm does not become oppressive or off-putting. His belief in what he tries to achieve is infectious. He is very friendly.

The most important thing is E's ability to befriend. He came to a department with a number of senior staff and some historical difficulties. When we appointed him we wondered whether his style would be too extreme, whether the changes he was being brought in to bring about would be too much. The key to E's success has been this ability to befriend. He has been able to get us to gel. I would guess that each member of the department would regard E as a friend. He is a friendly guy, on a comradeship basis. [ST]

Chapter Eight - Conclusions: Styles

So what has been learnt about the styles of effective heads of mathematics in secondary schools? How do they go about their tasks? How do they see their jobs? What do they regard as important? There can never be a portrait of the perfect head of department; there is no 'style for all seasons'. It is possible, however, to make observations about some effective heads of mathematics. There will be commonalities and they will hold true for many effective heads of mathematics. Differences may stem, for example, from the physical surroundings - whether there is a mathematics base; or from the personnel - there may be a second-in-department and there may be senior members of staff within the department; or the personalities of the heads of department themselves may lead them to behave in certain ways.

When reference is made to a particular head of mathematics, or one of the nominees, the letter in a bracket () refers to that head of mathematics. Such references are not meant to imply that the other heads of mathematics disagreed but rather that the reference gives a clear illustration.

Administration and Communication

The heads of mathematics all recognised that it is important that administrative tasks are carried out efficiently. It is not necessarily the head of mathematics that carries them out but arrangements must be such that they are carried out. There has to be a framework against which and

within which the department operates. This framework has to be understood and accepted and at its simplest level it will be concerned with the day to day running of the department, and at a more complex level be to do with how decisions are made and how the personalities inter-react. The ways in which even the most straightforward administrative tasks are carried out will carry messages about how the department is run.

The acknowledgment of this framework and the allocation of tasks is a central feature of communication in the department. There are many ways in which the heads of mathematics see that the department is administered. There may be a formal, public, list of tasks that have to be carried out. There may be frequent, purposeful meetings. There may be a department newsletter which is probably not just administrative; it may, for example contain a mathematics problem. There may be a department centre for coffee breaks and the head of department can be a key influence towards creating a stimulating and supportive atmosphere that makes being at work interesting and enjoyable. There may be convenient notice boards to display current items of importance and, like newsletters, they need not be used for simply administration but to show, for example, reaction of the pupils to a recent package, or interesting bits of mathematics. The way in which all these things are carried out gives clear signals to the department and all of these signals contribute to style (Peters and Austin,1985:Chapter 16).

Day to Day Management of the Department

It was an underlying assumption of this research that if there were rules or even guidelines as to how heads of mathematics should best operate then these were not well understood. The heads of mathematics in their interviews did not have access to a common language to describe their work or their way of working. K spoke specifically of not sitting at his desk and managing through memos; essentially he preferred 'Managing by Walking About' (MBWA) (Peters and Austin,1985). Most of the others made similar implications about maintaining a presence in and around the department classrooms. This can be very expensive on time and although heads of department are expected to operate as middle-managers they are very rarely given the necessary time. B was very conscious that, because of the time needed to talk with people at school, all of her preparation, marking, reading and writing had to be done at home. One way of alleviating this was to create an inter-dependence within the department rather than a continual looking to the centre for help (G,J). When D was faced with a simple but tiresome chore she avoided the simple solution of doing yet more herself and demanded that others did their share.

Even if some did not express MBWA in those terms it was clear that they were highly visible. One of C's nominees spoke informally of the purposeful stride and clear, crisp, dress-image created when he was around. E's 'whistling and smiling' was carried out all around the school. The appearance, demeanor, and the way they sound all involve 'attention, symbols, drama' (Peters and Austin,1985).

Some heads of department quite naturally referred to 'my' department; others were nervous of what that might imply and tried to avoid it. Some spoke of 'the' department but all the heads of mathematics gave the impression of identifying with 'their' department and they did feel that the department in some sense belonged to them. They accepted and enjoyed this responsibility.

Consultation and relationships with the teachers in the department

Consultation might be formal or informal or both. The heads of mathematics favoured a consultative democracy. They tried to keep in touch with the teachers in the department; they tried to listen, to be aware; they took soundings; they had meetings. It was clear, however, that it was the heads of mathematics themselves who took the final decision. The buck rested with them (C). There was an acceptance and an openness about this responsibility. There was an acceptance of the seriousness of the decisions to be made - they affected the pupils' lives and the teachers' lives - but there was also the acceptance that doing nothing was also an act. Issues could not be avoided by doing nothing.

The heads of mathematics were the major influence on the day to day agenda and the manner in which that agenda was tackled. They were the major influence on the rate at which development proceeded; judging when consolidation was needed, when stimulation was necessary.

It might have been expected that in effective departments the teachers would be great friends, with the head of mathematics as a social leader. Such was the impression given, for example, by David Fielker of his department at Abbey Wood - making coffee together, drinking at the pub, celebrating birthdays etc (Quadling and Shuard,1980:44). The heads of mathematics in this research were, however, generally at pains to point out that was not what they wanted. Some - H for example - did have parties for the department, perhaps once a term or so , others, such as F, did celebrate birthdays, but most refuted the idea that they were all great pals.

The heads of mathematics are in a highly personalised, but nevertheless professional, consultative role rather than a friendship or full counselling role. Some had formal counselling qualifications and all were interested in inter-personal skills. I was very much struck by the warmth of the heads of mathematics involved in this research. They were all open, approachable and relaxed in conversation. This echoed what Early and Fletcher-Campbell had noticed: that the effective heads of mathematics they met were "friendly, accessible people" (1989:51). One nominee made strong reference to E's ability to 'befriend' but this was in a small, very experienced, department, in a straightforward 11 to 16 school. It is not clear whether this aspect of his style could be as successful in a large department, say in a 14 to 19 school.

Pupils

For the pupils it was not just the scheme of work that was determined or influenced by the head of department: it was the whole ambience of the subject in that school. This ambience was set by classroom and corridor decoration, through the discipline procedures, through the whole environment around the pupils and the way they were treated. Whether classes were set by ability or not was not a central issue, perhaps being very dependent on the overall school policies. What was clear though was the importance placed by the heads of mathematics on differentiation of tasks set for pupils: differentiation by outcome through the use of neutral tasks where possible. This was entirely consistent with a concern for the pupils and their mathematical education. The heads of mathematics wanted each pupil in that school to be usefully and happily engaged in their mathematical activities.

Some sources suggest that the head of mathematics needs to be an excellent classroom teacher, being a model for all. This was mentioned by a number of nominees but not stressed. Innovations may well be introduced first by the head of department, and K stated that he did not feel it was right to ask others to tackle what he himself had not done.

Discipline was a major feature for F but not others. The head of department on occasion had to step in and sort things out but there was a general feeling of reluctance here. For D this was one of the areas where the acceptance of responsibility was hardest. Classroom discipline is an

important issue for two reasons. Firstly there has to be a comfortable atmosphere so that the pupils can learn and secondly there has to be a comfortable atmosphere so that the teachers can teach. The teachers need to be able to work in a way that satisfies them. This is not to say that they should not accommodate their teaching styles to the pupils needs; of course they should. It is rather that in order for the teachers, and thus the department and the mathematics in the school, to develop then the teachers must feel confident to teach as they feel appropriate: to experiment sensibly and with confidence. One nominee referred to the use of E as a 'safety net', giving the confidence to the teachers to teach in ways that they had often wanted to, but had been inhibited from trying.

Vision

All of the heads of mathematics had a vision of the future which echoes what Peters and Austin found in the business world (1985:Chapter 16). The heads of mathematics did not necessarily use the term 'vision' but its existence could be clearly inferred from their sense of purpose. They did not refer to doing what they were told or of carrying out the latest government directive. They were concerned with implementing their own ideas, albeit, of necessity, against a background of new rules, such as for GCSE. Their ideas were derived from a mixture of sources: reading books, reading journals, attending courses and discussion with colleagues. Without this outside stimulation there would be a danger that the department would stagnate. The effective department has necessarily to be dynamic - continually developing.

The heads of department are seers: they anticipate; they guide; they lead. When describing heads of department Tyldesley stood out for his use of expressive language and he drew on a wide range of references: for example, Machievelli, Malcolm Bradbury, and Martin Buber. When contrasting efficient administration with the wider roles of the head of department he asks whether it would be useful to enhance...

...the reputation of the head of department as a 'super-professional', making it easier to exercise a charismatic style of leadership, borrowing from the notion described by Weber but shorn of some of his historical excesses and references to the rule of prophets, warrior heroes and demagogues. (Tyldesley,1984:255).

It is easy to be carried away with romantic language but to communicate what is found in really special departments led by exceptional people such language may be appropriate; it may simply be unfashionable.

I formed the strong impression that for each of the heads of department who took part in this research there were deep seated drives. One possibility was the influence of a mentor - someone who, early in professional development, had provided the lead in some way. But in fact this wasn't mentioned and casual enquiries led to denials. Another possibility is that effective heads of department have derived particularly strong values from parents, family groups, their 'church' and/or various stages of schooling. There was too little evidence from this work but some of the heads of mathematics reported very positive experiences. These experiences did not necessarily relate to mathematics but since the people concerned were able as mathematicians it was in that field that the drives demonstrated themselves (B).

It might have been expected that effective heads of mathematics were evangelical in their zeal, perhaps even oppressively so, but this did not seem to be the case. The members of the departments appreciated being in the company of an enthusiast and enjoyed the atmosphere this created. None of the teachers even hinted that the zeal of the head of mathematics was overpowering.

As well as being in touch with mathematics education generally, it is worth noting that nearly all of the heads of mathematics were members of networks or associations. They were not passive members of these but had developed inter-relationships: perhaps within the LEA, perhaps the Association of Teachers of Mathematics (ATM) or Mathematics Association (MA), perhaps an informal network. The friendships gave them the strength and the resources to continue at the pace they did.

As a small additional line of enquiry I arranged to meet again the now retired Leicestershire Mathematics Adviser, Stewart Friis, who had been instrumental in the professional lives of all but two of the nine heads of mathematics. He confirmed that it had been his intention to create a network of heads of mathematics in Leicestershire and that he also promoted active involvement in Mode 3 CSE and GCSE. This had been successful in producing an atmosphere of collegiality among heads of mathematics who otherwise could have been isolated. It may be no coincidence that someone with this policy was adviser in an area with a very high reputation for mathematics teaching and for the participation of

its mathematics teachers on bodies such as the Cockcroft Enquiry, the Association of Teachers of Mathematics (ATM), the Mathematical Association (MA), and various public examination bodies. An element of the professional life of the effective head of department is the use made of contacts outside the school; for example to forage (E) for new ideas and materials and to look for appropriate INSET for themselves and members of the department.

Energy and Work-rate

All the heads of mathematics had a vitality, particularly the four in the second study, but they were not overcharged. They were somehow at the same time, or by turns as appropriate - outward looking, enthusiastic, and extroverted; or reflective, quiet, and introverted. They were usually considered in what they said and did but rarely dull or automatic.

They put tremendous efforts into their work and this was noted and appreciated by the nominees, particularly the part-timers and the probationers or those on the fringes of the department such as deputy-heads. It is hard to say whether this workload was 'natural'. Some seemed to maintain a high work-rate quite easily, whilst others needed to adapt their lives in order to achieve the level of effectiveness they wanted. The times within which the research was set were particularly demanding; not at all like the exciting 'sixties where there was time, money and hope. These heads of mathematics had to try to innovate against a backcloth of external controls, reduced resources and low morale. It is not clear whether it

should be necessary for a head of department to work harder than anyone else in the department. All the second study heads of mathematics worked very hard. D cheerfully admitted to being a 'workaholic' and she was lucky enough to have found a job in which she could find great self-expression. B was rather concerned that work was taking far too much time and feared that workaholic was an expression that could aptly be applied to her. It is possible that female heads of department feel even more pressure on them than men: the provision of a role model was mentioned more often in relation to women than men.

The second-in-department can be a useful partner in the work. I felt it may be atypical that the heads of mathematics in the second study did not stress a partnership with a second in command. A team of two can tackle issues in a greater variety of ways and can be of particular help with 'personality clashes'. There is also some feeling of 'boss' when dealing with the head of department. The staffing situation in any department is always changing: the departments studied were quite different in make up. When appointed to a post new heads of department cannot bring the department with them. They must be prepared to work with the members of the department as they are.

As Head of Department outside the Department

By choosing nominees from outside the department the heads of mathematics were asking questions about their performance and image outside the family atmosphere of the department. For the department itself the figurehead of

the head of department is important for morale and status. This is not to imply that image is of paramount importance but nevertheless the teachers in any department like to feel that their leader is respected and represents their interests. To a considerable extent they feel that their professionalism is demonstrated and seen through how the department is regarded. Of course in theory the teacher is seen through the success of the pupils, but since success can be of many kinds then is some public relations work to be done in explaining and representing the department's aims and successes to a wider audience.

This audience is indeed wide and varied: the headteacher; deputy-heads (one of whom may be the immediate 'manager' for the head of department); parents; governors (at meetings and on visits); the local education authority (through advisers and officers); Her Majesty's Inspectors (on inspections and fact-finding visits); the local teacher-training institutions; and, not least, the pupils. All of these will form impressions of the effectiveness of the head of department. One head spoke of 'the myth engendered in this office' (D). There is a sense in which no-one can ever know a truth about the effectiveness of a head of department. No-one can mark the start or finish points; no-one can judge the initial abilities of staff or pupils; no-one can judge whether the success achieved is trivial or due to great wisdom and work by the head of department. It is part of the head of department's role to represent or even create an image of the department which is one of success, confidence and professionalism.

There were various ways in which heads of mathematics could represent their departments. This can depend on the political structures of the school; on the headteacher's preferred way of working; on the issue involved. The variety spoken of included: using a direct line to the head, at lunch or whenever (B,F); using different members of the department for different purposes (G,J); using power bodies within the school (C,D,K); using support from LEA staff (B,J).

The demands made on a head of department from outside the department are quite different from those from inside the department. Some of the headteachers expressed this specifically but it was inherent in all the statements of nominees from outside the department: they were making demands from their perspective and not surprisingly those in senior management roles had a different perspective (as did the nominee from the initial training institution). These are yet more instances of how flexibility of style is needed by the effective head of department.

Personal Skills

An issue close to the essence of style is where professional skills end and (sheer) personality takes over. This research depends to some extent on being able to reduce the elements that are perceived as being attributable to 'pure' personality and increasingly to recognise that the elements of effectiveness can be acquired. Some people are good listeners and gain a reputation in their community for being able to help others: perhaps by giving advice or perhaps by helping others with their problems.

Counselling has intuitive aspects but there are also counselling skills that can be learnt. All of the nine heads of mathematics were good listeners; all were concerned and interested in what others thought of them; all were interested in language and thought; all were good communicators. Through many conversations and courses they had probably developed inter-personal skills and indirectly owed a considerable debt to the work of Carl Rogers. At least one of the heads of mathematics had formal counselling training although it was clear that they all had considerable inter-personal skills.

All the heads of mathematics were pragmatic and adaptable. They knew what they wanted but could be pragmatic in achieving it. If they had impatience to achieve their aims they tried to control it; C remarked in the final questionnaire that he wondered if others fully realised the effort and sacrifice he had to make at times to do this. They had a considered approach; pragmatic, but pro-active rather than re-active. They were aware of the 'milieu' (Parlett and Hamilton,1977:11) in which they worked and made allowances accordingly.

In their dealings with others they seemed perceptive, generous and giving but at the same time were tough negotiators. Merely by being clear in their own minds what they wanted in any given situation meant that they were more likely to succeed. On the other hand they were not intractable (C,E) and, when useful, were quite ready to give up for now and return to that topic at a later time. B was said in negotiation to set her initial demands high but was prepared to adjust her sights as necessary. The

negotiation was not always with colleagues but with parents and pupils and again flexibility was useful. D stressed the need for respect for the opinions and rights of others, particularly pupils.

The literature showed the immense variety in the day to day work of any head of department but these heads of mathematics set far higher and harder targets for themselves and this made for even more variety. Variety, of itself, can be stressful and potentially this could be a disruptive rather than a challenging stress. Although the first-study group did not mention personal techniques for survival each one seemed to have a vitality and to be fit in a general sense. The second-study group all seemed to take great care in balancing the demands of the job with recreational activities. All took regular physical exercise: long-distance running, fitness training, swimming, badminton. All valued their 'family' life, whether this was with just a partner or the children as well. None had to share their homes with children although two had to fit in seeing their children on a regular basis.

The head of department can be a key figure over an extended period in the professional and personal development of a colleague. One measure of effectiveness of a head of department is on the successful promotion of teachers from the department, particularly if they go on to be heads of department in their own right. Some of the nominees spoke with great appreciation and affection; not just in terms of professional consideration but in a much more personal sense.

The heads of mathematics distinguished between being responsible for the mathematics education in that institution and being responsible for the pupils and teachers themselves. They accepted responsibility for the mathematics but not for the people.

Leadership Theories

Section 2.1 reviewed some leadership theories and it is of interest to reflect on how they relate to the heads of department in this research.

Only G specifically referred to being 'democratic' or 'autocratic'

(Lewin,1944) and he suggested that he was at first democratic but veered finally to autocracy where appropriate. Although the other heads of department did not use those terms they all seemed to have the same general approach, namely to be open and consultative in a pseudo-democratic way but they accepted the responsibility to make final decisions as necessary. This was the 'Benevolent Autocrat' from the more effective level of Reddin's three dimensional model (1970:13). The other categories from that level were 'Executive', 'Developer' and 'Bureaucrat', and it would seem that this theory is borne out by our heads of department. They certainly avoided the lower-level, less effective descriptions: 'Compromiser', 'Autocrat', 'Missionary' and 'Deserter'.

The pragmatism shown by all the heads of department was clear and this would support Fiedler's (1967) contingency theories. They were all prepared to take many aspects into account and adapt as necessary, whilst still holding true to their 'vision', thus avoiding the epithet of 'compromiser'.

The heads of department were 'subordinate centered' but acknowledged the usefulness of working closely with the Headteacher as 'boss' (Tannenbaum and Schmidt,1973;96).

As implied by the detail I gave in the literature section I was looking to see if the theories expounded by Peters and Austin (1985), in a commercial/industrial context, would hold true in education. All the heads of department recognised the importance of Management By Walking About (MBWA). They all tried to be available and around: not to be shut up somewhere in an office or their own classroom. All the heads of department had 'vision' and this meant that they could give consistent 'attention' to those things that moved the department forward. Some of the heads of department were more 'dramatic' than others but I sensed that even if simply richness of language was a key then at least they were all ready to exploit that to the full. They were not theatrical in their use of gesture but would use many aspects of department life to communicate what they felt - posters, schedules, agendas, newsletters, meetings,etc. They all recognised that through 'symbols' they could promote the sort of atmosphere they wanted. So these concepts from Peters and Austin stood up well in interpreting the behaviour of our effective heads of mathematics.

Handy may have been right that there is a 'dated air' about leadership, but our heads of mathematics certainly showed that leadership has an important place in the management of schools.

Personal Development, Personality and Emotion

Their own personal development was important to the heads of mathematics in this research and of the second-study group three had already obtained further degrees and the fourth is about to read for one. They also seemed to imply agreement with Francis Bacon: "Reading maketh a full man; conference a ready man; and writing an exact man". The second-study group had all read widely, they had all shared ideas with colleagues, and they were moving to wanting to express themselves more in writing.

All of the heads of departments had at times to hold their personalities in check. They had to somehow express themselves as fully as possible whilst recognising the demands of others around them. This is true for all teachers whenever they enter a classroom but is heightened for the heads of department. They are not superhuman and naturally they experienced tensions on occasions between what they wanted to do and say and what was useful at that time. There can be a personal cost in keeping one's strong personality in check. One head of mathematics (B) mentioned this during the interview and another in the final questionnaire (C). In fact I felt that all of them had experienced this difficulty, perhaps making passing comment to 'reluctance' or 'diffidence'. The awareness that many of them had of such problems increased the burden of responsibility and stress. They had confidence but were at times acutely aware that complacency could lead to arrogance. Being acknowledged as effective and asked to take part in this research might also have had an adverse effect but in general it seems that being acknowledged as successful is an all too rare experience.

Slightly tongue in cheek D remarked "Once you are deemed to be effective you can do almost anything".

Since style is linked with the expressive elements of leadership then it was to be hoped that there would be insight into those features that govern the expressiveness of the heads of mathematics. If I was repeating this research I would look more closely at the personal, rather than professional, lives of the heads of mathematics. There were occasional glimpses of how personal events affected professional lives. A head of department who is in a stable partnership can take more risks in professional life; young children in the house can make it difficult to spend a lot of time on work; recent separation or divorce can leave a long trail of confusion. The aftermath of such events calls for more daily time for practical arrangements and also more time to resolve emotional problems. D made particular reference to how she became less dependent on success in her job, and thus more effective, once she had entered into a stable partnership once more. When personal life is demanding then perhaps there will be an attempt to simplify professional life. The styles that are realistically available to any particular head of mathematics are considerably influenced by personal parameters.

Summary

The managerial models considered from the literature proved useful in interpreting the styles of the heads of department. Lewin's terms - 'autocrat' and 'democrat' were the only theoretical terms used by the heads of department, and a mixture of these was the prevalent approach. It is unfortunate that teachers do not in general regard theory, research or the literature as useful or relevant and yet there is clearly much benefit to be gained by their critical consideration.

Fiedler's notion of context is useful. There was no 'style for all seasons'. Reddin's idea of a plane of soundness which can be raised to effectiveness or drop to ineffectiveness is useful. On the scale devised by Tannenbaum and Schmidt the heads of department were generally 'subordinate centered' rather than 'boss centered', and although leadership may or may not be considered to have a 'dated air' (Handy,1981:507), the heads of department taking part in this research would generally be thought of as demonstrating leadership.

The ideas of Peters and Austin proved particularly useful; the heads of department did give 'attention', show 'symbols', use 'drama', have 'vision', and demonstrate their concern and 'love'. They all practised 'Management By Walking About', mostly consciously. So: 'It is the way in which these functions are discharged - in the style of the manager - that features of leadership are sought' (Buchanan and Huczinski,1985:380) (Their italics).

What then are the commonalities - the generalisations - that arise from the pen-pictures and constitute the 'grounded theory' from this research?

- Affective features of behaviour are important so there is a considerable connection between the emotional state of a head of department and the type of style which can be used. For example, if personal life is secure then risks and openness in style can be more easily tolerated.

- The heads of department are extremely hard-working - not in a tense, driven way but rather because they are fortunate to be in a job which moves them towards personal fulfilment.

- The heads of department belong to support networks and use the counselling skills of colleagues and friends to support them.

- The specific context of a situation sets limits on possible styles and the more effective middle-managers are those who are prepared to adapt their style to suit conditions - perhaps in relation to the physical surroundings or perhaps in relation to the personalities of those with whom they are dealing.

- Support for the teachers in the department is generous and sympathetic but concentrates on professional rather than personal aspects.

- Effective heads of department are good listeners and not in a passive way; the purpose of listening is to help others - pupils or teachers - and offer constructive criticism.
- The professional development of each teacher is constantly borne in mind. Opportunities are offered continually.
- The teachers in a department led by an effective head of department are likely to be close professional colleagues, although not necessarily close friends. Teachers put a great deal of time and effort into their work and so 'collegiality' can be very rewarding and uplifting.
- The heads of department accept responsibility for the mathematics in the school but the responsibility for the lives of the teachers rests with each teacher.
- Good discipline and a pleasant atmosphere in the classroom are essential, both for teachers and pupils.
- Efficient administration is necessary but there are many ways of achieving this and certainly concern for administration does not dominate or deflect from higher aims.

- An effective head of department has aims and ideals, usually held consciously although not always publically declared. These ideals are continually refreshed through reading and discussion with others in the field of mathematical education.
- The pursuit of these ideals is not only through the department and the school but also through taking part in the public debates of the time - perhaps through membership of a professional subject association, through examination boards, through contributions to working parties, through writing, through research and study.
- The pursuit of the ideals through the department and the school is careful, calculated and considered. This results in a pragmatism - battles are not lost, but the outcome may be postponed.

In short this research confirmed, as song-writer Sy Oliver said:

*'It ain't what you do it's the way that you do it.
That's what gets results'*

Chapter Nine - Recommendations: Appraisal

The data-gathering methods used in this research amount to an appraisal process for middle-managers and can be expressed as a series of stages:

- A Decide you would like to be appraised.
- B Ask someone to do the appraisal.
- C Decide who sets the agenda.
- D Set an agenda.
- E Select nominees.
- F Decide a timetable.
- G Collect data ie ask nominees for their views.
- H Hold an appraisal interview.
- I Get written feedback from the appraiser.

Following this the appraisee could make a written action plan (Trethowan,1988:Section 2.1). This plan could be the starting point for the next cycle of appraisal.

Appraisal should not, however, be seen as 'a series of perfunctory periodic events, but as a continuous and systematic process' (ACAS,1986:86). Many of the stages listed above are applicable in situations not immediately associated with appraisal. Any teacher may decide to carry out a personal reflection and review and there are inventories available to help (eg Belbin,1981:153). A request for a reference triggers many aspects of an appraisal process: a choice must be made of who contributes to the

reference; there should be an interview with the reference writer to discuss what these others have said and what the reference might cover. This is particularly useful for middle-managers.

The process expressed above is very adaptable and the omission or reduction of any one stage would not normally invalidate the others.

Particular circumstances might suggest:

- fewer nominees;
- nominees making less full comments (perhaps just a few key sentences);
- nominees writing their reactions without an interview;
- the report back being oral rather than written;
- the agenda having a specific focus (for example: organisation, delegation, or contribution to the senior management of the school).

This research centred on the use of appraisal to increase the effectiveness of the performance of individuals through their personal development.

Appraisal in industry and commerce usually has additional functions, perhaps related to pay and responsibility. The appraiser is usually the line-manager and the appraisal, or review process, is an opportunity for the appraisee to clarify company policy and how he/she fits into the company plans. This may also become a feature of appraisal in schools.

However, where professional appraisal is sought for personal development, it is not important for the appraiser to be the line-manager. At the very top of one company I visited, peer appraisal is used on a voluntary basis. I

also read about one consultant who is offering services for appraisal of senior company executives with a scheme very similar to the one used in this research (Kramer,1990:3). At the highest levels of management the outside consultant concentrates on personal development in the professional domain. This approach may be relevant to headteacher appraisal.

It is not clear what sensible agenda limits should be set for an appraisal process, particularly with respect to the professional/personal dividing line. Although one view might be that the appraisal should be strictly professional this research has shown that, at least in relation to style, it is the personal parameters that matter most. One sensible rule is for each appraisee to determine the limits. If the appraisee has set the agenda then he/she can also set the limits and this will be satisfactory if the appraisee regards the appraisal in a positive light. However, if the head of department concerned is thought not to be effective, perhaps for rather personal reasons, then clearly senior management will be looking for the opportunity to explore more personal areas.

Historically I first set this research against the background of INSET courses for heads of department. My concern for the development of existing or aspiring heads of department was seen as being resolved chiefly through off-site INSET. The appraisal process trialled in this research proved to be very suitable for middle-managers who wish to become more effective. Courses of INSET outside the school may still be of value, and indeed might include replications of the interviews and write-ups. However,

without the nominees and without the appraiser having some independent knowledge of the subject and the school situation then it may be more difficult to draw insightful, and hence useful, write-ups. Counselling sessions could help the self-awareness of heads of department and readers of pen-pictures such as those in this research might decide that they wanted to find out more about counselling skills. One of the second-study heads of mathematics was an active co-counsellor and all of the heads of mathematics had considerable inter-personal skills.

Not only are specific skills, such as listening, needed but so is the will to use them. Personal goal-setting is important, as is coping with the feelings of failure when targets are not met. Techniques of positive thinking and self-reward can also help. Anyone is the richer for skills such as these and school training days could include these aspects, but, at least in my school, the expressed need for INSET at the moment seems to centre on understanding, or even just coping with, the demands of new initiatives. Perhaps a period of relative stability is needed before an individual will embark on radical change of a professional nature, particularly if this change is close to being a personal one.

The terms in-service training, or even in-service education, may be misleading if the pre-requisite for change is a shift in attitude. Without such shifts in attitude it may literally be impossible to move someone's style towards a more effective one. This research suggests that some aspects of expressive behaviour are crucial for effectiveness. These

aspects are summarised in the term 'style' and it follows that it would be useful to increase the repertoire of styles in which any middle-manager is fluent. For yet more effectiveness it is necessary to combine flexibility of style with the ability to read situations and understand people.

The implications for the development of heads of department which follow from this research are clear but radical. All aspiring heads of department (or in fact all teachers) should have the opportunity to benefit from the attention that the heads of mathematics in this research received. The experience of having a skilled, interested colleague listen to you and then write about you is a very stimulating and worthwhile experience. If what is written is further enriched by comments from other colleagues then so much the better.

Yet the introduction of appraisal is not being eagerly anticipated by most teachers and, since there is likely to be continued uncertainty and change in schools in the foreseeable future, we must look for positive ways forward. It is ironic that the obvious key lies with the middle-managers and even more ironic that in the week I first drafted this paragraph there was a letter in the Times Educational Supplement (4/1/91) which encapsulates much of the mood of heads of department at the times in which this research is set. D Parry, a head of mathematics, wrote to comment on an earlier article advocating appraisal. He stated that although the responsibility for the introduction of appraisal is said to lie with the heads and deputies, it will in fact be the heads of department that carry the greatest burden; just

as it is for 'the national curriculum, records of achievement and so on'. He continued: 'Faculty and departmental heads have a pivotal role in implementing educational reform where it matters most, in the classroom. Not for us the working week constructed around our managerial role such as deputies enjoy: instead we spend perhaps 75 to 85 per cent of our time teaching...How can such a huge discrepancy...be right?'

'The Time to Manage?' was such a fascinating and apposite title for the NFER report on middle management, and their earlier paper asking 'Who develops the developers?' poses a crucial question (Early and Fletcher-Campbell, 1986 and 1989). This research suggests that the developers may have to develop themselves and considers: 'How can the developers be developed?'

HMIs have recognised the problem: paragraph 148 of 'Quality in Schools: Evaluation and Appraisal' stated: 'More attention needs to be given to the appraisal of middle managers' (DES, 1985). But at the time of writing the government proposals to introduce appraisal schemes are not being funded well enough to suggest that there will be time and energy to do more than concentrate on classroom teaching skills. In one sense these skills are paramount, but heads of department in general are likely to be at least adequate classroom teachers and so the next stage for them is an appraisal of the way they run the department and contribute to the management of the school. An increase in the effectiveness of heads of department would produce better classroom teaching. Just as Stewart Friis worked to improve

mathematics in Leicestershire by working through the heads of mathematics so we can look to improve education generally in schools by working through the heads of department. If the quality of middle-management is high then the quality of teaching and learning will follow. The benefits of any improvement in pedagogic skills may be squandered if there is not a parallel improvement in management. There are far too many initiatives to be implemented for the heads and deputies to manage on their own: middle-managers have a key role to play.

Whether or not the government introduces a scheme of appraisal which acknowledges the need for appraisal of management skills, this research shows one way in which middle-managers can act. Any individual, or group, might consciously decide to focus on becoming more effective. This recognition might stem from a feeling of frustration that things in the department were simply not working out as hoped; or it might be from simply a curiosity or hunger to improve. Despite all the difficulties in schools such individuals do exist: it was certainly true of everyone taking part in this research that they had a desire to improve their performance. It is possible that some heads of department are hindered in their progress by not knowing how to proceed. Having recognised the need, the next step would be to decide who to approach for assistance, perhaps suggesting a reciprocal arrangement for mutual benefit. Any member of staff could promote such activity in a school, although there will be greater chance of it happening if a member of the senior management, perhaps the professional tutor, encouraged it.

Appraisal is good for you!

This research confirmed a finding of a recent HMI report:

'Appraisal has had a marked effect on individual teachers'
(HMI,1989:para 75).

Perhaps some final words from the heads of mathematics:

I think it's been very useful - a very worthwhile exercise. [G]

*I like sitting - thinking - sometimes. It's a good idea when
someone probes - to ask things I might not ask myself. [J]*

*The last time I thought about style was when I started this job and it
is good to think again. One tends to get settled in a groove - tend
not to think about it. It is very good to think how I come across to
the department. [K]*

*If this is what appraisal is about ... if this is the way appraisal
is going to be, then I would applaud it. [E]*

Yes - I enjoyed that! [D]

APPENDIX - Letters and Forms

Letter sent to the first two of the first-study Heads of Mathematics

19th February 1986

Dear [first name],

Thank you for agreeing to help me with my research. As I promised you earlier I am writing to give you some idea as to the focus of the interview that we have arranged for [date/time/place].

I want to spend about three-quarters of an hour with you which will largely be taken up with exploring what you see as your style as Head of Mathematics. I do not wish to influence you over what ground you may consider appropriate but it may help you if I give you a little background.

I have always been intrigued as to why some Heads of Mathematics are more effective than others. I do not believe their effectiveness is solely due to administrative efficiency, for example, nor to any easily listed skills. There seem to be other factors which I am choosing to call 'style'. I have asked you, among several others, to help me at this stage to draw up some 'pen-pictures' of the styles of some effective Heads of Mathematics. I hope then to draw tentative conclusions and develop training exercises to help existing or aspiring Heads of Mathematics.

I need to tape-record the interview and then I shall write up what I have understood that you have said. I shall then send you my write-up so that you can amend any misconceptions I may have formed. In this way I hope to arrive at a mutually agreed outline of your perceptions of your 'modus operandi'.

If you are nervous about the security of the tape-recording I will give you the tape as soon as our agreed version of the interview has been arrived at.

Once again I would like to thank you for your cooperation and look forward to seeing you on the [date].

Best Wishes

Letter sent to the remaining five first-study Heads of Mathematics

1st May 1986

Dear [first name],

Thank you for agreeing to help me with my research. As I promised you earlier I am writing to give you a better idea as to the focus of the interview that we have arranged for [date/time/place].

I want to spend about three-quarters of an hour with you which will largely be taken up with exploring what you see as your style as Head of Mathematics. I do not wish to influence you over what ground you may consider appropriate but it may help you if I give a little background.

I have always been intrigued as to why some Heads of Mathematics are more effective than others. I do not believe their effectiveness is attributable to an easily listed set of skills; there seem to be many factors which together I have chosen to refer to as 'style'. I have asked you, among several others, to help me at this stage in order to draw up some 'pen-pictures' of the styles of some Heads of Mathematics. I hope to draw tentative conclusions and develop training exercises to help aspiring or existing Heads of Mathematics.

I need to tape-record the interview and then I shall write up what I have understood you have said. I shall then send you my write-up so that you can amend any misconceptions I may have formed. In this way I hope to arrive at a mutually agreed outline of your 'modus operandi'.

I have arranged for all of us to meet at the School of Education at 4.30 on June 24th so that we can exchange views about the interviews.

Once again I would like to thank you for your cooperation and look forward to seeing you on the [date].

Best Wishes

Letter sent to first two Heads of Mathematics as I finished the write-up

April/May 1986

Dear [first name],

I have just finished typing the draft write-up of my interview with you. The typing is as awful as ever but I feel it is intelligible so I want to share it with you in this way. I want to explain how I have gone about getting to this stage and ask for your help in moving on.

First of all I listened to the tape twice right through. This seemed to be of little use so I then struggled through a semi-transcription. It was not verbatim but at least recorded the gist of each comment. Upon re-reading this about three times I found I could distinguish a number of strands to attempt a write-up.

This write-up is an attempt to make the interview coherent whilst preserving all that you had intended. At the moment it contains very few direct quotes but at this stage I intend to listen again to the tape and extract exact quotes as illustrations of the text. This should in theory make the presentation at the same time more interesting and more accurate.

I would like you to read this enclosed draft and comment at least in the following ways.

1. Does it sound like you?
2. If not what are the major errors? eg in style?
 in content?
 in the grouping of ideas?
3. If it is reasonable, make comments on small points. If, as will often be the case the grammar, spelling and syntax is up the creek don't bother to comment because there are many more versions before it is finished. You could make comments either in the margin or on a separate sheet; I have a top copy myself.

Once again I would like to thank you for helping me. I am getting a lot of enjoyment out of it and I hope you are too. I would also welcome any views on whether the exercise has a useful in-service function as far as your own professional development is concerned.

Best Wishes

Letter sent to K on 25th May 1986 as I finished the write-up

25th May 1986

Dear [first name],

I have just finished typing the draft write-up of my interview with you. The typing is as awful as ever but I feel it is intelligible so I want to share it with you in this way. I want to explain how I have gone about getting to this stage and ask for your help in moving on.

First of all I listen to the tape a few times and then do more or less a transcription. Upon re-reading this a few times I select several strands that form the bases of the headed paragraphs in the write-up. On this occasion about half way through I tried experimenting with some different language approaches to avoid K said this ...K said that. I realise the whole thing is very sketchy in places but it will serve its purpose.

This write-up is an attempt to make the interview coherent whilst preserving all that you had intended. At the moment it contains very few direct quotes but at this stage I intend to listen again to the tape and extract exact quotes as illustrations of the text. This should in theory make the presentation at the same time more interesting and more accurate.

I would like you to read this enclosed draft and comment at least in the following ways.

1. Does it sound like you?
2. If not what are the major errors? eg in style?
in content?
in the grouping of ideas?
3. If it is reasonable, make comments on small points. If, as will often be the case the grammar, spelling and syntax is up the creek don't bother to comment because there are many more versions before it is finished. You could make comments either in the margin or on a separate sheet; I have a top copy myself.

Once again I would like to thank you for helping me. I am getting a lot of enjoyment out of it and I hope you are too. I would also welcome any views on whether the exercise has a useful in-service function as far as your own professional development is concerned.

Best Wishes

Letter sent to the remaining Heads of Mathematics

May/June 1986

Dear [first name],

I have just finished typing the draft write-up of my interview with you. The typing is as awful as ever but I feel it is intelligible so I want to share it with you in this way. I want to explain how I have gone about getting to this stage and ask for your help in moving on.

First of all I listened to the tape a few times and then made a fair transcription of it. After reading this several times I selected various headings for the write-up. I feel that the end result is still a bit fragmented but would prefer to share it next before I go any further.

This write up is an attempt to make the interview coherent whilst preserving all that you had intended. At the moment it contains very few direct quotes but at this stage I intend to listen again to the tape and extract exact quotes as illustrations of the text. This should in theory make the presentation at the same time more interesting and more accurate.

I would like you to read this enclosed draft and comment at least in the following ways.

1. Does it sound like you?
2. If not what are the major errors? eg in style?
in content?
in the grouping of ideas?
3. If it is reasonable, make comments on small points. If, as will often be the case the grammar, spelling and syntax is up the creek don't bother to comment because there are many more versions before it is finished. You could make comments either in the margin or on a separate sheet; I have a top copy myself.

Once again I would like to thank you for helping me. I am getting a lot of enjoyment out of it and I hope you are too. I would also welcome any views on whether the exercise has a useful in-service function as far as your own professional development is concerned.

Bset Wishes

Letter sent to all first study Heads of Mathematics

16th June 1986

Ref: Research Interview.

Dear [first name],

I am writing to remind you of the meeting next week.
It is on Tuesday 24th June from 4.30 till about 6 o'clock.

I have booked the Biology Seminar Room on the first floor of the Fraser Noble Building. This is what used to be the Edward Wood Hall and is now the science building at the School of Education. The entrance to this building is via the car park beside number 2 University Road. You follow the signs; the room you want overlooks London Road.

The other interviewees have all been invited and one purpose of the meeting is for you all to meet and exchange views on your experience. I shall explain a little more about my research and for my research the function of the meeting is to listen to your evaluation of the interviews.

I enclose a form which I would like you to fill in and bring with you next week. I want to start a second round of consultation to ensure that my write-up is satisfactory.

See you next week I hope,

Best Wishes,

The Form which was enclosed was a sheet of A4 with this at the top

I have sent you the first draft of your interview and I now want to start the second draft. Please complete this form.

The first draft write-up

is satisfactory and can form the basis of a more polished second version.

contains major flaws that I would like to discuss with you
in person / over the phone (show which)

contains some minor flaws which I can describe here:

Letter sent to the new second-study Heads of Mathematics

March 1988

Dear [first name],

Thank you for tentatively agreeing to help me with my research. This letter is to clarify some of the issues I recently talked through with you.

I hope to interview a number of Heads of Mathematics with the intention of shedding light on the "Styles of Effective Heads of Mathematics". I asked you to help me for two reasons. First I feel there are likely to be areas of your work in which others may consider you to be effective! And secondly I feel that our relationship is such that together we are likely to discover useful insights that will be of benefit to you and to my research.

The plan is this:

* I will ask you to nominate three or four colleagues of whom you would not mind me asking "Tell me, what do you consider to be some of the positive aspects of [Head of Mathematics name]'s style that contribute to her effectiveness as a Head of Mathematics?"

* I will arrange to interview you and your nominees separately for lightly structured interviews. For you this interview will be about 45 minutes long and I will ask that you describe your style as a Head of Mathematics. Each nominee will be interviewed for about 20 minutes, during which they will tell me about those aspects of your style that contribute to your effectiveness as Head of Mathematics.

* Each interview will be recorded and from each one I shall make an interpretive write-up, not a transcript. This will then be returned to the interviewee for comment, so that a useful description can be agreed. (This method has been thoroughly trialled during the first part of my work).

* The write-ups of the nominees comments, once they have been negotiated as being correctly reported, will be shown to the Head of Mathematics. This, together with the write-up of the Head of Mathematics interview, will be discussed by the Head of Mathematics and myself as part of the de-briefing and evaluation of the research.

...continued

* Thus there will be three outcomes.

....The in-service, and subsequent development, experienced by each of the Heads of Mathematics.

....An evaluation of the methods used, particularly with respect to appraisal.

....A written professional biography of the Head of Mathematics from which others can learn.

So what do I want you to do?

1 Let me know as soon as you can if you have decided you would rather not take this on. I shall quite understand, don't worry.

2 If you want to take part then choose your nominees, by all means talk to them about it if you wish. I shall not want to make the first approach.

3 Choose a time next term probably in June, or towards the end of May when I could visit you for the main interview. I would hope to be able to do the other interviews at the same time but I have enough supply cover for two visits if necessary.

4 Let me know these dates, before the end of April if possible...the sooner the better from my point of view as I have to arrange my cover. If you can give a choice of dates I would appreciate it. Mondays and Fridays are the best for me.

As soon as you have all agreed (there will be four of you), I will let you know who you all are! No doubt some of you will be acquainted.

Nearer the time of the interview I will write again to help you focus your attention for the interview. I'm really looking forward to us working together,

Best Wishes

Letter sent to the two first-study Heads of Mathematics who were also used in the second study

May 1988

Dear [first name],

This letter is to set out in more detail the arrangements for me to visit your school in June and interview you and your nominees. I enclose copies of information which will help you all to prepare for the interviews.

I intend to visit [school] on [date] and to interview you and your nominees sometime after [time]. I have realised that it is not necessary for us to start over again with your interview but to base our discussion on what I wrote following our first interview. I enclose a copy of this which has not yet been re-drafted to take account of your comments. It seems sensible for you to contrast what was said then with what you see as your style now; to reflect on changes and adaptations you have made over the last year or so and on how these have increased your effectiveness as a Head of Mathematics.

I shall interview you for about half or three-quarters of an hour and I want you to be ready to tell me about your "style" as Head of Mathematics. I shall be ready to help you along and make occasional suggestions, but it is important that you realise that it is up to you to choose what you describe, and what you emphasise.

I shall then write up the interview and send you a draft. Then you can make comments and we can continue to negotiate until we have an agreed, interpretive version of what you see as your style.

Meanwhile I shall have carried out similar exercises with each of your nominees and I shall show the agreed version to you. Finally I shall ask you to reflect on what you have read and what you feel about the exercise overall.

Looking forward to working together

Best Wishes

My research is into 'Styles of Effective Heads of Mathematics'. My method is to listen to Heads of Mathematics as they describe their style and also to others that they have nominated.

I will be interviewing [first name] for up to about three-quarters of an hour for her to tell me what she sees as the essential elements of her style as a Head of Mathematics. I shall be ready to prompt if necessary but it will be a very lightly structured interview.

[first name] has told me that you have agreed to help and this note is to explain what I am looking for. I shall ask you to talk to me for about 15 minutes, or longer if you wish. I want you to choose some positive aspects of [first name]'s style as your Head of Department and tell me about them. I am aware that the word "style" is not too explicit but this is so that you feel free to develop whatever strands you like. I am not looking for a comprehensive picture but rather some selective insights into what makes [first name] effective as a Head of Department.

I shall tape the interviews and then write them up. I shall not make a transcript but rather interpret and set into context what is said. Then I shall send a draft version for you to alter as you feel fit. In this way we shall arrive at an agreed version of your interview. It is only this final version that I will discuss with [first name], particularly in relation to the interview that I have held with her.

My research has two aims:

First to cast light on what it is that contributes to making an 'Effective Head of Mathematics', and it is the substance of the interviews that will do this.

Secondly to explore possible methods of in-service and appraisal, particularly suited to middle or even higher management in schools. It is the process of the interview and the involvement of nominated peers which will do this.

This sheet lays out your minimum commitment, namely to be interviewed and to review the write-up I make of that interview. Of course you may want to do more and [first name] and I will welcome any extra help you could give us. I also anticipate that the reflection you carry out in preparation for your interview will be useful in-service for you.

I have already carried out interviews with seven Head of Mathematics and so the methodology of interview and write-up has been thoroughly tried and proved to be highly successful. Also all of the Heads of Mathematics felt that the exercise was valuable for them. This extension to include some of those around the Head of Department should also be of value as in-service for all of us.

Letter sent to the new Heads of Mathematics involved in the second study

May 1988

Dear[first name],

This letter is to set out in more detail the arrangements for me to visit your school in June and interview you and your nominees. I enclose copies of information which will help you all to prepare for the interviews. [*]

I intend to visit [school] on [date] June and to interview your nominees during that day. These could be held at [school] or elsewhere, whichever is more convenient for them.

Perhaps it will help if I say a little more about what I want from you. I shall interview you for about half or three-quarters of an hour. I want you to be ready to tell me about your "style" as Head of Mathematics. I shall be ready to help you along and make occasional suggestions, but it is important that you realise that it is up to you to choose what you describe, and what you emphasise.

I shall then write up the interview and send you a draft. Then you can make comments and we can continue to negotiate until we have an agreed, interpretive version of what you see as your style.

Meanwhile I shall have carried out similar exercises with each of your nominees and I shall show the agreed version to you. Finally I shall ask you to reflect on what you have read and what you feel about the exercise overall.

Looking forward to working together

Best Wishes

[*] As on previous page.

Letter to nominees to authorise write-up of their interview

Autumn 1988/ Spring 1989

Dear [first name],

I enclose my first draft write-up of our conversation last week. I have not set it in any context because it is too early for me to know how I will actually use what you have said in the research write-up itself.

The purpose here is to get your approval so that I can show it to [first name].

Although you may well have discussed with her what you have said I would appreciate it if you did not show her this actual written version as yet. I am wanting her reactions to her own interview and those of the nominees at more or less the same time.

Please make any alterations/comments on the sheet itself or on the enclosed sheet of paper and return it as soon as is convenient.

I very much appreciate your help,

Best wishes

The form that was included was a sheet of A4 with this on it

To [nominee's name]

Please note here any comments you have, particularly to alter anything with which you are unhappy.

If you are happy that I show the write-up as it is then please just sign this sheet and send it back.

Thanks.

Final letter sent to second study heads of mathematics during 1989

Dear [first name],

This packet represents, as far as you are concerned, the last stage of my research! Last summer when I interviewed you and your nominees I seriously underestimated the time it would take me to process the interviews. I quickly gained approval from the nominees for my write-ups of their interviews but found the writing of the Head of Department pen-pictures much harder. I also plead family, friends and the rest of life...not to mention (but I do) Beauchamp College and the ATM/SEG GCSE.

Anyway here are a last few things you can do for me if you will. I estimate it will take you about an hour if you tackle it all at once, but obviously take longer if you wish. Although I enclose forms which are intended to make your task easier, please use other methods of feedback if you wish. For example you might prefer to tape your reactions, or to phone me, or we could meet.

This packet includes:

- * Copies of what your nominees said about you! Sometime they would obviously like to talk with you about what they said...although this is now of historical rather than immediate interest! Please read these first and jot down how you feel on Form A.
- * A copy of my pen-picture of you. I feel nervous in case anything I say upsets or hurts, but all I can do is assure you that it is as honest and objective as I could manage, whilst at the same time not being dry and colourless. Please read this and write your comments on Form B.

Clearly the use of interviews and nominees is also of interest. There may be implications both for professional staff development and for appraisal, although in this context the two ideas seem to come together in a constructive way. Please comment on Form C.

It has been difficult to judge how much personal background to give and how many personal references to make in the text. The more references there are, the easier it is for the reader to identify you. On the other hand with no context the immediacy of the pen-pictures will be lost. The version I enclose will be virtually identical to what is published (except that your nominees names will be omitted and their references to your name will be replaced by the capital letter), so it is

important that you raise any objections now. I will not be referring back to you again.

In closing I find it difficult to express how useful, refreshing, fascinating and insightful this exercise has been for me. It has resulted in valuable self-appraisal on my part and hence considerable personal development. I hope that any eventual readers of our work will benefit in the same way. It has been a rare privilege to have been allowed to probe the secrets of your style! I hope to be able to send you the finished thesis as a token of my thanks but, since that may be some way off, perhaps over a year, I give you my heartfelt thanks.

FORM A: Reactions to the nominees' statements

Are you surprised at anything?

Are there some things that ring a bell for you?

Please use the back of this sheet for any other comments about the nominees statements.

FORM B: Reactions to the Pen-picture

Immediate reactions

Do you feel that there are things I have got completely wrong?

Are there any factual errors?

Now you have had a while to mull things over, what would you like to tell me about the pen-picture of your style? Please use the back of this sheet for any other comments.

FORM C

Reactions to the Process

Your interview?

Reading what the nominees said?

Reading the pen-picture?

There may be other things you feel would be interesting to tell me so please use the other side of this sheet to tell me.

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