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ABSTRACT

Philip Kenneth HARVEY

The Role and Value of A-Level Geography Fieldwork: A Case Study

Ph.D. thesis submitted for examination to the
University of Durham, July 1991

Fieldwork has occupied a prominent position in UK geography teaching since the establishment of the discipline in the late nineteenth century, and remains a ubiquitous element of the geography curriculum for pre- and post-sixteen year-olds today. Utilising autobiography as a method of reconstruction and interpretation, the thesis explores the development of this central role for fieldwork and argues that, rather than arising from a legitimacy effected by a critical appraisal of fieldwork as a pedagogical device, fieldwork has developed *pari passu* in response to geography's disciplinary shifts in philosophical and methodological orientation. As a result, varying conceptions of the purpose of fieldwork exist: as a parallel with practical 'laboratory' science in which theory is thought to be rendered more intelligible by the experience; as a means of teaching geographical enquiry skills; as a process of environmental engagement or immersion. The relationship between these educational objectives remains unclear, and a lack of educational research exists to clarify what is done on fieldwork, its intended educational function and effectiveness, and its place in contemporary geography.

The study seeks to redress the balance by aiming to analyse the role and value of a residential fieldwork experience in geographical learning for advanced level geography students (i.e. students aged 16-19); to compare and contrast the respective assessments of the student and teacher of fieldwork's purpose; and to explore frameworks and methods for evaluating the effectiveness of field instruction as a learning process. The research uses qualitative research strategies in a case-study to describe and analyse the holistic process of learning in action from the perspectives of its participants. Four themes are explored in depth: skills-based learning, affective learning, learning transfer, and geography fieldwork as environmental education.

Results show that learning is affected by a tension of purpose between teaching for theoretical exemplification, technical competency and investigative skills, and environmental awareness. Stage-management in hypothesis-testing aimed at developing students' conceptual understanding is the predominant teaching method but despite this emphasis successful transfer of learning is low. The technical competency emphasis is propositioned as moving fieldwork towards utilisation of a technocentric ideology in addressing environmental issues in geography. This is regarded as devaluing an individual's environmental experience, personal commitment, and political obligation which are seen as important aspects of an environmental education. Fieldwork is seen to be most valuable in the affective domain: producing self- and subject-motivation through *inter alia* novelty of milieu, self-concept enhancement, productive role-modelling, and changing students' 'scripts' for learning. The links between these affective dimensions and fieldwork's role in students' cognitive development offer profitable avenues for further research.

**THE ROLE AND VALUE OF
A-LEVEL GEOGRAPHY FIELDWORK:
A CASE STUDY**

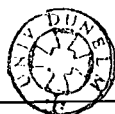
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Ph.D. Thesis

University of Durham, School of Education

July 1991



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DECLARATION

This is to certify that none of the material offered in this thesis has previously been offered by me for a degree at the University of Durham or at any other institution.

To Libby and to our first child to be

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Finally, I should like to make clear that any inadequacies and errors in the study remain, of course, wholly my own.

Philip K. Harvey

University of Warwick, July 1991

INTRODUCTION



INTRODUCTION

Fieldwork is an ubiquitous part of A-level geography courses, each year consuming a substantial amount of staff time and school resources. The geography teacher is presently required to conduct fieldwork in an environment of constraint: the number of pupils in classes; teacher-pupil ratios in the field; regulations concerning pupil safety; the release of teachers and pupils from the normal school timetable; time needed for fieldwork reconnaissance, preparation and administration, and the provision of financial aid for residence, transport and equipment, are but a few of the logistical matters which face the teacher attempting to organise fieldwork in the sixth-form programme. Why, then, in such a constraining educational context does fieldwork remain a recognised component of geography A-level syllabuses and courses, and what educational objectives are embodied in fieldwork?

In the past these questions would have been likely to provoke a relatively straightforward response from geographers. Fieldwork developed pari passu with the establishment of geography as a formal discipline, at a time when the regional approach and an emphasis on the morphological characteristics of landscape were dominating academic geography. Fieldwork supplied a means to study the areal-differentiation of phenomena and for developing a 'morphological eye' for landscape. Few geographers questioned the assumption that geographic problems were field problems and debate focussed mainly on the problems of methodology: 'how were geographical problems to be identified in the field and how was the necessary data to be collected in a useful form?'

The rationale for fieldwork in contemporary geography is more difficult to

discern. In the 1960s, geography moved away from the regional approach and attached less value to educating its students through the faithful acquisition of the 'eye for country'. A change in the geographical paradigm gave increased attention to the processes that explain the location and distribution of phenomena. With this shift came an interest in the methods or techniques by which geographical processes could be examined and measured in the field. A concomitant movement occurred in the subject at school level, and A-level syllabuses were among the first to feel the sea change in higher education and to incorporate the move from a descriptive analysis of form couched within the explanatory framework of the regional synthesis towards analytical studies of form and process phenomena through hypothesis-testing. Current approaches have evolved further to set the more 'scientific' method for acquiring data in the field into a more humanistic framework for enquiry which investigates issues arising from people's interaction with their environment.

Yet there has been no corresponding development in research to help define the specific educational objectives which these new fieldwork methodologies aim to achieve, and few attempts to evaluate their results for pupil learning. The multiplicity of purposes that fieldwork is said to serve: inter alia, supplying opportunities for students to gain expertise in research methods, providing a means to extend the themes of the classroom into the real world, and helping to encourage better teacher-pupil and pupil-pupil relationships, do not in themselves explain why fieldwork remains a sine qua non of a geographical education. Indeed it may appear that all too often fieldwork is performed unquestioningly rather than as an exercise with specific educational objectives. Because we lack any formal analysis of what is done on fieldwork, its intended educational function and its effectiveness, geography teachers have to rely

on evidence which is largely personal or anecdotal. Moreover, little is to be found in the literature on the student's understanding of and reaction to geographical fieldwork. Too often research which has been undertaken has been conducted on a model in which the researcher assumes the vantage point of the teacher and asks questions accordingly, rather than taking the course experienced by the student as the starting point.

The need for financial stringency and the requirement expressed through legislation that secondary education should be more publicly accountable for its activities lends an added urgency for research in this area, especially as fieldwork is an expensive and often disruptive activity in the school community. In such circumstances, the ability to have clearly defined educational objectives, to demonstrate that they are valid, and that fieldwork is achieving these objectives is potentially a matter of survival for fieldwork in the 1990s.

The present research seeks to inform this position by offering a critical appraisal through empirical study of the educational purposes, processes and outcomes of geography fieldwork. It presents a case study of the role and value of a residential fieldwork experience in geography A-level courses; it compares and contrasts the respective assessments of the student and teacher of the role of fieldwork in geographical learning; and it explores frameworks and methods for evaluating the effectiveness of field instruction as a learning process.

The structure of the thesis comprises four main sections. In the first section, following a brief introduction to some terms and definitions (Chapter 1), the thesis focusses on the use of autobiographical accounts as a mechanism to explore the origin of the research proposal, its formulation

and approach, and secondly, as a methodological tool in generating 'insider' accounts which are used to direct, supplement and contextualise a review of literature examining the development of fieldwork in geography (Chapter 2).

The second section provides an extensive review of literature from two conceptual perspectives. A 'geographical' perspective (Chapter 3) explores the relationship between geography's changing philosophical and methodological orientation and the impact on approaches to fieldwork in school geography. Utilising first-person accounts, fieldwork's longstanding association with a technical training of geographers and with a more holistic image of the education of the geographer are considered through a trilogy of traditional, hypothesis-testing and humanistic approaches. A 'pedagogical' perspective (Chapter 4) offers new insight into the educational assumptions and claims made for fieldwork as a pedagogic device to assist pupils' cognitive and affective learning. Research studies investigating fieldwork as such a device are categorised into psychometric and process-based studies and in so doing outline broadly the epistemological and methodological trends in educational research. Their results present a series of questions and issues which form a set of theoretical 'entry-points' to the exploration of the case study.

The third section opens the case study by introducing the reader to the Field Studies Council (Chapter 5): its status in the educational system in the U.K. as a provider of field courses; its educational policy for fieldwork as stated in Council literature and as interpreted by Council managers. Comparison is drawn between these perceptions of the aims and purposes of FSC field courses for A-level geography students and the guidance to teachers and pupils for fieldwork given by examination boards

in A-level geography syllabuses. The study then focusses more narrowly on an in-depth analysis of the respective assessments of the aims and purposes of fieldwork as revealed in course materials and as perceived by participants, centre teachers, school and college teachers and pupils, visiting one FSC centre for fieldwork - Slapton Ley Field Centre (Chapters 6 and 7). These prior assessments are then examined in the light of empirical observations of practice at the Centre conducted during an extensive period of research in 1985 and 1986. Data from pupil and teacher diaries, unstructured and semi-structured interviews, and participant observation is analysed to illuminate the learning process operating at the Centre and the learning outcomes which emerge from that process (Chapter 8). Exploration of data is progressively focussed on four interwoven themes: fieldwork and pupils' learning of skills; fieldwork and pupils' affective learning; the transfer of learning from fieldwork to school with special reference to the role of fieldwork in exemplifying theory; and fieldwork's relationship with environmental education.

The fourth and final section of the thesis (Chapter 9), concludes by summarising the major findings of the research and discussing some of their implications for the practice of teaching geography through fieldwork, and points out areas where further research is needed to test the findings of the present study.

SECTION I : FOUNDATIONS

CHAPTER 1

TERMS, DEFINITIONS AND GENRES.

The term 'fieldwork' conjures up a set of experiences and meanings to each and every pupil who has undertaken fieldwork as a part of an A-level course in geography. To some pupils, it may be a term to describe a particularly distinctive part of one's education. Fieldwork may be remembered as a vivid and separate set of experiences divorced from the daily routine of school or college life by the rare opportunity it offered to move education outside the formalised world of the classroom, lecture theatre, and library and into the diverse and complex world of learning by direct and first-hand experience. Various features may contribute to this memory of fieldwork as distinctive and different: fieldwork's infrequency in the school calendar; its relationship to the educational routine and rhythm of the classroom; or the contrasting approach it provides to the study of subject matter and to methods of learning. For those pupils who undertake fieldwork as part of a residential visit, the unusual experience of being away from home, living and working closely for longer periods with peers, encountering new and unknown environments, or the moment when the everyday world of the physical and social environment is revealed in a different light with new meanings and new understanding, may render fieldwork an intense and novel learning experience.

Paradoxically, fieldwork may also be recalled by pupils as little more than a matter of utility; a compulsory part of a course of study to be 'got through', another piece of assessment to be hurdled on the way to taking a final examination. Fieldwork may represent the real-life confirmation of concepts and theories already learnt in the classroom, providing

'real-world' examples to be remembered and to be listed as support for textbook theory - the 'icing on the cake' in examination answers. Pupils may recall their fieldwork as the provision of pre-determined hypotheses for investigation; a stage-managed exercise in which the procedures for enquiry are laid down with the results confirming teacher and pupil expectations. Despite the learning context being different from that more normally found in the classroom, the methods of field teaching and the subject matter render the fieldwork experience as indistinguishable from that encountered in the classroom with no new insights or understanding.

To a few, fieldwork may have a more particular meaning. It may be synonymous with the process of collecting data as part of empirical investigation and research. A necessary technical component of a geographical methodology which follows the identification of problems and precedes data analysis. In this sense, fieldwork as data collection is a purely technical problem; the procedures and methods by which 'primary' data is collected before returning to the classroom or laboratory to analyse, synthesise, and reject or accept a null hypothesis.

To geography teachers, these variety of meanings attributed to the term fieldwork may mirror their own perspectives. To some school teachers and field study teachers, however, fieldwork's particular significance may lie in its capacity to define a particular approach to teaching and learning. Fieldwork may encompass a repertoire of teaching styles, but it is an approach used by teachers to provide pupils and students with first-hand experience of learning about geographical phenomena and learning new geographical skills in a way that is designed to make geographical concepts, theories and generalisations more real and meaningful. It is a teaching strategy based on action and discovery within the 'real' world as

opposed to that encountered 'second-hand' in the classroom.

Thus, a primary objective in this study and a recurrent theme in the thesis is an attempt to explicate and understand what the term 'fieldwork' means to different groups and individuals (McPartland and Harvey, 1987). Pupils, teachers, field study tutors, field centre managers may each hold one or more of the perceptions described above or define fieldwork in different terms. By revealing the various meanings attached to fieldwork, this study suggests answers to the following type of questions: Do pupils hold a clear view of what is fieldwork's function and effectiveness in their learning of geography? Is this view matched by their teachers' perspective on its role and value in geography? In what terms do educational managers describe fieldwork's role? How do pupil and teacher perceptions relate to the statement of fieldwork's aims in geography syllabuses? Are these perceptions matched by providers of fieldwork at field study centres? To what extent are definitions of fieldwork's purpose the product of changing approaches towards subject matter and method in geography, and changes in our understanding of pupil learning?

The use of terms like 'role' and 'value' in the context of education implies a consideration of the educational worth of an activity or a set of learning experiences that are being planned and implemented by teachers to assist pupils in their learning and to improve the ultimate quality of education provided to their pupils. Consideration of the educational worth of activities like fieldwork in geography may be made for a number of different educational purposes; to review its place in the modern geography curriculum, to demonstrate accountability to educational managers and sponsors, to promote the professional development of teachers and the improvement of the institutions in which they work, and to better

understand the contexts and conditions which best facilitate pupil learning. To do so, necessitates engaging in a process of collecting information about an educational programme in order to make judgements about the quality of education being provided to pupils through the programme; a process termed educational evaluation: "Evaluation is the process of conceiving, obtaining and communicating information for the guidance of educational decision-making with regard to a specified programme" (MacDonald, 1973, in Stenhouse, 1975, p.112). In the sense that this study engages in this process of collecting and disseminating information about an educational programme to inform decision-making, it is an exercise in educational evaluation.

By considering the educational 'role' or function and value of fieldwork in geographical learning, this study follows Lawton's argument (1980) that evaluation of an educational programme should not be seen, narrowly, as a process of measuring the success or failure of teaching in terms of pupils' learning:

"Evaluation has often been seen simply as a process of measuring the success of teaching in terms of pupils' learning. More fundamental questions about the value of that particular teaching-learning process have frequently been ignored. But evaluation should be concerned not only with how well a group of students have learned a particular set of skills or kind of knowledge, evaluation must also be concerned with questions of justification (why should they learn X?) as well as the unintended consequences of learning (what else do they learn?; by learning X what else do they fail to learn?)" (Lawton, 1980 in McCormick (ed.), 1982)

Evaluation, therefore, also concerns making judgements as to the educational worth of an activity; this study seeks to answer the justificatory question - 'why should pupils do fieldwork as a part of their learning of geography and what else do they learn while they do fieldwork?'

We may narrow the focus of the thesis still further to include the term

curriculum evaluation. Definitions of 'curriculum' vary widely, but it has become common place to identify two parts to the curriculum; intention and reality (Stenhouse, 1975). One deals with intentions or prescriptions of what should happen in schools, the other is concerned with the reality or practice of what actually happens in schools. McCormick and James (1983) incorporate these two strands in their broad definition of curriculum being concerned with the following:

- " 1. the intended curriculum as formally stated by the timetable, in syllabuses and schemes of work, in aims, or as it exists in the general or unstated intentions of teachers;
2. the actual curriculum as experienced by pupils when they are involved in learning activities;
3. the hidden curriculum where pupils experience and 'learn' through such activities as lining up to enter school, wearing school uniform, standing up when a teacher enters the classroom, or being locked out of the school at break and lunch-times;
4. the outcome of learning in terms of the understandings, attitudes etc. that pupils develop." (1983, p.1)

This study is concerned with describing each of these components of the curriculum as they are addressed to the question of geographical fieldwork. It includes the relationship between the intended curriculum as defined in the aims of the examination syllabus and the intended curriculum of the residential or field study centre, the translation of these intended curricula into the actual practice of learning as experienced by pupils in the school and field centre, the hidden curriculum which emerges from a study of practice, and the understanding, values, attitudes, and experiences which pupils take as outcomes from their period of fieldwork on their return to the classroom and into the daily pattern of school or college life.

The study is not, however, only a description of the aims, process, and outcomes of fieldwork. It is also concerned with developing and improving

our theoretical understanding of what, how and why pupils learn when placed in different learning contexts or environments, by relating the educational theory produced by researchers working in the same or cognate fields of study to the empirical evidence produced in this study. As such it seeks to make a contribution to educational theory and educational research.

Although the distinction between evaluation and research is contested in the educational research literature with the two terms often found overlapping one another (see, for example, Walker, 1978 in Hammersley (ed.) 1986, pp.192-3), it is the capacity of the work to contribute to theoretical understanding which has been used as a criterion to distinguish evaluation from research: "evaluation is usually distinguished from research by its interest in practical problem-solving, rather than theory generation" (McCormick and James, op cit., p.165). This study conforms to another criterion of being research, as well as an exercise in curriculum evaluation, in that it is not a commissioned report to a particular sponsor and is therefore not bound so closely to the political context in which so much evaluation has to operate (MacDonald, in Tawney (ed.), 1976); its intended audience is wide ranging including other educational research workers and practising teachers in schools and in field study centres.

The empirical evidence presented in this thesis is drawn from geographical and educational research literature, and from observations made during a period of 18 months in 1985 and 1986, when regular visits of up to one month were made to a residential field study centre in England. These observations produced data that related to the perspectives of teachers and pupils engaged in geographical fieldwork in one educational setting, or in other words, data derived from a case-study.

As the term implies, 'case-study' means a collection of observations based

on an individual institution or setting. But the term has also been used to demonstrate a commitment to a particular form of social research in education, with associated sets of assumptions about the purpose of that research and the methods and techniques to be used. Some introduction to these assumptions concerning purpose and method are needed. It would be inappropriate to enter the debate at this point over the controversy that exists between social researchers working in educational settings who canvas the use of systematic observational techniques or those who argue for qualitative methods such as participant observation. The debate in the UK is long-lasting and well-documented having begun in the early 1970s with papers by Parlett and Hamilton (1972) and Hamilton and Delamont (1974) and continuing unabated to the point where recent up-dates have revisited the original issues and controversial themes (Delamont and Hamilton, 1984; Hammersley, 1985a). This is not to negate the importance of issues central to the qualitative/quantitative debate in social research in general and case-study research in particular. Issues such as: the relationship between educational concepts and observation of educational practice, the role of theory in qualitative research and the testing of hypotheses, the implementation and interaction of different techniques in a qualitative research methodology, the ethical implications of access and release of data, the generalisability of case-study research findings, and so on. Rather this introduction seeks only to provide a brief outline of the features which separate quantitative and qualitative approaches to educational evaluation and research, and to spell-out some of the tenets of case-study method to conclude our introduction to terminology.

The term 'case-study' is characteristically loose and ill-defined. The number of social and educational research studies or curriculum evaluation projects which flourished during the 1970s (see, for example, Hammersley,

1980) and continued during the 1980s and which have called themselves case-studies or which have used case-study methods, would seem to belie the fact that there is little consensus over a definitive statement to describe what a case-study is in educational research, and how it should be conducted. This is perhaps unsurprising when one considers that the evolution of the approach described in accounts such as Simons (1987, pp.55-89) grew from a "coalition" rather than a "consensus" of researchers (ibid.,p.61) who, in the early 1970s, were making a case for 'rethinking evaluation' (MacDonald and Parlett, 1973). Part of the difficulty in finding a definitive statement on case-study is that within the growing research literature there remain different interpretations over purpose and method which stem from the researcher's own differing backgrounds in social science. The sociologist whose work is intellectually underpinned by symbolic interactionism (Rock, 1979), or the geographer's research that takes a phenomenological perspective (Tuan, 1971; Seamon, 1979), or the social anthropologist who undertakes ethnography (Wolcott, 1975, Eddy, 1985) bring to case studies of educational settings different theoretical and methodological assumptions. Thus, the tensions exhibited in definitions of case-study method are not simply differences in research technique; they reflect a broader debate in social research over the philosophical, ideological, and epistemological sets of assumptions which social scientists hold about the social world and which they take into their research. (Rist, 1977)

An outcome of the lack of consensus and the variety of inputs from different but interrelated disciplines is that the literature is complicated by a lack of clarity between, and synonymous usage of, the terms case-study and ethnography (see Ball, 1983), or qualitative and case-study research (Rist, 1984) and even quantitative and qualitative

approaches (see, for example, Halfpenny's evidence in Burgess, 1985). So, despite the growth and associated professionalization of educational evaluation, and the recognised need to report educational research findings in a language accessible to a wide variety of audiences, the qualitative research literature is still marked by a loose blend of subtle distinctions which underpin terms like 'portrayal', 'illuminative', 'naturalistic', 'holistic', 'responsive', or 'case-study' research. The point is not new. Atkinson and Delamont (1985) remark that:

"It is remarkably difficult to provide anything approaching a definitive account of case-study approaches to educational evaluation." (in Hammersley (ed) 1986, p.240)

There are, however, a number of common presuppositions attached to the term case-study (which I shall use collectively to include 'illuminative' and 'naturalistic' enquiry methods) which render it meaningful and helpful for our purposes of introduction.

Advocates of case-study would share a critical perspective towards approaches to educational research which were based only on the use of systematic observational techniques. The often quoted example of such systematic observation being Flanders' Interaction Analysis Categories or FIAC (Flanders, 1970), which "was designed to measure variations in the level of control exercised by the teacher over classroom events" (Hammersley, 1986, p.xiii), although Hammersley refers to Galton (1978) to note that FIAC represents only one of over 100 systematic observation techniques currently available. Such techniques comprise sets of prespecified coding schemes and are used by a non-participative researcher to focus on subjects like verbal behaviour in the classroom. Criticism has been levelled at such schemes (Delamont and Hamilton, 1976) because their use of predetermined categories exclude the recording of information

irrelevant to those categories, and are therefore potentially limiting since analysis of data can only be on the basis of the concepts used to define the categories. Hargreaves D. (1972) has criticised systematic observation on the grounds that no account is taken of the meanings which participants give to their interactions, and Walker and Adelman (1976) have extended this point to argue that systematic observational techniques can not adequately explore the shared meanings between teacher and pupil which are dependent on the distinctive culture and historical context of that particular classroom, and which they argue are of major importance in understanding classroom activities (see, McIntyre and Macleod, 1978 for an appraisal of such criticism of systematic observation).

It is this combination of the meanings which participants hold to explain events or their actions and the actions of others, as they are applied within a specific context - that provides us with the other fundamental tenets of case-study approaches to educational research. The second characteristic of case-study is, therefore, a commitment shared with other qualitative researchers to viewing events, actions and values from the perspective of the participants in the study:

"A number of synonymous terms have emerged as alternative labels for the qualitative approach..., but they all fundamentally refer to the same thing: an approach to the study of the social world which seeks to describe and analyse the culture and behaviour of humans and their groups from the point of view of those being studied." (Bryman, 1988, p.46)

The focus on the interpretation of participants meanings in action in educational settings (often utilised in definitions of case-study, see for example, Walker (1978)), shifts attention away from the products or outcomes of an educational programme towards the processes by which change occurs. Pupil learning need not be seen only in terms of the measurement of pupil achievement against a set of prespecified objectives. Rather,

supporters of case-study methods argue, we should concentrate our attention on "what transpires in the process of teaching and learning... in order to compare practice with intention, opportunities with aspirations" (Simons, in McCormick (ed), 1982, p.119).

Finally, examination of the processes of change through the varied perspectives of the participants involved must take into account the cultural and historical context in which those perspectives are set (see, for example, Ball's study of the introduction of mixed-ability groupings in a comprehensive school, Ball, 1981). Case-study researchers argue that in order to best understand the process of teaching and learning, research should provide descriptions of what is happening in particular educational situations: "one of the best ways to represent and promote understanding of these processes is to accumulate and make available detailed descriptions of teaching and learning and the values and effects of curriculum policies within the context of particular schools and classrooms." (Simons, *ibid.*, p.119).

In summary, Simons (1981) provides a characterisation of the style of case-study research which combines these four elements; a move away from systematic observation, a commitment to explicating the perspectives of participants, a concern with process rather than product, and a recognition of the importance of cultural and historical context:

"Studies of the process of learning and schooling will tend to be descriptive/analytic, particular, small scale. They will record events in progress, document observations and draw on the judgments and perspectives of participants in the process - teachers, pupils, heads - in coming to understand observations and events in a specific context. Close description both of practice and the social context is an important part of the study. Such descriptions provide opportunities for interpretations that elude other models of assessment or evaluation based on assumptions of comparability and elimination of variation. Such descriptions also provide opportunities for more of the complexity of educational experience to

be grasped and articulated." (Simons, 1981, p.120)

The definitions of terminology like 'evaluation', 'curriculum' and 'case study' provided above imply that a consensus exists in the interpretation of the various attributes comprising such concepts. Such a consensus, does not of course, exist. Concepts like 'curriculum' have remained at the heart of educational debate during the last half of this century (see for example, Stenhouse, 1975) and seem set to continue. Rather, the definition of terms seeks to highlight key elements which have been seen to impinge on our understanding of these concepts, to point out areas of debate, and to make clear the assumptions which the researcher holds about the terminology.

Within the context of this discussion of key terms and definitions which appear in the thesis, attention is directed in the next chapter to the formulation of the research problem, its methodological approach, and its precise aims and objectives. Chapter 2 makes the case for using autobiographical accounts to inform the research process, and through my own account, makes clear the presuppositions which this researcher has taken to the study. It also describes how other first-person accounts have been generated in the research programme to interpret the historical development of fieldwork.

CHAPTER 2

FORMULATING AND APPROACHING THE RESEARCH PROBLEM: EXPLANATION THROUGH AUTOBIOGRAPY

"...our intellectual stance is deeply conditioned by what has come before, and refers to how that 'coming before' opens or closes, brings out into the clearing or shuts away and conceals, possibilities for our own thinking. We are never wholly original, but always build upon and out from what is given to us by the world into which we have been thrown, even when we react against it." (Gould, 1985, p.282)

2.1 Introduction

In this thesis the reader will not find a separate section or chapter early in the course of its enquiry providing a detailed technical analysis of the methodology used to approach the research problem; the strategies used to gain access and to select the case study; the ethical problems associated with case study research; and a discussion of the techniques and research tools used to collect, record and analyse data. Rather, the intention of this study is to weave a more limited and less normative methodological thread of progression through the course of the thesis; to alert the reader only to the broad context of debate concerning research methods in educational settings and to outline reasons why particular approaches were used and decisions taken, as the choices and prospects emerge at particular stages along the route of the enquiry.

This is done for two reasons. Firstly, no detailed technical case is made for selecting case study (and its variants) as a method to address a research problem in an educational setting, because this case has been comprehensively stated, debated and restated elsewhere in over twenty years of educational research (Parlett and Hamilton, 1972; Delamont and Hamilton, 1976; Stenhouse, 1978; 1979a; 1982; Elton and Laurillard, 1979; Burgess,

1984a; 1985, Atkinson and Delamont, 1985) and antecedents of the wider debate over qualitative and quantitative methods in social science research (Bryman, 1984; 1988) stretch back further in the twentieth century, especially in the disciplines of sociology (Becker, 1958) and social and cultural anthropology (Spindler (ed.), 1982). Furthermore, there is now a wealth of information which assesses the theoretical and practical pros and cons of using qualitative research tools such as participant observation, (McNamara, 1980) conversational interviews (Platt, 1981; Powney and Watts, 1987), personal documents and diaries (Walker, 1985; Woods, 1986) in educational settings. Avoiding an in-depth technical appraisal of approach and method, should not suggest that the present research has been uninformed by the research method literature. Indeed, aspects of the debate concerning educational research design and techniques form an important element of the analysis in Chapter 4 of research studies which have investigated the educational efficacy of fieldwork. Rather, it is to suggest to the reader that a technical assessment of case study methodology and qualitative research methods is more fully available elsewhere.

Secondly, there is growing evidence to suggest that stipulating a predetermined research methodology for an investigation and describing a normative path of its implementation divorces the study from the context in which it has been carried out, most notably by separating the presuppositions which the researcher brings to the study from the decisions taken to adopt a particular research strategy. A structure which sets out the research problem, its aims and objectives, a framework for enquiry, method, results and conclusions benefits from a procedural clarity but recent studies exploring the reality of the research process (Burgess, 1984b) recognise that the practice of undertaking educational research is not informed by a design that ignores the inherent ambiguities and

deviations present in the process of discovery: "this approach overlooks the fact that research is infused with assumptions about the social world and is influenced by the researcher." (Burgess, op.cit., p.2)

This emphasis on context and process marks the point of departure for the present study. Aspects of this emphasis inform this chapter's exploration of the use of autobiographical accounts in social science research in general and their particular use in this study. The importance of context and process underpins the research relationship in the thesis: between the researcher (Section I), theory drawn from literature (Section II), and analysis of data from empirical observation in the case study (Section III). A relationship exists between a triangulation of factors: my own 'individual' experiences and presuppositions which led to the formulation of the research, and which shaped, and were in turn shaped by, the process of the research; 'theoretical' insights gained from literature and from other autobiographical accounts; and the 'empirical' observations recorded in the data produced by the participants of the case study. The heart of this relationship between the 'individual', 'theoretical' and 'empirical' is a study of an educational setting in context; a study which aims to explore a world of events, experiences and mechanisms as perceived its participants - researcher, teachers and pupils.

Chapter 2.2 explores the principles and practice of developing autobiographical accounts in social science research. Drawing from the work of geographers such as Stoddart (1981), Gregory (1978), Billinge et al. (1984) Buttimer (1981), and Johnston, (1986), it is argued, firstly, that to provide an account of change in the subject of geography, such as the account of the development of the fieldwork movement provided in Chapter 3 of this thesis, we can not view the development of ideas in a way

that is divorced from the social, political, and ideological contexts in which those ideas are set, nor without recognising that accounts of change are, de facto, 'reflexive' interpretations of events from the 'interested' and historically contingent perspective of the writer. I make a case for using autobiographical or first-person accounts to provide an avenue for reflexive social research which encourages a focus on the importance of context in the explanation of the process of change, and for autobiographical accounts to reveal our own frames of reference which condition our interpretation of the social world (Powell, 1985).

Second, in the same way that autobiographical accounts can show how context impinges on the development of ideas to add to our historical sources, they can also better facilitate our understanding of the research process. A growing amount of social research includes first-person accounts to describe and analyse research as a social process and not as a linear model comprising a series of clearly defined stages to be followed, devoid of the researcher's presuppositions and the pitfalls encountered.

Third, these considerations are precursory to the inclusion later in this chapter (Section 2.3) of a short autobiographical statement from this researcher on the interest and involvement in geographical fieldwork which led to the formulation and approach of this study, and (in Section 2.4) to a description of the method by which first-person accounts were sought from lecturers in geography in university departments of education in the U.K. during 1985 and 1986 to provide 'inside' accounts of the way geographical fieldwork has changed since the 1960s.

2.2 Contextual understanding and the interpretation of change in geography: a case for the use of autobiographical accounts

Historical reviews of the discipline of geography are often characterised by a chronology of events; a narrative through time which stresses the 'progressive' and cumulative nature of the development of ideas towards a perspective firmly set in the present. As Stoddart notes (1981, p.2):

"...the actors in the history are readily characterized into those who followed the track (and who were therefore right) and those who blundered off (and were hence wrong)."

In reviewing the development of geography, Stoddart (*ibid.*) and Billinge, et al., (1984) refer to Hartshorne's Nature of Geography (1939) as a model of such a normative view of the development of geographical ideas. Along a prescriptive track, the heroes Vidal de la Blache, Humboldt, and Ritter emerge in a long series of geographers whose ideas are linked through time by a continuity of content. Deviations from the path are either ignored or identified as wayward, and the cogency of these "great men's" arguments is implicitly accepted by a rhetoric of convergence and consensus of thinking (Gouldner, 1971, in Gregory D., 1978, p.18). Stoddart argues that more recent texts (Dickinson, 1969) are not immune from the drawbacks of such an approach, since they exclude any discussion of the evolution of geographical ideas through a scrutiny of the social, ideological, and political contexts or 'milieux' in which they evolved. Examples of such normative models of conceptual change also exist in the field of geographical education. Biddle's review of Paradigms and Geography Curricula in England and Wales 1882-1972 (1980, in Boardman, (ed.), 1985) is a case in point for it does not provide an analysis of such milieu to assist in the explanation of shifts within the discipline from, say, what he describes as the 'areal differentiation paradigm' to the 'spatial

organization paradigm'. There is here a false separation of the subject's 'internal' history from the changing 'external' history of society, rather than a recognition of the interdependence between geography's 'internal' structure and content, and the 'external' changes in society which shape and interact with it. For example, Biddle begins his analysis by noting MacKinder's influence on the development of the regional concept and thereby changes in the teaching of geography in schools around 1900. He states:

"MacKinder was influenced by (the Scott Keltie Report) and his paper on 'The Scope and Methods of Geography', published in 1887, redefined the substantive and syntactical structure of the subject for both the tertiary and secondary institutions." (op cit., p.11)

But as Stoddart comments:

"Examination shows that this paper was very far from being the unheralded frontal assault on the entrenched forces of exploration, which won the day by the force of its intellectual argument. MacKinder's argument had been almost totally anticipated by others, and was indeed common currency in the Royal Geographical Society in the later 1880's. More to the point, however, its content reflects social and economic as well as intellectual tensions not only in geography but also in neighbouring subjects: the 'new geography' was simply part of a general readjustment of roles and subject matter in the earth sciences at a time of wide educational reform. The more this complexity is understood, the less revolutionary the process seems and the less dominant a figure MacKinder appears." (Stoddart, 1986, p.14)

This thesis follows that of Barnes (1982) in suggesting that the "inferences and judgments in science are always structured by contingent features of the settings wherein they occur" (in Billinge et al. op cit., p.16). The kind of attention to context that Stoddart displays above and elsewhere (Stoddart, 1986) provides us with an alternative interpretation of events and actions, and provides an insight into the process by which a subject such as geography develops and changes. Goodson's (1983a) account of school subjects and curriculum change takes a similar perspective on the importance of contextual analysis for interpreting change in the secondary

school curriculum. Accepting this premise, there is a clear need to describe and analyse these settings and to interpret their significance. In what ways can this be done? How can we describe events in context and investigate the context in which action occurs? Hammersley and Atkinson (1983) describe this task: "we have to generate possible meanings from the culture for surrounding or other apparently relevant actions. Having done that, we must then compare the possible meanings for each action and decide which form the most plausible underlying pattern." (p.16)

Autobiographical or first-person accounts have been used in geographical research (Buttimer, 1981; Billinge et al., op cit.), and biographical accounts or life histories have contributed to sociological research (Dollard, 1949; Becker, 1970; Bertaux, 1981; Goodson, 1983b) and to educational research (Sikes, Measor and Woods, 1985). Researchers advocating their use argue that the value of such accounts lies in them providing descriptions of events in context to facilitate a deeper understanding of the culture under investigation by generating possible meanings for events and actions. First-person accounts have been used in this way to overcome the problem of a separation between an 'internal' view which sees change in society as a normative and rational development through the progressive refinement and accumulation of ideas, and the 'external' relativist belief that ideas are primarily shaped and formed as 'a sign of the times' - a cause/effect response to the prevailing external political, economic, and social conditions. Buttimer (1983) conducted a project on the Practice of Geography with Hagerstrand at the University of Lund and at Clark University to look in part at this relationship between 'internal' and 'external' accounts of change in geography. Drawing on the work of the German philosopher and historian, William Dilthey, she argues that in contrast to "opaque" second-hand accounts of history,

autobiographies can show the "immense variety, ambiguity, and often paradoxical nature of lived experiences" and "shed light on essential questions about the history of the field, and the social construction of its thought and practice". Buttimer argues that polarisation into either/or ideologies of internalist versus externalist distorts the reality of a pluralistic social world. Buttimer and Hagerstrand's project sought to produce a collection of 'insider' accounts, that is, those who practiced in the discipline, in which participants were invited to reflect on their professional lives and careers and to become "the sources of insight into relationships between thought and context" (Buttimer, op cit., pp.5-8). The accounts offer a critical complement to those conventional research methodologies which rely largely on the use of historical and archival sources. They provide a valuable source of insight into the process of reconstructing historical change by revealing that the course of a subject or even specialisms within it rarely follow a normative path of progression through a structured development of ideas and clearly defined aims. Rather, the development of a subject is the chemistry which results from the combination, through what Buttimer termed a 'selective screening process', of the random influences produced by often serendipitous events, meetings, and encounters set within the contexts by which individuals live and work.

Autobiographical accounts such as diaries and memoirs in social research have also been valued in serving as a source of 'sensitizing concepts' to the researcher (Hammersley and Atkinson, 1983). Referring to Blumer's (1954) definition of such concepts as giving the researcher a starting point for further data collection, "a general sense of reference and guidelines in approaching empirical instances" (Blumer, 1954, in Hammersley and Atkinson, ibid., p.180), Hammersley and Atkinson argue that

autobiographical accounts can sensitize the researcher to the culture under investigation:

"(first-person accounts) can suggest distinctive ways in which their authors, or the people reported in them, organize their experience, the sorts of imagery ... they employ, the routine events, and the troubles and reactions they encounter. Read in this light, they can be used to suggest potential lines of inquiry, and 'foreshadowed problems'." (Hammersley and Atkinson, op.cit., p.130)

Autobiography can be a useful methodological tool in recognising that conducting social research is a reflexive process; a recognition that we are part of the social world we study (Gouldner, 1971; Hammersley and Atkinson, 1983). Taking an autobiographical perspective on the research process encourages researchers and interpreters to re-examine their own predilections and experiential filters and thereby clarify the conditions under which a more accurate interpretation of the social world can be made. Rose (1981) makes the point, "To understand is to understand a text-event in which the past in the form of the text and the present in the person of the interpreter and his interpretation are continuously bound up, shot through with each other" (p.120). The role demanded of the researcher utilising autobiography is, therefore, one of reflexive 'engagement' or 'immersion', (Giddens, 1976) through which the researcher becomes aware of his or her own a priori presuppositions; the legitimate assumptions which furnish the necessary conditions for any real understanding. (Gregory, 1978, pp.145-46). While we are unable to overcome the distance between one frame of meaning in the past and another in the present or "to set ourselves within the spirit of the age and think within its ideas and thoughts" (Gadamer, 1975, in Gregory, loc.cit.) an autobiographical account allows us to reflect on the outcomes of the researcher's participation with the social world: "the separations between past and present geographies are the very conditions of critical intelligibility, and properly understood they allow us to make sense of our collective biographies." (Billinge et

al, op cit.,p.4)

Thus, the research process can not be regarded as a normative progression beginning with the definition of the study's aims and proceeding through a series of clearly defined stages towards the analysis of its findings. Rarely can its aims, methods, and techniques be written large and clear on a tabula rasa, as if unequivocally ready for use, pre-packaged and immediately apposite to the research question. Social science research which claims a purely technical concern with 'methodology' and which rejects any notion of ideological bias does so at the risk of neglecting to inform the reader of the intellectual detours which have been followed along the way and which, critically, have had bearing on its outcome. As Hamilton states - there are "conceptual, methodological and historical pitfalls which litter the path of any research programme." (Hamilton, 1985, p.3).

Description of these pitfalls is an important part of the reflexive process for it focusses attention on the realities and pragmatism of conducting social research. The ways in which methodological problems have been overcome illuminate how the researcher has refined and redirected the study to answer the questions which he or she has posed. Further, in describing the pitfalls encountered in social research and the means by which they were negotiated, the researcher recognises and attaches importance to, the stimulus, motivation and selection procedures at work in the research programme. Thus, a discussion of the ways in which a piece of research has been designed and structured and the means by which theory has been constructed is integral to the research itself and importantly, through its explication, provides a greater understanding of what constitutes a 'methodology'. Burgess notes that:

"Recent developments in research methodology indicate that 'methodology' involves a consideration of research design, data collection, data analysis, and theorizing together with the social, ethical and political concerns of the social researcher." (my emphasis) (Burgess, 1984, p.2)

A research methodology, therefore, implicates a great deal more than an analytical description of the methods used in a research programme to tackle a research problem, for at its base it concerns the presuppositions which the researcher takes to the problem and his or her perception of how best to advance our understanding of the empirical world. This study follows the work of Harrison and Livingstone (1980) in that it accepts their argument that only by examining our presuppositions can the researcher enter into debate over methodological issues and problems. Johnston (1986) takes this notion further in claiming that the researcher is obliged to examine the ways in which the research is shaped by one's presuppositions before a consideration of methodology is possible:

"...the presuppositions with which we begin research are coloured by our fundamental beliefs about the origin of reality. These are our cosmologies, our personal paradigms, that condition our philosophies, our beliefs about the sources of knowledge and about knowledge itself. Only when our cosmologies and philosophies are determined can we shift to a consideration of methodologies, means of obtaining knowledge." (ibid. p.4)

Bearing this in mind together with the previous discussion of the role of autobiographies as a tool with which to reveal experience, there follows In Section 2.3 an autobiographical outline of the roots to this research study.

The autobiographical profile as a part of a research methodology has few precedents in geographical research but it follows the work of Eyles (1985) on Senses of Place in using autobiography as "a good source of geographical awareness" (Johnston, op.cit. p.3). It does so with the selective and

limited intention of throwing light upon my values and opinions which have influenced my perception of fieldwork in geography prior to undertaking three years of research work which sought, as a major theme, to investigate other people's perceptions of geographical fieldwork. Such a recollection recognises the selectivity of memory as did John Eyles in his study:

"Memory is a selective device, both exposing the half-remembered to our conscious gaze and subverting the past as our remembering suits our own purposes... In other words I want to expose those values and pre-suppositions that influence my interpretations of places...while realising the potential limitation of such selectivity... (Eyles, 1985, p.8)

However, this autobiographical profile differs from Eyles work in two important respects. First, in recognising the selective process at work in recalling events, personalities, places, etc., a process firmly and unavoidably rooted in the present, there is the realization that the researcher is forced to conceptualize about why experiences were significant. There can be no objective recall in such an "honest" (*ibid.*, p.8) account for categorizing or even presenting experience chronologically implies a conceptual bias. Because, therefore, trying to rationalize experience is integral to such an account, the statement attempts to make explicit my conceptualisations for why an event or experience is regarded as significant. Second, in this thesis comparison is drawn to other research using autobiographies to reflect on field experiences. In this, autobiography takes on an important analytical role in studying methodology, for as we have already seen, through such accounts the cumulative experience becomes more than a collection of idiosyncratic traits and unique events. While we are unable to generalise from such accounts or to ensure that they are representative or typical, we need to be aware that autobiographies do provide insight into the general process of interaction of the researcher and researched; between individuals and social structures. Goodson (1983b) describes this as the focus on the

tension "between what might be called the 'cultural legacy', the weight of collective tradition and expectation, and the individual's unique history and capacity for interpretation and action. By focussing on this tension... the life history offers ethnographers a way of exploring the relationship between the culture, the social structure and individual lives." (p.133) Thus, autobiographical accounts are unique but are not singular. Johnston (1986) usefully summarises this by saying that we need to explain events in context without falling into the "generalisation trap (where) the findings of a case study are transferrable in both time and space". Rather, he argues, we must be aware of the "danger of falling in the other direction, into the singularity trap, of assuming that the findings of a case study have no relevance to any other area of knowledge. Events are unique, but they are not singular, because they are responses, in context, to the driving forces of society." (p.64)

2.3 Reflections on fieldwork: an autobiographical perspective on the experience of fieldwork and the development of the research proposal

My experience of geography fieldwork at a large comprehensive school in Gloucestershire was formally confined to one week in a LEA residential field study centre in the Forest of Dean conducted as part of a Geography GCE A-level and to periodic day excursions to classic landform sites such as Lulworth Cove in Dorset. Of the residential week I remember very little, apart from spending a fruitless day walking the streets of Cinderford while plotting landuse on a large scale map. I have no recollection of the aims of this study or its eventual outcome and share a strong affinity with Peter Gould who reflects on a landuse mapping exercise he did as a geography student in the 1950's in agricultural Wisconsin. Little, it seems, had changed:

"I can remember a geography field camp in the 1950s when about twenty of us were scattered over the agricultural landscape of southwestern Wisconsin with soil augers, plane tables and air photos clutched in our hot little hands. Periodically, we were meant to plunge our auger into the soil, determine the type, record the slope, the crops and vegetation and so on, and mark in each field or 'natural area' with a complicated fractional code. Every evening, after a day in the blazing sun and 42 degrees centigrade in the shade, we were collected and taken back to the geographic 'operations room', where we added our day's information to the master map.

Of course as students we only looked stupid: after the first day of almost total dehydration, we quickly dragged ourselves out of sight over the brow of the nearest hill, found a good vantage point in the shade, and filled in the tracing paper taped over the air photos pinned to our plane tables by marking judicious 'estimates'. It was, of course, totally dishonest intellectually, but I confess it here as the only rational response to a blatantly inane piece of busy work. After two weeks, the master map was 'done', and that was that. No use was ever made of it, and apparently none had been foreseen from the beginning. The futility of the whole task was only equalled by the next one: to compile a land use map of an urban area, with its lawyers' offices, gas stations, drug stores ... in order to find the Central Business District, known to the professionals as the CBD. Ordinary people called it downtown, and any 5-year-old could have told where it was without a land use map. (Gould, 1985, p.20)

And yet my experiences of A-level fieldwork which mirrored Gould's feelings

of inanity did not dim a stronger and more long-lasting geographical curiosity; the roots of which stemmed from a fascination, as a young boy, for distant places. I would spend hours with an atlas unconsciously translating the two dimensional image into something real and tangible to the imagination and through the symbolic representations of the atlas in conjunction with old copies of the Encyclopedia Britannica I could transport my geographical imagination all over the world. Occasionally map-reading would take on a real significance when I was able to visit the places they described. At 9 or 10 years-of-age I enjoyed navigating for my father across France - in some way I found it easy to visualise terrain from a map and compare it with the reality outside and anticipate what would be around the next bend. The outcome, of course, was not always successful: I can clearly recall the fury with myself and with a map which I thought to be hideously inadequate when getting lost in the flat and featureless country around Chartres, having pleaded to leave the Route National 7 for the country lanes.

Such early field experiences fed this growing sense of geographical curiosity; a manifestation of a desire to enquire beyond the known and familiar of one's local surroundings, or in Peter Gould's terms, to "see a horizon and wonder what lies beyond it." (Gould, op.cit. p.8) But at school I don't remember those experiences and curiosity being structured in any way, either for or by me. I have no reflective sense of learning. School trips/expeditions which followed, to the Outer Hebrides, Yorkshire Dales, and to the Pyrenees, Andorra and northern Spain, to Bavaria and the Tirol were primarily social experiences - 'social' from their inception, through their fund-raising and planning to their eventual outcome. Geographically these expeditions were dominated by the 'form' of different landscapes and 'man' only intruded into the experience through the need to

communicate to buy bread or eggs from the local shop or farm. There was one notable exception. I remember walking into a croft on the Isle of Harris and Lewis to talk to a friend of a teacher who was with us on the expedition. We were there to learn something of the manufacture of Harris tweed. The owner of the croft was a lady who looked to me to be at least 80 years old. While she chatted away in an accent which was barely comprehensible about each stage of the cloth making process, and as she showed the mosses and herbs she used for the dyes, and worked the loom and wheels, I recall an overwhelming sense of this being a 'rare' experience; a recognition that her daily routine would only be available to future generations through film and artifacts in crofting museums. She became for me, the living nexus between the various constituents of the Outer Hebrides which we had seen; water, peat, gneiss, the standing stones of Callanish - a catalyst to a 'feeling for' or 'sense of' place.

On arriving in Oxford, to study for a joint honours degree in geography and education at the Polytechnic from 1977-80, fieldwork was little more than a collection of memorable social events interspersed with glimpses of new environments and people which brought the occasional photograph in textbooks alive. It was not consciously a means of learning; rather simply something which geographers did. They visited and sketched in the school holidays with school friends and fun teachers mostly in rural, semi-wilderness environments, and when they came home to write about it, they talked about drainage patterns, rock types and formations and drew pictures of the pyramidal peaks they had climbed on, and roche moutonees which they had been told were roche moutonees. Occasionally something happened which developed and fixed a picture in the memory; cutting maize by the side of the road for the evening meal or seeing a golden eagle for the first time, but rarely were these indelible prints taken through a

'geographical' lens. Where there was a geographical focus, the eye and camera concentrated on trying to replicate the teacher's view of the landscape. The aim appeared to be one of matching reality to this perspective or to the concepts and terms defined in diagrams and field sketches in classroom texts. Fieldwork failed to liberate my mind to appreciate the linkage between the world of discovering geographical concepts and ideas through a personal investigation of the variety and complexity of the physical and social world.

Undergraduate fieldwork at the Polytechnic was still unquestionably an activity for the 'field sciences'. In three years studying education as part of the joint honours degree I spent a total of five afternoons in a local junior school trying to get to grips with research techniques investigating children's reading abilities. But I regretted less the lack of first-hand experience of testing educational theory in practice than the void which separated staff and students within the education faculty and which I regarded was symptomatic of the lack of opportunity for field research. Social mixing through fieldwork was still, for me, the prime motivation because fieldwork had up to then not been characterised by an opportunity to learn new skills, to test new ideas, or to appraise one's own value systems. Interestingly, the first piece of residential fieldwork organised by the geography section's staff in the first term started from the premise that fieldwork provided for a close interaction between staff and student, and student and student. The weekend was geared totally to developing contacts and social understanding between staff and students, and between the students themselves. The first impressions that resulted of both peers and staff were longlasting and had both positive and negative results for inter-personal contact between members of the department for the three years of the degree course. The 'close encounters' with

particular staff meant that the availability of fieldwork became an important factor in determining my choice of modules around the compulsory 'core' since the amount and duration of fieldwork varied according to the units or modules of study. Interestingly, this contrasts with Johnston's experience of undergraduate choice of optional subjects which he regards as "often little better than haphazard" (Johnston, op.cit. p.148). Further, social friendships between groups of students and staff were extended through subject society work in the department, in which I took an active interest. Social mixing through fieldwork, therefore, fundamentally shaped the pattern and outcome of my degree course, and it provided a common unifying theme which crossed the content boundaries of the subject's modules.

At the same time I began to be aware of the contexts and work-patterns in which I learnt best. Looking back on it I realise that this was as much to do with the amount of thought which departmental staff gave to their teaching of geography, as with me finally beginning to come to terms with the way I thought and worked. Staff placed the emphasis firmly on the student for developing a responsibility for learning by engaging in, and sometimes directing and organising, the learning process, and fieldwork was no exception to the general ethos of the department. For example, my first piece of fieldwork was an individual exercise completed in the first week of term; a city trail around Oxford which by its route focussed on comparing urban planning issues in the developing and rapidly changing areas such as Jericho with the contrasting restricted development in the collegiate centre. The follow-up work organised by John Gold, introduced to me the work of Gould and White (1974) on mental mapping, through the analysis of the various mental map perceptions of Oxford city from students who had completed the trail. But importantly, new and stimulating ideas

such as Gould and White's were encountered together with an appreciation of the significance of the way in which the learning process could be manipulated, organised and managed; individual exploration in the field led to discussions in small seminar groups of about eight students who had shared the same route through the environment but developed very different perceptual outcomes. I remember for the first time staff encouragement and a developing responsibility to learning prevented me from continuing my education as an inactive recipient. Lectures were organised in 20-minute blocks interspersed with 5-minute discussion periods; seminars were structured around the opinions and ideas of the students themselves and it was immediately recognised by the students that their success was dependent on a mutual responsibility to learning through a readiness to contribute to the discussion and complete the required reading which preceded and followed each seminar. A strong and pervading emphasis was on participation and communication. These approaches in lectures and seminars fed back directly to group discussion in subsequent fieldwork for, once familiar with staff expectations, the strategies staff adopted could be applied in a variety of contexts. Staff recognised, however, the difficulty of engaging all students in an approach which was premised on a voluntary desire to actively participate. Peter Keene (1982a; 1982b) a geomorphologist with particular interest in the Quaternary, recognises particular difficulties in teaching students how to examine sedimentary deposits in the field:

...[sedimentary] "evidence is capable of being interpreted by students directly in the field and so becomes a useful teaching tool capable of lending an immediate substance to field classes which otherwise might be dominated by data gathering or tutor exposition.

However, herein lies a problem. Unlike the textbook diagrams, even relatively simple field exposures may initially appear to be of such bewildering complexity that they defy rational examination. Being unsure of where to start in unravelling the mass of detail which confronts them, students may take refuge in stabbing guesses, often ignoring simple and clear pieces of evidence.

Moreover the problem is compounded by the fact that the interpretation of sections in the field is probably only one of several competing activities on a field course, so the tutor is tempted to cover too much ground too quickly, substituting field class instruction for student investigation. In such circumstances a few able students make the running, while the majority simply acquiesce because they lack the confidence to contribute to the discussions, and are afraid to expose their lack of knowledge." (Keene, 1982a, pp.6-7)

The extract demonstrates the commitment made by staff to their teaching of geography, not only on what geography to teach but how best to teach it, and how to communicate these ideas on educational practice in geographical higher education within and between institutions. One outcome of this emphasis came with the launch of the successful Journal of Geography in Higher Education in 1977 published from Oxford Polytechnic, in which the editors David Pepper and Alan Jenkins wrote in the first issue:

[JGHE] "is founded on the conviction that the importance of teaching has been undervalued in geographical higher education... nowhere else is a forum provided at which geography teachers of diverse specialisms in this sphere can meet to discuss their common teaching interests...JGHE will now provide this forum... ..The topics dealt with in future issues will include curriculum development, teaching methods both traditional and new, assessment and evaluation of students and courses, fieldwork and the relationship between teaching and research." (editorial board, JGHE, 1977, pp.3-4)

The journal gave geography staff at the Polytechnic a forum in which to voice their ideas and concerns, and fieldwork has featured strongly in their contributions since 1977. For example, Keene and Jenkins (1979, pp.26-7) illustrate how fieldwork project findings can be communicated effectively through the use of posters; a technique used in Polytechnic fieldwork in Holland which attempted to engage all students in oral and visual presentation and synthesis of results. Groups needing to communicate graphically in this way with follow-up discussion of emergent themes was seen as promoting individual involvement and motivation.

It would be relevant here to draw attention to the broader context in which

the geography department operated, for the learning experiences I have described were determined and in some way supported by a relatively unusual educational system in operation at the Polytechnic in the late 1970s. The modular system with its 5-yearly course and departmental evaluations by the Council for National Academic Awards, placed particular kinds of pressure on students who, theoretically at least, had the choice of which modules to select and thus a freedom to be involved in the individual tailoring of learning experience to student need. A brief outline of the modular course in operation at the Polytechnic at this time is provided by Gibbs and Haigh (1983) and is included here to help to define its structure and basic terminology:

"The Modular Course is the main degree course at Oxford Polytechnic. It allows students considerable choice as to the profile of Modules they collect to gain their degree. A 'standard' Module is 100 hours of study undertaken in one term and examined at the end of that term. A student needs to collect 21 modules in years two and three to gain an Honours Degree and will take up to four a term to achieve this. The Modules are grouped in Fields. A Field is a subject area eg. Geography or Geology. Within a Field there may be Pathways which reflect a particular specialisation (eg. Human Geography or Applied Geology). Students combine two main Fields to create their Degree profile of modules." (Gibbs and Haigh, 1983, p.3)

This framework therefore handed students with responsibility for their own progress from day one of their higher education. In practice, students soon realised that the voluntarism was highly structured and allowed little time or room for manoeuvre. I remember being extremely envious of a Cambridge undergraduate I talked to in my final year who told me that he had spent the best part of two terms writing the music for the 'Cambridge Footlights Review'. He was reading English. Lack of time and flexibility to achieve a breadth in education by developing subject or other interests would stimulate complaints by students at the Polytechnic, occasionally voiced to staff, about the work-load required and especially the relative benefits of completing course assessed work in terms of final degree

result. "Nothing's compulsory on the modular course!" was the dictum which we sneered at. The assessment system encouraged a utilitarian view. One piece of fieldwork, for example, might provide a maximum of only 10% of the total coursework marks available for a particular module credit, and students were assessed in their second and third years on the accumulation of the results from their best 18 of 21 credits. A piece of costly and time-consuming fieldwork, therefore, could contribute a possible maximum of only 0.5% of the total degree result. Sights were set not on a holistic education but blinkered towards the examinations at the end of each eleven weeks of work. The system was, therefore, aimed at achieving flexibility and choice but in practice the outcome was restricted in its ability to develop subject depth and specialism by the utilitarian demands of the assessment system. Pressure on students was consistent and demanding; coursework deadlines were rigidly enforced through staff and student necessity of organisation, despite the difficulties facing students who combined geography with geology or biology and whose vacation periods and term week-ends were under pressure from fieldwork commitments. Regularly some students would be absent from field courses due to time-table clashes, and the problems were exacerbated when students attempted undergraduate dissertations or projects as compulsory components of both subject 'fields'. Together these elements produced a framework which demanded the organisation of work as a coping strategy, and which promoted learning through the self-discipline that such organisation required. But such contextual pressures gave rise to a personal disquiet about the lack of opportunity to adequately investigate interesting geographical problems which were highlighted on the course and through fieldwork; I juggled with contrasting educational breadth and subject depth continually through my three years at the Polytechnic without ever once feeling I had found a formula which I could take from one module to the next.

The content of my fieldwork in geography at Oxford ranged widely both in length and subject matter as regular and integral parts of the modules which I selected; afternoon visits to the Hydraulics Research Station at Wallingford; day-trips to investigate soil catenas on the scarp slope of the Chilterns; ten-day study visits to look at urban renewal programmes in inner city Glasgow; three day projects as part of a third year field course to Amsterdam investigating merchant bank financing of a proposed Markerwaard polder project. Fieldwork was not skills based. I recall implementing techniques in the field such as elementary surveying, but fieldwork was not prima facie about data collection methods, instrumentation, or data analysis operations. My motivation for fieldwork came initially from the social interaction between students and staff which it provided, and from the change in the learning context or 'milieu' in the seminar room, lecture theatre, or tutorial which fieldwork facilitated back at the Polytechnic. But my motivation for fieldwork came later from having a geographical curiosity stimulated by addressing new ideas and concepts in new locations through 'expert' introduction from staff, and for the opportunity it provided to question my value judgments about the social world which we investigated.

For example, I recall as part of a field course to Amsterdam, a group selected, as a study project, the squatting system operating within the city to illuminate 'hidden' housing pressure and resultant conflict with planning authorities. The issue had been presented to students by staff and then developed through meetings with the planning authorities in Amsterdam at their superb education/advisory centre, but the project itself was left largely to the students to plan and organise. I can clearly remember the excitement with which students talked about the careful

organisation and management of the system of squatting on their return from the field for here was an issue directly relevant to their own lives (student rented accommodation being generally ludicrously expensive in Oxford and largely managed by a 'grapevine' network of student need) and yet one which was hidden within the fabric of Amsterdam; hidden from the glitter of the tourist centre, tucked away behind the facades of buildings in the 'red-light' districts, and excluded from the planning statistics. The conceptual understanding of urban planning problems, the relevance of the issue to students' lives, and the self-reflection of values and attitudes prompted by the experience, rendered this fieldwork an important part of the themes explored in this third year course.

Fieldwork, was set broadly in the context of the structure of the modular course. Here, the Polytechnic's degree structure and particularly the modular course system was seen as both positive and negative. Positive, first, in creating a flexible system of student selection according to interest and need, second, in placing a heavy responsibility on the quality and outcome of learning on the student. Negative, in that the breadth of content and the amount of assessed coursework and fieldwork prevented in-depth investigations of some interesting issues and problems which the geography modules had highlighted; staff and students had little time to manoeuvre according to individual interest or specialism. Importantly, fieldwork was also set in the context of the nature and workings of the geography department. I have already stressed that a concurrent and unifying trend for all the fieldwork in which I participated was an explicit concern on behalf of staff with not only subject matter, but how best to teach it as part of an undergraduate education. A prime concern of staff was an investigation of the learning processes operating in fieldwork and its role in a geographical higher education. This concern provides the

roots to this research project and supplies the link between my student recollections of fieldwork and my involvement in research proposals to the Economic and Social Research Council (ESRC). It is, therefore, worth looking at the geography department's interest in fieldwork as a learning process in some detail.

The stimulus behind the department's attempts to evaluate the fieldwork it was running each term, and to investigate fieldwork's role in geographical higher education came from individuals within the department, and from a broad concern that developed during the middle and late 1970s within the Polytechnic for course evaluation.

Interest in evaluation at Oxford Polytechnic was coincident with the establishment of the Educational Methods Unit (EMU) under the direction of Graham Gibbs. Alternative models of course evaluation at Oxford Polytechnic is an example of some of the output from EMU in which the Geography Section collaborated. Published in 1983, it stemmed from a programme of course evaluation seminars held at the Polytechnic during 1982. The seminars were conceived primarily as "consciousness raising exercises" (Gibbs and Haigh, 1983, p.1) rather than seeking to provide "formal instruction in the techniques of course evaluation..." ..."they were intended to demonstrate through case-studies how different evaluation processes were being implemented and developed, and for what purposes, within the Polytechnic". (loc.cit.). The series had a number of objectives:

- 1) to showcase the experience of course evaluation practice and experimentation within the Polytechnic;
- 2) to encourage other teachers within the Polytechnic to consider the benefits of course evaluation;
- 3) to engage staff in considering why their academic neighbours and

rivals found course evaluation valuable, and to think about ways in which course evaluation strategies might be used to enhance their own programmes;

- 4) to encourage those already involved in course evaluation to consider the merits of the evaluation strategies employed elsewhere in the Polytechnic and to encourage the pooling of experience across disciplinary and departmental boundaries;
- 5) to raise the status of evaluation activities within the Polytechnic;
- 6) to turn the normally destructive forces of factional rivalry towards the promotion of constructive self-evaluation;
- 7) to turn a normally conservative academic hierarchy towards the promotion of radical grass-roots change;
- 8) to show that course evaluation techniques can be applied to the specific contexts within which Polytechnic staff work, and to show how it can meet their specific needs.

The contributions to the publication from the Geography and Geology departments both concerned the evaluation of fieldwork and were written in conjunction with the second seminar in the series which sought to debate the question of funding fieldwork. Supply of funds for fieldwork was, during 1982, an especially contentious issue, with swift government cut-backs in grant-aid in 1980/81 having critical consequences for the determination of priorities in allocation of resources within the Polytechnic. The outcome of which for the Geography Section led to a decision to arrange no further overseas fieldwork. Graham Gibbs summarises the atmosphere at the fieldwork evaluation seminar at which Brian Lloyd, then Director of the Polytechnic, was present:

"At the seminar...there was a tangible atmosphere of competition between those describing evaluations of Field Courses (there being a squeeze on money for such courses at the time) and almost no sense of an exploration of the role of Field Courses as part of undergraduate experience in general." (Gibbs and Haigh, op.cit. p.47)

And yet, although perhaps not made manifest at the seminar, individuals within the Geography Section were concerned with the overall role and value of fieldwork for the undergraduate in geography and more broadly, within a

higher education. This interest from staff was focussed on the teaching-learning process operating in fieldwork and not solely on an evaluation of whether the outcomes of fieldwork matched departmental, course, or employer objectives. The degree to which geography staff concentrated on 'process' is shown in their evaluation (Jenkins and Keene, 1983) which discusses, in particular, the use of diaries and video-recording as techniques which allow the learning process to be revealed. Diaries and video-recording, Jenkins and Keene argue, are media which allow free expression to assess "the meaning students and staff ascribe to the experience and [the students'] feelings and reactions to those experiences." (*ibid.* p.27) Certainly the diary extracts included in the evaluation of an urban fieldcourse in Glasgow give insight into student thinking and perception of course content, learning process, and the methodology itself by which those experiences are revealed:

"A tiring day seeing what there is to be seen. Glasgow has lived up to all its expectations, but perhaps not to the extremities of its image. It's large and dirty and crowded and poor, but one senses that all these things are under some sort of control and could be alleviated at the change of someone's whim. One interesting note is that of relativity. Duncan appears content with properties which in any other city would be condemned. Perhaps this is because he is hardened to the realities which we can only touch in the most superficial of manners. This superficiality is in itself a tragedy. We become the ghoulish spectators of one social disaster after another. Like pictures of war, such harshness in such quantities leads to rejection. The lack of contrast leads to acceptance of the status quo. There is the frightening prospect of us all leaving a little wiser but no more aware of our own position in the system creating such scenes. Perhaps this is a failing of the academic method. Though aimed with good intent at the great problems that confront us, the very methodology involved, our own lack of involvement, brings about the negation of interest..."

"I'm curious to know what the real point of this diary is? One of Alan Jenkin's ^(sic) suspect schemes again, or is there a more sinister motive?...Overall I think that Glasgow has surprised me, and so has "Urban Geography" - there's far more to both than I had previously imagined, and I'm glad that there's a lot of concern about how we are being taught, as well as what there is to learn."

"My immediate observations as I came in through the door was one of disappointment, not with the venue of the field course but with the people. Everyone was very distant, too distant. I think barriers

will have to be broken down if I am to enjoy this trip...[that's] one of the most important things that must be accomplished. People around must be relaxed or I begin to resent their company. I don't think that some people want to make the effort this week."

"...I'm aware of autocracy. Is it impossible to lead without pressure, coercion, domination. The dominant should be on the defensive, and yet the meek do not wish to inherit the earth. This domination is so pertinent in relation to the girls on the course. Why do they assume we should make the moves; that they have the choice to accept. Could it not be possible that for once they made the move and removed the pressure from our insistence?" (*ibid.* pp.31-33)

Gibbs argues, however, that while Jenkins and Keene's evaluation provides a wealth of rich data about process "which they can use to guide them in their (and their students) future use of fieldwork" the evaluation is less convincing with respect to outcome: "indeed it is not clear what, exactly, students do get out of Geography Fieldwork" (Gibbs and Haigh, *op.cit.* p.48).

Jenkins and Keene's evaluation came after 5-years of research interest in the nature of fieldwork, the roots of which Jenkins outlines in interviews conducted for this research:

- 1) a desire to do research and marry an interest in research with an interest in the teaching of geography;
- 2) a discussion on fieldwork and its role in geography in 1974/5 with L. Dee Fink, visiting Professor of Geography, University of Oklahoma, who was then engaged in the project Listening to the Learner (L. Dee Fink, 1977) (see also Chapter 4);
- 3) reading Parlett and King's Concentrated Study: A Pedagogic Innovation Observed (1971) where a parallel was recognised between fieldwork and Parlett and King's evaluation of a curriculum experiment in the physics department at the Massachusetts Institute of Technology using 20-day timetable blocks. The evaluation included participant observation, questionnaires, interviews and a quantitative analysis of the volume and quality of student assignments;
- 4) a recognition of the lack of available geographical literature which combined the role of fieldwork and the nature of the discipline with the general educational aims and objectives which underpinned its widespread inclusion in geography curricula.

The combination of these features produced a draft research proposal to the Social Science Research Council, the presentation of a research seminar to discuss the proposal, and a paper on the proposal at the annual conference of the Association of American Geographers (AAG, 25th April, 1979). The proposal was formulated jointly by three members of the geography staff, and the project was to run in conjunction with the assistance of the Educational Methods Unit at the Polytechnic, and consultant evaluation expertise from Malcolm Parlett. A brief outline of the proposal to the SSRC is provided below:

Introduction

1. "Field courses are a ubiquitous part of undergraduate geography programmes, each year consuming a substantial amount of staff time and departmental resources. Why, however, are they such a ubiquitous feature and what educational objectives do they embody?"
2. A variety of purposes claimed for fieldwork:
 - a) supply opportunities for students to gain expertise in research methods;
 - b) extend themes of the lecture theatre to the real world;
 - c) help to cement good departmental relations.

Yet the available literature fails to clarify fieldwork's role in geographical higher education and there are no studies to evaluate fieldwork's effectiveness

Aims of the Study

1. To compare and contrast the respective assessments of the learner and the instructor of the role of field courses as a vehicle for geographical learning at undergraduate level;
2. To explore frameworks and methods for evaluating the effectiveness of field courses as a learning process.

Method

1. Study length - 15 months.
2. Postal questionnaire to Heads of Geography departments in British institutions of higher education to "elicit insight into the general use of field courses in undergraduate geography programmes."
3. Assessment of a conceptual learning model for processing geographical information (Verduin-Muller, 1978) to:
 - a) assess the model's applicability in a British context;
 - b) assess the model for the insights it provides into the learning situations encountered on field courses.

Main Study

1. A series of in-depth analyses of the experience of participants in selected field courses in 2 studies of field courses -
 - a) First Study: before/after interviews by non-participant interviewers with individual staff and students to investigate:
 - instructor's initial aims and objectives
 - student's prior expectations of the field course
 - respective assessments by staff and students of the field course after the event
 - b) Second Study: to test the effectiveness of field course teaching using:
 - controlled learning experiments
 - psychometric tests
 - discussion groups

Despite recognising the need for research in this area the research proposal was rejected by the Human Geography and Planning Committee of the SSRC on 15 May, 1979 on the grounds that:

General Problems

1. "the present application was not sufficiently well-planned to merit support";
2. "you appear already to have decided in advance of analysing the results of your questionnaire survey of departments that there is a single type or style of undergraduate fieldwork";
3. "you would place an excessive amount of responsibility and initiative upon the research assistant".

Specific Problems

"There are a large number of variables involved, with implications for 'control' in research design, for data analysis, and extrapolation,...The proposed 'Main Study' appears the most potentially useful part of the proposal. Unfortunately it is not fully enough described for an estimate to be made of the likely benefits from partial attainment of objectives,...There is, perhaps, a potential source of confusion between assessing a 'conceptual learning model' and the specific objectives" [Aims of the Study]. "Especially it might be that one model and/or prior interest in one model imposes a constraint on the reasonably objective consideration of a very diverse teaching-learning milieu.

Suggestions for Resubmission

A more limited application with two primary objectives:

1. A well designed and purposeful questionnaire to geography departments

which would elicit information on the variety of aims of field teaching, the different forms of organisation employed, and the educational objectives;

2. A pilot study to:
 - a) examine how potential student gain may be assessed or measured;
 - b) to describe and categorise instances of teaching-learning with a view to refining the description of a repertoire of teaching methods;
 - c) to investigate a method for detecting and analysing relations between these three (a, b, and c).

In accordance with the SSRC's invitation to re-submit, the proposal was re-drafted and comments sought on problems with the original from a number of lecturers in geography and education departments in the UK and the USA. It is interesting to note that several of these 'informal' invited referees stressed the importance of 'selling' the proposal to the SSRC on the grounds that the research base was insufficient to adequately justify large public expenditure for geography fieldwork. For example:

"...I used the word 'sell' and I think that it is important to see your proposal as a piece of salesmanship. There are a lot of points to be made. Surely we, and local authorities, spend a hell of a lot of money on an untested hypothesis that fieldwork is important for geography students; and with cutbacks in staff, the precarious finances of local authorities etc., etc., it is high time a study was made..." (Letter to Alan Jenkins from Donald Bligh, Exeter University Teaching Services, 24 February, 1982)

Accordingly, this aspect in the re-submission had greater stress placed upon it:

"The need for financial stringency and expressed requirement that higher education should be more publicly accountable for its activities lends added urgency for research into this area, especially as field courses are an expensive activity." (SSRC proposal re-submission, 13 May, 1982)

The re-submission was written within a context of increasing pressure on diminishing resources for fieldwork and premised on a concern for the 'state of the art' of fieldwork in the light of the absence in the research literature of any studies to justify fieldwork expenditure. The proposal

sought to appeal by 'selling' its usefulness, in this respect, to a perceived utilitarian SSRC who had suggested that the study should concentrate on the ways in which potential student gain from fieldwork could be assessed or measured: the timbre of the SSRC's letter of rejection indicated that a study in this area should concern itself primarily with translating fieldwork's general aims into specific, measurable, behavioural objectives and then devising means by which those objectives could be assessed. Despite recognition of these points by department staff and by the 'informal' referees, the thrust of the re-submission still reflected the department's interest in 'process' rather than 'outcomes'.

The resubmission to the SSRC from Oxford Polytechnic was refused support during 1982, while I completed a PGCE at the University of Oxford Department of Educational Studies. I had kept in touch with staff at the Polytechnic over this period and had tried some of the fieldwork exercises which I had done as an undergraduate with sixth-form students in my teaching practice. Through conversations with geography staff at both the Polytechnic and at Gosford Hill School, Kidlington I realised that many of the issues relevant to fieldwork in higher education were prevalent at the secondary 16-19 level. My interest in fieldwork at this level was supported by Polytechnic staff who, having had their submission rejected, were prepared to hand-over drafts, correspondence, and administrative details from the SSRC. In April, 1983 I sat down to sort through the material and to read much of the referenced work which appeared in the drafts. By the end of August, 1983 I had written a research proposal with, what I thought at the time, was a narrower focus; concentrating only on residential fieldwork for the sixth-form student taking a GCE A-level course.

I had considered that one possible source of funding for the prospective research was the Field Studies Council. During January, 1984 after a 10-weeks study visit to the USA, I received a letter from the Research Director of the FSC, Dr Jenny Baker. I had asked Dr Baker for critical comments on the proposal and requested some part-time or full-time teaching experience at one of the Council's field study centres. She responded:

"...This is a brief interim letter to say that we are interested in your proposal and that I am discussing it with colleagues including a member of our scientific and educational committee who is interested in 'educational research'.

I think that it will probably be possible to arrange some teaching experience, but our financial circumstances would preclude payment other than board and lodging at the Field Centre concerned.

I will be in touch again as soon as possible, and very much hope that we will be able to co-operate. In the meantime I enclose various papers on research work in the FSC." (letter from Dr J. Baker, Research Director, FSC, 25 January, 1984)

Funding of the research by the FSC was to prove impossible, but a period of 6-weeks teaching practice at Slapton Ley Field Centre was arranged in which I taught and assisted with geography courses while re-drafting the proposal in the light of experience at the Centre. This was later extended to 6-months work at the Centre. A successful proposal for a Competition Award was submitted to the ESRC in May, 1984 and I took the award to the University of Durham, School of Education, to commence work in the following October.

My experiences at the Centre had led to substantial changes and a re-working of the proposal to the ESRC. It became clear from talking to visiting teaching staff and residential staff at the Centre that the economic climate of the early 1980s was having considerable bearing on the nature of the constraints and difficulties imposed on the geography teacher wanting to do fieldwork. The pressures on reduced resources for fieldwork

were greater than those I had seen operating in higher education:

"The geography teacher is required to conduct fieldwork in an environment of constraint: the number of pupils in classes, teacher-pupil ratios, the release of teachers and pupils from the normal school timetable, time needed for fieldwork reconnaissance, preparation and administration, and the provision of financial aid for residence, transport, and equipment, are but a few of the problems facing the geography teacher attempting to organise fieldwork in the 16-19 programme." (extract from submission to ESRC, 21 May, 1984)

The demand from head teachers, parents, and heads of department, to justify the expense and disruption to the school which fieldwork stimulated, seemed to positively correlate with increased pressure on resources. Some teachers looked to my prospective research to provide the defence against such requests for 'justification' and I hoped that the research would accumulate data to provide teachers with empirical evidence which they could use in support of their justification. I envisaged assisting teachers and students in their efforts to continue to supply such an experience to future sixth-form students, through educational research. This idealistic view of research was born partly out of the realisation that teachers had little in their armoury to support their claims. My early reading through the literature on geographical fieldwork, supported the Oxford Polytechnic geography proposal that there were few studies which defined the specific educational objectives for fieldwork, and fewer still which attempted to evaluate them. Further, the research studies that I could find were invariably conducted and written from the perspective of the teacher, and only Fink's study in the USA, had taken the course as experienced by the student as a starting point.

The situation was made more complex since the absence of educational research came at a time when the type of fieldwork being done by schools had considerably altered over the years; its changing nature clearly mapped out in the literature:

"In the early '70s the geographical paradigm [in schools] gave increased attention to the processes that explain the location of phenomena. With this shift came an increase in the number of publications concerned with developing a more structured approach to school fieldwork... The content of fieldwork and the methods or techniques by which the 'processes' may be examined in the field became key issues... and [geographical fieldwork in schools] developed from the descriptive analysis of form, process, and spatial distribution (look-see and understand) to analytical studies of form and process phenomena through hypothesis-testing. The current methodology as shown in the 16-19 Schools Council Project, has evolved further to provide frameworks of enquiry through investigation of 'man-environment' issues, questions and problems..." (extract from submission to ESRC, 21 May, 1984)

In reading through literature on the changing approaches to geographical fieldwork as I wrote proposal drafts at the FSC centre, it became apparent that there was a lack of consensus over the use of method, purpose, and most importantly theory on which the claims to different forms of fieldwork were based. Indeed the literature highlighted the multiplicity of aims claimed of fieldwork; as many as the definitions of geographical 'fieldwork' itself:

"fieldwork, field teaching, field instruction, field research, sensory fieldwork, humanistic fieldwork, and now framework fieldwork - each have their own disciplinary biases and emphases, and this list is by no means exhaustive. Often elements of one mix with another, and because each has quite different and usually implicit assumptions about the teaching strategies involved, one is deceptively left with the feeling that fieldwork is the panacea for our geography teaching problems. It sharpens pupils' powers of observation, teaches them the importance of accuracy in data collection, acquaints pupils with a wide range of 'geographical' techniques, enhances perception and is environmentally engaging, teaches scientific or is it quasi-scientific method, it's student-centred, discovery-based, problem-solving, decision-making, it's directed exploration as well as being open inquiry, it's convergent and divergent at the same time and so on, and it is, apparently, all of these things and more besides to all pupils, regardless of age and ability. How often is fieldwork slotted into handbooks for geography teachers with no recourse to the issues raised in the surrounding chapters on mixed ability, multi-cultural society, pre-vocational education and evaluation and assessment? And yet these are the realities for school teachers and field centre staff considering the integration of fieldwork in an A-level curriculum, let alone the daunting task facing them in terms of fieldwork provision for GCSE, or TVEI or CPVE students or indeed any group which does not quite match the university dominated conception of the subject." (extract from paper presented at Durham symposium on fieldwork, 1986)

A first priority in the proposal was, therefore, to try and unravel some of the complexities and contradictions present in the geographical fieldwork literature by making a formal analysis of the types of fieldwork being done by geography teachers and field centre teachers; the primary concern was with description and interpretation of events and experiences. Through description I wanted to try and match the claims made for fieldwork in the literature rhetoric to what was actually happening; to observe theory in practice:

"The design is, at first, largely descriptive; finding out what actually occurs during fieldwork, analysing it from the perspective of all participants, students and teachers. From this initial period of observation, during which there is no attempt to manipulate, control, or eliminate situational variables, it is anticipated that the participating schools will reveal a number of common incidents, recurring trends and issues frequently raised in discussion. From accumulating a body of descriptive data of what fieldwork seeks to achieve, what takes place, and what experiences participants gain from doing fieldwork, a second stage of enquiry is planned to select a number of phenomena, occurrences, or groups of opinion and to examine them in detail...[such an investigation] means that problem areas become progressively clarified and re-defined, and attention is directed towards emerging issues." (extract from submission to ESRC, 21 May, 1984)

There was, of course, a clear methodological bias in the proposal to the ESRC which had come from the original Polytechnic proposal. In reading Parlett and Hamilton's paper, Evaluation as Illumination (1972), I recognised that the learning context in which fieldwork was being carried out, was of similar complexity to that in the authors' concept of 'learning milieu'; the evaluation of which, Parlett and Hamilton argued, could not be reduced to matching the closeness of fit of learning objectives to sets of prespecified standards or criteria. I wanted my research methodology to take into account this complexity by it being "heuristically-organised" (Miller and Parlett, 1974); by allowing the focus of the study to develop as the research proceeded, rather than its objectives prescribing its direction. In this way, I thought, the aspects of the learning context

which were significant in explaining and interpreting student experience and behaviour were less likely to be omitted. The emphasis, in the submission to the ESRC, was placed firmly on interpretation of events and experiences in context. Thus there was a link between method and situational experience which the research methodology literature could support, and one which I developed in the submission to the ESRC:

"Instead of making generalisation the ruling consideration in our research, I suggest we reverse our priorities. An observer collecting data in one particular situation is in a position to appraise a practice or proposition in that setting, observing effects in context." (Cronbach, 1975, in Elton and Laurillard, 1979, p.88)

Having said this, I did not embark on the study to compare the relative assessments of the student and staff of a similar fieldwork experience, with an open-mind. I have already noted that one ambition for the study was to provide data to support and justify geographical learning through fieldwork in the light of increasing pressure on diminishing resources. A second, and major aim of the research, was to observe how the fieldwork experience was made transferrable to the rest of the Geography A-level curriculum: in what ways did the fieldwork become incorporated into the day to day geography teaching of the classrooms of the participating schools?; what stress was placed on relative components of the field course such as the illustration of theory, or the familiarity with techniques, or the ability to construct hypotheses set in different contexts?; how was the field experience incorporated into project work and what preparation was given for its inclusion in the writing of examination answers? These were some of the questions and issues which experience at the FSC centre suggested would be important factors in the study.

The Oxford Polytechnic proposal did less to influence my choice of techniques in the collection of data for the research, than it had in its

broad approach. After all, Parlett and Hamilton's paper which I was using as a benchmark, claimed "methodological-eclecticism" according to circumstance, the definition of problems and stages of investigation. But reading through the Register of Research in Geographical Education (Corney, 1981), I was comforted to find a number of published research articles which had used participant-observation, and interviews as research tools, and my limited experience of both methods, and the knowledge that I would be working outside the confines of the classroom, suggested that I would benefit from their deployment over the use of questionnaires or standard tests of classroom interaction. In a sense then, the decision to concentrate on fieldwork provision in one setting or case study and the selection of particular research techniques was mutually reinforcing; to an extent they came hand in hand. And perhaps through reflection in this way, we come close to addressing the problem of why the choice of methods by the social researcher often seems arbitrary or determined by convenience or compatibility with the researcher's experience, rather than their suitability to the research problem in question. Thus, although McCormick and James (1983, p.157) stress "that evaluative techniques should be selected according to their capacity to illuminate particular problems" it may, in practice, be more difficult to separate a general research approach from a choice of research techniques.

Finally, reading literature for the ESRC submission strengthened my view that I would not necessarily reveal insights into important teaching and learning strategies adopted by staff and pupils in fieldwork, by working with a large sample frame. Studies which had used such a frame and studied the population by using questionnaires, such as in the Schools Council 16-19 Project teacher's questionnaire (summary report, Schools Council, 1978), and the HMI survey Learning out of Doors (DES, 1983) had raised

interesting issues (for example, 'least' and 'most' used field teaching methods in the 16-19 Project survey) but the issues had not been followed-up by more detailed analysis and therefore could not be fully exploited in aiding decision-making in curriculum planning or informing practice.

2.3 Summary

This section has sought to explore through the self-reflection of an autobiographical account the pre-suppositions and context which affected both content and method in the research proposal to the Economic and Social Research Council. Contact with staff in the Geography Section of Oxford Polytechnic had stimulated my own interest in fieldwork as a means of extending a geographical curiosity to consider the application of new concepts in new locations, and as a way of reconsidering my own values and attitudes on social and environmental issues. My undergraduate experience also generated an interest in fieldwork as a learning process, and this was developed by my attempts to teach geography through fieldwork in teacher-training and by experiences of working at Slapton Ley Field Centre.

A submission to a research council by Polytechnic staff to explore aspects of fieldwork as a learning process was reconsidered in my own proposal to the ESRC in light of my experience of teaching geography to 16-19 year-old students. Here, as in higher education, financial resource restrictions were also prompting teachers to seek empirical results to defend and justify the use of fieldwork in the geography curriculum. A brief examination of literature for the research proposal revealed a lack of consensus over teaching method and purpose, and scarce recourse to educational theory to support the claims for the different approaches to

fieldwork which were being advanced. The aim of the study was, therefore, to examine the rhetoric appearing in the literature in light of a close study of practice. This was formulated more specifically as:

'The study's aim is to analyse the role and value of residential fieldwork in geography advanced level courses, compare and contrast the respective assessments of the student and the teacher of the role of fieldwork in geographical learning, and explore frameworks and methods for evaluating the effectiveness of field instruction as a learning process.'

In addition, my reading for the proposal suggested that an important area of enquiry previously neglected in the literature would be to consider the use made of fieldwork after a residential week, back in the school classroom; a theme central to the research was the learning transfer from the field into new learning contexts. The objectives for the study were summarised in the proposal as:

- '(a) to use case study material to describe and analyse what is currently being done under the name of 'fieldwork';
- (b) to examine the match or mismatch between theoretical statements on the purposes and process of fieldwork which appear in the literature and those provided by participants, and the learning and teaching strategies employed in practice;
- (c) to gain insight into how the field experience is being transferred into the wider geography curriculum and the ways in which fieldwork is incorporated into the day to day teaching of the geography classroom and ultimately into the A-level examination.'

The choice of case study method proposed for the research was influenced by the literature which had accompanied the Polytechnic submission and by 'gaps' in the findings of the few studies which had examined field teaching approaches by using large samples and survey techniques. I sought to adopt an approach which would explore the complexity of fieldwork as a learning process and not concentrate on developing pre- and post-experience tests aimed at reducing the process to the measurement of changes in learning before and after the fieldwork event. I wanted the research to be

'heuristically-organized' around issues and themes which emerged from a study of practice. In order to focus on issues which participants identified as significant in the learning process, the proposal argued for using qualitative research techniques such as participant observation, interviews, and diaries to facilitate access to the meanings which the participants assigned to particular learning situations.

In the final section of this Chapter, attention moves from analysing my personal experiences which have influenced the study's formulation and its approach, towards the means by which 'insider' autobiographical accounts have been generated to supplement an historical analysis of the development of fieldwork in geography.

2.4 Generating 'inside' autobiographical accounts on changing approaches to geographical fieldwork

In the previous section autobiography has been used as a tool to explore the roots to the research proposal; to establish a context for the questions which the research seeks to address and the contingencies affecting their formulation. The account also reveals the inherent vicissitudes of the research process, even in its early stages, which can shape perceptions and direct and redirect the course of an enquiry: the chance encounter; the response to a proposal for research funding; or the initial literature search illustrate not only the serendipity which prevails against any normative conception of social science research but more importantly the reflexivity of the research relationship between researcher and researched.

In the final section of this chapter, autobiography is regarded from a different perspective. Here autobiography is considered as a research technique which has been used to inform a historical review of the changing approaches to geographical fieldwork that comprises Section II of the thesis. The purpose and means by which autobiographical accounts were generated to aid the review are outlined below.

This research study intends to supplement the present published literature that delineates the historical development of geographical fieldwork by providing evidence from a collection of 'inside' autobiographical or first-person accounts; accounts from a selection of individuals who, over the last 20 years, have been participants in shaping the changing nature of fieldwork in geographical education; who have been active in debating geography fieldwork's pedagogical strengths and

weaknesses, and who have been protagonists and critics of differing approaches to fieldwork as a means of developing pupils' understanding of geography. The aim has been to use first-person accounts from 'insiders' as 'signposts' to direct attention in the literature review towards particular publications, key events, and general trends which the participants themselves regard as having been significant in developing geographical fieldwork, and to set this seminal work into a broader context of change in the subject of geography.

With this aim in mind, an early question addressed during the research was 'which inside accounts?' Geography teachers in secondary schools, lecturers in colleges, polytechnics, and universities, as well as teachers in field study centres would all have valuable reflections to make, and through such reflection give insights into the significance of particular individuals or events as parts of the process of changing approaches to fieldwork and their relative success. Interviews to be conducted during the case-study were considered to be a useful means of gaining personal reflections from teaching staff in schools and field centres. Another group who were considered to provide an accessible and valuable sample of opinion on the generation and development of geographical fieldwork ideas were teachers in geography and education at university departments of education teaching courses of initial and in-service teacher training - 'geography method tutors'. It was thought that the method tutors would play a significant role in identifying changes in perception of the function of fieldwork in geographical learning, identifying key personnel, events, and institutions which had been seminal in promoting new developments in fieldwork, and providing insights into why and how change had occurred.

A letter was sent to thirty-six tutors inviting them "to identify key personnel involved in the generation of ideas about geographical fieldwork since 1970, by reflecting on your own experiences, research, articles, contacts, meetings etc. (anticipating that) these (key) individuals will come from a range of backgrounds and occupy diverse posts from the fields of school teaching, lecturing in higher education in both geography and education departments, fieldwork organizations, advisers and HMI."

A framework was provided with the letter which set out a series of headings to assist the tutors in their responses: geographical training, key individuals, associated publications, events (conferences, meetings, seminars), personal research, curriculum projects, examination boards. These headings were intended to focus the respondent's thinking on elements of his or her career which appeared to have significantly altered, shaped, determined or modified their thoughts on fieldwork - for example under the first heading, data was sought to question whether attitudes to field experiences were most strongly determined during their own geographical training in higher education and post-graduate teacher training, or under the heading of 'publications', whether reflections on the changing nature of fieldwork identified published influences which came from the discipline of geography or from other subject areas. But it was stressed that the headings were not intended to limit or confine the response in any way and were there simply to act as guides or pointers to which they could address their own reflective thinking. Responses using different headings or format, were therefore, acceptable and encouraged. A total of fourteen (39%) tutors responded to the letter in some form; eight tutors used the framework as a guide and made notes around the headings provided; and the remaining six tutors replied in letter or short article form.

The letter to method tutors also made reference to the intention that the results of the survey would be discussed at a symposium on fieldwork to be held at the University of Durham in April, 1986. The symposium would provide a forum to introduce the research, synthesise the survey's findings, listen to the reflections from people the survey had identified as 'key personnel' and to discuss common themes and issues - particularly with respect to those contextual factors which tutors felt were significant in the development of ideas and approaches to fieldwork. As noted in the letter to tutors, it was hoped that interviews would be arranged before the symposium with those respondents who showed particular interest in the approach and subject, and who would be willing to elaborate their autobiographical viewpoints in written form. In the event, although interviews could not be conducted between the survey and the symposium some follow-up produced revealing interview data, some of which is integrated into the literature review.

The geography method tutors' responses identified individuals which they thought to be significant in generating ideas about geographical fieldwork at a variety of differing levels operating within their own career structure and life-path. The following represent levels of influence which have shaped the fieldwork practice of the method tutors:

- 1) personal friends and acquaintances;
- 2) "good fieldworkers" during geographical training and during teacher-training;
- 3) teaching colleagues at schools and field study centres;

- 4) geographical education innovators, book and article authors publicising and promoting school-based applications of concepts and techniques developed in geography in higher education. This group also includes geography curriculum project development teams;
- 5) geographical innovators, higher education geography specialists promoting ideas on fieldwork directly or incidentally through the dissemination of research;
- 6) outsiders, grouped largely by reference to their 'other' discipline - notably town-planning and architecture but also educational publishing.

The groups of individuals at each level identify important channels of communication and feedback which affect the curriculum development process. Within the first group are the personal friends and acquaintances who have uniquely influenced the tutor's fieldwork experience; second, those teachers encountered during their own periods of geographical training who made a longlasting impression on the tutor's conception of fieldwork; third, professional colleagues with which the tutor is in daily working contact and who have jointly developed ideas for fieldwork; fourth, individuals who have shaped their thinking by translating and adapting the current developments in the subject of geography to the fieldwork context in secondary education through publications, work-shops, and conference papers; fifth, university and polytechnic geographers whose research and innovation led to new understanding at the 'frontiers' of the discipline; and sixth, individuals who have effected change in fieldwork from the perspective they bring to the subject from other disciplines and other training. The unique combination of these levels of influence for each of

the tutors has shaped their perception of fieldwork's role and value in geographical learning, and one would expect, the practice of their teaching.

The levels of influence are interesting also for they reveal the absence of important influential factors. Tutors do not refer to learning theorists or other educationalists (with the notable exception of Jerome Bruner), to educational research (including their own), nor to data from educational research specifically investigating fieldwork as having a major impact upon their thinking. They do not refer to evaluation of their own teaching as a source of influence. Neither do their accounts draw attention to statements from government, DES or from HMI. Rather, the influences are very much pragmatic and subject based, and deal with the practical implications of changes in the methodological and technical aspects of geography or the conceptual changes prompted by a major reorientation of the subject's philosophy.

The levels are not mutually exclusive; individuals who are included in a group at one level may re-appear in the tutor's response at subsequent stages in their career at different levels. For instance, in John Everson's account, contact with Brian FitzGerald could be categorised initially at scales 3 and 1 and subsequently at scale 4. Other accounts (Daugherty; Graves; Kent; Walford; Wiegand;) locate FitzGerald only at scale 4. The focus of attention of the method tutors lay on this level of influence (4). This is a level to which the method tutors have a professional association, and significantly tutors referred more often to the teaching and written work of members at this level than to individuals in other categories. Although age data was not sought from each tutor, it is postulated that the similarity of responses and common references made

to particular publications and individuals, exist in part due to the development and changes occurring in fieldwork approaches at similar stages in the careers of the tutors. Closer examination of life-paths and career structures of each tutor and the critical phases and incidents encompassed within them, (for example, Ball and Goodson (eds.), 1985; Sikes, Measor, Woods, 1985), would have to be carried out to verify this.

The survey successfully identified key individuals who appeared repeatedly in the responses of the method tutors as markers or indicators of periods of significant change. The focus for the selection of speakers for the symposium in Durham came from 'geographical education innovators' (4), 'geographical innovators' (5) and 'outsiders' (6). This stemmed from the number of respondents who repeatedly identified particular individuals as influential on their thinking from these categories, for example, John Everson and Brian FitzGerald (4); Richard Chorley and Peter Haggett (5); Tony Fyson and Colin Ward (6). But attention was also drawn to these categories because key individuals within them were seen as representative of important shifts and developments in thinking towards fieldwork; John Everson (hypothesis-testing), Clive Hart (issue-based approaches), Douglas Pocock (humanistic approaches). This representation came most frequently through particular publications which were cited repeatedly by method tutors, for example, John Everson's seminal paper in the January 1969 edition of Geography or Colin Ward and Tony Fyson's Streetwork (1973), and Clive Hart's fieldwork input to the 16-19 Schools Council Geography Project (1982). Three individuals referred to by the respondents accepted an invitation to give short papers at the conference: John Everson (Chief HMI); Clive Hart (HMI); Dr Douglas Pocock (Department of Geography, University of Durham). These papers were presented, audio-taped and transcribed. It was hoped that Dr Pocock would provide some insights into

the development of 'humanistic' approaches to fieldwork, which method tutors claimed had been introduced at the secondary level in the early 1970s by individuals 'outside' the discipline of geography - people like Colin Ward, Tony Fyson, Jeff Bishop, and Eileen Adams. It was envisaged therefore, that Pocock's insights would introduce thinking from this level of influence (6) while retaining a perspective from a geographer involved in fieldwork at the higher education level (5).

Finally, in the letter to method tutors inviting their reflections, 1970 had been chosen as a benchmark to focus their thinking on a period of change in approaches to fieldwork which the literature survey had identified around the end of the '60s and into the early '70s. Many tutors responded to this by charting this shift in emphasis through publications and conference proceedings around this time, but others regretted that an earlier starting-point had not been given as their formative ideas on fieldwork pre-dated 1970. Rex Walford makes this point:

"It seems surprising to me to make 1970 the benchmark for identifying 'the changing nature of fieldwork'. By then much 'new fieldwork' was already in full swing. I would have thought that a date in the mid-sixties might have been a more suitable and significant one, say 1965. This would then encompass into the study such events as the Madingley conferences at Cambridge, the first meeting of the short-lived but influential London Schools Geographical Group, the first of the DES conferences for geography teachers on 'new developments' (Maria Grey College 1969), and the specially edited issue of Geography (January 1969) which was the published starting-place for a number of innovative ideas." (Walford, survey, 1985)

This extract, and other comments along similar lines from other respondents, indicate a strength of an autobiographical or life-history method. Reflection in this way adds to and develops the historical record which is present in the published archive; through Walford's comments we are able to see the contextual significance attached to the establishment of particular groups of individuals (London Schools Geography Group), or

sponsorship of conferences (DES), or the significance of particular events and meetings (the Madingley conference as a better benchmark for change). The published outcomes and proceedings from such conferences and meetings (see for example, Chorley and Haggett, (eds.), 1965; Walford, (ed.), 1973) do provide invaluable material with which the researcher can work but our contextual understanding of the significance of such events can be enhanced through the interpretation of 'inside' accounts.

The literature review which follows in Section II integrates themes and issues explored in the 'inside' accounts produced by the survey of method tutors, from the symposium held at Durham in 1986, and from follow-up interviews. Extracts from written responses to the survey, from transcripts of the symposium and from follow-up interviews are included in the review where appropriate.

SECTION II : REVIEW

INTRODUCTION TO SECTION II

"The teacher should from the first realise that some of the most valuable parts of the training his pupils can receive are not attainable within the walls of the class-room. Where practicable he should himself take walks with his pupils and direct their attention to the objects to be seen as they go. There are no doubt practical difficulties in the way of carrying out this method, but these are generally not insurmountable... It is hardly possible to overrate the benefit that arises from this co-operation of teacher and taught in the open air. The restraints of the schoolroom are suspended without giving way to the licence of the playground; there is a freer and friendlier intercourse, not only between master and pupil, but among the pupils themselves. The most timid and the most forward are placed on the same footing, the retiring pupils of the ordinary class-work not infrequently coming well to the front by their quickness of perception and swiftness of inference. A teacher full of enthusiasm for Nature, and ready to share his love for it with his scholars, is sure to find his way to their hearts, to kindle in all of them a respect and in some of them a love for the objects of his own affection. He may not in any sense be a naturalist, and may not dream of making naturalists of his pupils. But by directing their eyes to the outer world and leading them to take a reverent heed to what may there be seen, he fills their minds with a healthy influence, while at the same time he powerfully stimulates their powers of observation and deduction, and thus contributes in a most important degree to their education." (Geikie, 1887, p.17)

This introductory statement was written by Archibald Geikie in his The Teaching of Geography a little more than a hundred years ago, and yet apart from the subtle changes in language, the claims he makes for fieldwork's role in geography, and the sentiment he expresses in his rhetoric could have been taken from the pages of a geography teaching journal or 'method' text for geography teachers a century later in the 1990s. Geographers and educationalists have long claimed a central role for fieldwork in the teaching of geography and the training of geographers. Arguing for the value of its contribution to the knowledge base of the discipline and to its importance as a method of teaching geography's concepts and principles is not a new phenomenon. Neither is it novel to see statements which extend the claims made for fieldwork's value outside of the subject of geography and into a role in which fieldwork is seen as the means to achieve wider educational aims such as the broadening of pupils' personal

experience, the development of social skills of communication and teamwork, the tolerance of alternative views and opinions, and the development of a free and liberal society.

There are many contemporary themes in Geikie's advocacy for fieldwork in geographical education. He notes, inter alia, the practical constraints of taking pupils into the field; argues that once relieved of classroom restraints pupils and staff benefit from a more relaxed, friendlier interaction; and suggests that fieldwork is beneficial in teaching pupils of a wide ability range. He discusses the teacher's role in fieldwork, arguing that it should be to direct and lead with enthusiasm and to stimulate pupils' observation, inference and deduction skills. And he puts forward notions which have had an interesting legacy in the development of the subject and the fieldwork movement in the century that followed: fieldwork provides a medium to inculcate an ethic (which today we might term a green ethic, ecocentrism or ecologism (Bramwell, 1989) which concerns the development of a pupil's sense of respect, love and "reverence" for the environment. Geikie also suggests that fieldwork can be "profitably conducted in a large town" (Geikie, op.cit. p.18) but it is "of course most advantageously undertaken in the country" (ibid., p.17). He concludes that through this "healthy" experience for mind and body, fieldwork contributes "in a most important degree" to pupils' "education" and "training".

I will examine in detail the legacy of these and other themes in the development of fieldwork and the fieldwork movement later in this literature review. But by way of an introduction, it is sufficient to note here that these themes not only have a contemporary relevance for the modern geography curriculum but are also pertinent to addressing

contemporary problems concerning teaching methods and the process of teaching. For example, Geikie places importance on a method which seeks to emphasise a pupil's engagement in observation and dialogue rather than in rote learning, and supports a definition of content in terms of relevance to pupil experience - the "familiar things of everyday experience" (*ibid.*, p.10) within the context of the immediate local surroundings:

"A fact discovered by the child for himself through his own direct observation becomes a part of his being, and is infinitely more to him than the same fact learnt from hearsay or acquired from a lesson-book. The idea of discovery should be encouraged in every way among children... teaching only by rote ought to be strenuously abolished. What is imperatively needed is that geography should become a thoroughly effective and valuable educational discipline. For this end, children should, as early as possible, be taught to use their eyes in observing what lies around them, and their own judgment in drawing conclusions from what they see." (*ibid.*, pp.8-9)

The contemporary parallels observable in Geikie's text are reinforced when it becomes apparent that similar fieldwork themes like discovery, experiential learning, and problem solving through field observation and analysis of field data, are being addressed by modern geographers advocating the continuation of fieldwork as a component of the current geography curriculum. A century on from the publication of 'The Teaching of Geography' and Professor Denys Brunsdon in his presidential address to the Geographical Association (Brunsdon, 1987a), restates the central role of fieldwork in geography as 'exploration and discovery' and argues that as such fieldwork remains a "fundamental basis of our discipline that today occupies a more important role than ever before" (*ibid.*, p.194). Like Geikie, Brunsdon emphasises the educational benefits to be gained from the fieldwork experience: "Fieldwork has developed from many origins and must be regarded as a fundamental pedagogical device within the British educational system" (*ibid.*, p.193). Brunsdon goes on to suggest that as a method of teaching which links explanation to a pupil's own experience, fieldwork leads to the development of a critical awareness and

understanding of the environment as well as promoting "self-knowledge... in the senses of freedom and responsibility... My central thesis is that fieldwork as an educational method has a role to play in the development of a free and liberal society" (loc.cit). In seeking illustration of his thesis through an historical study of the fieldwork movement's origins and development, Brunnsden's address demonstrates the extent to which fieldwork is embedded in the discipline's roots, and underlines the fact that the concept of fieldwork lies close to the hearts of many of geography's most famous exponents. Through Brunnsden's catalogue of influences which have reinforced fieldwork's position in the geography curriculum, his address also shows what could be regarded as geographers' peculiar obsession with the concept of fieldwork.

Despite a plethora of literature restating the role of fieldwork in geography produced in the intervening years that separate Geikie's 'Teaching of Geography' from Brunnsden's address to the Geographical Association, there has been surprisingly little attention paid to critically appraising the sort of assumptions and claims for fieldwork made by Geikie, Brunnsden and others. This review seeks to redress the balance. It focusses on the development of fieldwork from two main perspectives. First, it examines a number of themes which have emerged from the changing approaches to geography fieldwork that have developed concomitantly with changes in geography's philosophical and methodological orientation, and second, fieldwork's role in the teaching of geography and its implications for pedagogy as a whole - perspectives which I term 'geographical' and 'pedagogical'. The review also marks a point of departure for new insight into fieldwork's role and value in geography, since it draws upon first-person accounts from 'insiders' - geography method tutors, HMI, and lecturers in higher education - to guide the literature review. The

production of these accounts was described in Chapter 2. They are used to supplement the published record by highlighting key events, seminal publications and general trends which have shaped their perception of fieldwork's significance in geographical education.

The two perspectives on the development of geography fieldwork provide a framework for the review in this thesis. In Chapter 3, I explore themes in the literature alongside first-person accounts from the geographical perspective; examining the relationship between change in the subject's methodology and philosophical orientation and changing approaches to fieldwork. Thus, for example, a predominant concern in geographical literature has been the relationship of fieldwork to the nature and practice of the discipline of geography. In this respect geographers have shown a particular concern for fieldwork's role in the training of future geographers, both in terms of its role in shaping the product of such training - the nature of the trained geographer - as well as influencing the type of geographical training provided. Fieldwork and training linked in this way have clear, although usually implicit, implications for the nature of geographical education being advocated. Fieldwork perceived as a training in geographical methods has historically given rise to some key concepts which became a sine qua non of a geographical education, such as the geographer's concern to develop a 'morphological eye' and an 'eye for country or landscape'. Such concepts lie at the heart of the significant conjectures on the subject from the geographers Carl Sauer and S.W. Wooldridge which the literature has widely interpreted as 'traditional' approaches to fieldwork. These traditional approaches require, therefore, close examination if we are to unravel the complexities of such statements on fieldwork which subsume notions of method, concept, and professional training.

The review also identifies important periods during the development of the discipline in the 1960s and 1970s which had direct bearing on the type and nature of fieldwork being propounded - claims were made in the literature for a move from field teaching to field research; a move which was argued to have first been felt in geography in higher education and subsequently in schools and which marked the discipline's drive towards analytical studies of process rather than description of form in the field. Authors interpreted, or even caricatured this change as a shift from a 'capes and bays' geography concerned solely with memorisation of content to a 'new geography' attempting to promote understanding of geographical concepts and processes. The move to measurement of process prompted a take-off in the 'field techniques' literature which attempted to cater for the growing demand of students needing to collect, manipulate and analyse field data. The field techniques literature is marked by an emphasis on the procedures of empirical enquiry including varying interpretations of 'scientific' method, principles of sampling and data collection in the field, field equipment, and the handling of the primary data whether by statistical operations or the use of relevant software. Numerous accounts are available in the literature which serve to translate the methods and techniques used in geographical field research in higher education for the GCE A-level student (see for example, Pilbeam, 1980; Beaumont and Williams, 1983; Lenon and Cleves, 1983), and recently there has been an associated growth in this type of field techniques literature for pupils undertaking fieldwork as part of their GCSE assessment (Greasley, 1984; Barton, 1985; Glynn, 1988).

The review marks a similar higher education stimulated shift during the 1970s to incorporate behavioural and humanistic aspects of the subject

although the benchmark for change is less easy to identify and the resulting effect on fieldwork in the discipline less well charted. Fieldwork became not only concerned with technical competency but also more applied in addressing environmental problems with its new-found technical expertise. The themes for fieldwork became more issue-based in line with the strengthening of the conservation lobby's interest within and outside geography in man-environment problems, and students were seen as needing to develop an understanding of the opinions and values of the individuals and groups involved in environmental decision-making, and an awareness of their own moral stance with respect to solving environmental problems. The political overtones of what to do, and how to act once such an awareness and attitude had been developed were an obvious offshoot of an approach which sought to directly engage the pupils in a mutual responsibility in environmental and societal problem-solving, but geographical material on fieldwork which sought to demonstrate how students could explore aspects of political decision-making was less prevalent in the pages of the geography teaching journals and handbooks or 'method texts'.

In Chapter 4, fieldwork is considered from the perspective of a pedagogical device. The primary objective of the chapter is to focus on the results of research undertaken by geographers and others who have sought to assess the educational efficacy of fieldwork in teaching concepts, attitudes and skills. However, as well as assessing the empirical results of such research, the studies allude to a general trend during the 1970s and 1980s towards engaging the students or pupils actively in the field investigation through highly structured participatory work in which hypothesis-testing plays a dominant role. Fieldwork which had been characterised by teacher exposition was labelled didactic and the vogue was to move away from such expository forms towards more pupil-centred teaching

in which the teaching and learning was orientated around pupil discovery of themselves and the subject through participation in field-based investigations. The review reveals that these pedagogical strands and the continued emphasis on fieldwork's prima facie case for developing students' observation skills runs through the fieldwork literature. It does so, despite the fluctuations and changes in geography's perception of relevant field content and shifts in the student's role in fieldwork - a continuum on which both the rational objective field scientist, and the 'interested' decision-making citizen in the liberal education tradition, has a role to play in defining the geography fieldworker. The fieldwork literature has been less precise in formulating a theoretical educational base for the new pedagogical developments of teaching and learning strategies which it has sought to promote or adopt. At best this literature is characterised by theory which is implicit in the approach to fieldwork being put forward, at worst the argument for a particular approach has been reduced to aphorism and anecdote. Occasionally reference in a geography 'method' text would be made to the work of psychologists and educationists like Jerome Bruner and Paul Hirst (see for example Walford, 1973, p.2) but rarely would theory at this level be explicitly used to construct fieldwork teaching materials, or to develop means of assessment; the stress being placed on the 'justificatory principle' of their work giving "solid foundation to the intuitions of early practitioners" (my emphasis, Walford, op.cit., p.2; see, however, Hall, 1976, pp.225-285).

In conclusion, the literature review that follows addresses the twin themes of fieldwork's link to the philosophy and methodology of geography, and fieldwork's association with pedagogy. On the one hand, the review seeks to trace the historical development of the fieldwork movement within geography, and to assess the reasons for fieldwork becoming firmly embedded

in the discipline's roots and the causes that prompted many of geography's famous exponents to become ardent fieldwork protagonists. This historical analysis of the fieldwork movement is set within the context of geography's paradigmatic shifts in philosophy and ideology, and it therefore includes reference to the periodic heretical statements on fieldwork which stemmed from new developments in geography's research methodology. It demonstrates that fieldwork at the secondary education level acts as a responsive mechanism to the new techniques and methodologies which accompany a major reorientation of the discipline in higher education. On the other hand, the review provides examples from the research literature of studies attempting to evaluate fieldwork as a pedagogical device. This literature is drawn from studies of a range of pupil ages and abilities undertaking fieldwork as a part of a broad environmental education and includes educational evaluation and research that specifically addresses fieldwork in the geography curriculum. The review emphasises the eclectic range of approaches used by educational researchers and describes their major findings.

The twin perspectives of this review are shown to impinge at many different levels of the geography curriculum: through the selection of appropriate geographical content for investigation they encroach on what we study in the field; through the application of empirical enquiry and the widespread adoption by geographers of a pseudo-positivist conception of science they determine how we study in the field; and through the practice of combining content with method to generate geographical understanding in our pupils they give rise to implicit assumptions of how best to teach. The ways in which these levels of analysis of fieldwork interact gives rise to a number of fundamental questions about the role of fieldwork in the geography curriculum, some of which are scrutinised in detail in the case-study later

in the thesis. Through their scrutiny we may come to a deeper understanding of the role and value of fieldwork in geographical education, and to appreciate why fieldwork has been referred to as "our fundamental data source, our laboratory, and our training ground." (Brunsden, 1987b, p.8)

CHAPTER 3

THE ROLE AND VALUE OF GEOGRAPHY FIELDWORK: GEOGRAPHICAL PERSPECTIVES

3.1 Wooldridgean Traditions

Geography for the first half of the twentieth century has been concerned with what Schaefer termed 'exceptionalism' (Schaefer, 1953). In his challenge to the Hartshornian orthodoxy of areal differentiation which had been the dominant paradigm up to the 1950s, Schaefer made a clear break between the old and the new (Johnston, 1979); the 'old' idiographic geography concerned with regional description and classification and the 'new' nomothetic law-generating science of geography. Fieldwork in the 'traditional' sense was very much part of the credo of areal differentiation which Schaefer criticised, and in this section I shall seek to explore the influences of an 'exceptionalist' view of geography on establishing the genre of traditional fieldwork in geography and the legacies of such traditional approaches to contemporary geographical teaching. In particular, this section traces the historical antecedents of fieldwork's concern with the observation and recording of the morphology of the natural landscape, training an 'eye for country', developing skills of map to land comparison, and the pedagogic significance of fieldwork's early link to local studies.

(a) Empiricist Foundations

Beaver (1962) argues that much of the fieldwork characteristic of the nineteenth century was manifest in the reports and monographs written in the 'exploration' tradition by individuals seeking new and utilitarian information about the world by journeying and mapping large tracts of terra

incognita. Organised and financed largely through geographical societies such as the Royal Geographical Society (founded in 1830) and its counterparts in Paris (1821), Berlin (1828), and New York (1852) (Stoddart, 1986, p.59) this work has been seen as the product of both the 'encyclopaedic trend' in geographical literature and the 'colonial trend' (Freeman, 1961) which aimed to collect, collate, and disseminate information concerning commercial activities and infrastructure. Statistics on population, production and trade were available to a wide audience through the publication of volumes such as Chisholm's Handbook of Commercial Geography (1899) and Gazetteer of the World (1895), and their companion volumes for use in schools were the focus of a 'capes and bays' geography concerned with the teaching and assimilation of large quantities of factual information (Johnston, 1979, p.31). A primary element in the formative years of geography as an empiricist practice was, therefore, the collection, recording and classification of factual information gleaned from field-based observations and their dissemination for political, economic and educational purposes often in cartographic form (Johnston, 1983).

Prior to 1887 and the first appointment of geographers to the universities, this classificatory fieldwork was done by individuals with no specific training in geography. This situation persisted into the twentieth century with notable geographers like Wooldridge receiving their initial training in other field sciences like geology or biology, and for Stoddart (1986, pp.48-51) this is a trait common to some of the founders of modern British geography. S.W. Wooldridge with his geological training was like Stoddart's other founding fathers, Mackinder, Fleure, Taylor, and Dudley Stamp, in that he brought to the discipline interests, methods, and training from a background outside that of geography. As well as skills

attributable to a training in other disciplines, Stoddart argues that these geographers shared a common commitment to fieldwork, whether physical or human, and "especially in the local area and especially in the British Isles" (ibid. p.51). Commonalities such as these are significant because they highlight the role of the natural sciences, and most particularly geology, in shaping and orientating the subject matter of geography and its method of research during its early years.

As Board notes (1965, p.186) geographical fieldwork in Britain had strong roots in the methods of observation and recording characteristic of naturalists such as Gilbert White, who in his Natural history of Selbourne (1789) had begun to depict places as being "composed of objects which could be recorded and related to each other in an objective manner, rather than as simply triggers to mood and expression" (Stoddart, op.cit. p.34). The methods and approaches of the field sciences of botany, zoology and geology were determined around this time by the establishment of systems of classification and taxonomy, such as that of Linnaeus (Systema naturae, 1735). Classification together with the introduction of the comparative method therefore unified the field sciences in method and technique, and combined with the professional unity which was being created by the growing specialisms within natural science. Geologists like Geikie saw the role of fieldwork as an important linking mechanism between the developing specialisms of mineralogy, petrology and palaeontology, although the increasing parochialism of the discipline and the need to supply the university demands for texts and lecturing led to a diminished support for fieldwork and mapping. Geikie viewed this trend with some concern and he paid particular attention to the need for scientists to continue to expand the knowledge base by cultivating the faculty of observation through first-hand experience of phenomena in the field. Thus, fieldwork for

scientists like Geikie became both the data source and the mechanism by which future geologists could be trained, and by training the prospective geologist to see more in the world "than is visible to the uninstructed man" (Geikie, 1905, p.296) the subject's overall professionalism and status could be reinforced and its development perpetuated.

(b) Fieldwork and areal differentiation

Partly as a result of many prospective geographers being not trained, at least initially, in geography but in natural sciences such as geology and biology, much of the work of the nineteenth and early twentieth centuries was focused on the nature of the physical environment. This led to "a theoretical position [being] established around the belief that the nature of human activity was controlled by the parameters of the physical world within which it was set" (Johnston, 1979, p.32); a position which has subsequently attracted the label 'environmental determinism'. The view that "the environment controls the course of human action" (Lewthwaite, 1966) is traced by Gregory D. (1981, p.103) and others to the influence of Darwinism, whose ideas made it "inevitable that geographers, along with other scientists, should begin to see differentiation of man the operation of natural laws." (Tatham, 1951 in Gregory D. loc.cit.)

The cause and effect relationship of the nature/man dialectic has been widely interpreted as environmentally deterministic in the work of geographers like Friedrich Ratzel, and his students Semple and Demolins. Indeed Johnston cites Semple's opening statement "Man is the product of the earth's surface" (in Johnston, 1979, p.32) in her Influences of Geographic Environment (1911) as indicative of the gross extremes which the position could adopt in linking environmental cause with human behavioural effect.

It was unsurprising then that an opposing thesis developed to counter such claims. The term 'possibilism' or "the view that the physical environment provides the opportunity for a range of possible human responses and that man has considerable discretion to choose between them" (Gregory D., 1981, p.269), is attributed by Holt-Jensen (1980, p.26) to the French historian Lucien Febvre but the approach was already formulated in the French school of geographers in the late nineteenth century - most notably in the work of Vidal de la Blache and Jean Brunhes.

Vidal's form of possibilism is regarded by Gregory (op.cit. p.269) as mediatory between the extreme polar positions which the deterministic/possibilist continuum could adopt. For Vidal there were no general laws governing the nature/man relationship; no divides separating the cultural environment from the physical. Rather, cultural and physical phenomena co-existed in unique regions in mutual interdependence; a genre de vie existed in such a unified functioning whole or organism with the livelihood of the region's occupants as its cultural basis. The demarcations of the pays or small regional units were based on personal interpretation of landscape characteristics as identified in the field, and were defined by their distinct physical characteristics (soils and drainage) and their associated agricultural specialisms. Each region, therefore, was a unique combination of phenomena and had an identity or even personality - boundaries could be drawn for such areas, for instance around the Alsace and Lorraine in La France de l'Est (Vidal de la Blache, 1917). For Vidal, these regions functioned predominantly at the local scale, in contrast to the larger scale pre-occupations of British geographers like Herbertson whose regionalism attempted to divide the earth into major natural regions, based on the association of "surface features, climate and vegetation" (Holt-Jensen, op.cit. p.34).

The regional concept is perhaps most significantly in evidence in Hartshorne's monograph The Nature of Geography: A Critical Survey of Current Thought in the Light of the Past (1939); which "rapidly established itself as the definitive statement of the paradigm" (Johnston, 1979, p.34). Hartshorne's view that the focus of geography should be areal differentiation is well known:

"According to this view, the principal purpose of geographical scholarship is synthesis, an integration of relevant characteristics to provide a total description of place - a region - which is identifiable by its peculiar combination of these characteristics... the 'classic' regional study usually followed a sequence comprising physical features, climate, vegetation, agriculture, industries, population and the like (Freeman, 1961, p.142) and summarised by a synthesis of the individual maps to produce a set of formal regions." (Johnston, 1979, 35-36)

For our purposes, the importance of such concepts lies in the method by which regions were identified. Based on empiricist traditions described above of collecting field data and comparing the areal expression of individual and interrelated phenomena in cartographic form (areal correspondence), the 'personality' of one region could be separated from that of another. Map comparison was thus a key element in the Hartshornian orthodoxy and the geographical emphasis lay firmly in the ability of geographers to observe and record data through fieldwork, and to interpret and use the cartographic representations of such data. The form in which fieldwork was conducted and its methodological aims were of central importance, therefore, to geographers during the period in which Hartshornian areal differentiation and the regional concept became the dominant paradigm in geography.

The dominance of the regional paradigm extended into the 1950s and 1960s in British geography and pervaded the training which many of the geography

method tutors surveyed for this research received at school and in higher education. Their recollections of early geography fieldwork were of traditional approaches which were enshrined in phrases like that of James Fairgrieve - the best way to learn geography was "through the soles of one's boots" (Fairgrieve, 1926) and in Wooldridge's own memorable remarks that the object of fieldwork was to "develop an eye for country" (Wooldridge, 1955, p.78) with the purpose of seeing and relating components of a landscape on the ground - the "primary document" for the geographer - with that depicted by a map.

"'Go out into the field, for through the soles of your boots shall ye learn'. That somewhat simplistic dictum was often quoted to me in my school days, by a geography teacher ever eager for his pupils to have field-work experience. We clocked up the miles on field trips with missionary zeal, anxiously believing that virtue would accrue in large quantities if the hike was more than six miles and we came home raw-soled and properly exhausted. In a generation nurtured on the philosophy of the Le Play Society, inspired by the example of S.W. Wooldridge, and receptive to the outdoor exploits of the Baden-Powell organisations, field teaching and the development of an 'eye for country' became the Holy Grail for many geographers from the twenties to the sixties." (Walford, 1984, p.18)

Being able to identifying components in the landscape and being able to relate those observations with the information conveyed by the map were skills central to the training of geographers: "the essence of training in geographical field work is comparison of the ground with the map" (Wooldridge, *ibid.*, pp.78-79) in order that the student be able to appreciate the scale of phenomena and be able to make "significant additions" to the map (Wooldridge, 1951, p.165). The purpose of this work, aside from its importance for geographical training, was the "close examination and analysis in the field of an accessible piece of country, showing one or more aspects of areal differentiation" (Wooldridge and East, 1951, p.161) with the ultimate aim of producing the "regional synthesis" (Wooldridge and Hutchings, 1957, p.xi).

(c) Training the 'morphological eye'

One important characteristic in geography's search for regional synthesis was a latent environmental determinism which placed traditional emphasis on the physical landscape (and the emergent geographical systems of geomorphology, biogeography, climatology) as delineating the region's social fabric and human geography (economic, social, political and historical). Geographers were trained by doing fieldwork in 'natural' environments to recognise morphological components in the physical landscapes.

This determinism and the focus on the physical landscape was partly the result of geography's early association with physiography - an integrated view of the physical environment which was defined as "the study of the causal relationships of natural phenomena or a consideration of the 'place in nature' of a particular district" (my emphasis, Huxley, 1877, in Gregory K.J., 1985, p.31), but was also, as David Stoddart notes, the likely outcome of so many of geography's founders coming from academic disciplines such as geology and biology. The attention to 'natural phenomena' was concentrated particularly on the study of landforms where fieldwork's twin characteristics of detailed observation and recording with that of landform mapping formed the basis of geomorphology. After the success of Huxley's Physiography in 1877 geography became increasingly concerned with the morphology of landscapes and their historical explanation and once geography had acquired the organising principle of W.M. Davis's 'cycle of erosion' the evolutionary study of landforms set the tenor for much of the geographical fieldwork of the twentieth century. Because of the emphasis on landforms and their evolution from the influence of Davisian

geomorphology, fieldwork came to be seen very much in terms of studying the visible landscape with the aim of geomorphology being to produce an "historical geography of the physical landscape" (Wooldridge, 1951, p.28). Observation of the visible features of the landscape was the means of searching for legacies in the present landscape to explain and interpret its evolution.

In the United States the work of Carl Sauer also emphasised geography's role in studying the morphology of visible landscapes, but here attention shifted away from studying the historical development of landforms and towards the cultural landscape, which Sauer saw as the "culminating expression of the organic area" (Sauer, 1925, p.32, in Board, op.cit. p.193). Nevertheless, for both Sauer in the USA and Wooldridge in the UK the cultivation of the 'morphological eye' or the 'eye for country' was the principal aim of fieldwork and as such fieldwork was seen as the primary means of training the geographer.

For Carl Sauer, like S.W. Wooldridge, geography was first and foremost a science of observation: "one orders by reflection and reinspection the things one has been looking at, and that from what one has experienced by intimate sight come comparison and synthesis. In other words the principal training of the geographer should come, wherever possible, by doing fieldwork" (Sauer, 1956 pp.295-296). Such first-hand field observations were directly linked to the promotion of a "feeling of personal discovery" and curiosity (Sauer, ibid., p.289). Therefore for Sauer, observation in the field was more than simply an exercise in recording visible features in the landscape. Rather, Sauer regarded fieldwork as a learning experience which cultivated through observation an 'eye for country' and which led to the geographer being able to compare and synthesise information.

"There is, I am confident, such a thing as the "morphological eye," a spontaneous and critical attention to form and pattern. Every good naturalist has it, and many of them are very good at geographic identification and comparison" (Sauer, ibid. p.290)

Stemming from the early empirical work of Sauer and the Berkeley school (Sauer, 1925) the emphasis on studying the morphology of landscapes was fundamentally historical in purpose. Description and explanation of form in the landscape was insufficient unless considered from the perspective of change over time. The aim of geography for Sauer, was to study and reconstruct this process of successional development of human culture within a spatial setting. In contrast to the later regionalism of Hartshorne, Sauer's interaction of human ecology with landscape morphology avoided the identification of regional boundaries as a central concern. Instead, Sauer's catholic view of geography sought a form of synthesis or to use his own term "geographic awareness" (ibid., p.291) which did not subscribe to a particular methodology or the use of certain techniques. Thus, for the geographer "the important question here is not whether he gets practice in mapping techniques but whether he learns to recognize forms that express function and process". Whether from 'topical studies' of geomorphology, biogeography or natural history the important element in a geographer's initial training (which he may subsequently apply later in a regional thesis) is to develop an awareness of form, "to recognize kind and variation, position and extent, presence and absence, function and derivation..." (ibid., p.296). Fieldwork then, was the principal medium through which such a training could be achieved.

In Britain, the morphological approach to studying landscapes concentrated largely on the physical characteristics of rural areas. The urban and cultural landscape was seen as blurring the clarity of the palimpsest; economic and social factors were seen as obscuring proper description and

interpretation of the 'natural landscape'. Board (1965) criticises this restricted view of the landscape morphologist and argues that it "has frequently been adopted by the geographical field teacher, with the result that an imperfect picture and explanation of the region under study is inevitable" (p.193) Nevertheless, despite such criticism, Walford's response to the survey conducted for this research shows that the search for historical explanation of the evolution of the natural landscape by 'eyeballing' its surface features remained the dominant paradigm in the 1950s and early 1960s:

"My own student experiences of fieldwork, at school and in the Joint School of geography at LSE/King's, were mostly of the traditional 'field teaching' kind. Teachers and lecturers led us through town and country (but mostly country) and discoursed at length about what they saw in the landscape (denudation surfaces, the incidence of local building materials, agricultural practices). We listened, wrote notes on a melange of topics and occasionally tried to draw an annotated field sketch." (Walford, survey, 1985)

(d) Fieldwork and Local Studies

A characteristic of literature encompassing traditional approaches to geography fieldwork is its call for pupils to be given the opportunity to undertake surveys and investigations in the local area surrounding a school or the home region. A key principle in fieldwork which emanated from the early roots of geography in the late nineteenth century, which was advocated by Wooldridge and others in the 1950s, and which remains evident today in the National Curriculum proposals for geography (DES, 1990) is that fieldwork should begin in surroundings immediate to the experience of pupils and move to unfamiliar environments with pupils transferring knowledge from one context and scale to the next. Traditional fieldwork was based on the assumption that fieldwork conducted in the local area will hold more meaning and relevance for pupils than if conducted in more distant and therefore unknown environments.

Carl Sauer supported the notion in his statement on the 'education of the geographer' (Sauer, 1956). The art of doing fieldwork was to be learnt in local environments and practiced in more distant locations:

"It is one of our oldest traditions to start by observing the near scenes; it is equally in the great tradition that the journeyman goes forth alone to far and strange places to become a participant observer of an unknown land and life" (p.296).

S.W. Wooldridge argued that:

"...to make a thing real you must make it local and I am completely persuaded that geography begins at home. What we have to develop if we seek status for our subject is the art of seeing and using accessible local ground as a laboratory for our teaching... The road to the attainment of both our objectives, the improvement of the status of our subject and our teaching of it, lies in the development of the laboratory spirit and the careful, indeed minute study of limited areas." (Wooldridge, 1955, p.80)

The link between fieldwork and local studies can be traced back to statements on geographical education by Fairgrieve who advocated that the teaching of geography should be organised on the principle of moving from the "known to the unknown"; from the "simple to the complex"; from the "concrete to the abstract" which "strengthens our conviction of the importance of the home region, school journeys, and educational visits... These supply the only real measure and illumination of conditions elsewhere..." (Fairgrieve, 1937, p.8).

Fairgrieve's conviction parallels T.H. Huxley's earlier demand that geography should be a subject studied from direct experience. For Huxley geography "was to be learned in the village and countryside, not read about in books. The field trip and the specimen were the means to knowledge, with the aim an understanding of the world in which we live" (Stoddart, 1986, p.47). From 1857, Huxley presented a series of lectures around the

country to the general public on a broad theme of 'Man's place in nature'. His lectures on 'a piece of chalk' (1868) or 'a piece of coal' (1870) were didactic in aim and method and based on the rational empiricism that science was the trained and organised study of 'common things'. His emphasis on physical objects in his lectures or 'object-lessons', held the pedagogical advantage that subject matter was structured around the daily lives and experiences of his audience and appealed to a wide spectrum of the public. For Huxley, science was based on the induction of general laws from a set of unambiguous empirical facts, and his lectures and associated text Physiography (1877) were organised on the same 'common sense' principle with data of increasing scales being linked together by a system of deterministic causality:

"the application of the plainest and simplest processes of reasoning to any of these phenomena suffices to show, lying behind it, a cause, which will again suggest another; until, step by step, the conviction dawns upon the learner that, to attain even an elementary conception of what goes on in his parish he must know something about the universe; that the pebble he kicks aside would not be what it is and where it is unless a particular chapter of the earth's history, finished untold ages ago, had been exactly what it was." (Huxley, in Stoddart, 1986, p.189):

Stoddart argues that "Huxley's genius... was to link this mode of explanation directly with the child's own experience, thus inverting the normal approach of physical geography texts of the day, and supplying an organising principle which many of them lacked." (loc.cit.)

Thus the book begins with:

"...the Thames at London Bridge. Working from the local and familiar to the unfamiliar, Huxley dealt with springs, rainfall and climate, water chemistry, denudation, glacial erosion, marine erosion, earth movements and volcanicity, deposition in the ocean and the formation of rocks, the geology of the Thames basin, and finally the earth as a planet, its movements and the seasons, and its place in the solar system" (my emphasis, loc.cit.)

"I endeavoured to give them a view of the place in nature of a

particular district of England - the basin of the Thames - and to leave upon their minds the impression that the muddy waters of our metropolitan river, the hills between which it flows, the breezes that blow over it are not isolated phenomena to be taken as understood because they are familiar..." (Huxley, in Wooldridge, 1955, p.81)

The fact that Wooldridge used the quotation above in his The Status of Geography and the Role of Fieldwork is indicative of the impact that Huxley's text and approach had on geographical education during the late nineteenth century and for the first half of this century. Wooldridge interpreted Huxley's approach as "clear and authoritative words" indicating "the royal road by which careful local study can be projected as a searchlight beam into our wider universe of discourse" (loc.cit.). Behind the hyperbole was the clear intention that fieldwork in a local study context, moving gradually from the familiar to the unfamiliar, should be at the heart of school geography syllabuses, as it was originally for Huxley.

Huxley's emphasis on the local study which so influenced Wooldridge, formed the rationale for his use of the Thames basin in his lecture plan and which was later re-worked into the Physiography text. Huxley's concept of the Thames basin as his starting point for both his book and lectures, was significant firstly, in that it was transferrable to other different local contexts: "It is easy, for example, to make the Medway, the Severn, and the Forth, or the Clyde the starting point of our studies of nature" (Judd, 1878, pp.178-180), and Stoddart notes that in the French and German translations of Physiography the Thames was replaced by the Seine and the Elbe and Weser respectively (Stoddart, op.cit. p.190).

Second, local studies were seen by Huxley and others of the time (see for example, Keltie, 1886) as a pedagogical device based on the premise that understanding as well as memory of geographical information could be enhanced by such information being presented to pupils in such a way that

it related to their direct experience. Attention focused on the methods by which physiography and political geography were being taught. Much of this interest came from comparisons between the German and English forms of geographical education; Keltie was in no doubt that "Germany may be taken as the model which all the other continental countries are following" a model which shows the "high standard of German geographers - a standard which, so far as education is concerned, we are not within sight of" (Keltie, op.cit., p.38). Keltie was particularly impressed with the elementary or primary geographical education which was based around a method of heimatskunde which "proceeds from the town or immediate neighbourhood to the district, then to the province, and so outwards to Germany, Europe, and the other parts of the world" (loc.cit.). Its method was structured around the principle of Anschauungslehre or the teaching by actual observation, the roots of which lie in the early educational psychology of Pestalozzi. Central to the approach of heimatskunde was the assumption that geographical knowledge could best be learnt and understood through the observation of phenomena within a context that is part of a pupil's experience:

"First, their knowledge of the points of the compass was tested practically; the directions of the principal streets; the principal buildings and their positions with reference to squares, streets and other buildings; names of the leading streets, buildings, squares, promenades, and their relative positions. Each suburb was treated in the same way. The boys were then sent to the map to point in reply to the teacher's questions; and they were made to put questions to each other. A boy was asked where he lived; he would give the suburb and the street. He had then to tell the streets he traversed in going home; the monuments, churches, parks &c., he passed. Next he had to point out on the map his route to and from school, naming the directions he took. Then the boys were examined on their atlases in the same way as on the large map. In all cases the boys were intensely interested." (loc.cit.)

Understanding, in this case the compass directions, was therefore seen by Keltie as having been achieved through the indirect observation in the classroom of phenomena available through map comparison, but the

significance lies in that the information was made relevant to the pupil's experience before abstracting the idea to a scale beyond that direct experience. Further, Keltie was clear that although such an approach could be achieved in the classroom, it was best developed when the observation could be done at first-hand in the field:

"An essential part of Heimatskunde... is the taking of pupils on excursions to the districts around the school, and, if practicable during the holidays, on somewhat distant tours. With their maps in their hands they identify the leading features, become personally acquainted with cities, rivers, mining, districts and minerals factories... At the same time, both in the school neighbourhood and elsewhere, opportunity is taken of practically illustrating the elementary facts and principles of geographical knowledge, and of making such observations and experiments in connection therewith as will be understood without difficulty." (Keltie, op.cit. p.41)

Keltie's report is indicative of an early recognition by geographers that their subject should move away from crowding "the memory with barren names of places" and imparting "a knowledge of their positions by means of a map". Replacement was sought in methods which would encourage and develop geographical understanding and fieldwork as local study was central to this aim. This 'understanding' was to incorporate notions of attentiveness, the reduction of boredom, motivation, as well as training "the intellectual faculties" and developing "the power of observation and reflection" thereby presenting "many opportunities for acquiring facility and clearness of expression" (Ravenstein, 1886, p.165). Ravenstein's sentiment is echoed by Stoddart's reference to Joseph Conrad who felt that "Of all the sciences, geography finds its origin in action" in contrast to the inactive world of the lecture theatre and library. Conrad warned of the subject becoming a "bloodless thing with a dry skin covering a repulsive armature of uninteresting bones" like the "bored professors" who taught it, and "who were not only middle-aged but looked to me as if they had never been young" (in Stoddart, 1986, pp.142-142). Later, it was perhaps with this in mind that Wooldridge called for geography to return to exploration and

fieldwork, and denounced the "insidious temptation to spiritous theorizing" which pervaded the geography of the "bar-parlour" (Wooldridge, 1948, p.3).

In summary, Huxley's 'object-lessons' of the 1860s-80s and their successful dissemination in the text Physiography built upon the simple but novel principle of heimatskunde which Keltie observed in the teaching in German schools. The concept seeded in the schools geography's long association with fieldwork and local studies, and established the claim that first-hand observation and experience gained from local studies was central to developing pupils' understanding of geographical phenomena - "Geographical facts are to be brought home to the minds of the pupils by inviting them to a study of the geographical features and phenomena which fall under their personal observation or experience. These facts are to become realities for them and not mere abstractions." (Ravenstein, op.cit. p.166)

"The result of this instruction will be to place the pupils in possession of a vast number of facts, which, being the result of actual observation and experience, will become their absolute property and dwell in their memory." (ibid. p.168)

The conceptual linkage between observation, realism, and understanding found in Huxley's text and in Keltie's report is a fundamental tenet of a pedagogical assumption that has pervaded geography fieldwork since the nineteenth century: that knowledge gained primarily by first-hand observation and experience through the vehicle of a local study is, in some way, made more meaningful and more memorable to the pupil than phenomena studied or abstracted from a text.

3.1 Summary

This section has shown that fieldwork's traditional emphasis on

observation, recording and mapping, developed in geography from geographers' desire for their subject to acquire the recognition and status of field sciences like geology and botany, by adopting the same methods and techniques of inquiry. The influence of these disciplines contributed to the empiricist foundations of the subject and, in particular, to the initial interest by geographers in physiography. This factor together with the unifying influence of the evolutionary concept evident in Davisian geomorphology, shaped the future course of geographical fieldwork.

Fieldwork became synonymous with the mapping of visible phenomena in the natural landscape to describe the historical development of physical features in a region and created the legacy of fieldwork's affinity with landform and country. Work in the United States, most notably that of Carl Sauer and the Berkeley school extended the field-based morphological approach to the study of social and economic geography. However, in the U.K. the urban landscape was often neglected as too complex an entity for visual identification of areal correspondence and was even dismissed as obscuring an accurate interpretation of past processes which produce the present landscape. To these reasons for fieldwork's association with study of 'country' we might add Strahler's comments that such a qualitative approach to landscape "appealed then, as it does now, to persons who have had little training in basic physical sciences, but who like scenery and outdoor life" (Strahler, 1950, reference in Board, op.cit. p.194).

Observation and recording of the morphology of landscapes had two outcomes for 'traditional' fieldwork. First, fieldwork as a pedagogic device or field teaching was seen as an enjoyable and pleasurable exercise in exemplification - the simplicity and applicability of Davisian geomorphology with its apparent basis of careful field observation (despite

the lack of measurement) could be seen through the study of actual examples by those with a 'trained' eye. Second, fieldwork as research method emphasised morphological mapping. Geographical observation and recording was ultimately associated with the empirical identification and mapping of morphological units of the earth's surface. The primary purpose being to make first-hand observations of components of the landscape on the ground and to relate those to features depicted by the map in order to facilitate the production of the regional synthesis.

The review has also drawn attention to fieldwork's long association with local studies and local surveys. Drawing on Huxley and Keltie's thinking on the teaching of geography in the late nineteenth century, Wooldridge, Fairgrieve and others make reference to the educational value of conducting fieldwork in familiar environments in which observations can be related to experience and be made more meaningful and memorable. The legacy of the principle that field teaching should be arranged to utilise the experience and move pupils from understanding in familiar contexts and scales to unfamiliar and more complex areas, remains evident in the modern geography curriculum.

Finally, the review indicates that there existed in traditional approaches to fieldwork a set of implicit assumptions about the nature of an 'exceptionalist' geography and how it could best be taught to pupils. First, there existed a geographical consensus in the regional synthesis as the discipline's primary objective and that certain components of the physical and cultural landscape are integral to such a synthesis and could be visibly identified and interpreted in the field: for example, the historical development of landforms could, through map to land comparison, be visibly associated with changing agricultural landuse patterns.

Second, that an empirical 'objective' view of landscape is possible; to be observed, interpreted and recorded by an unbiased and neutral observer. This empiricism has been termed the 'rule of phenomenalism' (Giddens, 1974). In this, "experience of empirical facts is the only basis for knowledge, reality is what we perceive..." (Johnston, 1986, p.53). According to this view, 'empirical reality' can be separated from the minds of the observers and personal meanings are either ignored or treated as observable (ibid. p.57).

Third, that such an 'objective' view of the landscape can be perceived and interpreted by students in the field through the eyes of the teacher. Students can be trained in the field to identify morphological patterns in the landscape and to interpret their relationships by being directed to the teacher's view of the landscape.

These assumptions which underpinned fieldwork in the Wooldridgean tradition - the inherent empiricism, the search for areal differentiation, the focus on landscape morphology, and the exemplification of the exceptional or particular - were questioned and reviewed by geographers in the 1950s and 1960s who argued for the adoption of a positivist philosophy to reorientate the subject of geography towards one which could formulate scientific laws to explain and predict the spatial distribution of phenomena. The quantitative revolution in geography which followed had important outcomes for geography fieldwork conducted in colleges and schools in the 1970s. Geography fieldwork shifted from expository approaches to field-based investigations in which pupils were said to become participants in the discovery of knowledge and not simply passive recipients. The move became characterised in the literature as a switch

from field teaching to field research which in turn became labelled as the hypothesis-testing approach. This approach to fieldwork is analysed in the next section.



3.2 Hypothesis-testing and problem-solving

A notable feature of the set of autobiographical statements produced by the PGCE geography 'method' tutors is the degree to which their reflective accounts of their own lives and careers identify a consensus about periods of contextual significance in determining and re-directing their thinking on geographical fieldwork. The largest consensus in the 'method' tutors' accounts is represented by their ubiquitous reference to John Everson and Brian FitzGerald's ideas on fieldwork presented in a number of publications in the late 1960s and early 1970s which epitomized for the tutors the significant change in fieldwork from field teaching to field research and the incorporation of an hypothesis-testing approach. Two examples from their responses to the survey are indicative of the consensus expressed by the tutors:

College,
Richard Daugherty, University of Swansea:

"After being brought up on a diet of a mixture of "look-see" field trips and some interesting but none too clearly directed data-gathering activities, the "hypothesis-testing" movement was the major influence on me at the beginning of the period. Partly directed through contact with John Everson and Brian FitzGerald in the G.A. 'Models' committee but also, like many others, via what they wrote. In particular: John in January 1969 Geography and in New Directions in Geography Teaching; Brian, with others, in the G.A. Occasional Paper No. 11. on hypothesis-testing." (Daugherty, survey, 1985)

Rex Walford, University of Cambridge:

"There was some fieldwork involved in the two Madingley conferences which I attended (1966 and 1967, I think) but my most memorable formative experience of that period was attending a week in 1968/1969 led by Dr C. Board (LSE) and Dr C.D. Morley (King's). It was run as an in-service course for teachers and based in Central London at a hall of residence in Cartwright Gardens. From memory, Rex Beddis, John Everson, Brian Fitzgerald, Pat Cleverley and Sheila Jones were also participants in the course...

...It was about this time that material began to appear in print concerning the so-called 'new approaches to fieldwork'. John Everson's significant article in the January 1969 issue of Geography was an important land-mark to me; he developed the ideas further at the Charney Manor conference in 1970, and these were later reprinted

in New Directions in Geography Teaching.

Everson was also a contributor to the influential GA pamphlet called Hypothesis Testing in Field Studies by D.P. Chapallaz et al. which appeared in the Teaching Geography Occasional Paper Series in 1970. This became a best-seller in that series, I believe, and was soon sold out and reprinted again in larger quantities.

Everson's teaching colleague at Haberdasher's Aske's School for Boys, Elstree, Brian FitzGerald was also a strong influence in this period. His book, written with Everson, Settlement Patterns, suggested a lot of human geography field exercises of the new type, and it was in the human field that techniques led the way in this period, as I remember it. FitzGerald was a contributor of a significant fieldwork unit to the practical section of the New Directions in Geography Teaching book (Unit 12; A model-hypothetical approach to urban fieldwork). Other contributors to that volume, which attempted to bring together the best of the innovative Madingley-inspired classroom practice, included R.J. Robinson, W.V. Tidswell, and J. Rolfe. These were also active figures in the pioneering fieldwork activities of the time." (Walford, survey, 1985)

In setting the context for the analysis of the ideas which Everson and FitzGerald developed on fieldwork, it is important to note firstly, that the changes which they advocated were, in Everson's terms, a "sub-set of my thinking on geography at that time [and] not a separate strand of development" (Everson, 1986, unpublished paper presented to the Durham symposium on fieldwork). Changes in fieldwork were a response to broader changes occurring within the discipline during the 1960s - changes which represented something 'new' in geography, and which have been referred to as a 'quantitative revolution' in the subject, despite criticisms that the label was a "disastrous misnomer" (Gould, 1979, p.140).

Second, these broader methodological and conceptual changes occurring within the discipline were instigated not by a re-examination and re-definition of the teaching of geography in the schools. Rather it was a geography as defined, described, and structured by 'academic' geographers working in higher education. Everson's papers which focus on fieldwork should be seen, therefore, as representing a move by some secondary teachers to translate for the secondary school pupil, the new ideas and approaches that were being moulded and welded into a new paradigm by key

individuals working at the tertiary level. Everson's papers represent attempts by a group of teachers linked together in an expanding and developing network, to decipher and make intelligible changes in conceptual emphasis and choice of methodology, and to apply these changes directly to their teaching of geography in secondary schools. In this way development in the secondary curriculum can be seen to have been subject-based, and stimulated by changes occurring outside the secondary school context.

Third, it is important to recognise that the changes occurring within the discipline during the 1950s and 1960s that prompted Everson and FitzGerald to consider the role of fieldwork in the 'new' geography, represented more than the application of increasingly complex statistical techniques to address problems of locational analysis. The changes represented a fundamental shift in methodology - a change in the "set of rules and procedures which indicates how research and argument are to be conducted within the discipline: how information can be collected and organized" (Johnston, 1983, p.4).

The set of rules and procedures which geography increasingly attempted to adopt, in response to the demands for generalization and theory-construction from Schaefer and others, were those used in the natural sciences and particularly in physics. Geographers sought to use 'the scientific method', or 'hypothetico-deductive method' to develop laws of association between phenomena in the search for explanation and prediction. Harvey's widely used diagram in his Explanation in Geography (1969, p.34) describes this method as "an alternative route to scientific explanation". Harvey regarded it as an 'alternative' to the Baconian route to scientific explanation which is based on a system of inductive inference, and which Harvey criticised on the grounds that it assumes "that

the processes of ordering and structuring data are somehow independent of the theory ultimately constructed" (loc.cit.). In contrast, Harvey proposed a second route to explanation which recognises the a priori nature of scientific statements - an intuitive "picturing" or modeling of reality from which theory is postulated and sets of hypotheses deduced. These hypotheses can then be empirically tested to confirm or reject their validity in the theory, and thus "establish a certain degree of confidence in the theory" (Harvey, op.cit. p.35). As the degree of confidence in the statements made by the theory increases, the closer these statements come to being scientific laws. Drawing from Harvey's diagram and description, Johnston describes "the usual representations of this procedure" (1986, p.85) as:

"...one begins with a problem, and then seeks to discover what we already know that can help in its solution, either directly or indirectly (e.g. through the use of analogues). The result is a model of the problem area, a generalized statement in diagrammatic, symbolic, or verbal form. This is a map against which reality is to be compared, through hypothesis-testing. The hypothesis is deduced from the model as an unambiguous statement of what should be observed empirically, phrased in such a way that it can readily be validated. An 'experiment' is then conducted to test the hypothesis. If it proves valid then one has gained positive knowledge; if not, then the outcome is negative knowledge." (Johnston, 1986, pp.85-86)

One of the early texts which attempted to introduce secondary geography teachers to the methodology and applications of the 'new' geography was New Directions in Geography Teaching (Walford, ed., 1973). It did so by presenting teachers with a published set of teaching materials which stemmed "in some degree from the impetus of recent developments in geography" together with contributions which assessed the "wider implications of new developments in geography to the classroom" (ibid. p.5). Its contributors attempted to inform practising teachers that the 'new' geography was as much about this fundamental shift in methodology as it was concerned with change in content and technique. Fitzgerald makes

the point:

"In recent years there have been many changes in geography at university level... Changes involving techniques have caused particular apprehension among teachers... especially when the so-called new geography has been characterized - to the point of caricature - by abstruse statistical techniques. This view of the new geography is, some feel, unfair and only clouds the issue - the issue being that the rapid changes that are taking place are more important than just changes in content or technique. They are changes in approach or method... And the change which many think is at the heart of geography is that towards the use of scientific method in approaching problems." (FitzGerald, in Walford, ed., op.cit. p.85)

It is, therefore, within this context, i.e. teachers such as Everson and FitzGerald attempting to translate the new methodological orientation of academic geography to the subject being taught in secondary schools, that the incorporation of field research and hypothesis-testing in fieldwork must be seen. Everson's contribution to New Directions - Field work in school geography (pp.107-114) - developed the case he made originally in Geography (1969) to argue that the method by which teachers approach geography fieldwork should come into line with the broader methodological developments effecting the discipline as a whole - namely the adoption of 'the scientific or hypothetico-deductive method'.

Everson argues as an initial premise that in spite of the difficulties facing the geography teacher in the secondary school, (difficulties which include organization and preparation time; justification for loss of school teaching time; interruptions to examination preparation; staffing; costs of travel and accomodation and so on), the advantages or value of fieldwork outweigh the problems of its planning and implementation. The proof that this is so, Everson claims, is in the "growth" of the fieldwork system, both in terms of customer demand, and the market response. He cites as evidence, the expansion of numbers of staff taking pupils on fieldwork; their widespread recognition of the value of fieldwork; and the inclusion

of fieldwork related assessment in a growing number of syllabuses. Further evidence for growth lies in the corresponding rise in the number of facilities being provided by the public and private sector to supply the demand. And yet, Everson argues, although there is published material to assist teachers in their choice of location, accomodation, techniques, and purposes of fieldwork, there is a marked absence in the available literature advising teachers on "the methodology of the subject" (Everson, op.cit. p.107). Everson's paper, therefore, sets out to meet this need by answering questions such as - "How then is the work attempted in the field to be organized? What are the underlying objectives, and what structure of study is presumed conciously or unconsciously by the organizer?" (loc.cit.).

In line with Board's (1965) analysis, Everson separates a traditional (British) fieldwork methodology from a field research (American) model. The traditional fieldwork approach (Fig 3.1.A), which I have examined earlier, is described by Everson as concentrating on developing the student's ability to observe and record visible phenomena. 'What to observe and record?' are questions which are largely determined, Everson notes, by the teacher's careful management and guidance, which in turn, is based on the teacher's perceptions and inferences made from the landscape. The approach bears the hallmarks of Harvey's inductive route to scientific explanation (Fig 3.1.B), with its fundamental problem of failing to acknowledge that the processes by which sense-perception data are structured and ordered, are determined in some form or another by an a priori classification system and can not be regarded as independent from any theoretical set of statements or laws which might emerge as an explanation of phenomena.

However, Everson's criticisms of this inductive methodology concentrate not

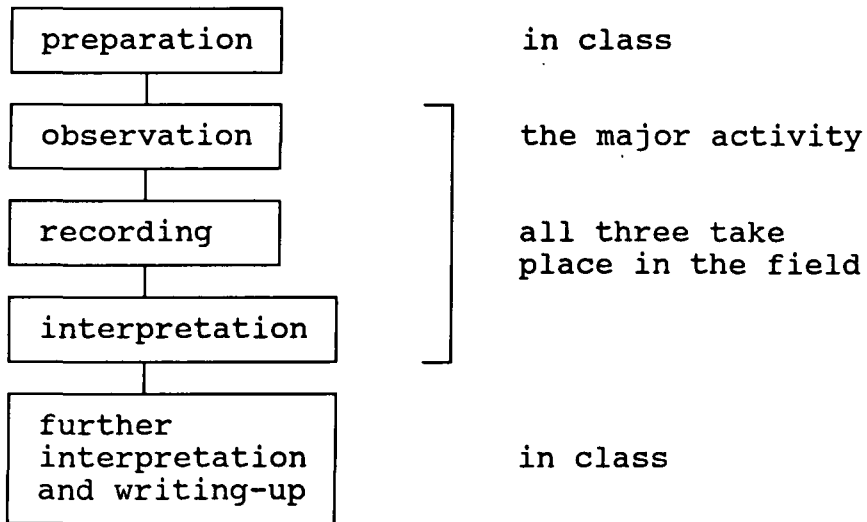


Fig. 3.1.A A Traditional Approach to Fieldwork (from Everson J.A., in Walford R. ed., 1973, *New Directions in Geography Teaching*, p108.)

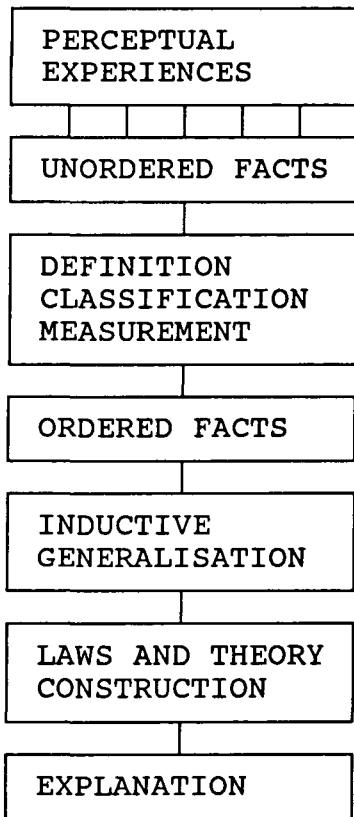


Fig 3.1.B The 'Baconian' Route to Scientific Explanation (Route 1) (after Harvey, D., 1969, *Explanation in Geography* p.34)

on the logical relationships which link stages in this system of making scientific inference (as Harvey does, see 1969, pp.36-43) nor on its implications when applied to pedagogy but on its geographical weaknesses as part of the regional paradigm:

- 1) The complex system of causal factors which produce a landscape cannot be comprehended by observation of its visible features.
- 2) Structuring sense-perception data within the regional framework invariably relies on a simplistic chronology which over-emphasises the role of the physical landscape and which implies an environmental determinism.
- 3) Perceived relationships between variables (e.g. landform and landuse) can not be properly tested within the traditional methodology.
- 4) Geomorphologically complex areas, together with urban areas are considered too difficult for school pupils to study using the traditional approach.
- 5) The concentration on developing pupils' observation skills is an insufficient educational aim for secondary school pupils.

Everson's proposes field research as a replacement for this traditional approach to fieldwork (Fig 3.2.A). He argues that in field research it is possible to incorporate "observation" and "description" from the traditional fieldwork methodology as a precursor to identifying a problem which is suitable and susceptible to testing by pupils. Problem identification can also be obtained from ideas from another discipline or

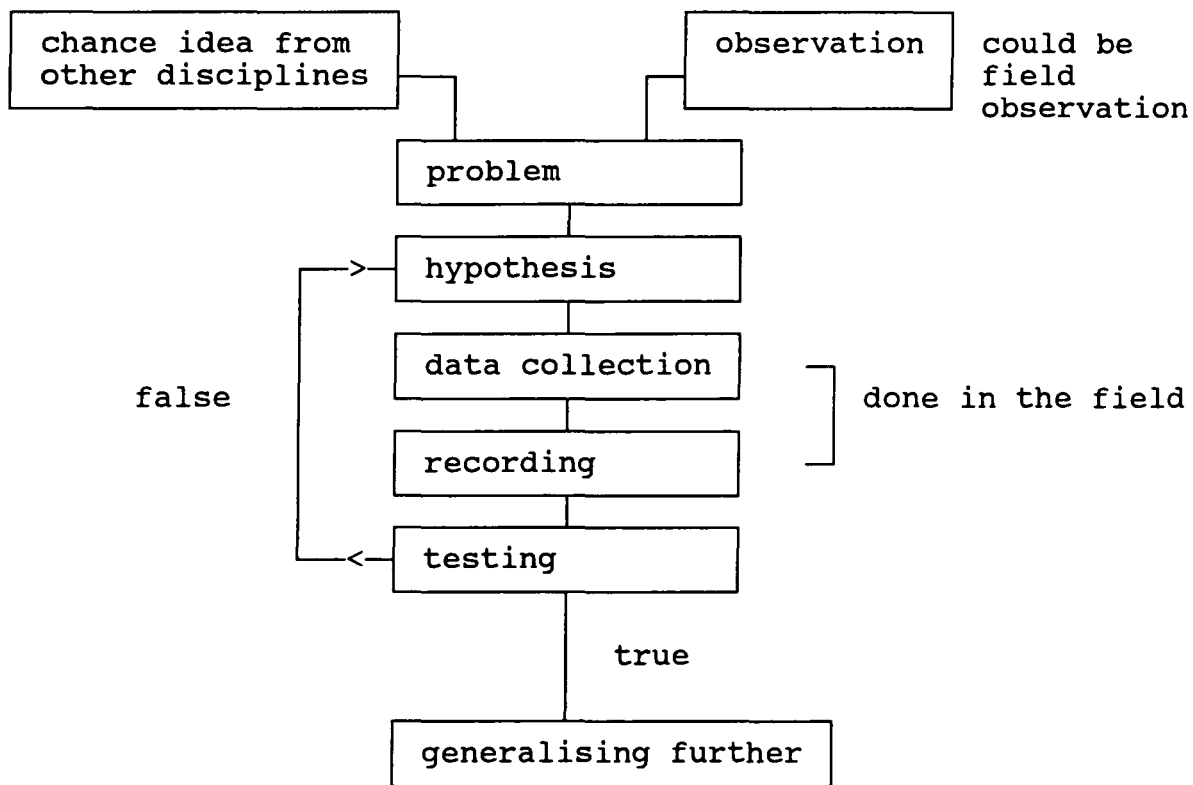


Fig 3.2.A A Field Research Approach (from Everson J. A., in Walford R. ed., 1973, *New Directions in Geography Teaching*, p.110)

from classroom discussions. The suitability and susceptibility of problems for testing, or in Everson's terms, those considered "important and relevant", are dependent on pupil "age, background and geographical experience", as are "the hypotheses that they will want to consider as possible answers to the problem" (Everson, op.cit. pp.110-111). But importantly, Everson sees the identification of problems and the setting up of hypotheses as classroom activities which precede fieldwork - "Here then the initial stages of the approach will be in the classroom not the field" (loc.cit. p.111).

Fieldwork in this field research model concentrates on data collection and recording. The collection of data is orientated towards solving the selected problem rather than blanket areal coverage, and may involve simple sampling procedures. Recording of the information may include the techniques used in the traditional model such as field-sketching, and map-land comparison, but would also use "more refined methods such as histograms, matrices, or punched cards" to format the data in such a way that the hypotheses can be tested - by comparison of distributions, ranking, and regression techniques. "When the results of the test are known, the student can, if the hypothesis was false, try again or, if it was correct, can test it further and then use his work as the basis for further generalizations" (loc.cit.).

Everson advocates field research on the following grounds:

- 1) Students use the scientific method of explanation.
- 2) Students use the same method of explanation used by research geographers.

- 3) In using this approach students will provide "general" "objective" statements, which are "comparable" with the results "obtained elsewhere from similar studies."
- 4) Field techniques are selected according to use and applicability, and therefore do not pre-determine the type and structure of the fieldwork. Techniques are "not studied for their own sake".
- 5) Field research emphasises the method of problem-solving and the analysis of conclusions, rather than the replication of regionally based factual information.
- 6) Field research emphasises the explanation of processes which determine form, and this enables the study of 'visibly complicated' (e.g. urban) areas by geography students at school level.

The advantages of this methodology as outlined above, are based on a set of assumptions, both implicit and explicit in Everson's argument.

First, is the assumption that a consensus existed in geography in higher education (which had developed during the '50s and '60s) over the need to adopt a hypothetico-deductive methodology throughout the discipline, so that, "objectives in field research are based on the idea that all geographers work in the same way" (loc.cit.). Johnston, however, doubts that such a consensus in geography ever existed:

"...in recent decades it has been assumed that such a condition [a consensus over philosophical, methodological, and ideological issues] existed. A relatively small number of excellent teachers and publicists conveyed the impression that there was a 'new' geography that everybody accepted. There wasn't. Within human geography there

were probably as many antis as pros, but the latter won the day in terms of public relations. One of the consequences was a re-definition of school geography - especially at A-level - which is myopic and, to many, unsatisfactory." (Johnston, 1985, p.9)

Second, there is the assumption that through this common adoption of scientific method the 'new' science of geography was to produce a set of geographical laws and valid theoretical statements which would form a widely recognised conceptual base for the discipline. But implicitly (through the exemplars which Everson uses in his article), these theoretical statements were orientated in a particular direction - towards a conception of geography as a spatial science or a science of locational analysis. The "spatial fix" for geography is considered by Johnston (1986, pp.132-137) to have had two main components. The first being "the focus on spatial distributions" with the objective of determining a set of "morphological laws and laws of coincidence, generalizations about the spatial arrangements of individual phenomena and their correlations with those of other phenomena" (p.133). And the second being "the use of mathematical languages for modelling and statistical procedures for hypothesis-testing." (loc.cit.)

Both the assumptions of a consensus of thinking in geography's methodological re-orientation, and its ultimate direction of purpose, lead us to the recognition that Everson is implicitly arguing for more than a shift in how work attempted in the field is to be organised. In fact, the kind of empirical fieldwork he argues for is based on a positivist philosophy - in which geography adopts the methodological procedures of the natural sciences in order to produce sets of law-like statements which can be used instrumentally to increase the level of confidence in statements of explanation, to the point where ultimately general laws can account for all events and behaviour. In supporting a positivistic conception of

geography, Everson seeks a change (to use Johnston's terms) in not only "how it obtains its material" but also "what it does with it" (Johnston, op.cit. p.87).

Developing his argument from these two assumptions, field research is seen, by Everson, as the vehicle for teaching these "basic concepts" within a commonly agreed set of rules and procedures which dictate how geographical research and thought is structured and conducted. Field research, therefore, supplies students with the opportunity to understand the mechanics of the geographical methodology and to gain practice in its implementation. According to Everson, geography's lead in higher education towards these objectives was one which the subject at secondary level should follow. Thus, based on the implicit, and arguably erroneous, assumption that a consensus of objectives had been achieved by geographers working in higher education, Everson's message to school geography teachers was clear - that the provision of a properly adequate fieldwork methodology rested in the acceptance "...that geography must adopt scientific procedures and methods, and must try to develop theory of its own" (Everson, op.cit. p.112).

Everson looks to the work of geographers in higher education to find support for his field research approach. In particular, he uses evidence from David Harvey's Explanation in Geography: Harvey's 'route 2' to scientific explanation (Fig 3.2.B). Clearly, there are parallels between the Everson's 'field research model' and Harvey's "extended and more generalized version." (loc.cit.) Everson uses Harvey's structure to argue that aspects of the 'old' - traditional fieldwork can be incorporated in the 'new' field research. The combination of the two can be expressed in a composite (Fig 3.3). He proposes that Harvey's first two stages of

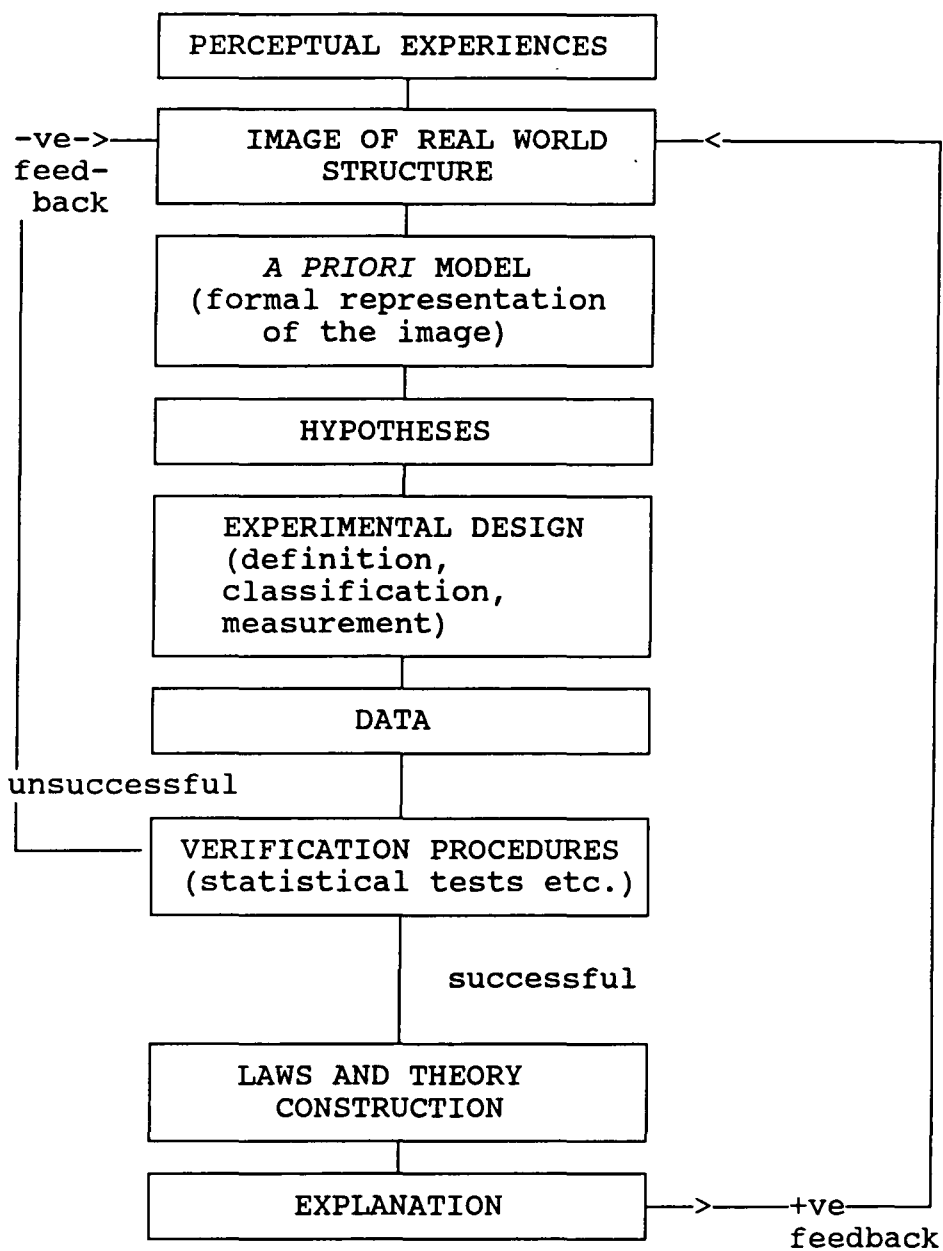


Fig 3.2.B An Alternative Route to Scientific Explanation (Route 2) (after Harvey D., 1969, *Explanation in Geography*, p.34)

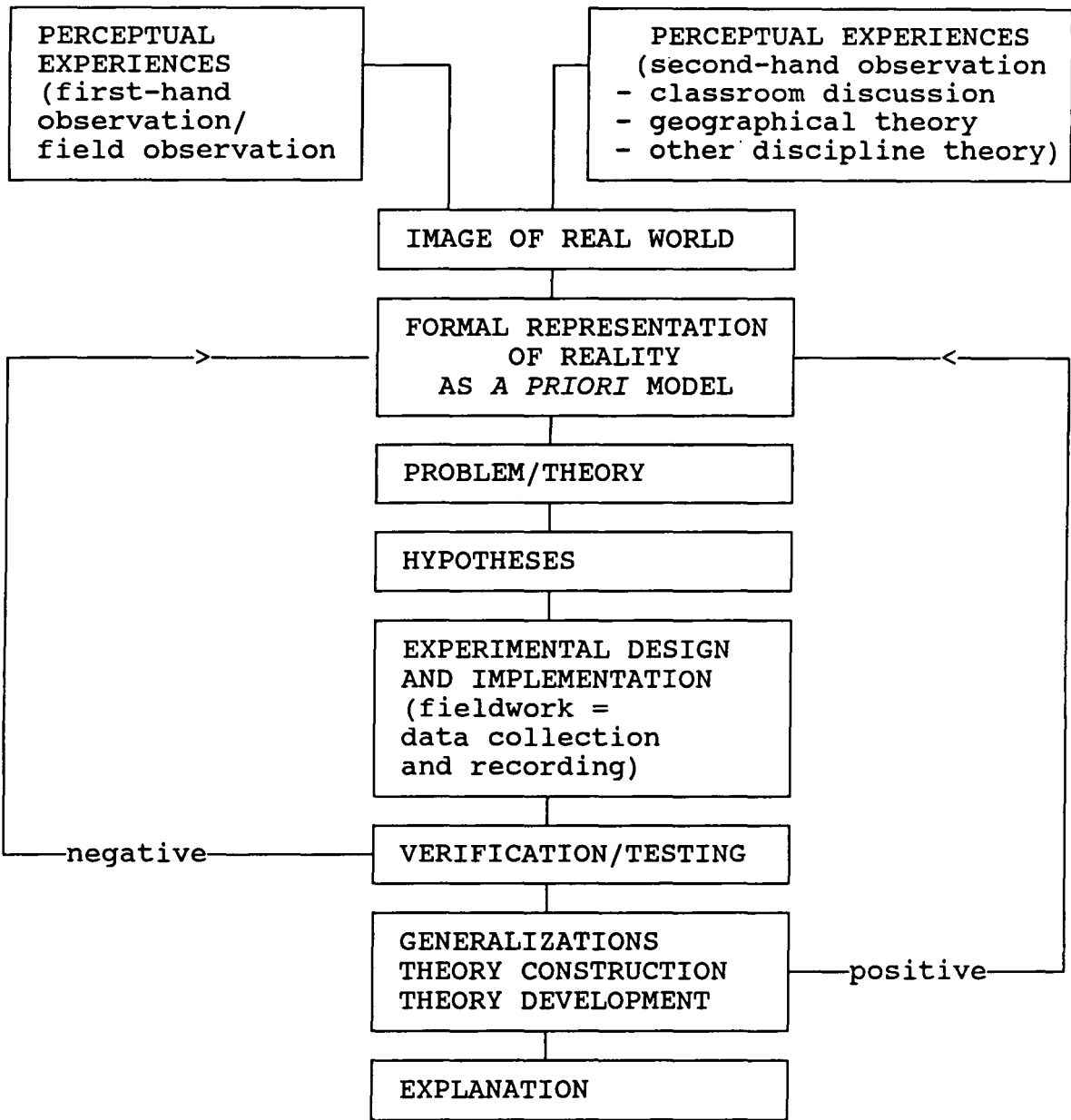


Fig 3.3 J. A. Everson's Field Research Approach Derived from D. Harvey's 'Alternative Route to Scientific Explanation'

"perceptual experiences" leading to an "image of real world structure" are synonymous with earlier definitions of traditional fieldwork. So that, traditional fieldwork is characterised by an inductive process of ordering sense-perception data into a series of 'factual' classifications, which combine to form an image of the real world, but which have a weak explanatory function and capacity. This image can then be used as the starting point for field research. It can be formally represented as an a priori model from which a theory can be postulated and subjected to hypothesis-testing. Everson describes the link between traditional fieldwork and field research as:

"The image the geographer now possesses of the area he is studying will be intuitively structured by the development of a a priori theory or models. This theory, new or new to geography or developed from earlier geographic theory, will allow hypotheses to be deduced from it which can be tested by the geographer." (Everson, op.cit. p.113)

Once the hypotheses have been formulated, the rest of Harvey's route to scientific explanation is matched in the field research model:

"From here on the procedure is the same... At the end of the sequence the laws or theory developed will, if the verification has been successful, be confirmed with a certain degree of confidence and can be taken into the general theory of the subject to be used for further empirical testing or field research." (loc.cit.)

And yet if we look at the two models, and examine more closely Everson's use of Harvey's alternative route to scientific explanation, we can denote some important dissimilarities and ambiguities. These ambiguities raise some important questions concerning the hypothesis-testing approach which will be addressed in Chapter 8.

First, we have already noted that Everson considers the initial stages of his field research model to occur in the classroom and not in the field. Later, this had significant implications for the adoption and practice of

the field research model during the 1970s and 1980s. For example, in Thomas and Rouncefield's (1977) description of their 'field research model in practice' in the southern highlands of Scotland, hypotheses are pre-specified for testing prior to any fieldwork being undertaken by the students, and 'collecting data' is described as "the only activity in the field" (p.120). For Everson, the posing of problems stage in his field research approach is regarded as the same as Harvey's postulation of theory from an a priori model of reality, but the difference lies in Everson's emphasis on the source of input for this problem-posing stage. Everson argues for a likely input to problem-posing from ideas which are based on a derivative or 'second-hand' set of 'factual' data - from classroom discussion, theory from another discipline, or theoretical statements from a previously formulated geographical model of reality. Whereas for Harvey in his alternative route to scientific explanation, it is clear that a fundamental element is the recognition that the processes by which data are ordered and structured (by which our image of the world is constructed) are integral to the formulation of theory which results. In other words, to understand the nature of a theory we must also understand the sets of assumptions and processes by which the original sense-perception data was organised, and their relationship to the theoretical statement.

Postulation of a theory and the deduction of hypotheses relevant to its testing, is dependent on the logical consistency between them and our interpretative understanding of the real world. As Harvey states:

"With the aid of such pictures [a priori models] we may postulate a theory. That theory should have a logical structure which ensures consistency and a set of statements which connect the abstract notions contained in the theory to sense-perception data." (Harvey, 1969, p.35)

In fact, there is evidence in Everson's paper which suggests that he was

aware of the need for such consistency: "The observational stage, however, must not be neglected, as successful and rewarding field research can only come from a precise and intuitive series of observations about an area or a problem" (Everson, op.cit. p.114). He provides an example whereby such observations are extended by field research. He suggests, in this example, that much 'traditional' fieldwork was characterised by the production of a land-use map. In this, the final explanation of the relationships between, say, rock type and land-use were invariably weak and untested, which (as we have seen in Peter Gould's reflections in Chapter 2) casts doubt on the ultimate purpose and value of hours of such map-making in the field. Everson suggests field research as an extension to such a study, so that from the production of a land-use map by a student collecting data in the field, the student is then able to develop...

"...an a priori model which could in this case be an adaptation of the von Thunen model of land use around a central city. A hypothesis from this model could be that intensity of land use will alter as distance from the village increases. He then will collect the data needed for the testing of the hypothesis. Verification will be made, and the student at the end will have tested in the field a piece of theory developed originally from an east Prussian farm in the eighteenth century." (loc.cit.)

In this example, Everson implies that the logical consistency required by Harvey exists - a consistency between the abstractions of the adaptation of von Thunen's agricultural land-use model and the student's own sense-perception data on which the adaptation was based. In this case, he argues, problem-posing is developed from the student's own field observations. In fact, we could argue against this claim; that such a consistency does not exist in this example. For the a priori model developed by the student is not logically connected to an understanding of the assumptions and principles by which von Thunen's original data was manipulated and organised. There is no necessary relationship between the student's model and the theoretical statements made by von Thunen.

A second ambiguity in Everson's field research model exists. In attempting to translate the tenets of 'the scientific method' to fieldwork, Everson's objectives for his article are realised only in part - important pedagogical considerations for such a field research methodology are neglected. Thus, Everson's paper sets out to provide teachers with a fieldwork methodology; a set of objectives and a working structure by which geography fieldwork could/should be undertaken by secondary school pupils. But in seeking to bring fieldwork in line with a perceived methodological consensus in geography in higher education, Everson explains a pedagogical activity only in terms of the discipline's research methodology. As in traditional fieldwork, which I examined earlier in this chapter, questions of learning process within the proposed methodology - the mechanisms by which students learn in the field, and the teaching assumptions for those mechanisms - remain overlooked and unanswered. There is a divorce between, on the one hand, a stated geographical methodology, and on the other, an unstated pedagogical methodology and learning theory on which it is based.

The problems in the field research model referred to above raise some important questions concerning hypothesis-testing which I shall seek to address in the case-study of this thesis. These questions relate specifically to the problem-posing stage of Everson's model but they also have broader implications.

First, are problems posed by students the result of their own insight into an a priori model of reality which has been constructed from their own field observations? Is this a necessary requirement for learning? How should 'established' geographical theory relate to, or be incorporated

into, the problems posed by students? Alternatively, where problem-posing is not based on a student's own observations, how can abstract theoretical ideas within geography or from other disciplines be translated into sets of testable hypotheses by the students themselves? Is this a necessary requirement for learning? Thus in practice, who determines the problem, and hypotheses, and the agenda for inquiry?

Second, what is the relationship between, on the one hand, the objective of teaching 'the scientific method' and an associated set of descriptive and analytical techniques, and on the other, the objective of teaching the content of a geographical theory? Does the stated method predispose the field investigation of certain 'established' geographical theoretical statements, and preclude others? These questions are of direct relevance today not only to geography teaching but also more broadly to science education. Woolnough (1991) has recently summarised the nature of this "persistent problem" concerning the relationship between theory and practical work in science education:

"Is the role of practical work to increase our theoretical understanding? Is the role of theory to aid practical ability? Or should the two aspects of science be kept separate? Layton (1973) argues that the curriculum developers of the 1960s took too little notice of the problems involved in teaching these two aspects of science - its knowledge and its methodology - simultaneously... We have argued elsewhere (Woolnough and Allsop, 1985) of the dangers of carelessly mixing the two aspects, or of making practical work subservient to theory, and suggested that we should initially separate these two aspects of science in our thinking, identify the quite separate justifications for developing both, and then reconsider their mutually supportive interaction... But it is clear that the processes of science are theory-laden, we observe not what is there but what our theoretical perceptions tell us is significant, and our success in applying those understandings is context-dependent. So can the two aspects of science be considered independently, should they always be considered as having an interdependent and interactive relationship? Or should we take a more holistic approach to the scientific approach to tackling scientific tasks, involving not only the cognitive and the psychomotor domains but also the affective?" (Woolnough, 1991, p.6)

3.2 Summary

The method tutors surveyed in this research guided this review to address an important period of change in geography fieldwork - the move from field teaching to field research. The method tutors identified articles and books written by Everson and FitzGerald as catalysts for shaping their own ideas on fieldwork and as seminal work in launching hypothesis-testing approaches into school geography. Everson's important article in New Directions in Geography Teaching (Walford, ed., 1973) which built on the ideas he presented in Geography (Everson, 1969) argued for the incorporation of a field research model into the traditional fieldwork approach in secondary geography teaching, with field research largely replacing traditional fieldwork in the later years of the secondary school.

The field research model was seen as the logical development (and, to some extent, the replacement) of traditional fieldwork which for too long had been tied to the production and replication of regionally based factual accounts. Traditional fieldwork was also criticised by its emphasis on the description of the form of a landscape rather than process; descriptions which lacked an 'objective' and 'scientific' basis from which generalizations or comparisons could be made. The argument for the field research approach was made on subject-based methodological grounds, and in this it represented the broader demands being made during the 1960s that geography should seek greater precision and rigour in its search for theory through the use of the scientific method.

Despite some ambiguities in translation, Everson sought support for his field research approach by drawing comparison between its methodology and

that described by Harvey as 'an alternative route to scientific explanation'. The implication being that a substantial re-orientation towards Harvey's methodology had occurred in geography in higher education, which the subject at secondary school level should follow. Thus, geography students applying the field research approach at school would, it was argued, implement and explore the same method being used by geographers and researchers in higher education. Further, the purposes of structuring geographic inquiry in this way were similar to those being advocated in geography at the tertiary level, i.e. to establish deductively a conceptual set of generalizations for the subject which would be centred around laws, which when quantitatively expressed, could be used to describe and predict the spatial distribution, structure, and organization of phenomena. Everson argues that through the method of field research, and with these aims, students would empirically test their own and other geographical models of spatial distribution, and so understand and develop new theory. Conducting these tests in the field would prevent theory from becoming "dull, arid, and deterministic", rather field research would render theory "interesting, rewarding and probabilistic" (Everson, op.cit. p.114).

Attention has been drawn in this section to Everson's proposed field research approach being argued for in 'geographical' and not 'pedagogical' terms. The method in Everson's model is dictated mostly by concerns with the subject's research methodology and its translation to the school context as the teaching of 'scientific method', and not the pedagogical implications of its use by secondary school pupils of mixed ability and varying age with their associated learning needs. As a result, some important questions concerning the learning process of the field research model have been put forward here - questions which seek to address the mechanisms by which pupils learn in the field when engaged in

hypothesis-posing and hypothesis-testing, and the understanding teachers have of, and the assumptions they place on, these mechanisms. These questions focus in particular on the relationship between hypothesis-testing and the educational value of problem-solving and its role as a skill objective in geographical learning or as means of learning theory. They form an important theme to which we will return later in the thesis.

3.3 Humanistic Approaches

The hypothetico-deductive methodology which geography had striven to acquire in the 1960s and its associations with a positivist philosophy survive in contemporary geography (Haines-Young and Petch, 1986), notably in physical geography where the subject is most closely aligned with the natural sciences (Gregory, 1981). In secondary schools and colleges, fieldwork that was developed along the lines of the field research model according to Everson and FitzGerald with its emphasis on the method of hypothesis-testing, and its conception of the field as the geographer's experimental laboratory in which data could be collected and processes measured, was sustained during the 1970s and 1980s as the prevalent approach in geography teaching of physical geography (Gill, 1979; Gregory, K.J. 1980; Butcher and Thomas, 1983; Burt, 1989). Data from this research study (see Chapter 6) shows that the hypothesis-testing approach applied to the first-hand study of physical processes remains a mainstream activity in A-level geographical education in the late 1980s.

In higher education geography during the 1970s and 1980s, criticism was directed less at the methodological changes per se which had taken place in the subject in the 1960s and more at the subject's empiricist orientation and in particular in human geography at the excesses of positivistic approaches which presented factors such as "distance as the influence on (or determinant of) human action" (Johnston, 1986, p.54). For the geographer Yi-Fu Tuan, ^{an early user of} the term 'humanistic geography' (1976), the complexity of relations between people and place and in particular the importance of human agency in such a relationship, could not be reduced to the testing of normative models against the real world because their positivist foundations separate the empirical world from the observer. Tuan and others (Relph, 1976; Entrikin, 1976; Ley and Samuels

(eds.), 1978; Pocock, (ed.), 1981) denied the possibility of a neutral observer, and instead sought to revive and elevate the role of human creativity and the understanding of individual meanings in creating and interpreting the environments in which people live. They argued that the mechanistic models of the quantitative revolution had suppressed the inherent subjectivity of the relationship between people and place and they sought to reinject the discipline with a concern for people's values and attitudes towards place which they regarded had become abstracted from a spatial science geography. Johnston argues that the criticism by humanistic geographers of the positivism which geography had acquired was made on three grounds:

"...it is not possible for a human geographer to be a neutral observer, because what one observes is a consequence of the meanings that one applies. There are no neutral 'facts'. Nor is it possible to understand meanings through observation alone, since meanings are mental not physical constructs. And, thirdly, one cannot assume that laws of behaviour can be developed, since this assumes that meanings are both shared and fixed." (Johnston, op.cit. pp 54-55)

In school geography, however, the response to these changes in the discipline in higher education was slower to take hold than that experienced in the late 1960s and early 1970s, when Walford, Rolfe, Everson and FitzGerald and others (1973) had translated the quantitative revolution in geography for the secondary school curriculum and where the effect had been most marked in changing the subject at A-level. The slow response to behavioural and humanistic developments taking place in academic geography was due, partly, to the amount of time taken to disseminate new ideas and to redirect syllabuses. The Charney Manor Conference papers from 1970 were published in 1973, around the time that geographers in higher education such as David Harvey were already reconsidering the effects of the quantitative revolution (Harvey, 1973) and Anne Buttimer was arguing for the full integration of a values dimension in geography (1974). By 1981,

when the papers from the second Charney Manor Conference held in 1980 were published, the call for geography in secondary education to address the relationship between human agency and social structure and to consider the values dimension was being made mainly by geographers working in higher education (Gregory; and Huckle, 1981) and were still regarded as 'signposts for the future'. But a second, and more significant factor from the point of view of geography fieldwork, for the delay in incorporating humanistic approaches into the secondary curriculum was the uncertainty of the method being advocated by geographers for its application (Daniels, 1985). The hypothetico-deductive method translated into an hypothesis-testing approach was, by the early 1980s, widely understood and applied by teachers as a clear framework which could be used to structure an investigation with pupils and test geographical theories in a local context (Walford, 1982). Furthermore, a large number of field-based exercises with associated sampling and data collection techniques had been developed and marketed to teachers to test particular geographical concepts such as central place theory and to teach key principles such as friction of distance and accessibility (Tidswell, 1976; Bradford and Kent, 1977). There was much less consensus amongst teachers in knowing how to integrate more qualitative approaches such as town trails into a framework for investigation or using language, literature or photographs to interpret people's perceptions of place or to show that a sense of place is not a static but a dynamic and historically contingent concept (Cosgrove, 1978). Similarly, qualitative investigational techniques of participant observation, interviews, and the use of first-person accounts such as diaries being drawn into the social sciences from sociology and anthropology were less well understood or applied by geography teachers undertaking fieldwork with their pupils (see, however, Rowles, 1978; Lee and Myers, 1980; Hapt, 1982).

Nevertheless, despite the absence of the "rare coherence and sharpness to the direction of innovation" (Walford, 1982) which had characterised the subject in schools in the late 1960s, transmission of developments in academic geography to schools continued to be a hallmark of the 1970s and 1980s and humanistic approaches were incorporated into geography teaching and, more specifically, into fieldwork.

The PGCE method tutors' survey responses signify that like Everson and FitzGerald's work earlier, some writers were regarded as developing ideas for fieldwork which were seminal in redirecting approaches for pupils studying geography in the field. Important amongst these were the repeated references to the work of Colin Ward and Tony Fyson and Brian Goodey. Books such as 'Streetwork' (Ward and Fyson, 1973), 'The Child in the City' (Ward, 1977), and 'Where You're At' (Goodey, 1974); the incorporation of their ideas into curriculum projects such as Geography for the Young School Leaver (GYSL, 1974); and articles in the early editions of the Bulletin of Environmental Education (Goodey, 1975), edited by Ward and Fyson, brought the geography teacher into contact with ideas from outside the discipline, notably town planning. These publications also provided teachers with examples of behavioural geography approaches to fieldwork, such as mental maps and town trails, which stressed the perception 'filter' of the observer in understanding people's relationship with the built environment (Fien and Slater, 1983). Such environmental interpretation techniques were later extended in humanistic approaches which placed great emphasis on the experiential aspects of fieldwork, and sought to stress the importance of the intimacy of pupil's thoughts and feelings about the environment - their private or personal geographies - and their possible means of expression. In explicating their own feelings about place through landscape

appreciation exercises or sensory walks, pupils could, it was argued, come to understand the value exchanges between people that occur when confronting environmental decisions and raise their environmental awareness (Fien, 1983). Dinkele (1987), for example, describes aspects of the humanistic genre in discussing Eric Brough's (1983) approach to geography fieldwork as aesthetic experience leading to a sense of place:

"...He insists that fieldwork should be an experience and that the visit should have meaning. The whole repertoire of fieldwork techniques had been practised during visits to a village over several years, but as Brough points out, the essence of the place remained elusive. Yet the children loved the village and Brough explains how this experience was tapped. They looked for the poetry in buildings and their relationship to colour, sky, field and trees, expressionless windows, mists and ploughed fields in autumn, shadows, and asked themselves does one area feel different from another..."

A paper to which many PGCE tutors referred as summarising the case for humanistic approaches to fieldwork and providing teachers with examples for use was Douglas Pocock's 'Geographical Fieldwork: An experiential perspective' (Pocock, 1983). Pocock caught the tenor of disquiet experienced by many teachers who had grown disenchanted with positivistic model-testing approaches and the mechanistic treatment of the environment as the testing ground for general principles instead of the elicitation of the individuality and uniqueness of place:

"The quest for a more scientific approach has meant that characteristic activities today concern the measurement of stream flow, delimiting zones of urban landuse or eliciting customer orientation, the results then being subjected to a model-testing approach where goodness of fit is often the measure of success. The danger of such a process- or technique-orientated approach is that geography en plein air can become the study of any stream or any town, where particularity of landscape or landscape features is subordinated to perceived generality." (p.310)

Pocock offered to redress the balance by advocating the use of field techniques such as students making audio evaluations of the environment and considering changes in their perception of place over time by recording and

reflecting upon their primary and secondary impressions of the environment. Alongside these approaches he recommended the return of field sketching which according to Pocock was "now rarely exercised". "The reason for reintroducing field sketching is that it teaches subjectivity: it teaches one to see a landscape... [it] demands that time be spent at one point looking, learning, imbibing. Sketching thus teaches sensitivity to form, texture, lighting and to the character or feel of a place" (p.322) These "place-related" rather than "space-related" (p.323) approaches would, he argued, shift the emphasis on to the experience of the intrinsic properties of particular places and on to the student's personal engagement with the environment. In this latter point, Pocock struck a chord with PGCE tutors who recalled that geography teachers had found that the hypothesis-testing approaches to fieldwork had become over prescriptive and teacher-dominated; that although pupils were active in the field collecting data for hypothesis-testing, their interaction with the environment was reduced to operationalising a set of instructions and not on environmental exploration, and personal reflection and discovery.

In the 1970s and 1980s, there emerged a framework for fieldwork (Hart (ed.), 1983; Hart and Thomas, 1986) which attempted to retain the clarity of the hypothetico-deductive method and the rigour of data collection and analysis techniques of process-based studies, while incorporating the values dimension that had emanated from behavioural and humanistic geography. The framework brought together field techniques and procedures, consideration of values resulting from people-environment interactions, and the application of geographical theory, by focussing on the theme of environmental issues in order to inject more relevance and applicability into the work being done by pupils in the field. In the following interview extract, Walford describes the social relevance theme of

issue-based approaches:

"...I think that the issue-based approach is more likely to be picked-up during a period when the moral conscience of geographers is being tickled than when the positivistic and scientific approaches are being followed. Given the rise of the radical and welfare approaches in the late '70s and the greater visibility of that, the concern about the quality of your own community and the issues within your own community became a more fashionable topic. You only have to look at someone like David Harvey - the spiritual odyssey from Explanation in Geography to Social Justice and the City is paralleled by Neville Grenyer's version of Brian FitzGerald's iron and steel game. Neville Grenyer's version is concerned with the social consequences of optimum location whereas the FitzGerald game is finding the best location based on an entirely rational and economic man. That was a shift in the paradigm of what was happening; with a change in concern towards a just as well as an optimal location, and it led to people looking at the real issues for communities rather than the spatial analysis of communities. And I now recognise the deficiencies of that positivistic period; that by treating people in quasi-scientific ways you actually took away their humanity; you gave yourself more tools to consider the pattern of human existence but there was the danger, as exemplified in the description of the gravity model as 'social physics' in which towns acted as the magnets and people as the iron filings. That's attractive in one way but it's essentially demeaning to humanity in another way. For instance, if people don't react in one way then they don't fit your theory!" (Walford, interview, 1986)

Walford's view represents a general perspective held by the method tutors which regarded issue-based approaches not as a methodological replacement for hypothesis-testing but rather as an extension of it which incorporated the humanistic agenda:

"The somewhat more recent emergence of work influenced by behavioural and humanistic geography seems to me to be an addition to the techniques of field investigation rather than a counter-movement to it. It adds the dimension of human perception, emotion and feeling to the quasi-objective approaches..." (Walford, survey, 1985)

The PGCE tutors referred to this conjunction of approaches as an outcome of the growth in issue-based geography which they regarded as having been launched by key articles such as Michael Storm's 'Schools and the Community: An issue-based approach' (1971) and later disseminated into schools through the curriculum materials and approach of syllabuses like the Schools Council 16-19 Geography Project. Issue-based syllabuses such

as the 16-19 Project were seen as people-orientated and student-centred in that they focus on issues, questions, and problems which arise from the interaction of people with their environment and which are of relevance to the daily lives of students. The siting of a nuclear power station (Boardman, 1986) or evaluating a site proposed for a reservoir (Hart (ed.), 1983) exemplified the approach which recognised that people-environment problems include both a factual component and a human values dimension. Students are encouraged to analyse their own values and attitudes and those of others with respect to the environmental issues under investigation. The foundation of geographical knowledge as the construction of theory and the building of models to explain geographical processes and patterns are not discarded as irrelevant to such a framework for geographical inquiry, rather they are seen in terms of their appropriateness of application to the management of environmental issues and environmental decision-making.

'Issue-based' fieldwork therefore attempts to incorporate the attributes of hypothesis-testing or field-research approaches in that it puts students in direct contact with primary data and the means of collecting and analysing that data, but it extends its function by requiring students to utilize geographical theory and field techniques to address people-environment issues from the outset; theory which underpins the closeness of fit of a model to reality, or the use of field techniques, are not ends in themselves but are integrated into the broader purposes of the investigation. The main purpose of techniques "is to supply answers to questions, that is to support and satisfy the process of enquiry and not to direct it." (Hart and Thomas, op cit., p.209)

In summarising the changes in approaches to geography fieldwork during the 1970s and 1980s four important themes emerge. First, it is clear that

change was less evident in methodology or technique and more one of change in purpose. Issue-based approaches and the collection of data for decision-making or role play exercises did not eschew the use of theory or the collection of quantitative information and its analysis, but instead sought to utilise that information to address the social consequences of environmental problems. The value of first-hand experiences of places and the study of environmental processes, the formulation of hypotheses, the testing of generalizations and the analysis and synthesis functions involved in drawing conclusions, have not been overthrown by geography teachers searching to incorporate a humanistic perspective. Rather, geographers have sought to utilise information gathered in the field to consider environmental issues which are real and relevant to the lives of students.

Second, the focus on the social relevance of environmental problems brought human agency firmly onto the agenda and highlighted the creativity of individuals in their perception and manipulation of their environment. The concept of rational economic man whose behaviour was controlled by principles such as the maximisation of profit produced normative models which ignored the complexity of social processes; suppressed the subjectivity and individuality of people's perceptions of particular places; and suggested that meanings could be shared and fixed and studied objectively by a neutral observer. Humanistic approaches to fieldwork developed experiential techniques to show that people's perceptions of their environment were both diverse and transient and as much the product of the values and attitudes of the observer as the social and economic processes in operation. A major change, therefore, in the kind of fieldwork undertaken in geography in the 1970s and 1980s was that it incorporated a consideration of the values of researcher and subject in the

study of people-environment interactions.

Third, the recognition of the subjectivity of perceptual and behavioural responses to the environment had an impact on the nature of the inquiry process. The positivistic approaches of the early 1970s were seen as having 'closed' the process of inquiry around the study of particular geographical concepts and narrowing an investigation to the rejection or acceptance of the null hypothesis. As a result, the field experience was viewed as the process of collecting data relevant only to testing the hypothesis and the role of the geographer was one of scientist experimenting in a natural laboratory. Humanistic approaches aimed to 'open' geography to the ideas and techniques of other disciplines and attempted to reinstate the importance of the qualitative and affective elements of the environmental experience (Pocock, 1989). The statement of emotional and aesthetic responses to the environment were not only legitimated within the humanist perspective but were central to understanding the subjectivity of people's interpretations of the environment and their responses to it.

Finally, humanistic approaches accompanied a growth in geographical fieldwork which investigated the urban environment. As I have shown earlier in this chapter, geographical fieldwork holds particular associations with notions of country and the outdoor experience. The impact in the 1970s of the perception and cognitive mapping techniques, urban trails, and the decision-making exercises based around urban planning issues (Rawling, 1981) sought to redress the balance and demonstrate that interesting and worthwhile field activities were possible in the built environments close to schools.

3.4 Summary

I have sought in this chapter to use literature in conjunction with 'inside' first-person accounts to reveal some of the assumptions and claims which have been made by geographers for fieldwork's role and value in the discipline; to critically examine these assumptions in an historical context of change in the discipline; and to explore the origins of themes apparent in contemporary geography fieldwork. The focus of the review has taken a 'geographical' perspective in that it has sought to examine fieldwork's particular associations with geography. Fieldwork's effectiveness as an approach to teaching geography, its impact on student learning of knowledge and skills, and its contribution to the social and personal development of students, are considered from a 'pedagogical' perspective in Chapter 4.

The geographical perspective reveals how over time varying conceptions of fieldwork's purpose and method have accompanied broader shifts in the discipline's philosophical and methodological orientation. The PGCE method tutors remarked that developments in fieldwork were usually associated with more widespread changes in the orientation of geography and that their thinking on fieldwork represented a 'sub-set of their thinking on geography at the time'. Fieldwork in geography is shown to be responsive to new ways of collecting data about the physical and social world since a fundamental purpose of fieldwork remains the training of geographers in the techniques of first-hand enquiry and investigation. Fieldwork therefore holds a close relationship with the technical and methodological training of the geographer. But fieldwork is also responsive to developments in the ways geographers have perceived their subject's ultimate function; developing a

morphological eye, map to land comparison, collecting data to solve environmental management problems, or 'experiencing' the environment to develop an awareness or sense of place, are responses to change in what geographers regard as the purpose of a geographical education and changes in how they perceive the world they study. Fieldwork is shown to be responsive to changing ideas on the education of the geographer, and to the meanings which geographers attach to their observations of the material world.

Three aspects of fieldwork's transition in purpose and practice are argued to have accompanied geography's development during the twentieth century: the traditional conception of fieldwork and its link with the empiricist foundations of geography; the hypothesis-testing approach to fieldwork and its methodological ties with the discipline's attempts to adopt a positivist philosophy; and the issue-based approach to fieldwork which accompanied human geography's search for a more humanistic and socially relevant perspective, and which also emerged from physical geography's concern for the subject to become more applied in its orientation by utilising theory to solve environmental hazard and resource management problems. Some of the themes which have been examined in the chapter's analysis of traditional, hypothesis-testing, and humanistic approaches are summarised below.

The analysis of fieldwork from the traditional perspective reveals that its focus on the observation and recording of the morphology of landscapes was rooted in the subject's early associations with mapping and taxonomy which geography inherited in the late nineteenth century from the emergent natural sciences of geology and biology. The evolutionary concept derived from Darwin and its applications in concepts like W.M. Davis's 'denudation

chronology', together with geography's early interest in physiography, meant that fieldwork became associated initially with the historical development of physical features in 'natural' landscapes and country. Geographical fieldwork as the pleasurable pursuit of studying classic landforms at 'type' sites has remained a prevalent theme. Mapping surface features such as agricultural landuse for the purpose of areal differentiation also survived as a legacy of geography fieldwork's early foundations until the 1950s and the criticism of the regional synthesis. Finally, fieldwork has strong associations with the study of local, familiar environments grounded in the assumption that observations made in these areas would be more real and hold more meaning than those studied in more distant and unfamiliar locations.

Drawing on methodological developments in geography in higher education, hypothesis-testing approaches to fieldwork emerged in secondary school geography during the late 1960s and 1970s. Concepts like friction of distance and accessibility that underpinned many of the spatial models which were being developed to explain spatial processes and distributions, were tested in the real world by students using a field-research method. Fieldwork was argued to be essential to enable pupils and students to relate the abstract conceptions of spatial science to the empirical world. Field research also removed the necessity to make journeys to the 'classic' sites. Instead, fieldwork's early associations with local studies were reinvigorated by an approach which could be applied to the study of any group of settlements or stream close to the school. Further, the perception of the field as the geographer's laboratory in which data could be collected for hypothesis-testing brought statistics into secondary school geography and later, with the growth of information technology, a means of relating first-hand observations with data handling skills which

integrated geography with other areas of the curriculum. The approach was argued to have engaged students more in the process of enquiry which in the traditional perspective had been relegated to pupils 'seeing' the landscape through the 'expert' eyes of the teacher. The process of translating empirical observations into an a priori model which then could be subjected to scrutiny in the field was less well explored in the hypothesis-testing approach and the arid determinism which geography had sought to remove was in danger of being replaced by the uncritical application and transmission of predetermined theory.

Geography fieldwork's newly found methodology was not, paradoxically, replaced by humanistic approaches in the 1970s and 1980s. Despite widespread criticism of the law-generating aims of a positivist philosophy which had spawned the incorporation of an hypothetico-deductive method into geography, the field research approach has been retained. But alongside its procedures a parallel concern emerged which attempted to integrate a values dimension into field investigations. Techniques were developed to show how behavioural responses to the environment and to problems arising from people's interaction with the environment were shaped by the values which people attached to particular places and thereby the subjectivity and creativity of their response. Issue-based approaches sought to make geography more real and relevant to pupils (often through the study of urban issues) by focussing on the application of geographical theory and techniques to environmental problems, and to make the process of enquiry in the field more open-ended and less predetermined. The adoption by teachers of humanistic approaches, such as techniques aimed at gaining pupils' aesthetic responses to particular places, potentially rest uneasily against the more objective approach of field research. It is as yet unclear how fieldwork in school geography will confront the emerging realist agenda

being propounded by Johnston (1986) and others working in higher education, which advocates that geography should explore the empirical world alongside research into the actions of individuals as they operate within the broader context of social structure.

The three aspects of fieldwork's development in geography imply a linear progression. Certainly, the review has focussed on seminal papers and articles which have analysed fieldwork's contribution to geography from the traditional, positivist and humanist perspective, and the review has been guided to an analysis of this literature by the 'inside' accounts of those involved in geographical education. Yet such a progression implies a separation of the changing purposes of fieldwork in geography and a divorce of one set of field-based techniques from another, into one of the three perspectives. Such a separation is, of course, artificial. In reality, the progression is one of subtle change with elements of former perspectives impinging of those which follow. For example, a technique such as field sketching that is redolent of traditional approaches, has been recently advocated for use by humanistic geographers, although as a means of capturing a subjective response to landscape rather than as the manifestation of the empirical eye. Another example would be the attempt in devising issue-based approaches to complement quantitative process-based studies with values enquiry in order to understand the moral and ethical dimensions to people-environment interactions.

The review has also shown that although fieldwork has undergone methodological and technical developments and has been intrinsic to the reshaping of the purpose and practice of geography, in essence an enduring purpose of fieldwork has survived the rigours of change: namely the educational principle that by taking pupils and students into the field and

observing geographical phenomena at first-hand, geography, the subject's knowledge base and its skills, are rendered more real and meaningful and more memorable. From Archibald Geikie to Denys Brunsden, geographers have revisited fieldwork to argue for its centrality in a subject which is about action, exploration and discovery and far-removed from the 'dry and bloodless thing' to which Joseph Conrad referred (Stoddart, 1986, pp. 142-143). In the next Chapter, the review turns to examine this principle and other educational assumptions for fieldwork's role in facilitating student learning.

CHAPTER 4

THE ROLE AND VALUE OF GEOGRAPHY FIELDWORK: PEDAGOGICAL PERSPECTIVES

4.1 Introduction

Geography teachers have periodically argued for the support of research evidence when seeking to promote, defend and justify the position of fieldwork in the geography curriculum. In the face of public worries over pupil safety on fieldwork, and the continued problems of persuading management in schools and local education authorities to release staff and capital resources for fieldwork, teachers have argued for empirical evidence to add to their intuitive knowledge of the educational value to be derived from fieldwork gained from a wealth of practical experience of teaching students geography in the field. While some would argue for the self-evident necessity for fieldwork in the light of its place in GCSE and A-Level assessment, many would welcome research results which critically assess fieldwork as a pedagogic device, and so move the level of debate beyond aphorism and anecdote and a priori assumptions of its educational worth, towards an objective base for justification (Humphreys, 1987). In the current professional context of pupil safety (DES, 1989), new contracts of staff employment, the availability and cost of supply cover, the limitation of time for fieldwork (Fido and Gayford, 1982), and the recurrent problem of fieldwork funding for equipment and travel (Hay, 1989), such research would have a pragmatic relevance and significance in an educational world whose objectives are driven increasingly by principles of cost-effectiveness. Teachers are under pressure to demonstrate in their advocacy of fieldwork the unique educational values to be derived from it, and to make evaluative comparison between fieldwork and other teaching and

learning strategies.

Calls for "measured appraisal" by HMI (DES, 1983,30) of the fieldwork experience and for "more clarity about what is 'essential' in terms of first-hand experience and scientific training for GCSE, AS and A-levels as opposed to that which is merely 'desirable' (Ward, 1987, p.79) are evidence of current thinking which seeks to assess fieldwork in cost-benefit terms:

"Evaluation, so far largely a matter of intuition and subjective impression, needs to be undertaken more methodically so that, in a time of financial restraint, priorities may be drawn up for the allocation of resources and the use of time" (DES, 1983, p.30)

Such demands for this kind of evaluation are partly premised on the perception that there is a lack of research data assessing the effectiveness of different teaching approaches, and more specifically, a paucity of empirical evidence which examines the pedagogical importance of fieldwork as an approach to teaching by comparing its efficacy against classroom-based instruction methods. More educational evaluation of fieldwork is required, it is argued, to quantify the benefits to be gained from fieldwork and to make comparison of teaching method possible.

Underlying this problem of a perceived lack of research, is a basic difficulty in reporting the results of educational research in a form which is both accessible and relevant to the needs of teachers. By its very nature, fieldwork encompasses a broad spectrum of educational issues as varied as discovery-based learning, problem-solving, pupil learning in novel settings, and the socialization of teacher-pupil interaction, each with their own idiosyncratic emphasis when applied to the context of geographical learning through fieldwork. Educational research which links the study of such issues to the subject of geography is absent from the geography method journals whose emphasis remains content and skills

orientated. This problem of the amount of fieldwork research reported to teachers is addressed by Professor Disinger at Ohio State University. Disinger (1985) recently reviewed several studies dealing with field instruction in the United States, and argues that a general lack of awareness by teachers of educational research on fieldwork, because of the small amount of research reported, contributes to the low amount of fieldwork being undertaken by pupils in schools in the USA:

"...little research-based evidence demonstrating the educational efficacy of field instruction has been reported. Relatively more evidence suggests that field work is at best equivalently effective, but not superior, to other instructional techniques. To the extent that such is the case, or is assumed to be the case, it follows that constraints... are sufficient to justify infrequent, or non-, use of field work in school-based instruction." (Disinger, 1985a, p.85)

However, in the UK, in spite of the recent downtrend in the secondary school pupil rolls (David, 1988), there has been an overall growth in the amount of fieldwork being done by pupils as a result of its inclusion as a compulsory element of many GCSE geography syllabuses (SEC, 1986), and its continued high profile in GCE A-Level syllabuses. Such growth would suggest that Disinger's hypothesis that constraints on fieldwork are sufficient to outweigh lack of awareness or equivocal research evidence of its ultimate value would appear to be untenable in the U.K. Teachers are overcoming resource and management constraints to provide fieldwork to their pupils, and are using examination requirements for fieldwork's justification in the curriculum.

Yet Disinger's comments on the lack of awareness by teachers of research-based evidence may still be significant. The periodic calls for greater clarity over the purposes, worth, and relevance of fieldwork in geographic education in the UK confirm the widespread view that the research literature is devoid of empirical studies analysing the

educational efficacy of fieldwork. It is clear, however, from Disinger's review of the research literature available in the United States and from other published summaries of research studies (Naish, 1972; Koran and Baker, 1979; Mason, 1980; Corney, 1981; Crompton and Sellar, 1981; CEE, 1985, Graves et al, 1988) that the exigency for evaluative research of fieldwork if based on a lack of empirical investigation is unfounded. Close examination of this literature reveals a wealth of research material going back over the past 50 years. For example, Lukehurst and Graves' (1973) 'Bibliography of British Sources of Geography in Education', identifies that as early as 1938, D. A. Hill set out to study the significance of the 'home region' in the teaching of geography, and Oliver (1948) investigated the 'efficacy of outdoor work in improving attainment of training college students in, and their attitudes towards, the subject of geography'. The string of research theses and papers referenced in Lukehurst and Graves' bibliography (Ware, 1956; Batten, 1965; Edynbry, 1966; 1967; Clarke, 1967; Cutley, 1970) testify that the problem of measuring the effectiveness of fieldwork as a teaching method is one which has long been recognised.

An alternative hypothesis for teachers' lack of awareness of the results of research is that studies have failed to make an impact because firstly, they are published in a burgeoning range of subject-based teaching journals not necessarily concerned with evaluating teaching and learning strategies within the context of geographic education, and secondly, because these studies fail to address questions of contemporary importance and relevance to meet the immediate needs of the profession.

The present literature review seeks to redress the balance by critically appraising a number of studies undertaken in the last ten years or so, to

investigate the efficacy of fieldwork in the teaching of environmental subjects, but with a particular focus on its role and value to geographical learning. It is not intended as an exhaustive or definitive review, indeed, the serendipity of my own research experience in locating many of these references would indicate that it is not possible to make such a claim. Rather, it aims to represent the type of information available to teachers; to provide a context to the educational evaluation methodologies used by the researchers in these studies; and to draw on their results to suggest approaches and issues of relevance to teachers seeking further enquiry.

4.2 Psychometric studies

For the past twenty years educational research and the evaluation of classroom practices has been riven by an ideological debate. This debate has centred on the divorce that has arisen between studies of classroom processes based on the social psychological tradition which utilize a reductionist approach to measure and quantify the outcomes for the learner that result from a particular set of instructional inputs, and ethnographic descriptions of classroom practices and events using qualitative data analysis and rooted in the anthropological tradition of participant observation (Hammersley, 1980). As David Hargreaves (1984) noted, the debate is characterised by "episodes of mutual hostility and recrimination" with few attempts to represent the different types of investigation as "complementary, rather than alternative, approaches to the study of life in classrooms" (*ibid.* p.46). The rapidly expanding amount of methodological literature and the increasing specialisms within each approach means that Hargreaves' argument for the utilization of both styles of research within a study is rarely put into practice (see however Entwistle, 1987).

The application of these two contrasting approaches to the study of teaching methods and pupil learning are evident in the research literature investigating fieldwork. The majority of the published accounts are studies conducted in line with the systematic observational approach emphasising the importance of reliable and valid quantitative measurement of pupil performance on tests conducted before and after the fieldwork event. In this model, learning is measured according to a set of pre-specified behavioural, instructional or performance objectives, or intended learning outcomes. Teaching strategies are assessed by their degree of success in developing pupil learning to achieve these targets. White (1988) describes the paradigm:

"Typically, investigators would devise two or more teaching procedures, one of which might be designated the 'control' and which was intended to provide a baseline against which the 'experimental' treatment could be measured. Students would be allocated to one or other of these treatments, preferably randomly, and their performances on a subsequent test would be compared. The comparison usually involved a statistical test of whether the mean scores of the various groups were 'significantly different'. Significant in this sense means not whether the difference in scores matters educationally, but whether it is too great to be unlikely to have arisen by chance, through accidental allocation of better learners to one group." (p.16)

A number of studies investigating fieldwork with this model of educational research utilize the terminology attributed to Bloom (1956) and Krathwohl (1964) and concentrate on assessing the value of fieldwork in terms of cognitive educational objectives such as the memory or retention of information (Riban, 1976; Dennis 1977; Koran and Baker, 1979; Wiley, 1984) or conceptual understanding (Humphreys, 1987), while others evaluate fieldwork's usefulness in terms of affective educational objectives concerning pupil values, attitudes, and social skills (Crompton and Sellar, 1981; Gayford, 1985). There follows some examples of educational research studies using quantitative measurement of pupil performance before and

after fieldwork to assess its significance for both cognitive and affective learning.

An example of a research study investigating fieldwork's value in the cognitive domain is MacKenzie and White's 'Fieldwork in Geography and Long-Term Memory Structures' (1982). MacKenzie and White organized their study on the basis of the behavioural psychology learning theory of Gagne and White (1978), which is broadly constructed on the principle that people's long-term memory stores are thought to consist of four components: verbal knowledge (facts or beliefs), intellectual skills (memories of how to perform a set of tasks), images (pictorial or diagrammatic representations of information held in the memory), and episodes (memories of events in which the individual participated). Gagne and White's hypothesis suggests that successful recall in learning is dependent on the degree of interlinking between each of the four components, thus for example, retention of new verbal knowledge will be better facilitated if accompanied by clear and "stable" episodes:

"Laboratory exercises, a feature of most modern science curricula, are intended to deepen the understanding of subject matter rather than merely to improve manipulative skills. The model implies that effective exercises will be those that make possible the establishment of specific links to propositions and intellectual skills. Similar considerations apply to other types of instruction aimed at the formation of episodes, including field trips, class acting of events of literature and history, and simulation games." (Gagne and White, 1978, p.214)

MacKenzie and White propose that according to this hypothesis, if fieldwork could be shown to provide clear episodes it should therefore, according to Gagne and White, "improve retention of related factual knowledge and skills" (MacKenzie and White, op.cit., p.624). They recognise, however, that students could undertake fieldwork and not form clear and stable episodes or that they could fail to link these episodes with other

knowledge. They therefore extend this model of learning by including in their hypothesis Wittrock's (1974) principle of generative learning - that for effective learning to take place the student must be an active agent in generating "perceptions and meanings which are consistent with their prior learning" (*ibid.* p.88). Fieldwork, per se, could not be relied on to produce improved retention and recall of information, but fieldwork which encouraged active participation in forming episodes and the linkage between memories of events and the principles under investigation, should show improved student performance.

MacKenzie and White set up their study using a sample of 162 12 and 13 year-old pupils divided into three different classes from two schools in Melbourne, Australia. The whole sample studied the same programme of coastal geography, using the same resource materials, and were all taught by the same class teacher. The sample were randomly assigned to three distinct 'treatments' or methods of instruction: "learning program plus processing excursion; learning program plus traditional excursion; learning program alone" (MacKenzie and White, *op.cit.* p.625). MacKenzie and White defined the characteristics of the "processing" and "traditional" fieldwork as follows:

"The processing excursion was designed to give greater emphasis than the traditional one to certain practices:

- The students use all appropriate senses, not just sight, in interacting with their environment.
- The students become an active part of the scene rather than observers of it.
- The students experience a few unusual and striking events which illustrate key, not peripheral, principles.
- The students generate information rather than receive it.
- The students construct their own records of the scene rather than accept the teacher's version.
- The teacher ensures that students link events with principles instead of leaving students to form their own links.

In the traditional excursion, at each of the five sites the students were given an explanatory field guide on a plastic clipboard.

The guide was designed to reinforce the information in the learning program. The teacher dominated. He drew attention to all aspects the students were required to observe, using the field guide as a check list. The students verified data recorded on the guides, but did no recording themselves. All vegetation transects were provided complete on the guides, and the students merely checked them. No unusual events were arranged. In the middle of the excursion the students did have to complete one set of questions, and there were some other minor tasks for them to do, but in general they were recipients of information, not finders.

In the processing excursion, at each site the students received a worksheet on a plastic clipboard, a map of the area, and a tide table. The teacher supervised while the students, individually and in groups, completed the tasks on the worksheets. The teacher answered any questions that the tasks generated, suggested action to solve problems, and checked the accuracy of recorded comments and data. Group discussions were held frequently. Students were continually required to do things: observe, sketch, record, answer questions. Several unusual events were arranged, such as walking through the mud of the mangrove shore, tasting foliage for salinity, scrambling over cliff platforms, wading in the sea.

It is emphasised that the students in the traditional group saw the same things as the processing group and spent the same time at each site. They had information repeated to them more often, but did far less." (MacKenzie and White, op.cit. pp.626-627)

MacKenzie and White administered two tests to the 'control' and the two fieldwork groups. The first measured student achievement against the objectives of the coastal geography unit by multiple choice and short answer items. This achievement test was given to students directly after the completion of the programme which consisted of a 2 hour classwork session and a 4 hour field visit for both fieldwork groups, and a 2 hour classwork session to the control group. The achievement test was then repeated for all students after 12 weeks. The second test called the link test, was administered to all students 12 weeks after the programme. It provided students with nine different scenarios or events which both groups encountered during the fieldwork, but which were experienced by the groups differently. The link test requested students to select one of five alternative statements which the scenario or event brought to mind. In the example of the link test to which Mackenzie and White refer, four of the alternatives are accurate statements but only the one which was specifically referred to during the fieldwork was regarded as the scoring

response.

The results of the study are reported by the authors to show first, that the students who undertook either form of fieldwork outperformed the students in the control group who had no fieldwork experience, on both the achievement test measuring initial learning and on the repeated achievement test measuring retention. Second, MacKenzie and White argue that a higher level of success is achieved by the processing group over the traditional group in the retention of knowledge: "the processing group suffered relatively little fall off in performance over 12 weeks... the processing group shows a 90 percent retention, in marked contrast to the traditional group with 58 percent and the control group with 51 percent." (MacKenzie and White, op.cit. p.630). MacKenzie and White claim that this difference can not be accounted for only in terms of the higher performance of the processing group in initial learning, and that the positive correlation between the link test and the retention scores for the processing group demonstrate support for their hypothesis that links with episodes will aid recall of facts and skills. The low scores obtained by the students in the traditional and control groups lead to MacKenzie and White concluding "unless deliberate efforts are made in instruction to get students to form episodes and link them with other knowledge, such links will not occur, and consequently little value is obtained from an excursion" (ibid. p.631).

Other educational researchers interested in studying fieldwork's effects on cognitive learning have concentrated less on information processing and more on the environmental factors influencing pupils' abilities to learn concepts taught as a structured task on fieldwork. The degree to which pupil learning is improved or retarded by the novelty of the learning environment encountered on fieldwork is considered by researchers at the

Smithsonian Institution's Chesapeake Bay Center for Environmental Studies. In a series of studies (Falk, Martin, and Balling, 1978; Falk and Balling, 1980; Martin et al, 1981; Falk and Balling, 1982; Falk, 1983), researchers set out to understand how field trip activities interact with classroom activities, and in particular how the settings visited on fieldwork actually affect the learning process. They argue that teachers often select sites for fieldwork on the grounds of the novelty or uniqueness of the learning environment (i.e. that the environment will be unfamiliar to the majority of pupils) but that this may be a poor pedagogical strategy since their research results would indicate that "novel field trip situations produce an adaptation or adjustment process on the part of the students which directs their behavior toward the environment and away from structured learning activities...and may actually interfere with the pedagogical goals envisioned by the trip leader" (Martin et al, 1981, op.cit. p.301). Their results support an hypothesis that extremely familiar or novel environments are counter-productive to task directed learning. Yet moderately novel or unfamiliar settings produce the best results on tests measuring cognitive learning and the retention of information. Falk (1983, p.141) concludes, that the place where learning occurs can be manipulated as part of a repertoire of teaching strategies to achieve desired educational objectives.

In a study of A-level biology fieldwork, Humphreys (1987) tested the hypothesis that the transect technique used to teach concepts associated with the principle of zonation in a system (a technique widely used in the teaching of biogeography) does not affect the level of mastery of particular concepts. Using Klausmeier and Allen's (1978) model of concept attainment, Humphreys conducted pre and post tests on a sample of 44 students to measure their improvement in attainment of preliminary, central

and additional concepts. Preliminary concepts, such as 'species' and 'adaptation' were defined as "those which are not specifically ecological and which the students may have encountered in other syllabus sections"; central concepts were "essential for a full understanding of zonation including its nature (the concepts 'distribution' and 'abundance') and causes ('abiotic environment' and 'competition'); and additional concepts such as 'habitat' and 'niche' were defined as "lying in the same general area of ecological theory" but "less directly related to the central principle of zonation" (p.30). Questions presented to the students concentrated on testing students' mastery of concepts at the classificatory and formal levels of Klausmeier and Allen's model. Students scored lower marks for only being able to demonstrate accurate instances of the concept (classificatory) and higher marks where they could accurately specify the defining attributes of the concept (formal).

While the experiment revealed significant improvement in students' mastery of preliminary concepts, Humphreys' main conclusion is that the results show a lack of significant improvement in conceptual understanding of the central concept of 'competition' and that this indicates "a limitation of the technique as the simple basis for an educational exercise on zonation" (p.33). The implication is that the exercise is only perceived by students as linking the variables of observed distribution with physical environmental parameters (such as height on a shore), and neglects to exemplify the important role of competition in establishing zonation patterns.

Empirical quantitative based studies of the educational efficacy of fieldwork have also been conducted to assess fieldwork's contribution to pupil's affective development. Crompton and Sellar (1981) review research

on fieldwork's impact on three affective categories:

- (a) self-concept/self-esteem
- (b) socialization
- (c) attitude towards the out of doors as a learning environment and toward school.

In the first category Crompton and Sellar identify research interest in self-concept from three perspectives:

1. pre- and post experience tests with experimental and control groups attempting to measure self-concept directly.
2. pre- and post experience tests measuring the discrepancy score between a person's assessment of ideal self and self-concept.
3. pre- and post experience tests measuring self-concept as the change from external to internal locus of control, or the degree to which a person perceives they are able to control the events which influence their lives.

In all three areas of research, studies showed an improvement in measures of self-concept as a result of a field experience, and in some studies the impact of the experience was shown not to be transient. Research suggesting a development in pupil autonomy and self-image as a result of a field experience were supported by the work of McDonald (1983) in his study of a six-day field 'experiential education' programme.

In the second category, Crompton and Sellar examine research investigating the impact of field experiences on four levels of socialization:

1. peer socialization and peer perception
2. racial integration
3. impacts on disadvantaged groups
4. teacher-student relationships

Crompton and Sellar's review indicates that while peer socialization and in particular friendship patterns, could be affected by a field visit or residential programme, these effects are not transferrable back into the context of school. Studies analysed by Crompton and Sellar investigating

racial integration patterns resulting from residential experiences tentatively suggest that racial desegregation evident in schools is reduced on a residential field programme with groups becoming less ethnocentric and demonstrating more racial interaction. Crompton and Sellar argue that fieldwork is also justified as valuable on the grounds of it facilitating greater mix between groups of different socio-economic status, with some studies showing significant improvements in economically disadvantaged groups on measures of self-reliance, group cooperation, and transfer of positive values back into the classroom, although the research points to larger gains made by groups of higher socio-economic status. Finally in this socialization research category, improved teacher-pupil relationships are frequently referred to as a benefit arising from fieldwork, and while Crompton and Sellar argue that empirical findings support anecdotal evidence of enhanced teacher-pupil relations during and after fieldwork, the causes are less clear with tentative suggestions that increased contact time and small pupil-teacher ratios are partly responsible.

Crompton and Sellar refer to a third category of research papers which have investigated the impact of outdoor education experiences on attitudes towards the out-of-doors as a learning environment, and attitudes towards school, arguing that studies indicate that fieldwork provides pupils contact with a more stimulating learning environment than the classroom, but that there is little evidence to indicate that this leads to a change in attitude or an increase in motivation towards classroom based learning. These findings, however, are questioned by the work of Kern and Carpenter (1984) who investigated the question of whether student motivation in a learning experience is determined by the affective responses of students to that experience, by contrasting two different approaches to teaching an undergraduate geology programme. The first was a 'traditional' treatment

using classroom based activities and a laboratory manual, and the second treatment was field based. Both were taught by the same instructor and were seeking to teach the same content. Both classes were pre tested on three affective variables; the value placed upon 30 topics or themes of the course, the interest in the topics of the course, and the attitude or sense of enjoyment expressed by students for the topics, and the results showed there were no significant differences between the two groups. But by the end of the term, post-tests on the same set of items revealed that the students who experienced the field-oriented approach left the course feeling much higher levels of importance in their work, greater interest, and enjoyment associated with the learning experience than did students in the traditional laboratory based group. Kern and Carpenter argue that motivation for the course had been improved by field-based instruction on the grounds that higher attendance by the field-based group over the laboratory group was recorded throughout the programme.

Kern and Carpenter later reported (1986) research considering the effects of field activities on learning using Bloom's cognitive hierarchical taxonomy separating lower order learning (memory and recall of information), from higher order learning (comprehension, application, analysis, synthesis and evaluation). The authors propose that there exists a causal relationship between the affective and the cognitive; teaching strategies which improve 'affective responses' from students lead to an increase in motivation, which leads to improved learning. Using data gathered from the first study, Kern and Carpenter analysed the responses of both the field-based and laboratory groups to a 75 item post-course examination. The examination was divided into two sections - the first contained questions testing memory and recall of information, the second contained questions testing student ability to apply higher order learning

skills. The results show no difference between the two groups in memory and recall of information on items in the first part of the examination, but significant differences favouring the field-based group in the number of correct responses to second category questions. The authors argue that the cause of the discrepancy is the influence of the field activities on the affective responses of students, and the concomitant improvement in student motivation for learning. Kern and Carpenter extend this argument to suggest that motivation led to:

"an intrinsic desire to take a closer 'look' and, as was observed so often during the study, the asking of many more questions of themselves, other students, and the instructor - questions that stimulated further efforts toward understanding... The second factor we believe relevant to the greater higher-order learning abilities of the field-oriented class is related to the nature of field experiences themselves. In the field, students get a sense of the integration of processes operating in the natural environment. Those processes and relationships too often appear to be discrete and unrelated in a text, lecture presentation, or laboratory manual; and 'facts' are too often taken as 'truth'. We believe that field experiences not only permit, but actually encourage, perception of the integrated whole, not just individual parts. This is, in essence, the bridge to higher-order learning." (Kern and Carpenter, *op.cit.* p.182)

The affective response of students to learning experiences and the linkage to student motivation is also analysed by Gayford (1985) who provides evidence to suggest that pupil interest and enthusiasm for fieldwork is positively correlated to the importance attached to fieldwork by their teachers.

4.3 Process studies

The studies described so far in this review have investigated the educational efficacy of fieldwork as a method of instruction using a behavioural objectives model of educational evaluation. In these studies, tests have been developed by researchers to measure hypothesised change in pupil behaviour or pupil performance after the fieldwork event against a

number of achievement or performance indicators; cognitive variables such as retention, recall, and (less frequently) understanding, and affective variables concerning motivation for learning, attitudes towards self, peers, teachers, school, and the environment. Pupil performance on pre-fieldwork and post-fieldwork tests measuring such variables is implicitly equated with pupil learning with the result that learning is seen as being reducible to a quantifiable expression. The level of significance which can be attributed to the data is dependent on experimental validity and reliability of the tests being used, and the strength or weakness of statistical correlation between variables. Thus, to use Stake's (1971) memorable expression, "general achievement tests have been developed to measure correlates of learning, not learning itself" (p.583).

Criticism of the behavioural objectives, rational-planning, or product model has been well rehearsed (Eisner, 1967; Parlett and Hamilton, 1972; House, 1973; Cronbach, 1975; Stenhouse, 1975; Hamilton et al., 1977; Eisner 1979). McCormick and James (1983) identify three key difficulties in treating education as a means towards ends with an emphasis on specifying learning in precise behavioural terms and an associated treatment of evaluation and assessment as measurement to see whether or not the pre-specified goals have been achieved. First, that teaching and learning in terms of curricular content and curricular processes has intrinsic worth; certain forms of knowledge or strategies for teaching such as discovery-based learning have educational worth in themselves and are, therefore, intrinsically justifiable. Second, the outcomes of education are not, and should not, be completely predictable. Assessing only those intended or preplanned goals neglects unintended outcomes which may have equal importance. Third, "the use of objectives as criteria for evaluation

permits judgement of success or failure, it is incapable of assisting in the diagnosis of reasons why a curriculum has succeeded or failed. In other words, the objectives model for evaluation is unable to provide the kind of evidence from which curriculum development can proceed ... Thus, according to Stenhouse (1975), 'The crucial criticism of the objectives model is that it assesses without explaining ... Hence the developer of curriculum cannot learn from it'" (McCormick and James, 1983, p.162).

In the light of these points, it is worth noting that the studies of fieldwork referred to above are predominantly concerned in the cognitive domain with variables such as recall and retention, which Stenhouse (1975, pp 80-81) argued were elements of education which he termed 'training' (the acquisition of skills) and 'instruction' (the learning of information); the assessment of which could be performed appropriately by the objectives model. Studies of fieldwork which have used behavioural objectives to evaluate understanding or the ability to make relationships and judgements, which Stenhouse termed 'induction into knowledge', are less frequent and less successful; perhaps unsurprisingly so, when we consider that Stenhouse viewed the objectives model as wholly inappropriate to the study of pupil understanding since it negated the importance of unpredictable outcomes which he regarded as the essence of educating for creativity:

"Education enhances the freedom of man by inducting him into the knowledge of his culture as a thinking system. The most important characteristic of the knowledge mode is that one can think with it. This is in the nature of knowledge - as distinct from information - that it is a structure to sustain creative thought and provide frameworks for judgement.

Education as induction into knowledge is successful to the extent that it makes the behavioural outcomes of the students unpredictable."
(p.82)

Stenhouse went on to argue for a 'process' model to replace the emphasis on education as 'ends-means', in which curriculum design progresses by

"attempting to define the classroom process in terms of what the teacher is to do at the level of principles and what the content is...: how is the teacher to handle what?" (p.90), and that classroom processes in the form of activities to be carried out by the teacher cannot be dismissed as unjustifiable on the grounds that these activities are not the ultimate purpose of education. He argues, instead, for a statement of educational goals which centre on principles of procedure or the process of learning; the development of pupils' ability to pose questions, or to engage in open-ended discussions, or to reflect on their own experience, or the development of the role of the teacher away from the notion of 'teacher as an authority' towards the role of 'teacher as co-learner'.

There have been relatively few published research studies of fieldwork which have sought to unravel fieldwork's importance for pupil understanding of geography by taking up the challenge laid down by Stenhouse and focussing on the learning process as experienced by pupils and their teachers when engaged in doing fieldwork. The perennial problem of the efficacy of fieldwork has not been addressed through the new orthodoxy. Few researchers have utilized the developing 'process' model (MacDonald, 1978; Simons, 1980; Elliott, 1981; Simons, 1981; Simons, 1987) and the concomitant explosion in methodological educational evaluation literature in the 1980s, to examine geography fieldwork as a set of 'transactions', "such as the interactions that occur between teachers and pupils, pupils and pupils, pupils and curriculum materials and tasks, or pupils and the physical, social and educational environment" (Stake, 1967, p.528), which play such a significant part in helping to explain how prior states of learning are linked to learning outcomes. Arguing for a process model of school self-evaluation which focusses on such transactions, Simons (1981) suggests that what is required is "to study the processes of teaching,

learning and schooling in order to be able to compare practice with intention, opportunities with aspirations. And one of the best ways to represent and promote understanding of these processes is to accumulate and make available detailed descriptions of teaching and learning and the values and effects of curriculum policies within the context of particular schools and classrooms" (in McCormick, 1982, p.119).

Certainly, a description and analysis of the curriculum-in-action as advocated by researchers supporting a process model is absent from the research studies of fieldwork referred to above. Pre-fieldwork and post-fieldwork tests administered to pupils which purport to show learning differences resulting from different 'treatments', in fact do not specify the curriculum content or its conceptual organization, the role of the teacher and pupil in the different learning situations, the teaching and learning strategies employed and their selection for parts of the curriculum, and the distinctions or congruence that separate intentions and observed practice. In short, they do not answer Stenhouse's point of assessment for explanation in order to facilitate curriculum planning. In MacKenzie and White's (1982) paper, for example, the 'processing' excursion is characterised by its "active" nature; pupil-led inquiry in which teachers reinforce links of events with principles, and this is contrasted with the "passive" nature of the 'traditional' excursion in which pupils are seen as recipients rather than finders of information. But, although the design of the two fieldwork treatments is clearly seen by the authors as a fundamental determinant in the study, the level of analysis of the two approaches is left to inference; there is no description or empirical investigation of what the teacher was doing to effect change - to link the theoretical underpinnings of the strategies used with what actually occurred in practice. The process of how episode formation effects the

differences in pupil outcomes that the recall and retention tests identified remains unexplained. How did the students become an "active part of the scene rather than observers of it"? How did the teacher stage-manage the experience of "a few unusual and striking events which illustrate[d] key, not peripheral, principles"? How did the teacher ensure "that students link events with principles instead of leaving students to form their own links?" (MacKenzie and White, *op.cit.* p.626). Similarly, in Humphreys' (1987) study of biological fieldwork there is no indication of why the transect exercise is deficient in promoting conceptual understanding. What were the three teachers involved in the exercise doing with students to promote concept attainment as measured by the tests? Can students who are directed towards task oriented activities in practical work such as observation, recording and measurement be expected to gain abstract conceptual understanding directly from empirical experience?

A study by Fink (1977) conducted at the Department of Geography, University of Minnesota, entitled Listening to the Learner: an exploratory study of personal meaning in college geography courses marks an important point of departure in offering a process orientated investigation of fieldwork's usefulness in the geography curriculum. Rejecting a behavioural analysis, Fink draws on the work of John Dewey, and Carl Rogers, to argue for an 'experiential' evaluation taking as its starting point the course as experienced by the student, which, Fink argues, leads to "a concern for (a) what the student actually experiences in a course rather than what the teacher intends to happen, and (b) the relationships between a learning experience and other experiences in the student's life, both past and future" (*ibid.*, p.5). Fink's original intention was directed towards the efficacy of fieldwork but the study later broadened its focus to include an analysis of student experience of fieldwork as one of a range

of teaching strategies employed on college geography courses:

"...attention was primarily directed at the value of field courses in geography. It seemed to the author that this form of teaching and learning ought to be especially effective in providing learning experiences that were personally meaningful. This view was based on the belief that, by allowing students to have direct experience with the phenomena being studied, the possibility for learning how to extract geographical meaning from any experience would be considerably enhanced... But, part-way through the study, the author became less interested in exploring the special significance of field courses than in finding a way to analyze the full range of meaning in a student's course experience. If an effective format for doing this were developed, it would have the potential for changing the way college teachers plan, conduct, and evaluate their courses." (Fink, *op.cit.* pp.11-12)

At the centre of Fink's focus on the interpretation of personal meaning is the rejection of the learning process seen as an object of study separated from the actions, intentions, motives and beliefs of the participants, a concept rooted in symbolic interactionism and phenomenology (Hammersley and Atkinson, 1983). Working from this interpretative or humanistic stance, Fink selected three courses being run at the University of Minnesota, 'Urban Micro-Climatology', 'American Cities' and 'Historical Geography of North America'. Fink used a battery of qualitative and quantitative strategies - staff interviews, current (44 students) and former (33 students) student interviews, questionnaires, and participant observation - to present an account of the students' self-perceptions, how students defined the course experiences, what they felt they had learnt and what was meaningful to them, and how the experience of the course was felt by students to have contributed to their later life. In 'reporting on the course experience' students were invited at interview to reflect on two primary questions - 'how would you describe what is happening in the course?' and 'how would you compare the various aspects of the course (lectures, readings, etc.) to one another?' Student responses were grouped under four headings; classroom events, reading assignments, field trips, and field problems.

Fink argues that students on the courses "almost universally indicated that field trips contributed significantly to their interest in the subject matter" (ibid. p.72). Student reasons for its positive value were grouped by Fink under headings of: enhancing specific local knowledge, providing an experiential referent to classroom learning, altering the perception of place for students to a dynamic view based on inhabitants' values and actions, and providing new techniques of observation. Not all students, however, regarded the fieldwork component of the course as a valuable learning experience. Where students failed to generate involvement and interest in a field research problem or regarded fieldwork as too passive an activity ("the field trips were too often exposure without technique" ibid., p.127), fieldwork was expressed as having little value. By analysing the student interview data to understand which experiences students regarded as valuable and why, Fink developed, what he terms a 'taxonomy of personally meaningful learning':

1. acquisition of personal memories;
2. changes in intellectual grasp of phenomena;
3. acquisition of the means for further inquiry;
4. development or redirection of interests, purposes and values;
- 5 changes in self-image, role models, and quality of social interaction.

The novelty of the experiences which fieldwork provided students featured prominently in their personal memories of their courses. Students recorded vivid descriptions of scenes and events they had encountered, and recalled in detail the individual and group field research which they had initiated, but when pressed to relate specific statements made by staff on fieldwork, their responses were less definite. Many students regarded the development of their own mental maps of place as significant in changing the level of complexity and sophistication of their thinking about geographical phenomena, and of the 20-30% of those students who retained any factual

information from the courses, all recalled information which related to fieldwork or to the area in which they lived. Fieldwork did not figure prominently in student recollections of learning new concepts, but was referred to by students in reinforcing the relationships between phenomena through direct observation. Fieldwork's importance for students in becoming 'better observers' was recognised by many students, but interestingly, Fink reveals through his data that students defined this improved observation in terms of being able to address new sets of questions to observed phenomena, and being aware of new data sources:

"In that course I was hit by the whole question of perception. This forced me to ask new questions about everything I encountered: what do you see, what is really there, what do you value?" (*ibid.* p.97)

Students also viewed fieldwork as central to their acquisition of research skills, including data gathering and information analysis and interpretation. Students referred to particular techniques with which they had become familiar or had acquired competency in using through their own field research.

Fink's affective categories in his taxonomy also reveal interesting insights into fieldwork's role in developing personal interests and values, and changing students' self-image and relationships with others:

"Our field project that year was concerned with the location of businesses owned by Blacks in this city. This prompted me to visit and talk with many Blacks here. This is something I would not ordinarily have done, but in the process I learned a lot of things, many of which were not directly related to the course or the field project. I did things like visit a Black church one Sunday and chat with a Black building contractor who offered me a job partly because of some experience we shared. But the most important thing about all this was not just learning about Blacks in the city, although that was very good to know, but I met people there. This led to new experiences and new thoughts. The end result was that I expanded myself because of the dialogue I had with other people." (*ibid.* p.102)

As well as facilitating student contact with a wide range of groups

external to the everyday social interaction of a student's experience, students commented on fieldwork's value for providing accessibility and interaction with staff whom they had formerly seen as distant authority figures and the significance of this experience in developing for students personal and professional role models, and providing the relatively rare opportunity to work in groups which students reflected had been an important learning experience for their future working lives. Fink summarises the point by saying that as a result "the whole learning experience became more humanized" (*ibid.* p.104). He concludes that the taxonomy of meaningful learning constructed around the students' own perceptions of educational worth reveals a breadth of educational objectives which go far beyond the objectives as stated by staff in the three curriculum courses which Fink studied, and that although generated from a case study of geographical learning the taxonomy has a more general applicability in other learning contexts. Fink also argues that the taxonomy represents a synthesis of cognitive and affective aspects of learning and that through an analysis of the learning process the true interactive character between both cognitive and affective elements is revealed.

4.4 Discussion

It is clear from the research studies referred to in this review that irrespective of the methodological stance from which they have been taken, based on objectives or process models, both have produced results which provide important insights into how pupils learn through fieldwork. The studies reveal a number of issues central to teachers of geography and of relevance to teachers of other field sciences and social sciences who utilize fieldwork in their repertoire of teaching strategies in order to

make the conceptual base of their subject more comprehensible to pupils, to provide pupils with new contexts for learning and applying skills, and to extend pupils' personal and social development.

The first issue concerns the linking role which fieldwork can play in enabling pupils to translate and apply concepts they have learnt prior to the field experience or new concepts they have encountered through fieldwork into different learning situations and novel contexts. Novak (1976) argues that this is an important benefit of fieldwork in that it provides pupils with the 'real-life' experiences necessary for pupils to form concepts and an opportunity for pupils to re-evaluate and test the meanings which they attach to such concepts:

"...this kind of experience can be designed easily to test for concept meanings. As new objects or instances of... processes are presented, students have the opportunity not only to differentiate between concepts further, but also to test the clarity and meanings of their concepts." (p.506)

This view is supported by evidence Fink presents in his study where students valued the opportunity fieldwork provided for gaining an 'experiential referent', and the new meaning such experience provided for pupils' later observations. To use an example often studied by A-Level geography students through fieldwork, of pupils learning about hydrological processes as components of understanding the concept of the hydrological cycle, fieldwork provides pupils direct experience of terms such as solutes, suspended load and bedload. In White's (1988) terms "without experience some meaning might be derived from statements like those, but it is easier when images can be drawn from generalized experiences" (p.190). These 'concrete' concepts comprehended through the direct experience of fieldwork and maintained by the establishment of stable images and episodes can be seen as building blocks to underpin the understanding of

relationships which exist between say, stream discharge, stream load, and the availability of material to streams. In turn, they form the basis of understanding unificatory 'abstract' concepts such as the hydrological cycle which cannot be perceived by direct experience. But as Humphreys' (1987) study and Fink's work shows, while fieldwork may provide an experiential referent of value in elucidating concepts at the classificatory level (the ability to classify a number of instances as examples or non-examples of a concept), fieldwork's heuristic value in facilitating concept mastery at the formal level (to accurately specify the defining attributes of a concept) is less certain. In fact, it may have a negative function. As Humphreys suggests "much of the mental and motor activity associated with the detail of using equipment and performing surveys and experiments could serve to distract the students from the concepts underlying the work" (p.30).

The extent to which concrete learning experiences are a necessary precursor to the formal acquisition of concepts for pupils of different ages is unclear. Learning theorists such as Piaget have argued that the necessity for concrete experience for conceptual understanding may diminish with age, but evidence from Fink's study suggests that students at college level still benefit from direct experience of phenomena before reviewing their own learning experience in the light of new information or when applying concepts to understand principles and relationships between phenomena:

"It was on the field trip to St Louis, when we were driving through the black ghetto, that the professor commented on, and I really became aware of, the relationship between quality of housing and the percent of owner-occupancy" (Fink, op.cit. p.94)

Extending this function of fieldwork, MacKenzie and White's paper shows that subsequent retention of knowledge of principles and relationships between phenomena may be affected by episodes (records of experience and

memories of events) formed concurrently with the teaching of principles and relationships, and that the novelty of experience on fieldwork may contribute to the successful formation of episodes. As has been pointed out, MacKenzie and White's study does not explicate how teaching strategies and the learning environment may be successfully manipulated to capitalize on the benefits to be gained from linking episode formation with conceptual understanding (see however, White, 1988). But it is interesting to note here the links between MacKenzie and White's findings to Fink's argument that the 'acquisition of significant personal memories' (scenes, self-actions, events, individuals, and statements) were seen by students as important outcomes of their own learning. Of particular interest is Fink's analysis that students referred to fieldwork when recalling scenes, self-initiated actions, events, and individuals but less frequently referred to particular statements made during fieldwork, which supports in part, MacKenzie and White's conclusion that "episodes have a positive effect on retention of subject matter... [but] that unless deliberate efforts are made in instruction to get students to form episodes and link them with other knowledge, such links will not occur..." (MacKenzie and White, op.cit. pp.630-631).

The second issue which these research studies raise concerns Fink's theme of fieldwork providing pupils with the means for further inquiry, and as I shall show, this can be viewed as an extension of fieldwork's importance for developing pupils' conceptual understanding and translation of learning to new contexts and problems. We might, therefore, suggest an alternative definition to classify student responses in Fink's study under this second heading as 'developing autonomy in pupil learning'. Fink categorizes under four sections: (a) acquiring new perspectives from which to proceed as a learner, (b) the identification of new and significant sets of questions,

(c) recognizing possible sources of data, and (d) developing a competence in research procedures. Fink illustrates the first three sections by referring to student responses at interview:

"That was the only geography class I ever took and I really got a new perspective on cities. The professor introduced a lot of things I was unfamiliar with, things like the effect of terrain on cities and the location of office space as an indicator of things. On my job [with the metropolitan planning council], I used these ideas all the time. It was easy to see that others did not have these same perspectives and tools."

"One of the things we did on the field trips was to look at the skyline or at different places, and ask why it was the way it was. I find myself still asking those questions..."

"Sometime ago I learned that I preferred to learn on my own by studying basic materials rather than just reading text material. In this course I was able to sit down with maps, study them, and just learn from them. The field trips also made me a more careful observer; I learned how to learn things from places I look at all the time anyway."

From Fink's study it is clear that many students have learned a new way of observing the world by being confronted with new sets of questions and perspectives posed by teachers through fieldwork. They have developed new conceptual tools to address their own empirical observations. For some students however, fieldwork failed to provide them with a means for further inquiry:

"The field trips were zilch for me. I missed two and slept on the others. I don't know what we were supposed to be doing."

"I'm not getting much out of the field trips. They're too passive; all we do is ride around in a big, uncomfortable bus all day. It's a big time cost. And we're not learning any new methods."

"I'm just not a 'field person'. I'm not particularly skilled at field work and I just don't see things. And I didn't on this course either."

"We find out things, but we don't know what to do with them"

How can we reconcile the two sets of statements? Using the principles of Ausubel's learning theory (1968) - that for meaningful learning to occur

new information must be linked to existing relevant concepts in the learner's cognitive structure - Novak (1976) suggests that acquiring a new way of looking at phenomena is based on the teacher's awareness and manipulation of what the learner already knows: "i.e. the concepts the students have that are relevant to a new learning task and the range of differentiation (or development) of these concepts" (p.508). Novak considers that this process can be broken down into three stages, "(1) show events (things or phenomena), (2) ask or have students record what they observe (identify the pertinent facts), (3) explain what is going on (apply concepts that explain the regularities in the observed facts). Using an example from biological education, Novak argues that explanation is achieved by asking students to record events from direct experience in response to the question 'how do you know that?' since the process of answering the question makes it clear to teachers and to the pupils themselves which concepts pupils do or do not hold to explain the processes they are observing and how differentiated those concepts are - whether pupils can see connections between concepts, and how those concepts help to explain the events they have observed. Novak concludes:

It should be obvious from the above example that most teachers, textbooks and course syllabi do little to make explicit the concepts needed to interpret events and the complex interrelationships between concepts. The opposite is more often the case, where an inordinate emphasis is placed on observing the events and on methods for recording the observations. The fact that concepts are what we think with, what we must develop and use to explain the regularities in our observations, is seldom stressed in biology teaching. Overwhelmed with a mass of observations, descriptions, or definitions, most students know of no recourse other than to memorize rotely as much as they can. The sequence: observe, memorize, test, forget becomes common practice, rather than: observe, apply concepts, interpret, interrelate to larger concepts, solve problems." (Novak, op cit., pp.509-510)

Clearly, there are 'geographical' parallels to be drawn from Novak's paper. Teachers will recall fieldwork which has begun from an unidentified conceptual base or at best a broad statement of a problem or aim , and

which has concentrated mainly on methodological problems of collecting and recording data. Analysis is carried out by a procedural sequence supplied by the teacher with conclusions 'drawn out' of pupils through question and answer. Teachers will also recall and perhaps empathize with the frustration and boredom exemplified by students in Fink's study that may result. Yet, teachers will also know that the same piece of fieldwork can hold meaning for some students and produce the positive responses evident in Fink's research:

"There seemed to me to be three elements in knowledge, all related. One is naive percept, one is concept, and the third is experienced synthesized... Concepts are classes of things, and these are the vocabulary of geography. A teacher can be very useful in helping a student structure his experiences with a geographic vocabulary... This is what this teacher did for me." (Fink, op.cit., p.94)

The key to reconciling the two experiences may lie in Novak's demand that curriculum design and instructional methods such as fieldwork must be predicated on a distinction between the process of selecting the concepts we wish to teach and the instructional task of selecting our examples and teaching strategies. This is perhaps to state the obvious and observations of good practice indicate that teachers do work from this principle and 'unpack' concepts during field observations selected for their illustration, but the degree to which it is done explicitly by teachers with pupils may be the difference between some pupils being able to understand the purpose and procedure of fieldwork and others for whom the process remains a mystery until 'the conclusions' or not at all. Selection of the concepts we ultimately wish our pupils to understand and use, precedes the selection of examples to teach concepts and the sequence in which we present the examples. But these concepts must be 'processed' or reflected on by pupils to make meaning of their own field observations. White (1988) argues, in the context of laboratory experiments, that it is insufficient to leave to chance the linking of observation to conceptual

understanding and the subsequent processing of new information. The concepts pupils are using to make sense of their fieldwork, and the new concepts they are learning to explain their observations need to be specified by the pupils themselves. Drawing evidence from Tasker (1981) and Moreira (1980), White suggests that pupils should be encouraged to write detailed introductions to their own experiments, and list all propositional knowledge they used during their work, or to return to Novak's terminology, the concepts they used to answer the question 'how do you know that?'

The third issue raised by the research studies in this review concerns fieldwork's importance for affective learning; its impact on changing pupils' attitudes about the subject of geography and its broader influence in altering pupils' fundamental value and belief systems about themselves and other people, and its significance for changing pupils' patterns of social interaction. Teachers will recognize that it is frequently argued that fieldwork can have a significant and longlasting impact on pupils' interest and motivation for the subject of geography, and will recollect examples of former students who remember a field course as a deciding factor in determining their choice of subject for study, or an important turning point in their personal and social development. But more generally, teachers also refer to fieldwork's value for generating in pupils a motivation for learning, a greater independency in learning, a changed attitude towards school and their teachers, and a new social cohesion in the classroom.

The results of the research studies referred to in this review therefore address two levels in examining the impact of fieldwork on pupil attitudes. The first refers to fieldwork's importance for shaping attitudes

specifically towards the subject of geography, and generating in pupils new 'geographical' interests and perspectives which are carried forward into later life. The second concerns the impact of the social experience of fieldwork on broadening pupils' experience of working and living with others, re-evaluating pupils' value systems and beliefs, altering their self-image, and developing role models for pupils. The two levels are interactive, and both show the importance of fieldwork as a vehicle for changing pupil attitudes through a process of direct experience and as a process of social interaction.

White (1988) defines an attitude to a concept such as 'science' as "the person's collection of beliefs about it, and episodes that are associated with it, that are linked with emotional reactions. The stimulation of these reactions affects decisions to engage in behaviour, such as choosing to take a science course, to read about scientific matters, or to adopt a science-related hobby" (p.101). Fink's research shows that fieldwork has an important role to play in stimulating students' emotional reactions to the subject of geography which can have longlasting effects in redirecting pupils' interests, purposes and values. Fink's interviews with students support the ideas of Kern and Carpenter (1986) in revealing that the stimulus comes from fieldwork providing firstly, an integrative and holistic 'geographical perspective' or a new way of looking at phenomena distinct from that of the classroom and text in which processes and relationships are perceived as discrete and unrelated. And secondly, an understanding of the principles and procedures which characterize geographical investigation. In short, students perceive fieldwork as central to them acquiring a professional model for the geographer and geography. For example, Fink refers to the effects of the field trips of the American Cities and Historical Geography courses on changing student

perceptions of place from a conception of cities as static and inorganic to one which regards cities as dynamic and adaptive to the values and actions of the inhabitants. Students on these courses placed high value on the insights they gained in this way from their fieldwork, and demonstrated that its importance was not a transient experience but had a longlasting influence on their personal interest in the historical development of cities, their spatial structures and form, and other individuals' perception of place.

Some of Fink's data from interviews with former students raises important issues concerning pupils' attitudes and motivation towards learning, but which are not specific to geography. Fink divides into four categories the value for later life that students place retrospectively on parts of their courses; aspects of the course which influenced students' casual interests, study interests, general competence, and occupational choice and qualifications. From this data, students value fieldwork for (a) providing an 'experiential referent' for concepts, (b) developing a capacity to select and solve problems, and (c) an opportunity to work in groups. But fieldwork is also seen by students as of significant utilitarian value in providing knowledge and information which was influential in their choice of initial career, and for developing specific skills which students subsequently used in their careers. The former students show therefore that fieldwork is a key determinate in fashioning a positive attitude towards their learning experience since it causes an enhanced level and quality of conceptual understanding gained through direct experience, demands the application of that understanding for problem-solving, supplies a framework for individual and group study, and holds a perceived utility.

Thus, an affective response such as the motivation for learning a subject

is shown in Fink's study to be closely linked to the growth of a pupil's cognitive structure. Fink's research clearly shows that positive attitudinal change towards a subject is concomitant with the student's perception that s/he has benefited cognitively from the experience, and that this is readily perceived to have taken place when students are able to recognize that they have solved new problems or learnt new skills. We can conclude that the study provides empirical data to support the notion that pupil motivation for learning a subject is linked to a perceived achievement in applying conceptual understanding to solve problems. A notion supported by the work of Gayford (1985). Novak (1976) stresses the importance of this interdependence of affective and cognitive learning in these terms:

"One of the most important affective responses is the positive reaction experienced when an individual recognizes that he has meaningfully learned new information, especially when the new learning results in problem solving. This positive emotional response provides motivation for new learning and, because of its origin, it is referred to as achievement motivation..." (p.501)

At the broader level concerning the effects of fieldwork on pupil attitude towards self, teachers, peers and others, and its influence on social interaction, Fink's study provides qualitative data to strengthen the quantitative findings of studies discussed earlier in this review which support fieldwork's positive contribution to pupils' personal and social development. Students in Fink's study recollected through clear episodes field experiences which were influential in changing their self-image towards one of increased self-competence, or for causing a re-assessment of their own values by confronting social and political problems directly in the field. An interesting issue is also raised by Fink's work which is omitted from the behavioural studies analysing fieldwork as a method of instruction on the affective response of pupils. It suggests that the equivocal findings of Crompton and Sellar (1981) on the causes of improved

pupil/teacher relations resulting from fieldwork may be resolved partly by an examination of the nature and level of access students have to teachers during fieldwork. Fink shows how influential this new form of interaction can be in changing student attitudes to teachers to the point where students perceive teachers as role models for their own behaviour, or in other words, fieldwork provides the context in which students identify attitudes, competences, and behaviour in teachers which they would like to emulate. This is linked to the comments made earlier concerning fieldwork as an opportunity for acquiring a professional model of the geographer, but it extends the argument to address the question of the teacher's role as a personal model, by equating the empathy students developed for teachers on fieldwork to the opportunity provided by fieldwork for students to see evidence of a personal commitment and deep belief by teachers in the value of their subject. Fink's paper suggests that fieldwork provides pupils with greater access to a greater variety of teacher roles and that modelling can be an important outcome of pupil learning: "The encounters in these activities provided the basis for a large portion of the students' comments about the professor as an influence on their own identities" (p.105).

This review has attempted to present the empirical findings of a number of educational research studies which have sought to demonstrate the impact of fieldwork on pupil performance against specific cognitive and affective criteria, and studies which have concentrated on observing and describing the complexity of the teaching and learning process of which fieldwork is a part. Some studies have looked specifically at the educational outcomes of fieldwork within the context of a geographical education, others have examined fieldwork from a different subject base or concentrated on eliciting the personal meaning attributed by individual pupils to the whole

learning experience they have encountered through fieldwork. The studies have identified a number of educational aims for fieldwork. Their results indicate that fieldwork plays an important role in, inter alia, developing pupils' mental maps of local areas; supplying an experiential referent through the formation of episodes and images to aid conceptual understanding; providing an opportunity for group work; and improving interaction between pupils and teachers through the development of professional and personal modelling.

The studies, however, do not provide insights into many current issues regarding fieldwork of concern to teachers of geography. For example, they do not resolve questions of content and sequencing in fieldwork: what geographical concepts should we teach through fieldwork to pupils of different ages and abilities? Further, some important questions concerning the teaching and learning process remain unanswered: how can we avoid fieldwork becoming a highly technical and mechanical investigation of geographical minutiae, predominated by questions of method; of use only to geography specialists, and divorced from the everyday reality and needs of most of our pupils? How can we integrate in ways meaningful to pupils qualitative evidence of people's values into the template for geographical fieldwork that is supplied by the scientific method? And perhaps most critically, how can teachers select examples, and stage-manage the fieldwork experience while retaining the principle that fieldwork is an essential part of discovery learning? For if we accept Novak's principle that a weakness of past instructional methods has been "the lack of careful delineation of concepts to be taught and a deliberate effort to select instructional materials that optimize the student's opportunity for meaningful learning of these concepts" (Novak, op.cit. p.503), then we must design our teaching strategies and select appropriate contexts for learning

in ways which prevent learning being seen by pupils as a smooth process of authoritative transmission devoid of personal responsibility and involvement. Instead, it should be regarded as a process of personal discovery and construction of meaning "through the individual's relating things seen and heard to things already known" (White, op cit. p.160).

SUMMARY TO SECTION II: Implications of the literature review for the case study

The main purpose of the literature review conducted in Chapter 3 and Chapter 4 of this thesis has been twofold: firstly, to explore the relationship of fieldwork with the philosophical and methodological development of geography as a discipline, and secondly, to consider the findings of research studies, undertaken using 'quantitative' psychometric and 'qualitative' process-based approaches, which have considered the educational efficacy of fieldwork as a pedagogical device in the teaching of geography.

The geographical perspective in Chapter 3 has explicated some of the longstanding assumptions and claims made by geographers for fieldwork's role in providing students of geography with a methodological and technical training. It has also shown how, during the development of the discipline in the twentieth century, fieldwork has continued to have been regarded as a sine qua non of a geographical education. The geographical perspective provides the historical context in which to set the case study which follows in the next two chapters of the thesis. This context is particularly important if we are to understand and interpret the set of transactions occurring between the participants in the case study concerning their various perceptions of the purpose and practice of undertaking fieldwork at the field centre.

The geographical perspective of the review has also revealed that in the process of translating a methodological development in geography from higher to secondary education, such as in field-research and hypothesis-testing, geographers have failed to consider adequately the implications for pupil learning of the change in approach or method being

advocated, and even less to formulate a theoretical educational base for the new pedagogical developments which they seek to adopt. The review has identified questions about problem-posing and problem-solving in field research which are fundamental to the balance between teaching through 'open' and 'closed' enquiry approaches. In Chapter 8.2, analysis of data from the case-study considers aspects of this open-closed continuum in the teaching and learning process.

The pedagogical perspective in Chapter 4 has thrown into sharp relief important questions concerning fieldwork as a teaching and learning process. These questions form a theoretical framework for enquiry in the case study. They should be seen as a series of entry-points into the complexity of the social setting of the case and not as a prescriptive agenda directing the qualitative data collection and analysis around a narrow research focus, as advocated by Hammersley, (1990 pp. 101-123). However, the questions arising from the research studies reviewed have informed the exploration of the case study in ways which differ to the grounded discovery route to theory expounded by Glaser and Strauss (1967; see also Turner, 1981) which argues that the application of other research results can be suspended until late in the enquiry process (Bryman, 1988). At a general level, the findings of the studies reviewed in Chapter 4 have highlighted a lack of empirical research of fieldwork that compares educational practice with various perceptions of intention, through an exploration of the processes at work in an specific educational setting. Little research has been conducted to look at fieldwork as a teaching and learning process which links prior states of learning to intended and unintended learning outcomes. This absence of process-based research indicates that the case study marks an important point of departure for geographical education research.

More specifically, the research studies have guided the case study to explore in more detail theoretical aspects of the affective and cognitive dimensions of the learning process. For example, in the affective domain, research evidence points to fieldwork's role in producing achievement motivation for the subject, and in positively changing pupils' conceptions of self-image and their relationship with teachers and peers. However, analysis is absent in earlier research of the specific conditions present in the learning milieu which produce such change. The present research seeks, therefore, to identify whether the results of fieldwork's positive impact on pupils affective states can be repeated, and more importantly, to identify in the learning milieu some possible causes. This dimension is considered in Chapter 8.3.

In the cognitive domain, research findings stress the importance of the linkage between first-hand observation and concept formation. Fieldwork may assist pupils in developing concepts at the classificatory level, but it may have a negative function in enhancing pupils' capacity to develop understanding of geographical concepts at the formal level (the specification of the defining attributes of a concept). While pointing at the critical nature of this linkage, previous research has failed to examine the process by which knowledge and skills can be transferred between classroom and the field effectively or if conditions exist which may impede the interchange. In Chapter 8.4, data from the case study is analysed to consider in detail the nature of the learning transfer.

Section III which follows comprises the case study of this research.

Chapter 5 contextually sites the field centre which is the focus of the study within the organisation of the Field Studies Council. It sets out

the intended geography A-level curriculum of the FSC, its educational objectives and its rationale, and draws comparison between its educational policy and the criteria concerning fieldwork specified in current geography A-level examination board syllabuses.

Chapters 6,7 and 8 focus on one field study centre run by the Field Studies Council - Slapton Ley Field Centre. An introduction to the physical and social setting of the Centre and its local environment, is followed by an analysis of the contrasting aims and intentions of the participants in the learning process - centre tutors, visiting teachers, and pupils. The learning process and learning outcomes as revealed through participant observation, diaries, interviews and other sources, are considered through an exploration of four major themes: fieldwork and pupils' learning of skills; fieldwork and pupils' affective learning; the learning transfer from fieldwork to school; and fieldwork and environmental education.

SECTION III : CASE STUDY

CHAPTER 5

THE FIELD STUDIES COUNCIL

5.1 Introduction

The Field Studies Council runs ten field study centres in England and Wales and is a large independent contributor to environmental education in the UK; supplying courses in fieldwork, public access and management of nature reserves and sites of special scientific interest, facilities for research, staff with local environmental expertise, and environmental records, to over 30,000 visitors annually. In 1987, nearly 20,000 secondary school pupils, students in higher education, teachers and lecturers, and adults visited the FSC's nine residential centres, and a further 12,000 visitors came to its non-residential day-centre. The work of the Council at its field study centres is augmented by the FSC's more specialist Research Centre in Pembrokeshire which conducts applied research and provides consultancy under contract to governmental agencies and industry seeking information on the biological and sedimentological effects of petroleum in the marine environment. The FSC also publishes the journal Field Studies, and prints papers and extracts from the journal which are thought to be relevant to the teaching at its centres, or of general interest to individuals investigating the local environment around a centre.

The FSC's primary aim is broad-based - "towards a better understanding of the environment for all" - and emphasises the Council's concern to develop environmental interest and awareness to as wide a range of the public as possible. In reality, however, only 14.7% of the visitors to FSC centres in 1987 were adults. The majority of its visitors are school children and students coming to centres to learn something of the environment through

fieldwork, and traditionally attention has concentrated on the FSC's educational and teaching role for these groups. In this the FSC has over 45 years of experience.

The Field Studies Council was originally founded as the Council for the Promotion of Field Studies in 1943 by a group of academics led by Francis Butler who was trained as a natural scientist, and whose work as an inspector of schools in London during the 1930s had convinced him of the educational value of first-hand experience of the environment for the study of biology, and the value of offering experience of the countryside to pupils from urban schools. Sinker (1973) notes that the Council "was an independent body from the outset, and was later registered as a Company Limited by Guarantee and an educational charity. Its purpose was to encourage the pursuit of every branch of fieldwork, particularly by the setting up of residential centres for field studies" (p.46). Sinker suggests that Butler's original concept was to supply "accommodation, working space and library facilities for any visitors who cared to use them: amateur naturalists and artists, university field classes and parties from schools under the leadership of their own teachers. Each Centre was run by a Warden whom Butler regarded as a sort of resident Gilbert White - an expert naturalist, intimately familiar with the country around his Field Centre, willing and always available to answer visitors' questions" (p.46).

In the early years after the Council's formation the Ministry of Education gave financial seed-corn support to the Council to fund the first four residential centres formed during the late 1940s, but during the 1950s the organisation was forced to become self-supporting on the gradual reduction and eventual withdrawal of state funding direct to the FSC. Attention became focussed at an early stage on meeting the large post-war demand from

schools and colleges for the teaching of courses in fieldwork to students of biology, geography and geology, particularly for the 16-19 age group. "In 1955, the intake of visitors of all kinds at the first four Centres totalled just over five thousand, rather less than half of them from the Sixth Forms of secondary schools" (Sinker, loc.cit.). During the 1960s, growth in the organisation continued to come largely from fieldwork courses run by the centres for sixth-form pupils but this remained supplemented by providing facilities for adult and higher education groups.

Fieldwork courses in the early years of the FSC were geared for the academically able - the majority of visitors in 1960 were pupils taking A-levels in grammar schools (56% of total student weeks) with only 3% of visitors being pupils from secondary modern schools (FSC Annual Report, 1960). "Mounting pressure" from grammar schools and teacher training colleges (Wooldridge, 1960 p.3) meant that the number of places was far exceeded by the number of applicants; a trend which continued during the 1960s and into the 1970s until the reorganisation of the local authorities in 1974 imposed significant reductions in LEA grant-aid support for school pupils undertaking fieldwork. The resulting fall in numbers of pupils coming to FSC centres meant that in 1976 for the first time since the Council's inception it became necessary for it to publicise its A-level courses beyond the list of FSC member schools with the aim of increasing bookings (FSC Annual Report, 1976). The difficulty faced by schools in finding funds to support the fieldwork they wished to carry out meant that the steadily rising curve of visitor numbers to FSC centres peaked in 1974 and was not reached again until 1982 (Table 5.1).

Table 5.1 Trends in visitor numbers to FSC residential field study centres from 1951-1987

	Total nos. (student weeks)	% With Form students	Nos. of students geography related fieldwork	% of total nos. geography related fieldwork
1951	3,483	-	-	-
1960	8,539	-	3,144	36.8
1970	15,839	71.2	5,932	37.5
1974	16,966	67.7	5,682	33.5
1980	16,861	62.6	4,822	28.6
1981	16,786	59.8	4,667	27.8
1982	17,071	59.9	4,488	26.3
1983	16,403	61.5	4,400	26.8
1984	16,816	55.2	4,405	26.2
1985	17,155	53.9	4,383	25.6
1986	17,577	52.3	4,784	27.2
1987	19,302	49.5	5,704	29.6

Source: Field Studies Council Annual Report Statistics

In the 1980s, the FSC has continued to face a number of pressures on its traditional area of teaching fieldwork to A-level students. Notable amongst these pressures has been the combined problem of a reduction in grant-aid to pupils for fieldwork as a result of LEA restructuring and the necessity for local authority savings, together with a national drop in the number of pupils on secondary school rolls. Figure 5.2 illustrates the significance for school rolls of the 34% decline in birthrate from the post-war peak of 1964 until 1978 when the birthrate began to recover (David, 1988). The twin problems of local authority cutbacks and falling pupil rolls have prompted a decline in the proportion of numbers of sixth-formers visiting FSC centres for fieldwork - from 71.2% of total student weeks in 1970 to 49.5% in 1987. More recently, this situation has been further exacerbated by the inability of LEAs to pass on charges to parents for fieldwork "that is a compulsory part of the syllabus 'for which the pupil is being prepared at school" (Hay, 1989 p.13) under the terms of

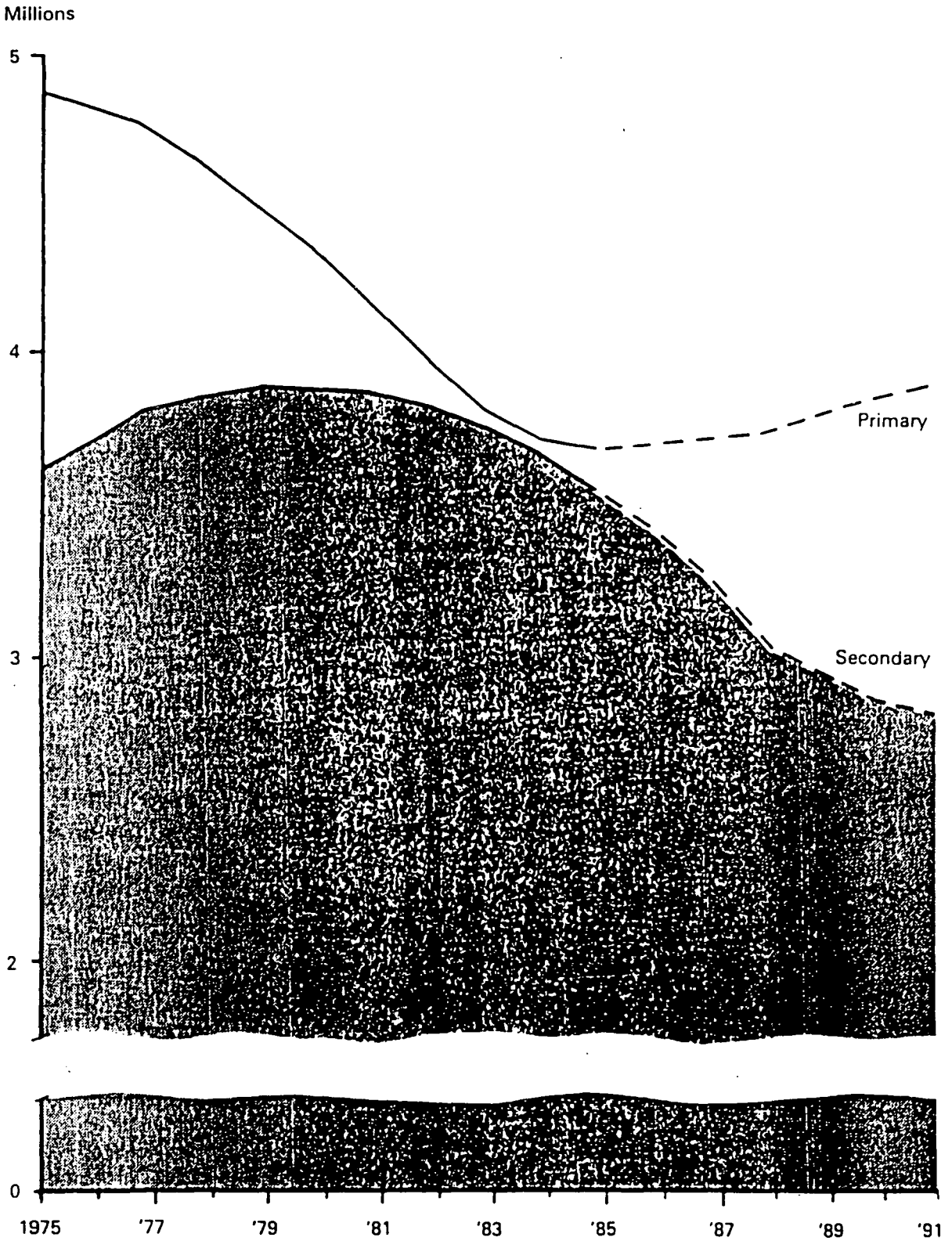


Figure 5.2 Pupil Numbers 1975-1991 (maintained schools in England)

Source: National Audit Office - Falling School Rolls

the 1988 Education Reform Act. The ramifications for the FSC of the latter are still to be felt but the legislation may herald the demise of residential fieldwork for A-level students in its current form. Hay concludes "sadly it would appear that unless an authority is prepared to either totally fund residential fieldtrips or provide their own free fieldwork centre, residential fieldwork may become a thing of the past." (Hay, op.cit. p.13).

The FSC has responded to constrictions on LEA funding for fieldwork and national changes in the school population with a number of initiatives, with the result that the total number of annual residential visitors has risen to 19,302 in 1987 (FSC Annual Report, 1987). The provision of grant-aid by LEAs is far from uniform (Field Studies Working Group, Geographical Association, 1987) and the FSC continues to search for partnerships through schools and advisers with LEAs who still actively support fieldwork and who are willing to provide financial support. A strengthening of the policy of the FSC to provide 'Courses for All' represents an attempt by the Council to actively seek a wider audience than its traditional A-level market. Deliberate attempts have been made to search for new sources of state funding, notably from the MSC and later the Training Agency for technical and vocational education. During the mid-1980s the FSC has placed particular emphasis on the opportunities that residential fieldwork provides for combining a social and academic experience to pupils who are studying pre-vocational courses such as TVEI and the FSC developed its first TVEI residential courses with Enfield LEA in 1985. Similarly in the search for a broader customer base, the Council has targeted in-service training for teachers who are required to organise fieldwork for their pupils taking the GCSE. The proportion of student weeks taken by these groups together with a growth in the number of junior

schools using FSC centres has risen by 100% in four years to occupy 22.1% of total visitor numbers in 1987. Yet although these important initiatives have had an impact on the overall number of visitors to FSC centres, residential one-week fieldwork courses for A-level students continue to hold a key position of around half the total number of student weeks in 1987.

Geography and geology fieldwork has figured prominently in the courses taught by the FSC. Its initial impetus was due in part to the widely publicised work of the Council's chairman S.W. Wooldridge, and later Geoffrey Hutchings who was one of the Council's first centre wardens and later a president of Geographical Association. Fieldwork courses for sixth-form pupils studying A-level geography became an important contributor to the overall numbers of visitors to the FSC's centres. By 1960 the number of visitors rose to an annual total of 8,539, more than double that of 1951 (3,483), of which 3,144 were taking courses in geography related subjects. Teaching geography fieldwork has continued to be a major component of the Council's work. In 1970, 37.5% of the visitors to centres were taking courses in geography, and by 1987 this had fallen to only 29.6%. In 1987, the total number of students from sixth forms and further education colleges undertaking one-week residential geography fieldwork at FSC centres as a part of their A-level geography course was 3,642 (plus 463 students to the Council's day-centre). It is interesting to compare these figures with the total number of geography A-level entries reported to the DES from the annual survey of GCE examination boards. The DES statistics for academic year 1986/87 reveal that 31,210 school leavers and students in further education sat for the geography A-level examination. While recognising that the number of students taking fieldwork courses in 1987 would not all sit for examination in the same

year, the figures suggest that the FSC provides fieldwork for well over 10% of the annual total geography A-level entry population (DES, 1987).

5.2 The FSC's A-level geography field courses - the intended curriculum

The Field Studies Council publicises its A-level field courses to teachers, parents and pupils in a variety of formal and informal ways. In this section we shall examine the aims and approaches of the FSC's geography A-level courses as outlined in the 'formal' publicity material sent to schools together with insights into this literature from interviews with FSC management.

The FSC states that a primary principle of its work is that first-hand experience of the environment is an essential pre-requisite to environmental understanding. The Council argues that this principle is widely accepted and that fieldwork is universally recognised as having an important contribution to make to the education of students studying environmental subjects. Evidence for this assertion is the stress placed on fieldwork in A-level syllabuses of environmental subjects published by the Examination Boards. There is, therefore, a strong utilitarian theme in the Council's information leaflet arguing for the need for fieldwork on the grounds that the syllabuses which teachers use include references to the importance of students gaining fieldwork experience. There is a causal link joining the design of the FSC's field courses to the requirements of the A-level syllabuses published by the Examination Boards.

But the FSC are also keen to place emphasis on the intrinsic qualities of a field course for a pupil's understanding and enjoyment of a subject. The FSC stress the importance of residential fieldwork providing time for

students to fully explore geographical problems which they find interesting in a way which classroom studies are unable to do. And the leaflet cites the Schools Council Geography Committee report on Outdoor Education (1980) as providing evidence of the social benefits to be gained by teachers and students on fieldwork. Such intrinsic qualities provide a broader educational experience through the detailed investigation fieldwork offers of one part of the syllabus. Breadth of experience and depth in subject are two key elements in the Council's advocacy of fieldwork. Thus, the FSC propound that their fieldwork courses are planned with the relevant syllabus in mind, but "their content is by no means restricted to providing answers to specific exam questions. On the contrary, it should illuminate and enliven the whole subject. A field course in unfamiliar territory widens the horizons of environmental experience; first-hand information and balanced judgement transmitted by members of staff, who are themselves actively involved in the local community, can help students to develop into informed and committed citizens with a real sense of environmental responsibility." (from 'A-level field courses: information to teachers and parents', FSC). In summary, two themes are stressed in the FSC's promotion of their courses; first, the reference made by examination boards to fieldwork's value in promoting geographical understanding and teaching geographical skills, and second, the value of the experience in developing an 'informed' citizenry and an environmental awareness in society.

5.3 The aim of fieldwork in developing geographical conceptual understanding and in the teaching of skills and techniques

Looking first at the FSC's reference to fieldwork's place in educating for knowledge of geographical concepts and the skills of geographical investigation, it would be helpful to review the FSC's aims and approaches in the light of modern geography A-level syllabuses to see if the stress given to fieldwork in syllabuses justifies the FSC's claim as to its

central position in the geography curriculum. The content and approach of the FSC's advertised courses are outlined first, and then comparisons are drawn to principles and themes in current A-level syllabuses. For earlier detailed reviews of the role of fieldwork in A-level examinations and the question of the assessment of fieldwork the reader is referred to Harding and Lewis (1977); Taylor (1977); and Prudden (1981).

In the FSC's information leaflet, an important precursor to the notes on course content stresses that the FSC's fieldwork courses differ from centre to centre with due regard to the needs of students, the interests of staff, the local environment, and seasonality. Nevertheless, a common core exists in the FSC's geography A-level field courses through which run a number of unifying themes.

First, the leaflet describes the methods of field investigation (and by implication the teaching methods) used. It indicates that geographical relationships are investigated by a combination of field teaching and field research methods (see also Chapter 3); the man-environment relationship is investigated by "an amalgam of the descriptive-instructional tradition in fieldwork with the newer element of field research and quantitative study. Students are encouraged to carry out their own investigations in the landscape, and to apply rigorous scientific procedures of observation and hypothesis-testing in order to sharpen their powers of analysis and appreciation." It is clear, however, that the emphasis is on field research rather than 'descriptive-instructional' methods. The focus is on involving the student with the study of environment processes through a hypothesis-testing approach in which the principles of geographical models are tested by an evaluation of empirical data collected in the field. Trudgill (1983) describes the approach as:

"The aim of the fieldwork on A-level courses is to involve the student with the environment, especially in the study of the human and physical processes which have created and are still creating the landscape. General models are discussed and hypotheses about form and function are generated. Fieldwork is structured around these hypotheses and the relevant data are collected, analysed and interpreted. The validity of the original hypotheses is then examined in the light of the field observations." (p. 175)

Second, the organising principle for the fieldwork outlined in the FSC's leaflet is the systems approach in which components of the human and physical environment that operate at different scales are investigated. Central to a systems approach are the linkage mechanisms and energy flows which join systems across their boundaries, the self-regulating status of many environmental systems which introduces students to concepts such as dynamic equilibrium, and the ways in which man interferes with natural systems. The emphasis, however, in the leaflet is on physical rather than human systems. The systems approach is introduced to A-level students at many centres by a study of the local drainage basin "as a fundamental unit of study", with attention focussing on natural processes such as weathering and fluvial processes and their resultant landforms. Little attention is given to the synthesis of man's interaction with the physical environment and less concern is given to studying man's involvement in the functioning and management of natural systems. Rather human geography is perceived as a set of separate systems with their "forms and functions, location and patterns and the theoretical relationships between size and rank. The study of functional zones in towns, including the central business district, leads to discussion of models of urban growth and zoning. The spatial and functional relationships of settlements can suggest the construction of hierarchical models." Despite the unificatory principle of the systems approach to investigate man-environment relationships, the separation of human geography from physical and the subdivision of the environment into the study of individual sub-systems stresses a topical

organisation of the fieldwork with little explicit regard for how the topics are drawn together into an integrated whole.

Third, attention is given to the quantitative techniques employed by geographers to measure and evaluate environmental processes, and the presentational means by which quantitative data can be organised and communicated. "All courses include quantitative work and the application, and limitation of sampling methods; where appropriate, statistical analysis of data collected in the field is carried out and interpreted. Much attention is given to the presentation of observations and results in the most appropriate written, graphic, diagrammatic or cartographic form." Emphasis is given in the leaflet to the quality of the field equipment which is available to produce and record field data, and the use made of permanent field installations to provide long-term monitoring records to reveal general trends. The results of a particular field course can therefore be set in the context of longer term environmental change.

In summary, the FSC promotes three elements in the linkage of its design of fieldwork courses with the requirements of A-level syllabuses; first, student involvement in studying the environment through field research methods, second, a systems approach as an integrated framework for geographical study, third, high quality field sites and equipment and expertise to facilitate the teaching of geographical enquiry methods and techniques.

The broad aims of GCE A-level syllabuses for 1989 include the agreed common core of general principles established in 1982/3 by the Inter-Board Working Party on Common Cores at Advanced Level (Daugherty, 1982; GCE Examining Boards, 1983). The seven principles set up by the Working Party

to act as "a framework of general principles to guide syllabus design" are as follows:

- "1. An awareness of certain important ideas in three areas: in physical geography; in human geography; in the interface between physical and human geography.
2. An appreciation of the processes of regional differentiation.
3. Knowledge arrived from a study of balanced selection of regions and environments, linked with a broad understanding of the complexity and variety of the world in which the student will become a citizen.
4. An understanding of the use of a variety of techniques and the ability to apply these appropriately.
5. A range of skills and experiences through involvement in a variety of learning activities both within and outside the classroom.
6. An awareness of the contribution that geography can make to an understanding of contemporary issues and problems concerning people and the the environment.
7. A heightened ability to respond to and make judgements about certain aesthetic and moral matters relating to space and place."

(Daugherty, 1982, p.78)

The GCE A-level Examination Boards have concentrated their attention on indicating the importance of fieldwork's role in geographical learning within principles 4 and 5 above when designing and structuring their syllabuses. Fieldwork is commonly seen by the Examination Boards as an essential medium through which a training can be acquired in basic skills of geographical enquiry; notably the ability to collect first-hand data using knowledge of sampling procedures and field equipment, the representation and presentation of data by graphic and cartographic means, the manipulation and analysis of information using statistical techniques, and the application of results to evaluate geographical models and concepts. Fieldwork is therefore seen as the opportunity to gain experience and acquire skill in geographical methods of enquiry and research, and in particular the knowledge and application of specific

geographical techniques.

Thus, a typical rubric outlining the aims of the A-level syllabus refers to the role of fieldwork in the teaching of geographical techniques. The following are examples taken from the Joint Matriculation Board's syllabus B, Southern Universities Joint Board, and the University of Oxford Delegacy of Local Examinations:

Joint Matriculation Board, Syllabus B, 1989

"A. The General Aims of the Syllabus

The basic aim of this syllabus is to enable centres to provide courses in Geography (Advanced) which educate candidates so that they can arrive at an understanding of how and why differences exist between different areas of the Earth. This may be achieved through:

(i) an understanding of the processes affecting the natural environment, an appreciation of the interrelationships within the environment, and an awareness of the role of people in producing changes within it,

(ii) a knowledge of the spatial patterns of human activities, an understanding of general principles by which we seek to explain these patterns, and the relevance of these patterns to world situations,

(iii) a training in the basic skills needed for the application of these ideas in terms of geographical enquiries and investigations.

...Candidates will be expected to show an understanding of, and competence in, a variety of skills and techniques by which geographical data can be obtained, analysed and presented. It is essential that these be carried out during the Advanced level course, practical work being understood to include fieldwork as well as investigations carried out indoors in the classroom, laboratory or school library, or using other non-school sources of information." (Joint Matriculation Board GCE Advanced Level Regulations and Syllabuses, 1989)

Southern Universities Joint Board, 9055, 1989

"The aim of the syllabus is that candidates should acquire an understanding of:

...(e) the collection, analysis and representation of geographical data

The aim of the examination will be to test candidates in their ability:

...(c) to handle geographical data from primary and secondary sources,

to make appropriate inferences, to formulate arguments and to make decisions based upon the application of data.

...The papers may include data response, structured and essay type questions... Questions involving fieldwork and geographical techniques may be included in any of the three papers.

University of Oxford, 9845, 1989

[Candidates] should be aware of elementary field-work methods, of the kinds of data that may be collected and measured in the field, and of ways in which such data and those from published sources may be presented and interpreted for purposes of geographical analysis. Thus questions may be asked assuming familiarity with field-work in physical and human geography and with the application of simple methods of measurement to geographical problems including: measures of central tendency; sampling methods and their application to data collection; statistical description of spatial distributions; scatter diagrams and simple non-parametric tests of association and correlation (e.g. Spearman)

All current geography A-level syllabuses assess the candidates ability to use geographical methods and techniques, although the means of assessment varies between Boards. Knowledge and application are tested by means of a separate practical paper in geographical techniques (JMB Syllabus B and C; Cambridge 9050; Oxford and Cambridge 9630; Welsh Joint Education Committee 0015), and/or by the submission of a local geography project or essay or individual project (AEB; JMB Syllabus B and C; Cambridge 9050; Southern Universities Joint Board 9055; Oxford and Cambridge 9630; London 210; London '16-19 Project' 219). Boards such as the University of London (210 and 219), Southern Universities (9055), and Oxford (9845) assess the knowledge, understanding and application of geographical methods and techniques by integrating data-response questions or decision-making exercises into the traditional unseen examination papers or into the coursework assessment (London 219).

Most GCE A-level syllabuses provide a large amount of detail specifying the range and type of techniques which candidates are expected to be able to use and apply to geographical problems and data sets. But while most

syllabuses link fieldwork to the teaching of geographical techniques, few provide the same level of detail concerning the skills they are intending to develop in students through fieldwork, and the educational purpose which underpins fieldwork as a teaching method. The Associated Examining Board (626) and the University of London (16-19 Schools Council Project, 219) syllabuses are exceptions.

The AEB syllabus considers fieldwork as an essential component in the education of a geographer for the following reasons:

- (i) geography is both a theoretical and practical subject, and a fuller understanding of the subject may be accomplished through undertaking fieldwork investigation;
- (ii) geography has become an increasingly applied subject, giving rise to the need to relate geographical studies to wider problems of social and scientific interest;
- (iii) fieldwork investigations afford candidates the opportunity to work independently or to accept individual responsibility within a group investigation.

The AEB and 16-19 Project syllabuses require candidates to submit an individual study or fieldwork investigation, because they argue the skills they are attempting to develop in students through fieldwork are unable to be fully assessed by a traditional written examination paper. The value of the individual study lies in the opportunity it affords students to study a geographical question, problem, or issue of their own choosing in depth; gain experience of the research methods used by geographers; show initiative in searching for information; draw conclusions from the information produced; and display originality. In the case of the 16-19 Project the individual study is seen as an integral unit in the assessment process which combines many of the skills central to the aims of the whole syllabus. These are listed as communication skills, intellectual skills, practical skills, social skills and study skills.

In summary, A-level syllabuses make particular reference to the value of fieldwork in teaching the methods and techniques of applied geographical investigation. Many syllabuses supply lists of the type and range of techniques which they expect students to be able to apply in the collection, presentation, analysis and interpretation of data. But few provide an educational rationale for the particular skills which fieldwork is aimed at developing.

The second kind of reference to fieldwork in GCE A-level syllabuses typically calls for candidates to use information gained from fieldwork of geographical case-studies to exemplify and illustrate written answers. The University of Cambridge Local Examinations Syndicate syllabus (9050, 1989) encourages students to amplify their answers by applying knowledge gained from fieldwork to the points being made:

"Candidates will be expected in answering their questions to apply knowledge and experience gained through fieldwork based on the school or home district and through other forms of personal observation. Questions will be set to encourage them to use this knowledge.

Wherever appropriate, reference to specific examples should be made by candidates answering questions. These examples may be either those derived from the study of suitable text-books or may be local examples which have been studied first-hand by the candidate, perhaps in the home area under the direction of the geography teacher or in areas covered by field studies. The examples which are used should be carefully integrated with the answer, and should be used to illustrate or qualify general points which are made."

Thirdly, reference to fieldwork is also made by the Examination Boards when considering the concept of scale in geography. Although specific reference to scale is not included in the Inter-Board Working Party's framework of guiding principles, Boards such as London (210) aim in their syllabus for candidates to acquire "an awareness of the importance of scale, both temporal and spatial, in geography." JMB (Syllabus B) considers

that fieldwork has a role in providing students with an understanding of general principles and concepts as they operate at the small scale level and candidates are expected to illustrate their answers by reference to selected case-studies "based upon the candidate's first-hand experience, through field work, of aspects of his or her local and/or other environment(s); such studies may be supported by library and other work where relevant."

However, there is little guidance from the Examination Boards to suggest how written answers in examinations may best be illustrated by examples of fieldwork undertaken by students; the level of detail expected from case-studies or field experiments including data summaries, and the ways in which this information is best integrated into the text. The AEB state only that "examiners will be particularly looking for evidence of first-hand investigation where relevant" (my emphasis, AEB, 1986) and the Cambridge syndicate warns only that "a list of examples put together in a haphazard manner and not organized into an argument is of little value" (Cambridge Local Examinations Syndicate, 1989). The methods of utilising fieldwork in examination answers generally receives scant attention. A relatively recent subject report from the University of London on its 210 A-level Geography syllabus made no mention of fieldwork, although it pointed to major weaknesses in candidates' ability to adequately exemplify and illustrate their work with relevant information from case-studies. Fieldwork is seen as valuable in providing information to qualify or confirm geographical concepts central to the syllabus, but the Examination Boards remain silent on providing examples of what chief examiners regard as good practice.

We have seen that the FSC draw attention to the point that their field

courses utilize a systems approach as a framework to integrate human and physical components in geography, although it was noted that fieldwork at centres is geared especially towards explaining the mechanics of environmental systems through physical geographical systems; in particular, the drainage basin is regarded as a fundamental unit of study at many centres. A review of current A-level syllabuses would suggest that the FSC's selection of a systems approach is in harmony with that predominating in the subject at A-level. Modern syllabuses remain convinced of the value of viewing geography in systems terms, not least for the opportunity the approach provides for focussing on the interrelationships between and within geography's human and physical components. Despite the variety of assessment procedures, the strength of a systems approach to the study of geography is a theme which runs through many current syllabuses, as shown by Figure 5.3 taken from Hall (1986). Oxford and Cambridge Board, for example, provide the following introductory statement:

"...the syllabus is loosely based on a systems approach... by couching the syllabus in systems terms...attention is drawn to the interrelationships between the various landscape elements and factors which are outlined in the syllabus, and to the fact that we deal, in geography, with a complex functioning system centring on the relationship between man and the land. ...it is necessary to introduce into the syllabus the basic concept of systems including their definition, delineation and major behavioural characteristics and problems." (University of Oxford and Cambridge Schools Examination Board, 1989)

The FSC's emphasis in their field courses on explicating the basic concept of systems through an examination of the processes operating in natural systems and their resultant effects on landscape, are mirrored by the Examination Boards' reference to field studies in the physical geography area of their syllabuses. Boards such as London (210, 1989) lay particular emphasis on the role of fieldwork in the study of biogeography (ecosystems, soils, and vegetation), geomorphology ("actual studies of the drainage basin"), and hydrology. The Board does refer to collecting and analysing

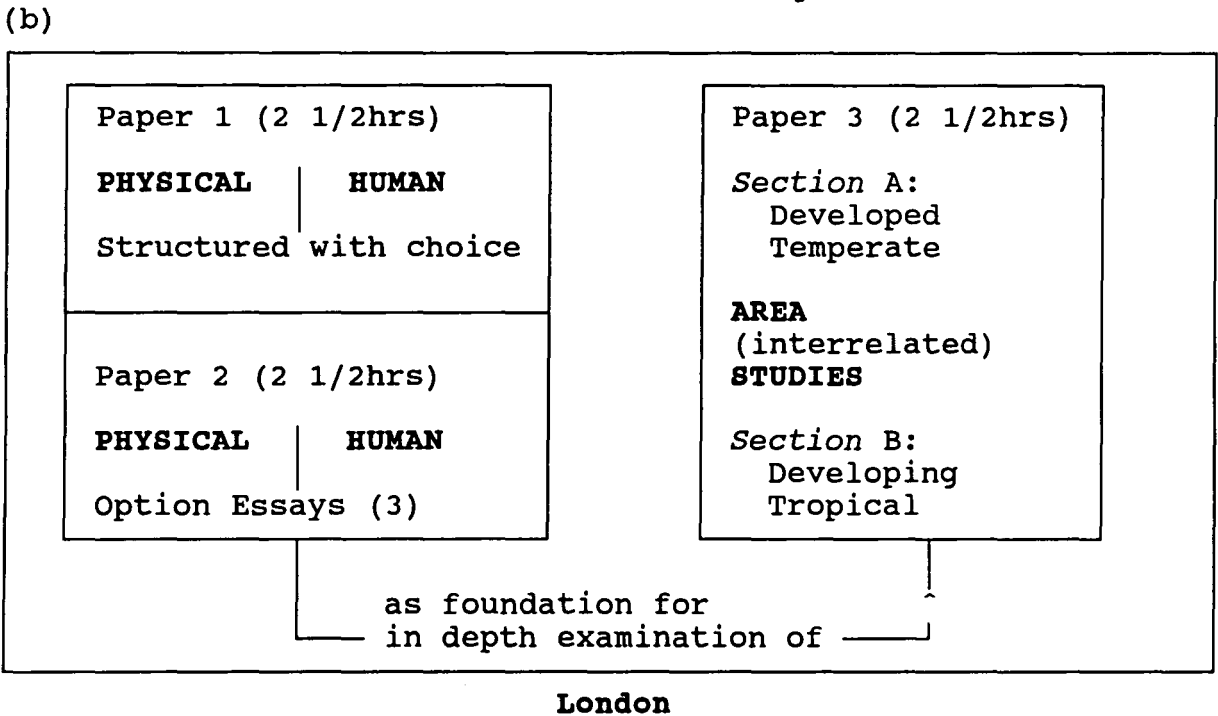
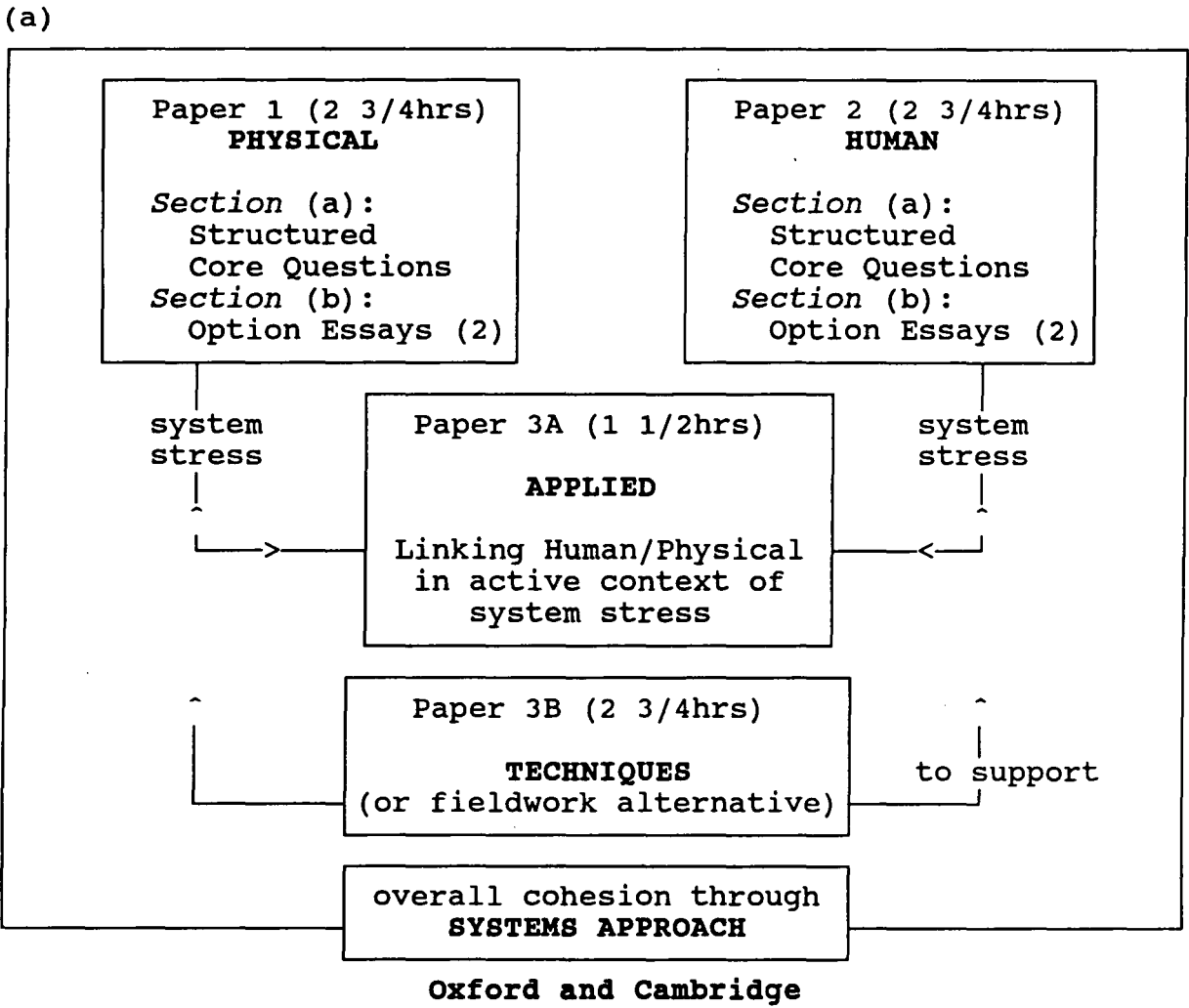
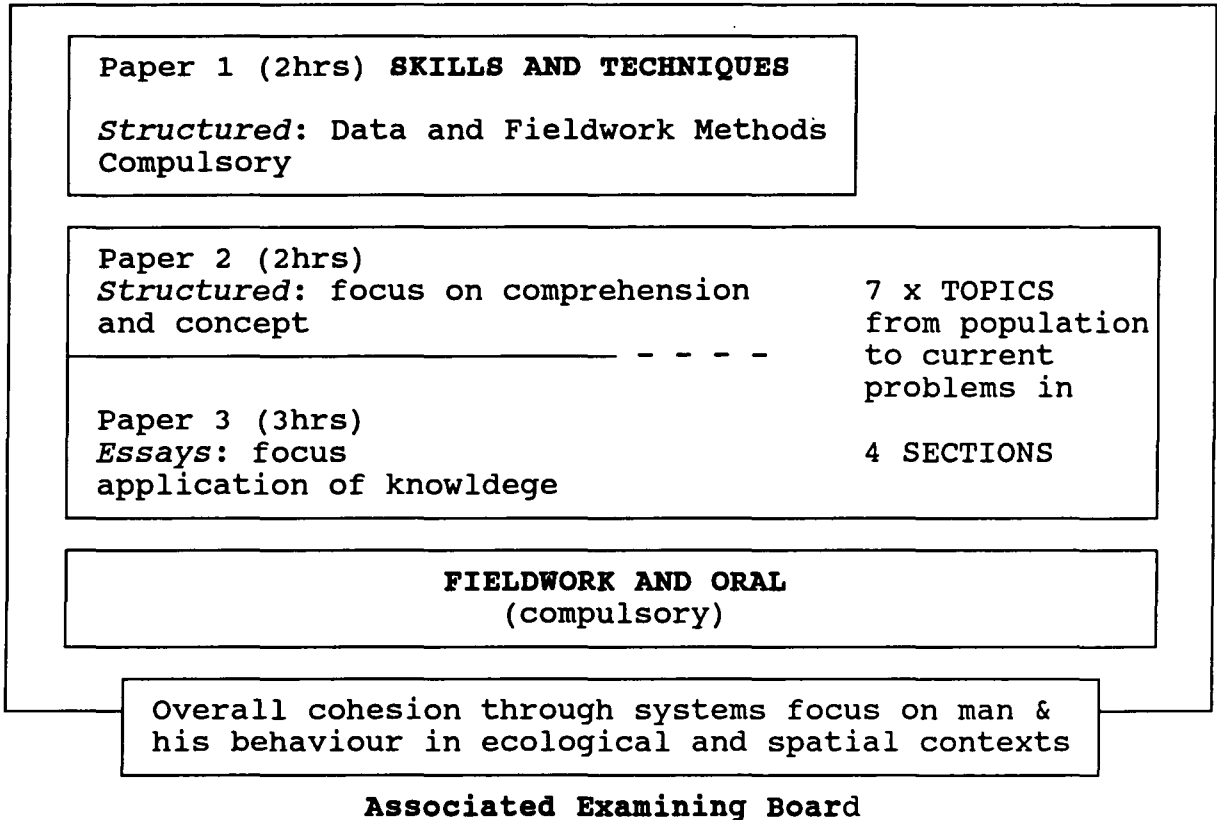
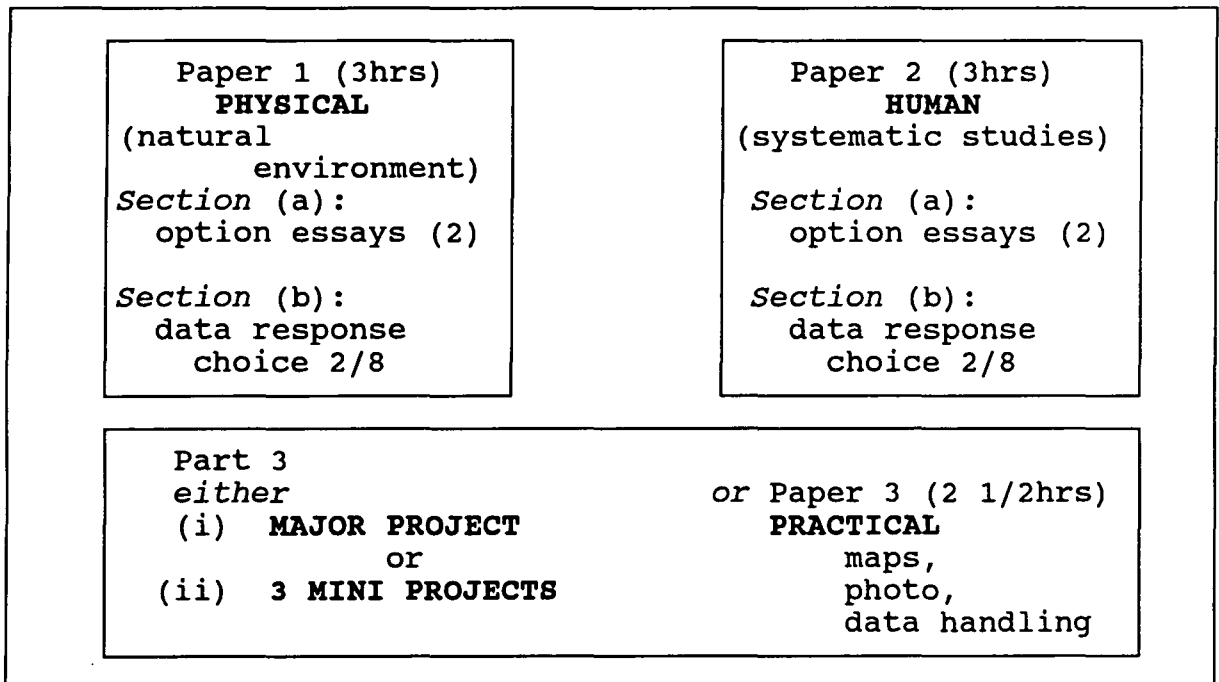


Figure 5.3 (a) and (b) 'Different viewpoints about A-level geography as indicated by syllabus design' after Hall D. (1986), p 258

(c)



(d)



Joint Matriculation Board (Syllabus B)

**Figure 5.3 (c) and (d) 'Different View points about A-level
 geography as indicated by syllabus design'
 after Hall, D. (1986) p.258**

data from field studies in the human geography section of the syllabus but here the stress is on the separate techniques employed to analyse economic activity, population data, and settlement patterns, rather than using fieldwork to explore the concept of systems in human geography. In the context of human geography, fieldwork is invariably referred to as the means by which students can acquire actual examples to test the validity of models of economic location and an understanding of the principles which underpin such models.

Finally, the FSC's emphasis on using field research methods in their field courses rather than the 'descriptive-instructional' methods more normally associated with field teaching, are in line with the investigative approaches supported by the syllabuses. The procedure of scientific enquiry (which we examined in Chapter 3), translated by the 'new' geography into 'hypothesis-testing', is encouraged by most syllabuses (with notable variations in the London, 16-19 Geography syllabus). Such a procedure emphasising the steps of problem identification, by observations or classwork; formulation of an hypothesis; data collection and recording in the field; data analysis; and acceptance or rejection of the hypothesis, provides a framework in which many syllabuses list techniques to be covered by attaching them to each step in the procedure. Many Boards implicitly correlate the procedure with 'the' method of geographical investigation. Hypothesis-testing and problem solving are skills to be learnt and practised through fieldwork. Some Boards advise candidates who are offering an individual study that "experience shows that candidates gain more from setting up a study that asks a definite question (e.g. "What factors account for recent growth in hi-tech industries in Swindon?")" (Cambridge, 1989) and tentatively warn students and teachers away from fieldwork which goes into the 'unknown' territory of 'newer' approaches in

geography:

"Local studies based on humanistic, radical and other newer approaches in geography are acceptable so long as they are based on primary data gathering and analysis, but novel areas should not be taken on lightly by candidates unaware of the additional difficulties of data collection they may present." (Cambridge, 1989)

In conclusion, this section has shown the close parallels to be drawn between the aims and approaches of the FSC's literature sent to schools and the tenor of modern GCE A-level syllabuses. The similarity of emphasis on fieldwork providing the means to learn, understand, and apply geographical techniques, is particularly strong. So too, is the concurrence in methods of investigation and the use of fieldwork to provide understanding of the concept of environmental systems. With the exception of the 16-19 Project syllabus, the FSC's approach to fieldwork mirrors the positivist philosophy implicit in the modern geography A-level. The statements on fieldwork are locked into the 'new' positivist geography of the late 1960s and 1970s with its emphasis on explaining geographical phenomena by reducing observable events to generalisable laws. Fieldwork is seen as part of overall process of deriving empirically-testable hypotheses from observations, and numerically manipulating the results to predict the pattern of future events. Fieldwork is also seen in narrower terms as teaching the skills to engage in that process at each stage.

5.4 The aim of fieldwork in developing an environmental awareness and environmental ethic

The FSC's advocacy of fieldwork is also based on the concept that fieldwork is educationally enabling. We have seen that the Council links fieldwork in the teaching of certain aspects of content and skills in the geography curriculum, but also in its function as an "educational vehicle" for the development of, what Sinker termed as, "citizenship training" (Sinker, 1973, p.45). This, he argued, came "through the cumulative

benefits [that fieldwork provides] of environmental experience, logical thought, and enthusiasm [for learning], leading to a better understanding of our environment, its component parts and its problems. By this means can be developed a critical awareness of the importance of conservation and a basis of a responsible political judgement in this field." (my emphasis, loc.cit.) Sinker's argument is therefore that one of the intrinsic qualities of fieldwork is that it engenders in students a critical awareness of environmental conservation and the decision-making process involved, and that through this educational process we will arrive at better environmental management and more informed decision-making. Or in short, that changes in attitudes prompted by fieldwork will effect changes in social behaviour. This is based on the premise that conservation and management of the environment requires a society with an awareness of the complex interrelationships that operate in man-environment systems, and a society that continues to accrue knowledge and to develop theory of explanation for such systems. But it is also based on the notion that society benefits from the increased altruism in social behaviour gained from a fieldwork experience, and the respect for nature or the development of a 'bioethic' that the experience engenders. O'Riordan and Turner (1983) illustrate well these two themes in considering the role of outdoor skills and field studies in environmental education:

"By taking young people out of their urban settings, away from their homes where there may be poor family relationships and away from their fellows who may encourage socially undesirable behaviour, these schemes serve a valuable purpose in providing a learning environment, based largely in the out of doors, which is conducive to personality development and public spiritedness. Co-operating with and helping others is an essential ingredient in such programmes, and this in turn breeds a sensitivity to the needs of others and a satisfaction in the sheer joy of doing a good turn for someone else. In short, such courses encourage the skills of altruistic behaviour, because they are conducted in settings in which altruism is rewarded, which hopefully may spill over to circumstances where, as Hardin frequently observes, pure altruism is discouraged.

But there is another element to this kind of education, apart from

the physical fitness and sociability aspects, and that is an association with nature in more immediate form than is commonly experienced by most urban youngsters. The aim here is to give people a more realistic sense of what nature is all about, a greater respect for natural forces that are more powerful than man's abilities to conquer them, and in essence, a feeling for the bioethic and biorights notion..." (O'Riordan and Turner, op.cit. pp 380-381)

These two aspects of the educational value of the experience for pupils involved in fieldwork, and the broader social gains of environmental understanding that stem from fieldwork, underpin much of the philosophy of the Field Studies Council since its conception in 1943, and are still inherent in its policy in the 1980s, as described by the current Director of the FSC:

"In terms of ideology, I could obviously just roll off "towards a better understanding of the environment for all" and I don't wish to be derogatory by putting that sort of tone on it. I think that it's so essential - we must get people to at least think about decisions that are made about this world of ours, and therefore one has to have people who are more informed or people who have the opportunity to be more informed... What I am trying to create is an organisation at all levels which has the ability to offer information in a rigorous, not merely scientific way but objective way, to as wide a range of people as possible. That's what I feel the organisation ought to be doing.

I'm glad to say that many people today feel that [they want] some form of environmental involvement - it might run from a whole range: British Trust for Nature Conservation, National Trust involvement, RSPB courses, walking and rambling in the landscape, learning more about the landscape. Hopefully going from, you know the old sort of adage, learning in and about the landscape to ultimately for the landscape. So you've got the idea which runs through lots of environmental education: of trying to get people [to be] aware of things, and ultimately that they care, and those in certain positions can maybe even influence the way things go.

...[The FSC] tries to implement that policy through a whole variety of mechanisms. It might be the residential and day teaching facilities that it offers. [It might be] all the various pieces of work that go on to actually produce an FSC course at whatever level, and by that I mean staff research, data banks, libraries, long-term monitoring. It [might be] research in the environmental area which we do through the OPRU - most of this is contract work - some of it direct for the Nature Conservancy Council, some for oil companies. It can be line surveys or impact assessment and so on, so there is that aspect of research into the environment. There is also the aspect of the dissemination of information outside that of the courses that we provide, a lot of which is done through our publications... the Journal of Field Studies, offprints, and the Working Papers Series...

...So we're not a pressure group in the sense of trying to influence how people make decisions in government. [Rather] we're hopefully trying to get people who are interested in the environment, who have a concern for it, and who ultimately might be in that situation where they might have to make decisions... [And then, maybe we've] aided people's understanding of the environment through the little bit that we have taught through our courses, or through our research, or through our publications."

In these interview extracts the Director elaborates on the FSC's basic theme of "environmental understanding for all" with the core of its educational policy being to raise environmental awareness, to establish from such an awareness a concern for the pressures on the physical and social environments that modern society is creating, and finally through such awareness and concern, a more informed society with a better basis for decision-making. Providing field courses at its centres is only one mechanism which the Council uses to pursue its policy. It also seeks to achieve this policy through the knowledge and experiences it provides to participants on its field courses, through environmental research, and through the dissemination of research results in its publications and through the wider forum for debate that those publications provide.

The Council's task to implement these aspects of its policy produces some inherent tensions. It faces the inherent dilemma, perhaps contradiction, of questioning social norms, values, and political decisions in a way which is politically balanced, objective, and even scientific. It treads a tightrope of connecting empirical evidence about the environment with notions of individual responsibility and action. It faces the dichotomy which divides those who believe that solutions to environmental problems are found in the utilitarian management of resources, from those who would suggest that 'environmental understanding for all' means raising individual awareness to the point that respect for the environment supersedes the pervading ideology of human supremacy and

dominance over nature. And the Council has to recognise the pragmatical constraints of developing this environmental understanding for its students. It has to select appropriate material for students, and develop relevant teaching strategies. It has to look closely at the implications of its policy for its teaching staff in their role as the linchpin between the Council's aims and the pupils who visit its centres. It must consider the role of locally based fieldwork within the larger scale national and international patterns of environmental change, and seek to make comprehensible to pupils the timescales involved in environmental change processes. And, for the majority of pupils who come into contact with the work of the FSC, it must tackle some of these aspects of its educational policy within the six days of a field course.

It is important to recognise that the aspects of the FSC's policy outlined above are currently being paralleled by recent shifts in the subject of geography towards attempts across the age range to design a geography curriculum which seeks, as a major priority, to teach concepts of 'environmental awareness' and a 'conservation ethic'. The introduction of geography syllabuses such as the Geography (16-19 Project) during the 1980s and the establishment of environmental education as a cross-curricular theme in the National Curriculum (NCC, 1990) reflect the influence that the environmental movement has had on curriculum planners since the early definitions of environmental education in the 1970s (Disinger, 1984; 1985b). The Field Studies Council has not been slow to illustrate the closeness of fit between its educational policy and statements on environmental education. For example, Sinker (1979, p.6) draws on the DES publication Curriculum 11-16: Environmental Education (1979) to demonstrate that fieldwork supplies the framework to meet the four objectives of environmental education laid down by the DES:

- "i) the ability to observe and respond to environmental stimuli;
- ii) competence in certain environmentally related skills;
- iii) the understanding of key topics concerned with environments, stressing the complexity of environmental systems and problems; and
- iv) concern for the quality of environments and for life within them. Concern, it was hoped, would lead to commitment and appropriate action."

(quoted in Naish, Rawling and Hart, 1987, p.10)

The DES criteria listed above and the following set of objectives for environmental education from UNESCO, illustrate that the FSC's aim of developing a wider environmental awareness in pupils together with improved skills, are in line with the focus of environmental education principles.

- "i) Integration of environmental concern, knowledge and skills into all relevant areas of learning.
- ii) An environmentally literate citizenry.
- iii) The preparation of experts qualified to deal with specific environmental problems.
- iv) A deeper understanding of environmental matters by a large number of groups - politicians, planners, civic leaders, teachers at all school levels." (Emmelin, 1977, UNESCO in O'Riordan and Turner (eds.), 1983, p.380)

Stemming from the debate during the 1970s on the relevance of the school curriculum in addressing broad social concern for environmental issues, geographers have attempted to consider definitions of environmental awareness and a conservation ethic and sought to discuss teaching strategies for such concepts through geography (see, for example, Trudgill, 1991). Recent geography journals such as *Geography Review* launched in 1987 have run series written by eminent modern geographers on a theme of Life on Earth (Simmons, 1987; 1988a; 1988b; also *Geography* 76, 1991). At another level, the Geographical Association which has increasingly become a touchstone for gauging the tenor of geographical teaching, invited

Jonathon Porritt (former Director of Friends of the Earth) to provide geography teachers with an insight into the role of Education for Life on Earth (Porritt, 1988). Geography, it seems, has become increasingly sympathetic to finding a place in the subject at secondary level for the sentiments expressed by Porritt and others:

"The role of education is of paramount importance to ensuring the future of life on Earth. Our generation has tampered with the environment with little regard for the consequences: today's teachers have a special duty to foster the next generation's awareness of its responsibility for the planet. Yet this awareness cannot simply be based on facts and figures. The development of a whole conservation ethic, a sense of equity but also a sense of reverence for the world around us, is essential for tomorrow's caretakers of the Earth."
(Porritt, 1988, p.1)

Overtones of this focus are reflected in the A-level geography syllabuses offered by GCE Boards and are stressed in two of the seven general principles stated by the Geography Working Party examining the establishment of a common core of syllabus content at geography A-level:

- an awareness of the contribution that geography can make to an understanding of contemporary issues and problems concerning people and the environment;
- a heightened ability to respond to and make judgements about certain aesthetic and moral matters relating to space and place. (GCE Boards, 1983 in Boardman, 1986, p.24)

In conclusion, the Field Studies Council's educational policy which was outlined at the beginning of this chapter parallels many of the themes incorporated into GCE A-level syllabuses. In particular, the Council's long legacy of interest in fieldwork for environmental understanding and decision-making, is coincident with the recent broader shift in geographical education towards a consideration of environmentalism and an associated 'greening' of geography's philosophical orientation. Sinker's (1979) list of the positive reasons for and benefits of fieldwork, includes the notion that fieldwork can promote "the gradual development through

personal experience and conscience or conviction of the conservation ethic as an individual belief rather than a received dogma" (Sinker, *op.cit.* p.8). This statement, together with the insights gained from the interviews with the current FSC Director, point to a duality of purpose in environmental education. Whether it should be perceived as the educational development of pupils towards a skills-based management of the environment with an emphasis on measurement and the quantification of environmental problems in cost-benefit terms, or whether its purpose rests more in the affective domain of developing pupils' own values and attitudes towards the environment, and an understanding of their role in environmental decision-making. But the significance of these statements in our consideration of the role of fieldwork is that fieldwork, it is claimed, offers a resolution of the two elements; fieldwork acts as the catalyst for geographical study to develop these twin goals of scientific understanding of the environment, and the enhancement of personal and social awareness and appreciation of environmental issues to the point where social behaviour can be changed. Grounded in this assumption is the basic tenet that fieldwork provides pupils with the opportunity to experience at first-hand factual information about the environment and the investigative means by which that information is obtained, together with an appreciation that such factual information when concerned with environmental issues is value-laden and therefore open to different interpretation and rationalisation by different individuals and groups in society. The intended educational aim is that by engaging in the fieldwork process of rigorous scientific investigation while attempting to understand the levels of awareness and the perceptions held by individuals who are involved "in the social or political ramifications of the issue" fieldwork provides the opportunity "for students themselves to clarify where they stand over a particular matter" (Hart and Thomas, 1986, p.209).

5.5 Management structure of the Field Studies Council

The FSC is organised and managed under the direction of an Executive Committee. The Executive hold the ultimate responsibility for the well-being of the FSC. As well as being involved in the employment of staff, the Executive is responsible for ensuring that the Council's finances are in order, for the statement of the Council's education and research policy, and to oversee that the Council is succeeding in its broad aim to seek to provide "environmental understanding for all".

The Executive Committee consists of a team of approximately 35 non-paid members drawn from different professions for their environmental knowledge, particular expertise, contacts, and authority - from academic institutions like universities and polytechnics, from those involved in the teaching profession - Chief Education Officers, LEA advisers, teachers and teaching associations, and others from associated groups with relevant expertise like the National Parks and the Nature Conservancy Council. In recent years, the emphasis in the make-up of the Executive has switched from a focus on individuals with academic excellence in an environmental specialism to those who are seen as being more 'useful' to the economic well-being of the organization because of their breadth of experience and association with students and adults who are targeted as potential FSC customers.

In practice, much of the responsibility for implementing the decisions made by the Executive and its associated sub-committees, and for the day to day running of the Council is divested in the authority of the full-time post of Director of the Field Studies Council. Financial administrative

assistance to the Director is provided through a Secretary/Treasurer and through the work of the finance and administration sub-committee of the Executive. The Director is also assisted by the Education Officer (in 1988 this post was divided into two advisory positions in science and the humanities), and a Research Director who together with the Director work as the senior management team out of the Council's central Information Office. Publicity, marketing, and administration consume much of the Education Officer's time, while the Research Director is responsible for co-ordinating the Council's research activities programme which includes contract survey work undertaken for industry and governments, and the development of courses and projects relevant to sites of scientific interest. This management team is the focal point for the organization, and its members are called upon as leaders, figureheads, and liaison officers in a variety of contexts at national and international level to promote the Council in its aim to achieve better environmental understanding and management through education and research.

In addition to this team, the FSC employs approximately 60 graduate staff trained in biological and earth sciences who are termed variously within the organization as 'scientific', 'academic', and 'teaching' staff. For most staff their job descriptions include aspects from each of these categories, but they also have an additional administrative role, which for the wardens of centres is pre-eminent amongst these other role categories. Over recent years, increasing emphasis has been placed on staff to be full-time teachers/administrators rather than teacher/researchers - individual or project research time has been squeezed into diminishing time-slots as the demands for staff to teach more courses with a greater range of pupils and wider content increase. There is, therefore, little margin for staff employed by the Council to develop specialist research

interests unless it can be incorporated into their daily teaching, and most, like the case-study centre in this research study, would define their roles as simply field tutor or field teacher. Nevertheless, staff are usually highly qualified in their own environmental specialism with many individuals entering the profession with masters degrees or doctorates, and an increasing percentage of entrants possess teaching qualifications. This group of 'teaching' staff can be separated from a group of approximately 25% of the total employees who are employed to work on identified research projects as full-time research staff; the majority of these being contracted to work at the Research Unit which for the purposes of this research project can be seen as a separate unit.

The full-time teaching staff that the FSC employs is distributed unevenly between the centres with the primary determinant of allocation being the number of student visitor weeks achieved by a centre during the year. However, at each of the ten FSC centres there is usually one member of teaching staff responsible for the organization and teaching of biology/ecology fieldwork and another member of staff who specializes in geography fieldwork. In the case-study centre the amount of teaching during the year warranted the employment of four tutors, two attached to each subject specialism, in addition to the warden of the Centre who taught some geography courses and all geology fieldwork as a result of his undergraduate training in geology. These teachers held varying levels of status and salary according to their position on the promotional scale the FSC offered to its staff: tutor, senior tutor, deputy warden, and warden. Appointments were nearly all made at the tutor level, usually to graduates in their middle twenties with some research, teaching, or industrial experience, with promotion to more senior levels being an internal process. Because of the narrowing pyramid of promotional opportunities available to

staff with only ten wardenships and deputy wardenships in the organization many staff would join the organization for a short period of a year or two years as tutors before embarking on a higher degree or a postgraduate teaching qualification. A few rise to occupy senior management positions within the FSC and some individuals have gone on to become senior officers in National Parks, managers of nature reserves, or to go into industry.

In terms of the structural organization of the FSC, the wardens and directors of the field centres form the tier below the senior management team and above the centre teaching staff in the organizational hierarchy. One of their responsibilities is to channel information about their centre's work and its staff, and from visiting teachers about the quality of its courses, back to the Information Office and Director, which the Director can then report to the Executive. Some of this information is published in statistical form in the FSC's Annual Reports. But the Director recognises the need to know not only the type and number of visitors to its centres, but also the expectations and demands that pupils and visiting teachers have, and the content and approaches FSC staff are teaching to meet those needs. The Director perceives that more detailed information about the Council's primary resource - its teaching staff - produced on a self-monitoring basis, in combination with mechanisms to gauge accurately the needs of its visitors will assure that the Council's overall policy is being realised in practice.

Yet, this is a relatively recent concern. Historically, the wardens have exercised considerable freedom in innovating and directing their centres as they see fit with the only proviso being that they meet the financial guidelines set annually by the Executive. Indeed, the practice of implementing the FSC's educational policy are left very much in the hands

of the individual centre teaching staff. Often, with the only feedback coming from visiting teachers, and occasionally with no other input at all when groups are sent to the FSC for fieldwork courses without their teachers accompanying them. To a large degree, the evaluation of educational quality of its field courses is measured by the willingness of school teachers to return for further courses with their students. Although more recently the FSC have sought to engage the services of HMI in providing 'educational audits' of its centres. In this structure, management of the FSC does not extend, therefore, to setting directives for the teaching of subject content or method of teaching, although examples do exist of management writing papers suggesting key concepts in particular subjects and appropriate methods of teaching. The field tutor is largely left to him/herself to construct and run their own field courses, and shares in both the burden and the benefits that this responsibility provides. This situation does not inevitably lead, as might be thought, to individual and widely differing teaching standards within and between field centres in the FSC. Role-models are evident in the Council - new staff are recommended to observe experienced tutors' teaching with the result that certain approaches to fieldwork in subject areas are common to many centres. The converse situation is less common, however, where experienced staff visit new staff in their teaching to gain from recent school-based teaching experience or from recent postgraduate training. Experienced staff do try to 'tap' newly qualified graduates in respect of their subject knowledge and research experience but educational theory, educational research, or teaching experiences receive less discussion than that given to subject specialisms.

The historical autonomy of the Council's centres in formulating their own educational policy has meant that management are perceived by some staff

only in terms of setting financial targets for centres and then auditing the centres in the light of these targets. The two-way communication process that the Director wishes to develop is not always evident in practice. Clearly, there exists an uneasy balance between centre autonomy and management control. The resulting demarcation between the management team and the individual centres is recognised by both the management team and centre staff as problematic. Despite efforts on the part of the Director to improve liaison between centres and the central office and the Executive, the ten field centres and their staff operate with a high degree of autonomy, and demonstrate on occasion that they understand little of each other's role within the organization as it relates to or impinges on their own work. In a climate of pressured human and physical resources, centres have increasingly looked inward with time and energy devoted only to the immediate needs of coping with 'the next group in' for the following week.

Three short extracts from interviews illustrate this point. The first two are from management, and the third from a member of teaching staff.

"We're a very poor organisation at communicating with one another. I think that this is partially understandable - the centres are isolated and some may feel, although I don't feel, that it's difficult to give commitment to some nebulous central organisation that some call the FSC, whereas one can give tremendous commitment to Nettlecombe Court, to Malham Tarn, and to Flatford because that is something tangible. Some central little organisation called the Information Unit which flies the flag of the FSC is regarded as a bureaucracy which is placing demands on you when you have far more important things to do like teaching. I agree that that's far more important but it means that there is a very low priority on telling others in the organisation what you are doing. So, that actually detracts from what we have to offer, and I find it saddening that we are restricting our abilities, our specialisms, to what we have to offer at just Slapton or to just Nettlecombe."

"There is very little [feedback to management], to be truthful. Most of it goes back to the warden, and the wardens do pass on comments to me if they are favourable, and some of them pass on comments if they are not so favourable. I have some, but much less than I would like,

of direct contact with tutors, and one of the things I would like to expand in the near future is an assessment of staff performance - actually going round and seeing what they do. We do try to have some method of internal communication; passing on different ideas that people are developing at different centres. But in the present climate it is quite difficult because the centres are under pressure of an economic kind and the tutors are tending to teach more courses, and it's getting more difficult to get them to move from centre to centre. We are trying to make distinct effort towards those ends, but to be candid I don't get much feedback."

Researcher: "What about the links with other centre staff?"

Yes, they occur mainly through staff courses, some of which have been very good and some of which have been disappointing. There are two aspects of what goes on at staff courses - there's the interchange of ideas that goes on informally, when you're down the pub or whatever. There's not as much of that as there ought to be because for some reason, I don't know why, a lot of tutors don't like talking about their work very much and would rather talk about superficial things... ..and then there's the more formal area of getting us genned up about an area, by bringing in university or poly people and bringing us up-to-date with a new technique or concept.

Researcher: Do you feel that the Centre is insular within the organization?

Yes, it is insular... But, I think that the courses have got to reflect the environment of the centre, its equipment, the inclinations of its tutors. Because if you have to teach stuff that you are not really interested in, then nothing is going to be terrifically successful... I don't think that it matters that the topics covered or even the approach is different at different centres.

Researcher: So, do you feel that it's important that the Centre is part of the FSC?

No, I don't think so. I don't think it would lose very much - purely from the teaching angle and not worrying much about the financial side of things - I don't think that it would lose out from declaring UDI or whatever.

Researcher: So being part of the FSC doesn't really make a major contribution to the Centre ?

No, I don't think so. I mean, I always appreciate going to other centres and having contact with other people, but that doesn't mean to say that those contacts depend on having this centralised thing called the FSC. Contacts between centres are important but one could just as well have contacts between a whole series of little independent units, which to a certain extent is what we've got.

Researcher: So what kind of role do you think the management team have in helping, assisting, guiding or whatever, in what you do here?

I feel that their activities don't really impinge much on my activities. There are potential ways in which they could be useful or

helpful but in a way they are an irrelevance."

The interview extracts together with the comments above on the structure of the Field Studies Council illustrate three important points which effect the context of the fieldwork and field teaching at centres, and which need to be borne in mind when we look at the case-study centre. First, they highlight the problem that the Council faces in developing a structure for the organization that provides its teaching and research staff with a 'corporate' identity, in which its employees can relate to a common set of objectives driven by the Council's primary educational, research, and conservation goals. There is the inherent danger that the Field Studies Council is seen by employees and customers only as the administration body for a group of isolated and independent educational centres, rather than as an organization which sets the national agenda for environmental education through its policy and through the practice implemented at its centres.

Second, their comments illustrate that the current economically stringent climate with less flexibility in managing scarce staff resources, is reducing the opportunity for putting into operation mechanisms which could alleviate the problems of isolationism and introspection identified by management and centre staff. Potential mechanisms such as regular centre to centre teaching, or longer exchange arrangements, or staff forums to establish and debate uniform policy are becoming increasingly difficult to resource, schedule and organize as staff are being required to teach more courses to a wider range of pupils during the year. Such mechanisms are essential if they are to act as an adjunct in strengthening the decision-making, policy, and corporate identity of the Council.

Third, they indicate a dichotomy in the structure of the FSC between the pressured resources of a small management team and its teaching staff.

Staff interviewed voice their feeling that the action of management impinges little on their daily concerns apart from its role as financial auditor, and that there is room for a more integrated structure to provide a network of teaching support services. This dichotomy between management and teaching staff is reinforced at the centres by the financial system which the FSC operates: whereby profit generated by some centres is clawed back to a central pool to offset the losses made by other centres. The scheme inherently lacks incentive for the managers of centres since the benefits are not visibly seen to be received by those who are profit-making, and who may wish to invest in the particular kind of teaching support services its staff require.

Together these three points highlight a fundamental dilemma that the Council faces in its relationship between management and teaching staff. On the one hand, it seeks to encourage centre autonomy, local financial management, and centre-based curriculum innovation, while on the other, imposing a centralised system of inequitable income targets, and seeking to become a more uniform organization with clearly defined and targeted educational and research policies. The Council's Director recognises these areas of concern and has attempted to utilize the inter-centre systems of communication already in place to consider how they best be addressed. For example, the Council's bi-annual staff training courses have recently been orientated towards themes which directly relate to staff needs; themes such as 'coursework assessment' in new subject syllabuses in the GCSE (staff course II, December 1986, Annual Report). In addition, management are keen to experience the field courses its staff offer and the routine problems they face, by making regular visits to centres and through conversation and observation with teachers; ultimately with the view of moving towards the concept of the self-evaluating institution (Adelman and Alexander, 1982) in

which centre staff adopt schemes of self-appraisal. Thirdly, centres are encouraged to exchange information through a 'resource-link' for particular parts of the curriculum, such as the Geography 16-19 Project, and there is a move to extend this to include wider dissemination of field techniques, teaching approaches, and materials used by centre staff in their fieldwork. The Director recognises, however, the difficulty of putting all of this into practice: "It is sad that no matter how much emphasis one puts on it, or how much force one puts into directing people to do things - it still needs people themselves to put a high priority on it - to actually make the time and effort to give to that area..."

This section has looked at the internal structure of the Council and has identified some problems within it. Problems which have centred on: integrating the views of management with the concerns of centre teaching staff, the provision of in-service staff training, establishing a corporate identity and common educational policy, and creating incentive for centre staff in its present financial structure. The next section looks outside the Council to examine the links and relationship the FSC has with the wider educational system - the state of the organization in the external structure of the fieldwork system.

5.6 Field Studies Council - External Relations

The current Director of the Field Studies Council left his post of warden at an FSC centre to take up the Directorship of the Council in 1983. In so doing he followed a well-trodden path since the previous Director had also risen through the organization to become a warden of a centre and subsequently its senior representative. On taking up his appointment it was made clear in the Director's job description that a key part of the

Director's work was to "initiate, engage in, promote and review new educational and research developments appropriate to the work of the Council" and to "promote academic liaison between the FSC and appropriate outside bodies, institutions and individuals". The Director's report in the FSC Annual Report highlights the attention given to this task by regularly including a section on contacts made during the year with relevant groups and individuals.

The job description for the post of Director was a clear brief from the Executive Committee to ensure that in the competitive educational climate of the 1980s the 'independent' Council and its centres were in the vanguard in defining and implementing 'good practice' in fieldwork. And an identified part of the Director's role was, therefore, to be the point of interface between the 'internal' structure of the Council and the 'external' educational structure formed by pupils and teachers in schools, local education authorities, higher education, subject associations, and the DES.

In 1983 there were already some indicators to suggest that the Council had been successful in its liaison policy. Liaison between the Council and new curriculum developments like the Schools Council Geography 16-19 Project had already been established. Involvement in such projects was regarded by the Director as a highly successful exemplar of the kind of 'interactive' curriculum development work that could fully utilize and incorporate the experience of the Council's teaching staff in a national curriculum project with the curriculum planners who were working in universities and schools. Such involvement in curriculum development along action research lines (see Stenhouse, 1979; McCormick and James, 1983, pp.312-321) emphasised teacher collaboration and participation, and held intrinsic benefits for the FSC

teachers involved by providing them with the opportunity to plan and implement new fieldwork ideas and approaches, but also had the added attraction of marketing the Council's courses by providing immediate access to a large number of schools and teachers through the Project's publications, working examples, and published resources (see for example, Hart, 1983; Naish, Rawling and Hart, 1987, p.138).

The Director's determination to involve the Council in new movements in the schools curriculum, as exemplified by the FSC's association with the Geography 16-19 Project team, gathered strength and pace when in 1985 he was invited to join the Secondary Examinations Committee GCSE Geography Committee (and later the GCSE Geography Committee of SEC's replacement - the Secondary Examination and Assessment Council) who were seeking to include a compulsory fieldwork element for the forthcoming GCSE geography syllabuses. The Director encouraged wardens to widen their horizons of potential customers to include field courses for GCSE students and their teachers, and coincident staff training was hurried through at the FSC's second annual staff training course in December on a theme of 'New Educational Initiatives'. The FSC's Annual Report for 1985 notes that following these developments "GCSE in-service training courses, for both geography and biology teachers were arranged for Redbridge LEA, and centres piloted the FSC's first field courses for GCSE students during 1986 and 1987.

In short, the Director of the FSC firmly held the belief that "as long as fieldwork is healthy then the FSC will be healthy." It was a management strategy 'by association' - by the FSC being associated with curriculum development work at the grassroots level, the Council's teaching and resources that it had to offer would be indirectly marketed. First, by

teachers having to consider organizing more fieldwork for their students in response to curriculum changes; second, by teachers seeking direction, ideas and advice on the kind of fieldwork they should be organizing; and third, by teachers finding that the approaches to fieldwork advocated by the curriculum projects were coincident with the approaches that had been trialled and experienced by FSC teachers. Thus, the policy of the FSC's Executive Committee of initiating, enjoining, promoting and reviewing new educational developments where there was a potential role for the organization was one which was actively pursued by the Director. It was, prima facie, a policy driven by the pragmatism of economic considerations: "One has, to put it in blunt marketing terms, sold oneself as a body of people that can actually provide a service which is strongly tied into the demands being made by the examination boards."

There were many ramifications of this policy during my periods of observation at the case study during 1985 and 1986, and we shall examine in depth their implications for the practice of A-level fieldwork at the Centre in the next chapter. For the purposes of this section, however, the above illuminates the broader educational structure which the organization is a part and certain elements to which it responds most readily. The Director recognised that the organization was outside the mainstream of communication channels operating within the State educational system, and was concerned that the experience the Council had to offer new developments in curriculum design was fully used by planners within the educational system to the mutual benefit of the Council and the eventual shape and outlook of the curriculum. He describes the need for liaison with this system or "fomal" structure in these terms:

"...One of the problems of being on the outer edges and not being part of the formal system - it really does depend on personal contact and putting yourself about. So if there are opportunities you [make

yourself] aware of them and you make a commitment to do something for a particular project and hopefully they'll allow you to become involved. That's one of the small difficulties of being outside the system in that one is not necessarily asked to respond to a new innovation or initiative. But yes, I would accept that a way of developing for us is to be involved and associated with new projects. I'm very pleased to have been invited to sit on the GCSE committee, because I can see that this as another major area which I feel the organization should be involved with, and for the first time to have written-in a compulsory fieldwork element."

We can deduce then, from these comments and from the policy of the Executive Committee that clearly one important area within the educational system that directly impinges on the Council's decision-making are the geography syllabuses that are offered to teachers by the examination boards, and specifically their degree of emphasis on fieldwork and the type of fieldwork recommended as being beneficial to student learning of geography. Recognition by the Council of the importance of syllabus content with respect to fieldwork suggests support for the view that syllabus design when controlled by external examination boards exercises a constraining influence over teachers in their freedom to plan their curricula for their students. Lawton (1980) describes this constraint:

"It is often said that secondary teachers are, in theory, free to devise their own curricula, but in practice an important set of limitations is imposed by the system of public examinations at 16-plus and 18-plus which are so important in England. Of all the constraints on secondary teachers' freedom - HMI, local advisers, governors, parents and employers - the examination system is most frequently mentioned and complained about. For many secondary teachers, the examination system provides not only a means of assessment but a set of objectives as well... Teachers who are apparently proud of their freedom, have accepted a system which includes syllabuses written by a board external to the school, examinations set and and marked by externals, and with little or no account taken of teachers' judgments in the final assessment of pupils." (Lawton, 1980, p.83)

Although much has changed at the 16+ level since Lawton's statement in the early 1980s (particularly in the forms of assessment), much of the image which he portrays is still in evidence at 18+ in the GCE A-level system. Of course, the picture is not a simple slavish adherence by teachers to the

delimitants set by the syllabus in order to reach that aim. Teachers do currently retain degrees of freedom in what they teach and when they teach it. Nevertheless, Lawton's comments and the concept of syllabus constraint is recognised by the participants of this study as being a highly significant factor in determining the amount and type of fieldwork teachers undertake with their pupils. We will examine this from the field tutor and visiting teachers' perspective later on. Now, we can note that the comments of management in the Council highlight a point of control in the structure of the educational system which the FSC have realised they can manipulate to market their courses to teachers. In other words, the Council have realised that the concept of constraint of syllabus content for practising teachers could be utilized to the Council's best advantage. This feature together with a summary of some of the examples of the Council's involvement in other levels of decision-making in the educational system is explored in the diagram below (Figure 5.4 adapted from Lawton, 1980, p.135; and Lawton, 1983, p.115)

Using the diagram we can summarise the points made in this section on structure both inside and outside the Council. The diagram exemplifies the Council's involvement in national, regional (LEAs), institutional (the school), departmental, and individual (the teacher), levels of curricular decision-making. We have already noted the Director's involvement in national innovations in the geography curriculum via the Secondary Examination Council GCSE Committee and the emphasis on coursework in its National Criteria. At the national level the Director is also represented through being chairman of the Field Studies Working Group of the Geographical Association, who have, for example, recently attempted through LEA advisers to survey LEA funding policy for fieldwork. At the regional level, involvement has focused on providing individual LEAs with in-service

<u>CURRICULUM DECISIONS</u>				
Level	About	Made By	Assessment	FSC Involvement
National	Guide- lines	Schools Council (pre 1984)	APU (national standards)	Geography 16-19 Project Director: Chmn SEC GCSE Committee;
	Specifi- cations	SCDC(1983) NCC (1988)	SEC (1983) SEAC (1989)	Chmn GA Field Studies Working Group; Member NCC Environmental Ed. Cross-Curriculum Grp
Regional	Co-ordin- ation & implemen- -tation	LEA Governors	(national standards)	GCSE INSET courses to LEAs; TVE resid- ential experience; guidance to LEA field centres
School	Whole Curricu- -lum	Academic Board	self- assessment & moderation	annual lectures to schools; follow-up visits; secondments
Dept.	Syllabus	Teachers	collegial	FSC Executive from HE influence GCE syllabus design; school HoDs Exec members
Individual	Lessons &Methods	Teacher	Teacher/ Pupil	FSC tutor/teacher GA conference publications

**Figure 5.4 Levels of Curricular Decision-Making with Field Studies
Council involvement in the 1980s**
(adapted from Lawton D., 1980, p.135)

Abbreviations:

APU	<i>Assessment of Performance Unit</i>
SEC	<i>Schools Examinations Council</i>
SEAC	<i>Schools Examinations and Assessment Council</i>
SCDC	<i>School Curriculum Development Committee</i>
NCC	<i>National Curriculum Council</i>
GCE	<i>General Certificate of Education (A-level; AS-level)</i>
GCSE	<i>General Certificate of Secondary Education</i>
GA	<i>Geographical Association</i>
INSET	<i>In-service education for teachers</i>
TVE	<i>Technical and Vocational Education initiative</i>
LEA	<i>Local Education Authority</i>
HoDs	<i>school Heads of Departments</i>

training or catering for the fieldwork needs of a consortium of staff who are involved in teaching pre-vocational courses. At the regional level, FSC staff who have wide experience of field teaching are occasionally asked to teach at LEA field centres.

Links at the institutional level with individual schools are developed most closely through visits to FSC Centres, but are supported by annual lectures held at venues in London where teachers and pupils are invited to attend from a wide range of schools to observe the resources and experience in fieldwork the Council has to offer. Further, some post-fieldwork follow-up has occurred with Council staff going into schools to look at the use made of the experiences and material they have helped to provide to students during their visit to a Centre. This usually results from a request by a particular visiting teacher for a field tutor to do some follow-up work back in the school after the field course. Less frequently, there have also been cases in the Council in recent years for FSC staff to have been seconded to teach for short periods in a school. More permanently, the Council regularly loses staff to the wider teaching profession often via the PGCE course.

The importance of syllabus design and content for fieldwork is made manifest at the departmental level where Heads of Department and their colleagues make curriculum decisions which will determine the amount and type of fieldwork offered to their pupils. It is interesting to note that rather than attempt to influence teachers' choice of syllabus at this level, the Council have adopted a policy of trying to ensure that the options open to teachers with respect to the fieldwork requirement in a syllabus are uniform; that fieldwork is represented as an important and integral aspect of any geography curriculum irrespective of the syllabus.

Influence over syllabus design at the national level - at the top of the cascading system - has predominated over attempts to influence teacher choice at the departmental level. However, the FSC do also attempt to influence teacher/department choice in addition to involvement in syllabus design. Teachers who are interested in bringing their students to an FSC course as an alternative to running their own fieldwork programme are encouraged to make reconnaissance visits to a centre to look at the facilities and teaching the centre has to offer.

Finally, contact between the Council and individual school teachers has been a successful means of ensuring that bookings to its field courses continue. Teachers have established relations with individual FSC staff which have enforced a sense of traditionalism within both the field centre and the school; the annual field course to a particular centre becomes embodied in the folklore of both institutions, and equally importantly, in the folklore of one generation of students to the next, as we shall see. Contacts can develop to the point where Council staff and teachers meet socially, or more formally, meet at subject association conferences. Publications by Council staff or reference to research work at a particular Centre, in relevant journals such as *Teaching Geography*, and *Geography Review*, also assist in reinforcing the connection between teacher and field tutor.

5.7 Summary

The educational policy of the FSC as stated in information to schools, stresses the role of fieldwork in GCE A-level examination syllabuses, and a review of current syllabuses suggests a high degree of coincidence between the advocacy of fieldwork by the FSC and the purposes of fieldwork in geography described by the Examination Boards. The emphasis on matching fieldwork to national curriculum trends as explified by examination syllabuses exercises a powerful force over the FSC's course design, with the result that the Council's educational policy has a potential tendency towards fragmentation. Intrinsic qualities of fieldwork of teamwork and social cohesion, together with the broader purpose of developing an environmental awareness, are less well detailed by syllabuses in their aims and objectives and their associated assessment procedures, but these qualities remain a central tenet of the FSC's educational policy. The policy is less secure in identifying how an environmental experience gained from fieldwork can be translated into an appreciation of the concept of an environmental or bioethic.

The Field Studies Council is managed by an Executive Committee whose membership is drawn from education, research, and conservation. It devolves responsibility for the daily running of the Council, via sub-committees, to a senior management team led by the Council's Director. The Director liaises with the ten centre wardens who in turn manage their own units, their budget, and their staff. Cash targets are set by the Executive for each centre or unit which are not uniform from centre to centre, and recurrent expenditure by centres is controlled in the light of these targets. Standard rates for accomodation and board apply to all the

Council's residential centres. Because income generated from courses and contracts by centres is returned to a central pool, more successful centres 'support' those who are less successful, with success being measured in the number of bookings. Successful centres face the outcome of this economic pressure in having to meet high targets by running more courses for more students during the year. The numbers of A-level students visiting centres have declined since the early 1970s, partially as a result of national demographic trends, with the result that centres are currently being encouraged by management to become involved in providing fieldwork or a field experience to a wider range of pupils. Rapid changes in the curriculum during the 1980s add further complexity to an already pressured system. The concomitant pressure in such a climate on staff is to show greater flexibility in their teaching since they are required to adapt to a dynamic curriculum, and to understanding the learning needs and learning difficulties of a wider range of pupil age and pupil ability.

The thesis now narrows the focus further to consider the implementation of the Field Studies Council's educational policy for its A-level geography field courses, as revealed in the practice of one of its field studies centres - Slapton Ley Field Centre.

CHAPTER 6

SLAPTON LEY FIELD CENTRE

6.1 Introduction to the Centre

The total number of visitors to the Field Studies Council's nine residential centres in 1988 for geography related fieldwork was 6,027 (FSC 1988 Annual Report, totals measured in student weeks). Over 25% were visitors to Slapton Ley Field Centre in South Devon (Figure 6.1) and of these 88% were students from sixth forms and colleges of further education studying Geography A-level. These statistics render Slapton Ley Field Centre the largest centre within the FSC for the provision of geography A-level fieldwork and a major national supplier; providing field courses for approximately 5% of all students annually taking A-level geography in the U.K.

Slapton's other major users are 16-19 year-old students studying ecology as part of A-level biology. Together with the geographers they formed 66% of all residential visitors to the Centre in 1988, with the balance being made up of groups from universities and polytechnics, junior and other secondary school groups, and teacher training institutions.

Slapton Ley Field Centre, like other Field Studies Council centres, offers three levels of facilities for teachers and students wishing to do fieldwork. 'Independent' courses offer teachers the opportunity to bring a group to the Centre and take the responsibility for teaching themselves; using the Centre's teaching and accommodation resources and the resources of

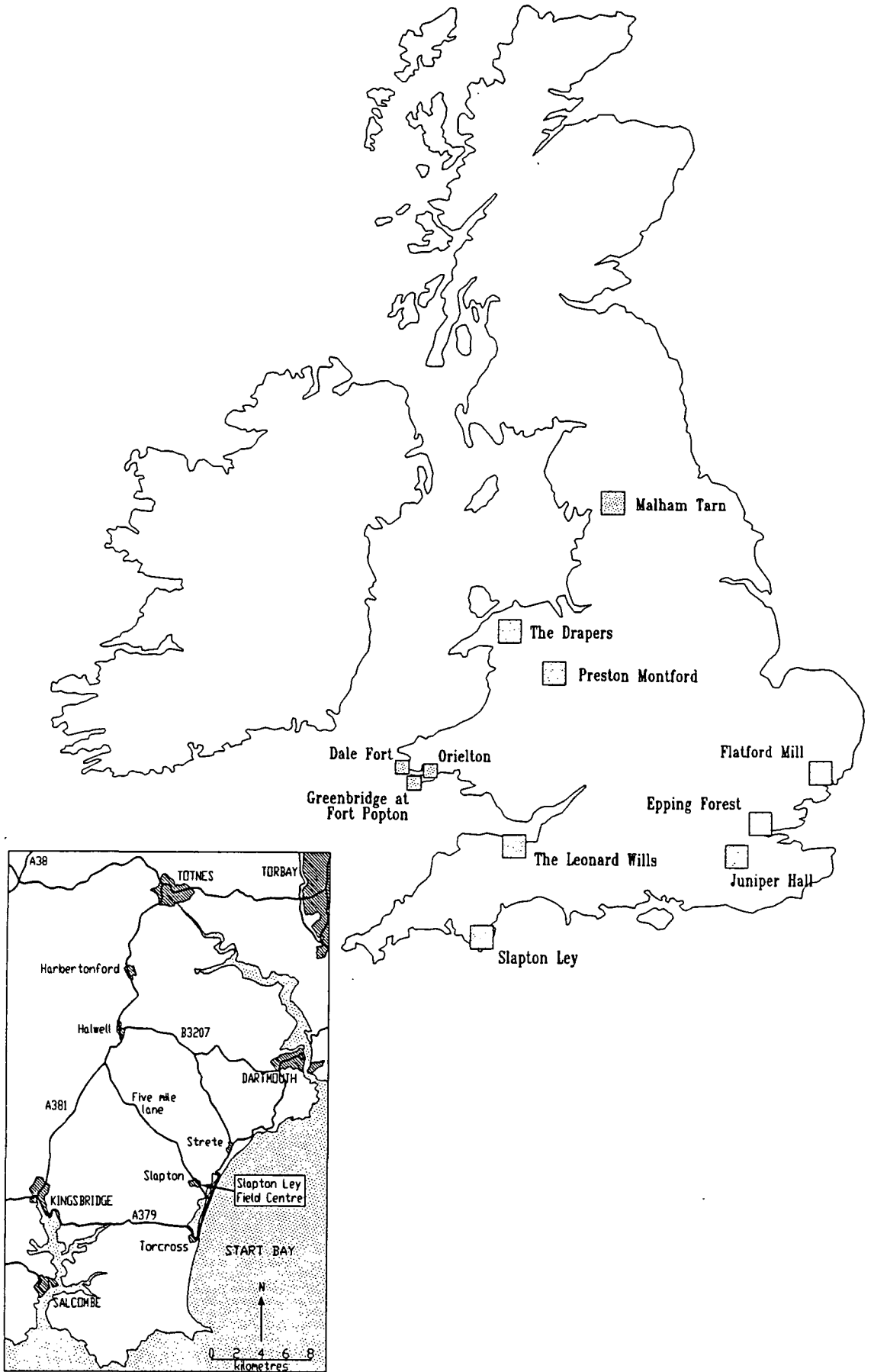


Figure 6.1 Field Study Council Centres in England and Wales (insert of Slapton Ley Field Centre, South Devon)

the local environment to plan and undertake fieldwork appropriate to their students' needs. 'Joint' courses are run with schools and colleges to enable teachers who prefer the option of independently designing and teaching their own field course, but who wish to benefit from including the expertise of Centre staff for some components of their programme. The majority of courses, however, are 'centre-run'; planned, organised and led by the Centre's teaching staff. In 1988, of the 1,336 geography students from schools and colleges, no students were taught only by their own teachers on 'independent' field courses, and only 5% were taught jointly. Of the 95% of students on Centre-taught field courses, the majority are accompanied by their own teaching staff from school but it is not uncommon for students to travel to the Centre unaccompanied and join a larger group of students amalgamated from a variety of schools and be taught by Centre staff. In this case-study, the research focus is on the field courses taught by Centre teaching staff, including a range of accompanied and unaccompanied groups of students from independent and state secondary schools, sixth-form colleges, and colleges of further education.

6.2 The Centre's Site

The buildings and the setting which provide the physical structure of an educational centre or establishment have, according to many researchers (Smith and Keith, 1971, pp.171-208; Stebbins, 1976, pp.208-216; Burgess R.G., 1983, pp.52-119), profound influence on the nature of the social structure operating within it, and in particular on the quality of pupil learning experiences and teacher-pupil relationships (Atkinson and Delamont, in Hammersley and Woods, 1976; Delamont, in Stubbs and Delamont, 1976). These studies testify to a growing research interest in the interaction between the design of school buildings and their grounds and

their impact on the social and cultural milieux of the institution, notably the daily pattern of the teaching and learning that goes on within the institution (Wallace, 1980). In this study as we shall see, the physical contexts for learning at the Centre and in the field in its environs, significantly affect the choice of geographical content taught as part of the fieldwork curriculum, as well as influencing the pupils' and teachers' conception of the Centre in terms of the status and quality they attach to the Centre and its teaching.

At Slapton Ley, the physical structure of the Centre consists of six rather scattered buildings on a site located at the eastern fringes of Slapton village about .5 km from the sea (Figure 6.2). From the lane which runs through the village to join the coast road, two unassuming green signs headed by the FSC logo, mark the narrow entrances to the Centre, and there is also a notice-board which gives passers-by daily tide information, and times of guided walks around the Centre's Nature Reserve. Only the old Slapton vicarage which holds the Centre's administration and teaching offices and some student accommodation above is clearly visible from the road behind the red Devonian slate walls and trees. Centre minibuses and the Nature Reserve's vehicle are squeezed into the small spaces which front the Centre, and their frequent exits and entrances together with groups of students moving to and from the field, armed with their field equipment and daysacks, are the only outward signs of a busy educational centre at work.

The Centre's main buildings which currently can accommodate up to 90 students, comprise a former hotel, the old vicarage, and a purpose-built laboratory and accommodation block which was erected and came into use in 1983. Accommodation for residents is scattered throughout the Centre and ranges from single bedrooms to larger rooms which can house up to 8

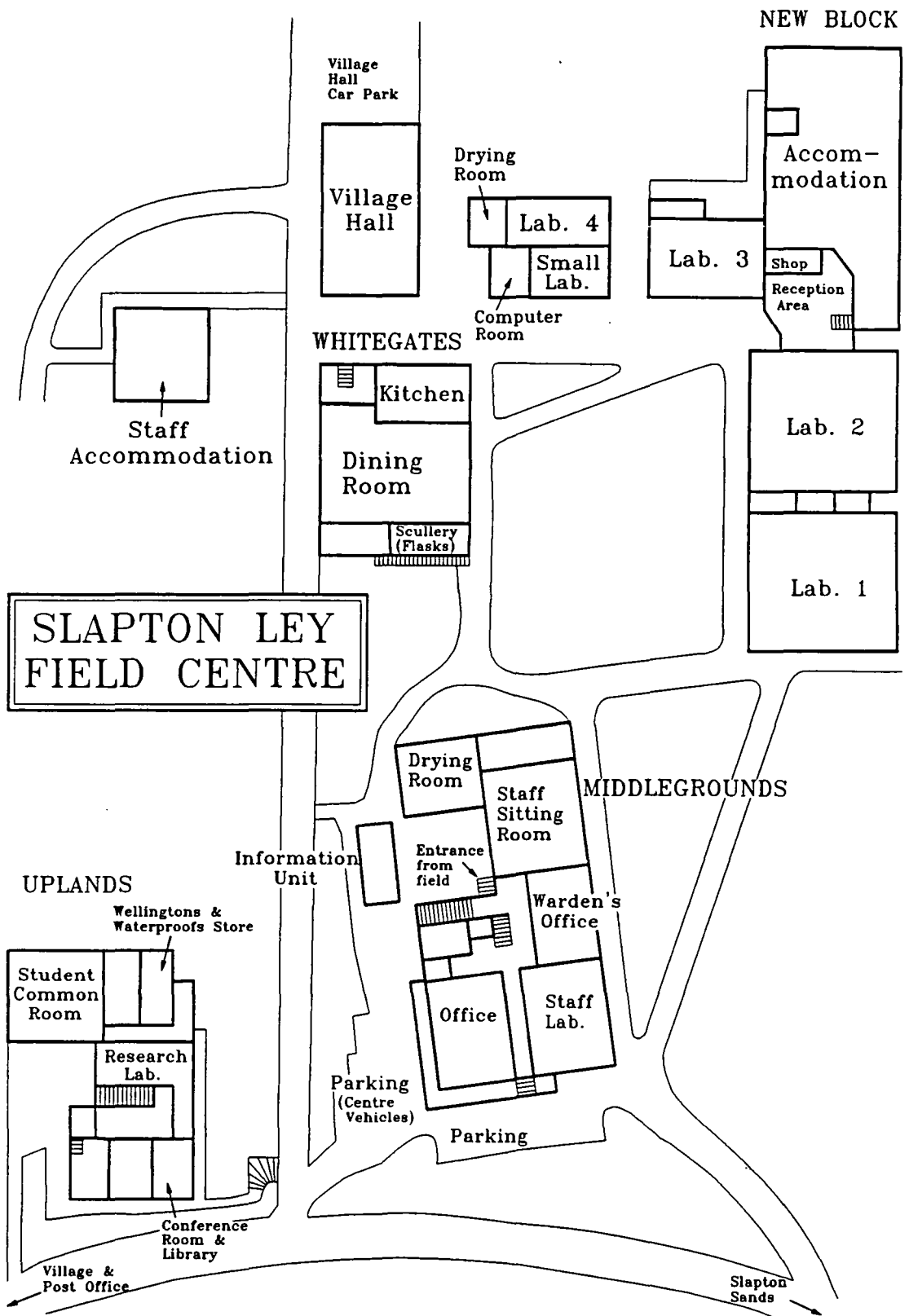


Figure 6.2 Slapton Ley Field Centre - Site Plan

students. Accommodation in the New Block is of a higher standard, with well-appointed single and twin rooms. Elsewhere, although the facilities are older and more basic, the rooms are clean and well-kept. All over the Centre the stream of weekly visitors necessitates constant care and attention to the buildings' fabric; a task which requires the employment of a full-time resident workman.

Students' arriving at the Centre give generally positive first impressions of the Centre's buildings and setting:

PS/WT.3/85: "Arrived at a reasonable hour, and settled in quickly. The dormitories seem ideal, warm and comfortable without going over the top. After supper, which wasn't as bad as I thought it was going to be, went off to the New Block for a lecture. Nice place the New Block, and the labs seem very modern and well equipped. After that, went off to the Common Room for a coffee and a fag. The Common Room is a bit dingy and the building is in need of some attention, but it is well stocked of facilities and the chairs are comfy - can't get channel 4 though?"

SM/HER.3/85: "The centre is different to what I thought it would be. It's a lot smaller and more friendly. The facilities are good, more like a hotel..."

AM/DAV.3/85: "After seven hours in a coach (mini-bus) it's absolute bliss to arrive - anywhere. This place is not too bad, but would we make it into the New Block!! - no such luck.

Now we're in and comfortable, things are looking up - new labs and equipment - this is no cowboy outfit, we're in with the pros!"

The Centre has five specialist teaching rooms or laboratories, all in close proximity to one another. The white-walled 'New Block' buildings house three of the five laboratories and are well resourced with movable work-bench tables, stools and chairs, black-out blinds, projection screens, black and white boards with spotlights, and cupboard and storage space for field and laboratory equipment, texts and statistical tables, handouts, and teaching materials. Each of these 'new' laboratories is well lit with windows on two sides, below which are wooden work-surfaces and

wall-cupboards inset with sinks and drainers. All of these laboratories are sufficiently flexible in structure and resources to allow use by school and college groups doing geography, ecology, and biology fieldwork, although because of the way equipment and handouts are stored, geography and ecology courses regularly use particular rooms for their course teaching. The learning milieu of the 'New Block' teaching rooms also consists of ample pin-board space on the walls which provide general and detailed course information. Maps at different scales of the vicinity are pinned-up next to photocopied newspaper extracts which supply a realistic link to course issues or themes, or advertise the work of the Centre and the FSC in the local area. Large colourful wall-displays illustrate research work at the Centre and focus on particular environmental systems that students regularly investigate in their fieldwork. Labelled soil profiles in clear plastic tubes, used also for hydrology infiltration experiments, stand on the work-benches next to painted wooden model/games constructed by Centre staff for visiting junior school pupils. An aquarium in each of the laboratories completes a learning milieu which is free of graffiti, vibrant and interesting to eye and touch, and which demonstrates the staff's assurance that equipment and resources can be 'left-out' for use without risk of damage or harm to the user.

A fourth laboratory has recently been renovated to come into line with the standards set by the New Block laboratories. Before renovation, when the number of groups visiting the Centre demanded the use of all teaching rooms, students and teachers using lab 4 felt that they had 'lost-out' in terms of resource allocation. Centre staff perceived a need to improve facilities to the point where all the teaching rooms had broadly equitable teaching resources. Backing onto lab 4 is the fifth laboratory or 'wet lab' which houses much of the equipment for dealing with the samples which

students bring back in from the field, such as: soil, beach, and water samples. Beam balances and Orling machines record to milligram accuracy weight of sample; drying ovens and furnaces are used for soil moisture, organics, and suspended sediment tests; sieves and automatic shakers for beach pebble studies; pH field kits for soil samples; and conductivity meters to assess water quality; and there is a host of ancillary equipment - dessicators, crucibles, filter pumps, test-tubes, pipettes, clamps. When large student groups doing ecology and geography field courses return from the day's fieldwork the pressure on the resources in the wet lab and the time available to use them, is high. Accordingly, Centre staff are keen to get 'their' students into the lab first to conduct sample experiments so as to provide the data on which the evening's statistical tests or use of computer programs depend.

Centralized within the New Block is a small reception area, telephone booth, and shop which sells a range of teaching and domestic items of use during a pupil's stay at the Centre, together with a collection of publications relevant to their course and the locale. Two rooms in the Centre are set aside as drying-rooms for field clothing which students can hire at a nominal fee per item from the 'waterproofs store'. Next to the store which is located across the lane from the laboratories, a spartan student common room is heated by a wood-burning stove and provides students with a late-evening refuge away from staff after they have finished in the labs at about 9.30-10.00pm, where they can have coffee, watch television, and enjoy their own company. Closer to the laboratories, the Centre has converted what once was the library into a small computing room which houses Apple IIe and BBC computers and printers, the software library, a weather satellite link, and most recently, an interactive video disk facility. Moving the well-stocked library to another part of the Centre

some distance from the teaching rooms has reduced easy access to literature relevant to the course, and occasionally causes some conflict of interest when the library is used during the evenings for adult courses or local village committee work. But the proximity of the computer room to the teaching labs and the access to software and hardware frequently used in the evening's data analysis, gives staff the opportunity of integrating computers more readily into their teaching. It also highlights the perceived relative importance at the Centre of this resource as a learning tool, over the books and texts it holds in the library.

In addition to these teaching resources, Centre teaching staff have their own workroom near to the Centre's main office and the Warden's office. The 'staff lab.' is a busy and occasionally chaotic hub of the Centre for the teaching staff. The workroom is physical testimony to the long and periodically frantic hours spent hastily preparing teaching materials, and a lack of staff time to order and systematize records and resources. The photocopier occupies the prime site in the centre of the small staff lab and is heavily utilized for the production of over 60 different handouts used regularly in a week's geography field course. 'Masters' of frequently used handouts hang ready to hand in plastic wallets labelled by daily fieldwork themes. Many of these 'regular' handouts could be printed in large quantities, and indeed older printing machines exist in the Centre, but they have fallen into disuse chiefly it seems because they cannot produce 'immediate' results - quickly and efficiently at very short notice. This demand for instant copying is a particular characteristic of the fieldwork teaching at the Centre. As a resource, its consistent use symbolizes the efforts made by staff to meet the varying and individualistic demands of visiting teachers and their students. It also emphasises the essential 'first-hand' characteristic of much geography

fieldwork; data is collected anew by students in the field every day - it is 'grouped together' during the evening in readiness for discussion and analysis. Copies of this unique and ephemeral data are provided by staff for each student; they are a record of their day's fieldwork and a statement of the quality of their individual and group work. A net result of the continuous demand for teaching handouts and a perceived need that students should have an individual record of the data, is that the staff workroom occasionally has the appearance of a busy printroom.

The activity which the photocopier creates means that the staff lab's atmosphere is demonstrably 'pressured'; heavy reliance on the copier at certain times of the working day is a source of frustration to staff and sometimes a bone of contention between staff. Discarded handout copies litter the floor, and invade other parts of the workroom. Desk space is at a premium and is often difficult to get to because of the 'safety-sacks' on the floor which intermingle with packed-lunches, boots, and pieces of field equipment. These safety-sacks are ruck-sacks which are necessary and vital pieces of equipment for teaching staff who daily take large groups of students into the field. Staff are obliged according to FSC working regulations to take them into the field - they contain safety equipment and first-aid materials. Training in first-aid and in aspects of Mountain Leadership is regularly provided for new as well as experienced members of staff at the FSC's staff training courses; all its teaching staff are expected to have a thorough knowledge of safety procedures and safety-sack equipment when teaching in the field.

Finally, the physical structure of the teaching resources at the Centre includes a workroom called the 'research lab' which accommodates research students investigating aspects of the local environment for undergraduate

project work, and for higher degree and post-doctoral research. The Nature 'Reserve' staff also use this facility, and it is here that much of the Centre's long-term monitoring data on the Reserve is kept; most of it in a form which is not readily accessible to the tutor seeking data to integrate into their daily teaching; to make, for example, annual or seasonal comparisons. Staff do incorporate some of this long-term data in the construction of their handouts but the ideal of a student being able to contrast their own data by having ready access to data collected by other students at different times of the year or on the same day over successive years, is not realised in practice. The Research Lab is not open to students, although its photographic darkroom is used occasionally by students and staff doing 'project' work.

The Centre's buildings are set in attractive well-tended grounds with pine trees and hedges bordering onto permanent pasture on its seaward side. The buildings are not, however, isolated from the local community. On the west side, the Centre is close to a collection of modern detached houses, and Slapton's village hall overlooks Centre buildings. Old prefabricated classrooms form the boundary at the rear of the Centre with the next-door farm, and these have been turned into workshops and storerooms. Between these rooms and the New Buildings, a part of the grounds has been set aside for the 'met. pen' and the meteorological equipment it encloses. From the 'met. pen' at about 100m above ordnance datum, the whole of Start Bay is visible to the east, spanning the Mew Stones which mark the entrance into Dartmouth, right around to the Start Point lighthouse before the coastline turns, and trends east-west towards Salcombe and the Kingsbridge estuary. Only the east facing rooms on the first floor of the New Block share large parts of this vista. On their west side, open areas of grass and garden run between the buildings and these areas are often used in summer by

students and staff teaching and working with field samples and equipment. Overall, the eclectic architecture and simple gardens provides the Centre with a homely and functional atmosphere which visibly divorces the place from any sense of institutionalization; a feature which is enhanced by the lack of formal directional or instructional signs on or within the buildings.

6.3 The Centre's Local Environment

HM Inspectors visiting the Centre in 1983 wrote in their report, simply: "The choice of the site for the centre can only be described as inspired" (DES, 1983). The comment reflects the location of the Centre with respect to its local environment, and the quality and variety of the teaching sites which that environment holds. More specifically, it addresses attention to the fact that the Centre's visitors have the luxury of short and long-term access to many of those sites. Students and teaching staff have access to large areas of land which the Centre overlooks to the east, as well as to the south in the sheltered valley of the Start river. Some of this access has been granted by local farmers and land-owners, but an extensive part of Slapton's environs is managed directly by the Centre and its staff. Historically, this is because the collection of buildings which constitutes the Centre were formally opened as a field centre in 1959 when the FSC acquired the lease of the Slapton Ley Nature Reserve from the Herbert Whitley Trust. This 190 hectare Nature Reserve is listed as a Grade 1 Site of Special Scientific Interest; a large part of which (80 hectares) is a freshwater lake or 'ley' separated from Start Bay by an 8km shingle barrier or beach known as Slapton Sands. Much of the Reserve's remaining area comprises two large deciduous woodlands in the catchments to the west of the ley, and extensive tracts of reed bed and marsh habitat. Outside the

areas leased to the Field Studies Council, and managed by the Centre's Reserve staff, the rural surroundings offer an abundant supply of environmental data and potential for varied fieldwork. HMI continued its report by saying:

"...There is a wide range of ecological habitats, for example, many types of sea-shore are within easy reach... Start Bay has a coastline with ranging geology, and a set of shingle beaches the origins of which pose interesting problems. There is one coastal village which was largely destroyed by a storm of 1917, probably because of massive dredging of shingle to provide marine defences for the Navy in Plymouth. Other settlements are under constant threat. There are river catchment areas which lend themselves to study. Dartmoor is close at hand, Slapton village - hidden from the sea and the Vikings - and other settlements provide for fascinating studies. Varying land use and agricultural practice abounds.

Centre staff over the years have gathered data and made contacts with local people, and continue to do so. The area is well-known to them, and the potential of sites has been well-assessed. There is considerable knowledge available about changes in the area, environmental issues and conflicts and the current state of thinking about the phenomena which are studied." (DES, 1983, p.2)

The ready access to the land which forms the Nature Reserve and the carefully nurtured relationships with land-owners whose property borders onto the Reserve, means that Centre staff can set-up long-term scientific monitoring sites or stations. These yield data for analysis which can, theoretically, be incorporated into the A-level field course, but they also provide permanent educational exhibits of field equipment in use by geographers. The learning ideal expressed by Centre teaching staff is that by linking the visual experience of seeing equipment work to a contemplation of the data it provides, the conclusions based on the data are rendered more understandable and more meaningful; an hypothesis which will form an important point of investigation in this study. The permanency of these monitoring sites on Reserve land leased to the FSC is also a valuable spin-off for the Centre's teaching and research staff. It means that soil pits do not need to be freshly dug, and heavy, bulky equipment does not need to be transported on each visit to the teaching

site. Finally, direct control over the management of different local environments has another advantage, in that land-use which might be regarded as malpractice in terms of pure economic efficiency, can be continued and justified on ecological and/or educational grounds, and forms a valuable contrast to the effects of maximizing profits from agricultural land which students see at work in the surrounding rural landscape.

In conclusion, the learning milieu which results from the physical structure and setting of the Centre is one of rich natural variety, environmental interest, and novelty for the student. The physical resources available for use by students during their stay at the Centre are of high quality, and most are regularly used and are accessible to visiting teachers and their groups. The combination of access to varied teaching sites, some with permanent monitoring field equipment, together with the provision of equipment at the Centre to facilitate gaining the maximum potential for geographical learning from those natural resources, engenders Slapton with a sense of professionalism, and expertise.

CHAPTER 7

AIMS AND PURPOSES

7.1 Defining Slapton's Geography Field Course: Information to Teachers

Teachers making inquiries to the Centre for information about the Centre-run geography fieldwork course receive an information pack. The pack contains, *inter alia*, descriptions of the overall approach and aims of the geography course and suggested topics that teachers may wish the Centre's staff to include during their week's fieldwork. The geography course described in this information handout is referred to by Centre staff as the "standard" A-level course, but there is also material which has been written to provide teachers with information about the opportunities which exist at the Centre for doing fieldwork as part of the Geography 16-19 Project (University of London syllabus 219). During my research at the Centre in 1985 and 1986, the majority of Centre-run courses were 'standard' geography A-level field courses. The Centre had bookings for three 16-19 courses in 1985, out of a total of approximately 36 weeks teaching for the year. These three courses included a week's fieldwork for a group of students from two schools studying the 219 syllabus with assistance from initial teacher training students taking PGCE secondary geography from the University of London's Institute of Education, and the Centre was also involved in providing in-service courses to teachers seeking training in the syllabus's approach to fieldwork. But these courses were interruptions to the rhythm set by the normal pattern of students coming to the Centre for a 'standard' residential Centre-run geography course.

The geography course at Slapton as described in the information pack

mirrors many aspects of the notes to teachers and parents published by the FSC's central information unit (Chapter 5) but it is also dissimilar in some important respects. First, it is similar in that it is clearly targeted at demonstrating to teachers, students and parents the relevance of the field course to the requirements of modern A-level syllabuses, both in terms of its field-research based approach to teaching and the concepts, skills and techniques which the course aims at teaching. The course is described as emphasising:

"Explanation of form and pattern in the landscape through an understanding of processes.

A systems approach to illustrate the links between all parts of the landscape.

A scientific approach to fieldwork based on discussion of models, data collection, hypothesis testing, statistical analysis and interpretation.

Practical experience in a range of laboratory and field techniques through the use of simple and more sophisticated instruments.

Past data to inject a temporal dimension into the spatial studies undertaken by students while at Slapton.

The relevance of findings to environmental management."

In addition, the course description stresses the need to regard fieldwork not as an isolated experience but as a fully integrated element in the A-level course with links to many of the concepts taught in the classroom. The notes also argue that the direct and first-hand nature of fieldwork can help to provide a wholistic experience of the environment for students which acts as a counter balance to any tendency to view the environment only in terms of its component sub-systems.

As I have attempted to show in Chapter 5, modern A-level syllabuses frequently stress the importance of students acquiring an understanding of physical and human systems as an integrative approach to geographical study

and within this systems framework they emphasise the value of fieldwork in supplying a training in the skills and techniques of geographical enquiry. These enquiry skills are described in terms of the knowledge and practical application of the deductive route to scientific explanation (Burt, 1989) and more specifically, the particular techniques used in collecting and analysing geographical data sets. These features of a systems approach to environmental investigation and understanding, together with the skills and techniques which students acquire by conducting geographical fieldwork form the essence of the message conveyed to teachers in the Centre's course description. Central to and implicit in the course description is the notion that the educational rationale for the Centre's field course is the utilitarian one of assisting students to pass the A-level examination by meeting the fieldwork requirements contained in the syllabuses.

Although the approach as stated in the course description attempts to emphasise the links between fieldwork and classwork and between aspects of the human and physical geographical systems, the literature offers no advice to teachers on preparation or follow-up and it gives a clear topical structure to the course without explicating the conceptual themes to link one distinct unit to another and to provide an overall course coherence.

Teachers are invited to consider 8 topics, and recommended to select 6 units to be covered during the 6 days of the course from:

stream channel processes

small catchment hydrology

form and process on a depositional coast

form and process on a coastline of erosion

biogeography

rural settlement

urban patterns and processes

environmental management and land use

Each unit is defined in terms of the basic geographical concepts it is attempting to convey, the hypotheses which could be tested, some of the technical terms associated with each topic, the field equipment students will use, and the graphical and statistical analysis students will conduct to verify or reject the original hypotheses. Where appropriate reference is made to the use of data from long-term monitoring field sites to help students appreciate the importance of temporal changes in the medium term, and the concept of long-term environmental change is also considered by drawing attention to the fact that much of the present landscape is the product of past processes. In each unit reference is made to the rural or urban areas surrounding the Centre which will be investigated during the fieldwork. There is no mention in any of the course descriptions of the computer-aided learning facilities which the Centre has to offer to assist students in analysing data or predicting change in variables in systems. There is also less frequent reference to a consideration of the implications to be drawn from the results of the student's own fieldwork for planning and environmental decision-making. Indeed, the student's own perceptions, values and attitudes of what the fieldwork means to themselves and the lives of the local people is markedly absent from most of the course unit descriptions, although as the following example illustrates, there is clearly an aim in some of the units to engage the students in local issues as well as teaching the core techniques and concepts involved in each topic:

"Rural Settlement

In explaining the numbers, sizes, functions, and spacing of

settlements in a rural landscape, the Central Place model can provide a number of initial working hypotheses. However, discrepancies between the model and the real world quickly divert attention to the many other factors producing marked spatial and temporal variations in rural settlements. Growth or decline in services and population, variations in housing type, age structure and social characteristics require reference to such processes as commuting, retirement migration, tourism, second-home ownership, planning and the role of key settlement policy. Data collection, observation, and conversation in local settlements, backed up by recent census data, are undertaken with the aim of testing traditional models, demonstrating the numerous factors producing rapid social and environmental change in rural settlements, and uncovering some of the problems of rural life in a superficially affluent countryside."

(extract from course description: Geography at Slapton Ley Field Centre)

The Centre's description of its geography A-level field course is dissimilar to the information for teachers produced by the Field Studies Council's central information unit, in two important respects.

First, it makes no case for the intrinsic qualities of fieldwork such as promoting a student's enjoyment and motivation for the subject of geography, or providing a novel and stimulating learning milieu in which communication skills and teamwork are encouraged, or providing opportunities to learn and work with teachers and peers in new social settings. The breadth of educational experience which the Field Studies Council says it hopes to provide for students on its courses, in association with an enhancement of a student's depth of subject understanding, is absent from the Centre's course description. The emphasis remains singularly on the functions of fieldwork for students' cognitive development and not on their affective learning needs.

Second, the course description makes no reference to the ethos of the Field Studies Council. Chapter 5 has drawn attention to the fact that within the Council's overarching principle of seeking "environmental understanding for all", the advocacy of its field courses is focussed more narrowly on

attempting to generate in students an awareness of the importance of conservation and an ability to exercise responsible political judgement regarding environmental issues. The argument runs that this goal would be achieved by students doing fieldwork in settings which brought them into a more intimate contact with nature, and that this first-hand experience would foster a heightened environmental awareness and an understanding and respect for the environment and people's interaction with it; or in short, an appreciation and acquisition of the notion of a bioethic, described by O'Riordan and Turner (1983) as "a sense of responsibility for the earth and a plea for a basic ecological understanding before tampering with its resources... In other words, human morals should be based on ecological principles, not attuned to merely socially derived rights and wrongs."

(p.3). The argument reaches the conclusion that ultimately an individual's actions and social behaviour would be in tune with ecological principles by the application of a bioethic when decision-making.

The broader purpose of fieldwork, then, as the educational catalyst for the generation of a bioethic, built on practice, application and understanding rather than as received dogma, is not part of the course which Slapton Ley Field Centre describes in its information to teachers. The course description mentions the significance for environmental planning of some of the findings of the fieldwork that students will undertake during their course, but it is conceived as an appendage to the main body of knowledge and skills the course is portrayed as conveying, rather than as blood which gives life to the assemblage of geographical concepts and techniques.

In summary, Slapton Ley Field Centre is a major national provider of field courses to A-level geography students. The majority of its courses are led by Centre teaching staff. The Centre's geography courses are described in

an information handout to teachers. A distinction is drawn between its course designed for teachers following the Geography 16-19 School Council Project syllabus, and its course designed for other A-level syllabuses, but in 1985-86 and 1986-87 the proportion of 16-19 courses to 'standard' A-level field courses was small. The course description matches the material published by the Field Studies Council in that it is clearly tailored to fit the tenor of modern A-level examinations in its use of an environmental systems approach as an organising principle, its reference to fieldwork as the means of exploring a deductive route to scientific explanation, and in its focus on fieldwork's relevance to teaching geographical skills and techniques. The course is described as topically structured but appears to lack coherence despite its reference to integrative themes. The course description makes no reference to the broader educational purpose of the Centre and the Field Studies Council. It lacks a description of how its fieldwork is significant in developing students' affective learning, or how the Centre's courses are aimed at meeting the Council's overall policy of promoting in students a conservation or bioethic for an 'environmentally informed' society.

7.2 Aims and Purposes: Centre Staff Perceptions

We have seen in Chapter 5 that the Field Studies Council recognises that its courses will vary from centre to centre according to the needs of the students, the interests of staff, the local environment, and seasonality. In this section the focus moves from the Centre's aims as stated in the literature sent to schools and towards the educational aims of the Centre and the broader educational policy of the FSC as perceived by the Centre's geography teaching staff. Their views are prefaced by short biographical introductions to the three Centre staff who taught geography fieldwork during my period of research at the Centre.

In 1985-86 and 1986-87, I observed, assisted, and taught with three members of Centre staff who led the Centre's geography fieldwork for A-level groups; Keith Chell, David Job and Rob Lucas. These three teachers were not the only staff involved in the Centre's courses. Centre staff teaching ecology, research students, 'placement' students on university and polytechnic sandwich courses, local individuals, and, of course, teachers accompanying their students to the Centre, each played an important ancillary role in shaping the experience which students received at the Centre. But Keith, David and Rob held overall responsibility for the teaching of geography fieldwork at the Centre and usually individually led a course for its one-week duration, although Keith's managerial and administrative duties as the Centre's warden, meant that the majority of the annual teaching load was evenly distributed between David and Rob.

Keith Chell was appointed warden of Slapton Ley Field Centre in 1984 following the departure of its previous warden to the post of Director of

the FSC. At 32, he had previous experience of working in the FSC, using his graduate training in geology to teach geology and earth science field courses at the Council's centre in Shropshire, and this followed a year's post-graduate employment at the Institute of Geological Sciences. After working for the FSC for six years and reaching the post of deputy warden, and with no immediate prospects of promotion to warden of a centre, Keith left to teach at Oswestry tertiary college in 1981. On arriving at Slapton, Keith had, therefore, the administrative experience of being a deputy warden at an FSC centre together with nine years of teaching experience both within the Council and outside in a further education college. He saw his role at the Centre primarily in terms of management, administration and promotion of the Centre and the nature reserve, to meet and maintain the visitor targets which the Centre had established in the early 1980s, with his teaching role being confined to the rare A-level groups wishing to do geology fieldwork, as a relief teacher for David and Rob, or when the pressure of bookings on the Centre demanded running three geography courses concurrently.

At 27, Rob Lucas recommenced working at Slapton as Senior Tutor teaching geography. He had been a tutor at the Centre for three years after graduating at Huddersfield Polytechnic in 1980. Rob is representative of a long tradition of liaison between Huddersfield Polytechnic and the Centre - each year the Polytechnic would send 1 or 2 'placement students' to work at the Centre as part of their practical 'sandwich' year in the environmental science degree course. Rob had been a placement student at Slapton and took up a teaching post there after graduation. Both Rob and his predecessor at the Centre entered the FSC in this way.

Rob left the organisation to take a PGCE at Leeds University in 1983/4 and

returned in January 1985 when the second geography tutor's post became vacant. The links between the Polytechnic and the Centre are still strong, with a former Centre tutor - Dr Dave Butcher - now lecturing at the geography department at Huddersfield. Rob, therefore, already had a great deal of teaching experience at Slapton, and had developed close links with many visiting schools during his four years of teaching geography A-level courses; links which seemed not to have been damaged by his year's absence in Leeds. Rob left the Centre in 1986 to take a deputy wardenship at the FSC's Malham Tarn field centre.

At 36, David Job had eleven years of teaching experience within the FSC. He joined the organisation in 1974 after taking a BSc in Geography at Aberystwyth University, where he also commenced a post-graduate research degree in biogeography. In 1976, David left the Leonard Wills field centre in Somerset to teach at the Preston Montford field centre in Shropshire where his period of teaching coincided with Keith Chell's, until he took up the post of deputy warden at Slapton in 1980. In 1983, he unsuccessfully applied for the vacant post of warden at the Centre, and was acting warden for a period of 3-months until Keith took up the post. In 1985, he took sabbatical leave to teach geography at a secondary school in London for a term. More recently, David has completed an M.Phil on the coastal geomorphology of the beach systems around Start Bay - some of the data for which was collected by A-level geography students at the Centre over a five year period. He has published many articles based on his field teaching, in the Council's Field Studies journal and in Geography Review.

David is widely respected throughout the organisation, by visiting teachers, and by academic geographers, as an experienced and committed geography field tutor and researcher, and has the reputation for being a

gifted communicator. The recognition of his teaching skills may have contributed to his unusually long length of service to the FSC. Many newly qualified graduates and post-graduates join the FSC to teach geography and move on after 2 or 3 years to take professional teaching qualifications, or teaching posts in schools and colleges, or to take up appointments elsewhere in organisations like the National Parks or in nature conservation groups and trusts, or to run teacher centres elsewhere. Accordingly, in the light of relatively rapid staff turn-over at the level of tutor and senior tutor, David's length of teaching experience is highly valued by the Centre's warden and other heads of centres in the Council. Newly appointed geography tutors in the FSC are often sent to the Centre to observe an A-level course being run by David before starting out on their own field teaching. The course which he has been teaching and developing since 1980 is regarded by staff in the Council as a model of what the organisation can offer to teachers seeking to give their sixth-form A-level geographers fieldwork experience, and in this David has maintained an FSC tradition that Slapton's geography field course is particularly strong. In 1989, David left the FSC to teach geography at Godolphin and Latimer School in London.

Interviews with the geography teaching staff at the Centre reveal that there is concurrence in their perceptions of the aims of the Centre's geography A-level field course, although they prioritise the aims differently:

- to assist students in meeting the fieldwork requirements of A-level geography syllabuses;
- to provide quality service to teachers and students to encourage teachers to repeat their booking of a course at the Centre;
- to stimulate students' interest in the subject of geography;
- to develop an awareness in students of their environment and a

consideration of the implications resulting from their fieldwork for environmental planning and management;

- to provide students with an opportunity to work with others in a novel physical and social setting.

(a) Meeting the A-level requirements

The modern geography A-level stresses the importance of fieldwork in two main areas; first, the opportunity it provides to gain experience and acquire skill in geographical methods of enquiry and research, in particular the knowledge and application of specific techniques of data collection, analysis and representation, and second, the opportunity fieldwork provides for students to gain knowledge of examples and case-studies which can be used to illustrate or qualify wider geographical concepts. Staff at Slapton clearly see their field course as giving students the kind of field experience necessary to meet these two requirements:

Keith: "...The primary function of the geography course is to develop geographical skills in the first instance, whether they be mathematical skills, literacy skills, or graphicacy skills and to develop those in the geographical context. That is how I see the main thrust of the course."

(KC/SLFC.int)

Rob: "I think that first of all it aims to provide quite a wide range of fieldwork evidence for quite a wide range of topics that they are likely to come across in their A-level. I think that it aims to produce a sort of scientific means of approach to a topic, and ideally [students] ought to be able to approach topics that we haven't covered in the same sort of way with a logical approach and come out with an answer that they can justify in the end."

(RL/SLFC/int.)

David: "Fundamentally the A-level exams must figure quite prominently [in the field course] because it gives the students the chance to try out theoretical ideas that they have thought about and been told about in class - models, theories, and so forth, to see if they have any validation in the real world."

(DJ/SLFC/int.)

It is interesting to note that Keith's references to the importance of students learning skills associated with geographical investigation are phrased in a way which extends this skills-based function of fieldwork outside a purely geographical context. He argues that the course aims at promoting skills which can be used not only in geography but which have relevance to a student's life beyond the A-level examination:

Keith: "Inherent in much of what we have discussed, is this move towards the idea of skills transfer, in that they might be geography students, but the skills they are picking up are ones of literacy and numeracy - there's a move towards that skills end of things. Also a move towards perhaps the higher educational stages of getting students very much more involved in decision-making, processing information and making decisions in the light of stuff they have gathered, as opposed to straight forward going out and being descriptive... So, I see the geography syllabus moving into that field, and moving away from its concern with the mass of detail of geographical information, and more towards using that geographical information in a way in which it is going to promote life skills."

(KC/SLFC/int.)

(b) Providing 'value for money'

The teaching staff at Slapton recognise that they face the difficult task of teaching students about whom they have little or no information, and invariably no prior contact. As a result, Centre staff reflect on the aims of the Centre's fieldwork primarily in terms of meeting teacher expectations and not of individual student needs.

These expectations are perceived to be firstly, an understanding of the general approach and requirements of the A-level examination syllabus that the teacher has elected to take and, more specifically, whether there can be a coincidence between the topics covered on the field course and those covered at school. Second, Centre staff regard it as essential that the Centre's fieldwork is aimed at providing the level or quality of experience to students which would be difficult for teachers to provide themselves by

teaching their own fieldwork. Centre staff see this as resulting from their own expertise of field teaching, field techniques and an intimate knowledge of the Centre's local environment and its resources, together with the physical resources like well-resourced laboratories, field equipment, permanent field stations, and long-term monitoring data which the Centre has to offer. As well as these resources, Centre staff perceive that teachers value the opportunity to step aside from the 'limelight' of direct responsibility for teaching and administration and use the experience to observe their students at work by taking on a different teaching role from that of their daily teaching in the school classroom. Rob makes these two points in answer to a question asking why A-level geography students come to the Centre to do fieldwork:

Rob: "Well, I don't want to blow our trumpet but quality basically - they get very good value for money. They get to use a lot of equipment that they would otherwise not get a chance to use, they get to use past data and they get to look at phenomena which they are unlikely to look at in any other way, and things which are perhaps difficult to explain - the shingle ridge is a good example, it occurs in textbooks as an example of long shore drift whereas it's much more complicated than that and it takes some sort of local knowledge to explain it all. They also get someone totally different to their own tutors. I think that there are very few perhaps even only just one, self-taught geography course in the whole year at Slapton. It's quite nice for their teachers to get out of the limelight for a while and it's nice for the kids to listen to someone else for a while."

(RL/SLFC/int.)

In summary, an important aim of the Centre's field course is to satisfy the expectations of teachers who send their students to the Centre; to ensure 'value for money'. Centre staff interpret teacher expectations in various ways, but they are predominantly perceived as needing to ensure that the field course is relevant to the A-level syllabus both in terms of its overall approach and content, and to provide the quality of field experience to students which would otherwise be unavailable to them. The measure of success is whether teachers repeat their visit/booking to the

Centre with another group of students the following year. It is an aim born out of economic necessity and represents a consumer-led or market-led philosophy of setting educational objectives and curriculum design.

(c) Stimulating students' interest in geography

Centre staff testify that its field courses also aim at stimulating and developing a student's interest in geography. Motivation for learning is regarded by staff as essential to ensure that the learning experience is an enjoyable one for students, not only for the duration of the field course but also in the longer term once students have transferred their learning back into the classroom. Fieldwork's ability to generate a sustained interest in geography is interestingly linked by staff into the aim (e) below which suggests that fieldwork offers an opportunity for students to work in new social and physical settings and to learn geography in new ways. It is suggested that the enjoyment of working in a new and exciting environment with first-hand information renders the experience of learning geography a more interesting prospect than that provided in the more familiar context of the classroom and, significantly, Centre staff argue that part of the motivation comes from their own enthusiasm for fieldwork:

David: "I would hope that it motivates them much more and they go back wanting to know much more about geography as a result of being on a field course in comparison to when they set out. I think a lot of teachers see it in that light. In fact, some might say that the content, the academic bit and the ideas are less important than motivating them and getting them enthused about geography.

Researcher: How is that special to fieldwork then?

Well, because it's more immediate and a more novel situation. It's spectacular sometimes and hopefully fun and hopefully sociable. I think that if all those things happen then it'll be motivating.

Researcher: You don't think that that happens in the classroom so much?

No, well having tried both, although I'm looking at it from a rather

selfish point of view, but having tried both, I didn't very often... yes, I very rarely got much of a buzz in the classroom. I can often get quite a buzz and quite high on fieldwork. I think that inevitably gives a feedback effect, and that if you're quite high then that brushes off on them and they get invigorated as well.

Researcher: Right, you talk about the reasons for that motivation - the novelty, spectacular nature of fieldwork, its immediacy, socialisation etc - in your experience of teaching both in a fieldwork centre and in the classroom in a school, why do you think there wasn't the same kind of motivation when you were teaching in the classroom - why didn't you get a buzz from your classroom of a similar kind to your fieldwork teaching ?

Yes, very difficult to say. I think that partly it's because for the pupil the classroom is so familiar and maybe they don't expect excitement too much, so you don't get it. It's that familiarity of the situation."

(DJ/SLFC/int.)

(d) Environmental Awareness and Conservation

Centre staff recognise that the Field Studies Council's ideology of seeking "environmental understanding for all" is built on the principle of providing people with an opportunity for learning about the environment at first-hand and that this process of engaging directly with the environment will lead people to acquire an environmental awareness which will in turn prompt action for the environment. The principle is grounded in the assumption that people's future attitudes and actions towards the environment will be shaped by the kind of educational experience they have from the process of doing fieldwork. These elements of environmental knowledge, the development of environmental awareness and attitudinal change motivating a commitment for action, are key components which have been used to define environmental education for over twenty years:

"Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to help solve those problems, and motivated to work toward their solution" (Stapp et al, 1969, in Disinger, 1984, p.110)

But interviews with staff reveal a tension between the principles of environmental education central to the ethos of the FSC and the aims of the geography field course at the Centre. The aims of the geography course are not perceived by staff as being driven by the core principle of an environmental education i.e. teaching awareness for conservation. Instead, staff regard the development of 'environmental awareness' and a 'conservation ethic' through geographical field enquiry as a more specialised process of applying the knowledge or results gained from geography fieldwork to questions which address problems of environmental planning and management. But that these applied considerations are regarded by staff as having to be subordinated to the main purpose of teaching geographical concepts and skills through fieldwork and are therefore frequently addressed only at the conclusion of the field enquiry process. Staff at the Centre regard the superordinancy of geographical theory and techniques of enquiry over the application of the results of fieldwork for environmental planning and management as a constraint resulting from the necessity of having to respond to teacher expectations and thereby, the demands of A-level examination syllabuses.

Rob: "...it is certainly true that you could do a lot more about the environment and general environmental issues if it wasn't for the constraints of the examinations. We have to get through, or perhaps we only perceive that we have to get through: one of the reasons why Slapton is so successful is that it is seen to do what the schools want to do and gives them something of value and they don't feel that they have a wasted day."

(RL/SLFC/int.)

Thus, rather than environmental problems forming the focus or starting-point for a fieldwork investigation, staff regard modern A-level geography syllabuses as rendering environmental problems and their conservation and management implications as supplementary to the need to teach a body of geographical concepts and skills. Centre staff do,

however, draw a distinction here between the Schools Council 16-19 Geography Project and other A-level syllabuses, arguing that the 16-19 Project in contrast to other syllabuses aims to begin the process of field enquiry by looking at environmental issues or problems and that this starting point assists in demonstrating to the learner the relevance of geography to the understanding of environmental problems.

An extract of an interview with David explores this tension between fieldwork for environmental understanding and conservation, and fieldwork for geographical learning. David begins by describing his view of the ethos of the FSC:

David: "Yes, it's hard to identify a single ideology. I suppose overtly, that the motto - "towards a better understanding of the environment" or "environmental understanding for all" implies a conservation ethos. I don't know whether that comes over very explicitly in the courses that I teach. I'd like it too more but I feel constrained by what's expected in terms of examination requirements and teachers' expectations. Though increasingly, because of the way that the syllabuses are changing there are more opportunities for introducing more applied ideas and conservation aspects.

[...]

Researcher: How do the examination syllabuses constrain you?

Well I suppose the content doesn't normally include a tremendous emphasis on conservation. That's changing but in the past it hasn't for most syllabuses...

...[and regarding teacher expectations] I've had the experience in the past of going on at length about a conservation aspect of some topic that we are doing, perhaps hydrology, and I've felt that the visiting teachers haven't been tremendously impressed with it or haven't been able to see its relevance. But having said that I have had teachers who have commented on the lack of conservation content in the course, and would like to see more. And this pleased me a lot that they had made that comment.

[...]

...the general environmental awareness side [...] has much more to do with life than exams or geography or the academic side of things, and that's the side that I feel doesn't always come over so strongly or explicitly in the course that we do, as it ought to. It's coming over more through things like the Schools Council stuff, like the Geography

16-19 syllabus. In the past if we get down to conservation issues at all they tend to get pushed down to one day on the course and you "do" conservation or else it's mentioned in a couple of sentences at the end of the day - you know, we've explained the system whether it's a stretch of depositional coastline or a catchment or a settlement pattern and as a sort of final flourish we mention that what we've found out has some important implications for man's relationship with his environment and how we manage our environment. But that doesn't often have a central or a sufficiently prominent position in the courses, I think.

[...]

...it's also tacked on in that way in things like the new London syllabus - it's not the starting point but is something purely to give it a relevance, at the end. Whereas the Schools Council 16-19 puts it firmly at the beginning and the environmental context is the all important thing and that's where you begin from. But it's bound to become diluted if you tack it on at the end... So, bits of the course are environmental education in that they convey an environmental message but as a whole I don't think that it is; there's no overall message saying 'think a little bit about how we relate to and manage our environment'."

(DJ/SLFC/int.)

(e) Novel Learning Environments

In section (c) above, it was noted that Centre staff regard the novelty of learning geography in new social and physical settings as an important aspect in motivating students towards the subject of geography. But Centre staff also testify to the broader educational benefits to be gained from fieldwork providing students with the opportunity to learn in new social groups and in unfamiliar physical environments.

Many of the schools who use the Centre do not have sufficient students studying A-level geography to make a viable course from their students alone, so schools sending, perhaps, 10 students are combined with similar sized groups from other schools by the Centre when booking a course. The average group size for a course at the Centre is between 25 and 30 students. Of the 3 or 4 schools grouped together for a course, it is not uncommon to find a mix of state and private schools, a different regional

area of origin and accent, and a combination of some students accompanied by staff and some students unaccompanied. The social group is therefore both eclectic and novel for all participants - centre staff, students, and school staff - which means that the course commences from a common basis of new social interaction between students and students and staff; except on rare occasions, only Centre staff and school staff may have met before on a previous course. This novelty of social interaction is reinforced by Centre staff implementing a policy of mixing schools and sexes in work groups of 4 or 5 students for the duration of the course.

Centre staff perceive the novelty of the social experience encountered by students during their field course as firstly, an important ingredient in making the experience fun and exciting and a contrast to the more routine experience of school-based learning. Secondly, an opportunity to widen students' social interaction with other peers from different geographical and cultural backgrounds. And thirdly, the novelty of the whole experience, including the process of social interaction, produces a different kind of interaction between teacher and student from that found in the school classroom. The teacher/student relationship takes on a different sense from that of teacher imparting knowledge, ex cathedra, to learner. Instead, Centre staff perceive that the direct contact with pupils for up to 12 hours a day during the field week, separated from the school's culture and its various demands, and the students unfamiliarity with the learning context, produces a "relaxed" and "informal" interaction between teacher and student; a kind of esprit de corps emerges from the shared novelty of the learning experience which enables the teacher to take on the role of resource rather than authority:

Rob: "We have a lot of advantages over a lot of ordinary teachers. You've got the kids in an alien environment, away from home, and they're going to be doing things that they haven't done before, and

often they'll be mixed up into smaller groups than they'll be used to. Basically, you know the ropes and they don't and that puts you into a very strong position - you hold all the cards. You know what they'll be doing and where they'll be going and you control their destiny and they don't know enough about the system to pull the wool over your eyes like they may do in a school situation. Going on from that, is to try and make it entertaining for them and we're in an advantageous position over their school staff because they may be following very different approaches and they may be confined and not be able to get out and do fieldwork or new techniques because they haven't got the textbooks. So generally, we are doing something more fun than school and in a different situation. It seems to me that generally the kids are on our side and they think we're great but mostly that's because we've got them in a situation that they're not used to.

(RL/SLFC/int.)

David: "I think that the social aspect is important. One of the most enjoyable things is where you get a course with a real mixture of students on it, coming from different parts of the country, different sexes, and different schools - public and state schools. I think that it's enormously good for them to be all mixed up together, and to meet people from different parts of the country and different backgrounds."

(DJ/SLFC/int.)

Thus, the novelty of the social experience encountered through fieldwork is regarded by Centre staff as an important contributor to motivating pupils towards learning, enhancing their social development and providing an opportunity to inject a new form of teacher/pupil interaction.

Furthermore, the contrast to school is an element of the fieldwork experience that is actively enhanced and encouraged by Centre staff in order to reinforce the novelty of the fieldwork experience.

7.2 Summary

Centre staff perceive the aims and purposes of the geography field course at Slapton in terms which extend those set-out in the course description. Like the course description, they view the course as aiming to meet the demands of the A-level syllabuses in providing pupils with a knowledge of techniques of geographical enquiry, and examples or case-studies, examined at first-hand, to illustrate or qualify theory

learnt in the classroom. In addition, however, Centre staff recognise that they must achieve this aim in ways which meet teacher expectations of quality in field teaching, to ensure that teachers continue to bring their students to the Centre. Centre staff define this quality in various ways, such as the local expertise of staff, the field equipment and access to field sites etc.

Unlike the course description, Centre staff also state that an aim of the course is to stimulate students' interest in geography by making the learning experience fun and exciting. They also aim to generate in students an appreciation of how aspects of geography covered on the field course can be applied to addressing environmental management problems. But Centre staff argue that teachers' expectations of the course derived from the examination's requirements for fieldwork militate against teaching a course which has, as its core, educational objectives of teaching conservation and environmental awareness.

Finally, Centre staff argue that these aims of the field course are achieved, in part, by the novelty of the learning experience encountered by students at the Centre.

7.3 Aims and Purposes: Visiting Staff Perceptions

In this section, data is drawn from one-to-one interviews with eight teachers visiting the Centre and from the 'fieldwork diaries' completed daily by each of these teachers during the field course, to develop an understanding of how and in what terms teachers describe their perceptions of the purpose of taking their students to the Centre for fieldwork and to focus on the educational rationale which underpins these varied teacher perceptions. For the purpose of confidentiality all names of individual teachers and schools have been anonymised but, where appropriate, real data is given of the school's size, type and general location and details of the nature of the geography department in which the teachers work.

The teachers whose views are incorporated into this section represent a broad and diverse sample of teaching opinion and professional background; a wide range of teaching experiences are provided from a group of nine teachers who vary in age, level of responsibility in their school, geographical training and experience of different types of secondary school or college. The group of insights used in this study range from those of a newly appointed teacher in his first post in an urban comprehensive from a coal-mining community in South Yorkshire to a head of a large geography department from a sixth form college in the Welsh borders with over twenty years of teaching experience. Their reasons for selecting the Centre and its geography field course may differ widely; for a probationary teacher it may be perceived as an extension to initial teacher training and an opportunity to learn alongside the students, for an experienced Head of Department it may represent a chance to view the students and staff colleagues in the department from an entirely different and holistic

perspective. For the latter, who has the experience of making regular visits to the Centre over successive years and the professional self-assurance of a thorough knowledge of the local environment, concepts and methods of geographical inquiry and field teaching approaches, the field course may offer an opportunity to reflect on the learning process in a way not possible within the busy confines of the school environment.

But whilst recognising the diversity of their teaching careers and teaching experience with different motivations and aspirations, they share a common commitment to providing their students with fieldwork experience by the plain and simple fact that they are with their students on a field course at a field centre. If the results of Gayford's (1985) survey of biology fieldwork in sixth-form centres have any comparative relevance to this research concentrating on geographical fieldwork for A-level students, then the teachers visiting Slapton Ley Field Centre are representative of a large group of teachers who regularly utilise field centres for fieldwork. In Gayford's sample, nearly 50% of the total amount of fieldwork conducted with sixth-form students was done in field study centres. Gayford's survey revealed that almost 88% of his random sample of 133 centres in England and Wales undertook some fieldwork with their pupils although he recognised that this figure would be reduced if account were taken of the possibility that the non-respondents to the questionnaire were likely to include a higher proportion of teachers who do not conduct any fieldwork. Thus, based on the results of Gayford's survey, 1 out of every 2 teachers conducting fieldwork use a field centre for their field teaching either as the sole mechanism for supplying fieldwork to students or as a supplement to locally-based fieldwork conducted in the school area. This data can be compared with the results of the teachers' questionnaire conducted by the 16-19 Geography Project Team (1977) which show that of the average total

amount of time expended on fieldwork by geography teachers with A-level groups approximately 58% was residentially based with nearly 20% organised and taught by field centre staff. A conclusion to be drawn from these two surveys is that a large number of teachers use field centres for their fieldwork and a proportion of these use the experience of field centre staff to teach their students. The teachers visiting Slapton Ley Field Centre with their student groups on Centre-led fieldwork represent, therefore, a significant group of professional opinion regarding fieldwork.

The teachers visiting Slapton make reference to the purpose of fieldwork and the reason for selecting the Centre from three main perspectives. First, they refer to the value of the experience for their pupils. Second, they comment on the constraints which militate against them organising a self-run field course for their pupils and the advantages to staff of accompanying their students on fieldwork without the responsibility of teaching the course. And third, they identify particular attributes of the Centre and its geography field course which have influenced their decision to take their pupils to Slapton.

7.31 Teacher Perceptions of Value to Pupils

Teachers make a clear distinction in their expression of fieldwork's value to pupils between, on the one hand, its contribution to a student's geographical knowledge and understanding and its importance to motivating a student's interest in the subject of geography, and on the other, fieldwork's broader educational value for social development that stems from a residential experience operating in conjunction with a period of intensive and novel learning. The distinction separates subject-specific educational objectives from those which are student-specific.

The interviews with teachers in this study reveal that teachers place equal importance on fieldwork's significance for these two aspects of a student's learning. Teachers stress, however, that they feel the necessity to emphasise the benefits of fieldwork in subject-specific terms because these are the criteria demanded by audiences seeking a justification of fieldwork's place in the curriculum. They note that they are under pressure to demonstrate a correlation between fieldwork and examination success in a way which is not demanded of classroom-based learning. The stimulus behind this demand for justification is clearly the view that residential fieldwork is a high-cost activity. The difficult process of acquiring scarce time and cash resources within a school for a week's field course means that, once acquired, geography staff regard the field week as a highly-prized commodity to be defended against criticism from colleagues in the school and an event which requires repeated justification to the Principal or Head teacher, to governors, to parents and increasingly to pupils. Once enshrined in the pattern of the school year teachers are reluctant to lose fieldwork from their calendar. In these circumstances, teachers place emphasis on the fact that fieldwork is an assessed component of the A-level examination syllabuses and therefore a necessary element in the geography curriculum. An outcome of this is that many schools visiting Slapton inform their students before they commence their A-level course that there is a compulsory fieldwork element.

(a) Subject-Specific Goals:

(i) Exemplification

There is, interestingly, less unanimity amongst teachers concerning how

fieldwork specifically contributes to the assessment of a pupil's knowledge, skills and understanding of geography at A-level. Some teachers see the utilitarian function of fieldwork as essentially supplying examples to qualify and expand students' unseen written answers in the final examination:

Steve: "The main priority as far as the kids are concerned is ultimately, I suppose, getting good A-level results. In that respect the main criteria for the fieldwork is to contribute towards that, so therefore, it's to use case studies where relevant to improve the factual content of their exam. answers."

BG/HS/int.

Tim: "...So each day was a concentrated package of knowledge and examples which they [the students] could lift pretty well straight into an exam essay or answers like that - so it was really concentrated teaching with the real world example that they could use. And I felt that that was very effective."

MH/HVIC/int.

The implication of these remarks is that fieldwork serves a valuable function of supplying students with a knowledge of real-world examples to illustrate or critically complement theoretical knowledge. But there is a further and more important implication here, that pupils who have studied examples at first-hand have developed by doing so greater understanding of geographical concepts and theories. The quotation and relevant use in an examination of an example studied at first-hand in the field is regarded as demonstrating geographical understanding of the concepts involved. The following interview extract demonstrates the kind of example which a teacher argues he, as an A-level examiner, is looking for, but it also illustrates how knowledge of an example is correlated with pupil understanding. The extract reveals a lack of clarity about what fieldwork's precise function is with respect to exemplification:

Tim: "...the main purpose is obviously to help them with the A-level geography. So if you like - a concentrated package which is the cream on top of what you do. There are some things that you can't do in the

classroom, for instance you can't package such a large amount of information into small periods of time. What we used to regard it as, was an intensive week. I mean, the standard thing was that it was equal to a term or half a term's geography - you've probably heard this, quite a lot of people say this - it's like half a term's geography concentrated into one week. I don't think of it as quite the same now, because I see it as just the cream on top, because ideally you set up your course and then the fieldwork adds that reinforcement and slots it all into place - it is revision plus real examples. I see it as the cream, or you could see it as the cement!...

...Well for us doing the Cambridge Board then it's mainly writing essays. They need to pad ... what they need to do very often is to explain things and then pad it out with real examples so they can talk about Slapton Wood, Hallsands, Great Mattiscombe, Prawle Point or wherever - they've got that in precise detail because the examiner doesn't want e.g. Snowdonia. I'm an A-level marker and what you have got to have is the precise detail. You don't need quite the detail as they get down here and that's maybe a danger, in that they feel there is a need to be quantitative and they can't retain that - and maybe that's too sophisticated for a lot of them in terms of techniques. But they do need that precise back-up which may be quantitative back-up as well to express things like, for example, the percentage of flint on the shingle ridge was x%. That's the kind of precise detail that the examiner is going to credit.

Researcher: And the examiners do credit that?

Yes, because it shows that the student has understood the area in question, in this case the form of shingle ridges and the processes that produce it and one would give a lot of marks for that.

Researcher: Right, so it's theory in practice in a sense then?

Yes that's right. Those examples are showing the full understanding of what's going on and the student can show in a very short period of time that they understand - they've got the question taped really in the first few sentences, and that is based on good information and then they back it up with good examples from here. That's the vital bit because that is where the weak candidate falls apart. They make a series of weak, unconnected statements. I mean one of the phrases that we look for is coherent work, and if you take a Slapton day's exercise then that is really coherent and it all slots together.

Researcher: The package of Slapton then - is that something that works in itself as an entity or does it have to be used to be successful?

No, it obviously has to be set-up first, to be effective. A lot of the theory element is best done in the classroom where you have several weeks to go through and perhaps to read up references so that they are grounded in theory before they come up on the field course. I don't know what you think, but perhaps it's better to go on the course later when they have more theory. But when we come they have got some of the theory covered and they should have done some hydrology, settlements and some peri-glacial stuff and so on. It's not just coming here for the examples it's so that they can also

extend and build on their theory and refine it.

The trouble is that they tend to have forgotten it if you have done the theory too long before, and then it has to be revised afterwards. Now that's an area when we fall down, and that's back to the teachers court, and groups that come unattached, of course, miss that all together. When we revise for the exams (and this lot have a year and a quarter to go before their exams) one always wants to use this a lot. And we should be using it a lot because it's a whole chunk of the course. For some reason they [students] don't make as much use of it as they should but that's up to the teachers to make more use of it."

MH/HVIC/int.

So, how does the acquisition of real-world examples of geographical theory in practice, lead on to better student understanding of the geographical concepts under investigation and what is the role of fieldwork in this part of the learning process? Is this value of fieldwork based on the assumption that fieldwork leads to better recall of examples (perhaps because of episode formation) and that it is the process of testing the validity of geographical models against real-world data in the field which generates better conceptual understanding? And leading on from this assumption, what is regarded as relevant use of examples from the field and how much is this dependent on fieldwork or classwork? These are important questions which will be explored later in this case-study by examining the question of transfer of fieldwork to classwork to see the ways in which students use the examples learnt in the field in their examination answers. The data reveals important issues regarding the role of fieldwork in the exemplification and analysis of geographical theory and suggests some problems with the educational assumptions underpinning teachers' views of fieldwork's efficacy that have been raised in this section.

Meanwhile, we can note that teachers coming to Slapton see one aim of their visit as providing students with knowledge of examples to better understand geographical concepts and that these examples are perceived as important

supplements in students' examination answers - 'the icing on the cake'.

(ii) Project work and Individual Study

Teachers also refer to fieldwork's function in the A-level course as being the important contribution it can make towards project work or the individual study; it is seen as teaching students a framework for the process of geographical inquiry, which they can use to structure their own project, and a familiarisation with the steps involved in an investigation. Students also benefit, teachers argue, from the field course providing students with some suggestions of potentially suitable projects for investigation and through the topics covered on the field course students are able to develop particular geographical interests. Finally, the field course enables students to learn data collection and analysis techniques from first-hand experience with field equipment and by conducting statistical tests on their own data.

Anthony: "...in more pragmatic terms, more direct-based exam benefits as parents would see it (perhaps more than the kids would), many of them will end up doing projects on streams - a) because we've got streams in Herefordshire and b) because they've got experience of the knowing the sorts of things that they can actually do - width, depth, looking at hydraulic radius and bed roughness - all these things which they have been studying here. So that has a very direct contribution to their A level projects because it is undoubtedly the most popular area of projects that we have... But essentially we get the students to pick their own project and I don't think that they could possibly do that unless they had been here [Slapton] first or done something like this. I mean they just wouldn't know how to set up an experiment or how to cope with it in terms of physically setting it up, maintaining it and monitoring it. I mean if you are going to do something over a month like temperature readings at 6am or 6pm, then you have to be religious about it, so they get this idea that accuracy is important. So it does have that enormously beneficial effect."

MG/HVIC/int.

Steve: "...Yes, thinking of things like V-notch weirs and so on, in terms of techniques it brings everything alive and I'm sure that the vast majority of them are now 'au fait' with that type of thing - the value of V-notch weirs, the use of flow-meters and so on - actually doing things is so much more valuable than sitting there in the

classroom and simulating those ideas.

BG/HS/int.

The first extract above, shows that this teacher values the field course for the opportunity it provides students to learn a structure of inquiry with which they can approach their own field investigations. This point is extended in the next interview extract. This teacher makes the point that students benefit from encountering through fieldwork the application of a scientific method to geographical hypotheses. But interestingly, he goes on argue that this process is more engaging than that found, in his experience, in the science laboratory since students on fieldwork are not passively required to conduct experiments to empirically verify theory. Adopting the scientific method in fieldwork is not the passive presentation of concepts by experimentation. This point takes us back to White's (1988) theory of learning science referred to in Chapter 4 of this thesis, namely that for general principles to be understood they must be revealed by the students themselves through active engagement in enquiry or investigation; the students must be active in constructing meaning by relating their observations of the world to things they already know. The process of students taking part in the enquiry is an approach which will, to use White's terms, "provide in advance the episodes to which verbal information can be linked so that meaningful propositions are stored" (p.164).

Steve: "In the first instance it's quite interesting for them to adopt a scientific method because even if they are doing physics or chemistry, as we were talking about earlier on, it's often taught in a very stylised and formalised way, and although they are more scientifically rigorous than geography, everything is fed to them as having already happened; it's very much 'do this experiment and you get the obvious answer which has been the same for years and years' although with Nuffield it's a bit different. But [with geography] they can adopt a scientific method, put a hypothesis forward, test it out, and collect data, test the hypothesis, come to a conclusion and go back to the beginning and feedback and go through the whole process again. Even for arts people, like historians, it's quite a useful method but whether the kids actually recognise it as such remains to be seen. From that point of view it's useful."

BG/HS/int.

(iii) Motivation for Subject

A key variable rarely referred to in the literature examining fieldwork is the value of the experience for generating in students a motivation for wanting to learn geography and a sustaining of interest during an A-level course and beyond. Centre staff, as we saw in 7.2, identified this aspect as significant for pupil learning and suggested that the reasons may be grounded in the novelty of the social and physical contexts of learning and their own enthusiasm for the subject of geography that results from being able to communicate their subject interest in an exciting and actively engaging way.

Visiting teachers to the Centre support these views and highlight the importance attached by teachers to fieldwork as a means to generate initial interest in the subject, maintain enthusiasm for learning geography, and to re-generate, if necessary, interest after the fieldwork event.

Steve: "...the general point has to be made, that if there is one thing that interests them in geography as a subject, irrespective of whether it's hydrology or rural settlement, is that they always associate the good time that they have had here with geography, and that gives you a major advantage in the sense that, as the rest of the course progresses, if you are doing some of the more tedious stuff like regional prosperity variations where there is no obvious fieldwork component in it, the enthusiasm that they have generated this week will actually carry them through the next year...

...I mean they were talking about it all the way through the upper sixth - you see them on a Friday afternoon but they don't necessarily want to do a great deal so you mention something about Slapton and reminisce for ten minutes and then they're ready to get on with some work again. It seems to be able to trigger off concentration or whatever, and even when you meet them out of school afterwards it always tends to be one thing that you can talk about and which they can discuss and which they have very fond memories of. You can't reduce the significance of that angle of it - it's very very important and it does an awful lot for geography and their interest in geography...

...From my own point of view as a geographer and an enthusiastic geographer there would also be in my criteria a desire for fieldwork to get them interested in the subject. And I think that this week does it without any trouble at all."

BG/HS/int.

Fieldwork at the Centre is referred to repeatedly by teachers as the centre-piece of the students' A-level course and the staff teaching year. To support their argument, staff offer evidence from former students who reflect on their A-level course and identify the field week at Slapton as the mainspring behind their enthusiasm for geographical learning. However, teachers also make evident that the field course is such a memorable event and a significant catalyst for change that it may produce a negative and demotivating outcome in some students; the field course may confirm their dislike for the subject and marginalise students away from those who are stimulated towards the subject by fieldwork. The following is an interview extract with a member of teaching staff at a Sixth Form College who regularly use Slapton for fieldwork. We are discussing a diary of her classroom teaching which she has kept for one month during the Autumn Term for this research project:

Sheila: "This is a comment I wrote down because I had a letter from a past student, who was a very good student and who completed her degree at Durham and got an upper two, who is currently working in the Sudan at the moment. Now, she was gifted in every way and she could have done anything for her degree, but she says in her letter - "are you going to Slapton again this year? It was that field course that told me that I wanted to be a geographer. I wonder if I would be seeing the Sudan, without that geographical training." Having written back to her, I said that it was exactly the same for me, because I went to Malham when I was her own age and it was that that made me a geographer. And I find that this comment comes time and time again. I find that the Slapton fieldwork crystallises them into finding out whether they are a geographer or not - it either turns them off or turns them on. It is very significant and does have a long term effect. You could say that this student's life and career is all based on, initially, a week at Slapton."

MR/HVIC/int.

The teachers' comments above reveal another factor which may be operating during the fieldwork at the Centre to produce the kind of motivation or demotivation towards the subject of geography that both groups of staff identify. In addition to the factors identified by Centre staff - novelty of the learning milieu and their own enthusiasm for field teaching - teachers pinpoint that fieldwork supplies students with a professional role-model for the geographer; "fieldwork made me a geographer". This supports the evidence produced by Fink (1977) in his study which we analysed in Chapter 4. Fink's study showed that students related their own appreciation of the course and motivation for subject to the personal and/or professional model with which they perceived their course tutors. The teachers in this case-study argue that the field tutor becomes a professional role-model for some students by demonstrating geography being put into practice and that, in turn, indicates a personal commitment and belief in what the field tutor is teaching. Clearly, we need to examine students responses to this question of personal and professional modelling since the teachers' comments make it plain that they regard this as a crucial aspect of the learning process.

(b) Student-Specific Goals

At the beginning of this section I made the distinction between teachers' perceptions of the value to pupils of fieldwork in subject-specific and student-specific terms. As well as the value of the experience for exemplification, for project-work and individual studies, and for motivation towards the subject of geography, teachers point to the benefits of the field course at the Centre to students because of the change in social context for learning. The result, they argue, is a more intensive learning experience but one which is also more relaxed and

informal, which generates a different quality of relationship between pupils, and between pupils and staff from that found in the classroom prior to fieldwork.

Steve: "...the whole thing from the kids' point of view is more relaxed and that translates itself to the staff as well...

...they're in a different set up. I don't know how am I going to put it. Well, the social angle is different - they're mixing with other people and people that they don't know. They are put into groups with people that they have never seen before so they have to mix in and it's very interesting to see the way that they react to their contemporaries in that sense and also because it's a more relaxed atmosphere they react to me in a different way, and I can relate to them in a way that I couldn't necessarily do so easily at school - christian name terms, for example...

Researcher: Which they don't do at school...?

...no, but it doesn't worry me - they do at school but not in anything like as obvious a way. When we go back to school I wouldn't stop them from calling me Bob but they wouldn't shout it down the corridor. But here if someone calls across the grass "Hey, Bob, can you help me with this?" - no problem.

BG/HS/int.

This teacher also refers to the value of the experience for placing his students into an unfamiliar learning context; unfamiliar in the context of physical environment in which the teaching is taking place, unfamiliar in the intensity of the learning experience - the amount of time during a day committed to learning about a subject with staff and peers, and unfamiliar because students are working in new social groups. For Steve, who teaches in an all-boys independent secondary school in south-west London there is a particular advantage in taking his students to the Centre and sharing a field course with, in this case, an all-girls grammar school from Lancashire. The experience of learning in mixed-sex groups not encountered by students is one which Steve regards as important in changing pupil attitudes towards their peers and towards people of the opposite sex, and providing students with the memory that a learning experience can be a fun and sociable event:

Steve: "For many of them it's their first real contact with women. I mean that's the thing to bear in my mind at an all-boys place. You know, people like Richard, for example, and Graham and Stephen (the quieter ones) - it's probably the first time they have sat next to a girl for as long a period in all the time they have been at school, and that for them can be quite a torrid experience in some respects, but it changes their attitudes..."

"...I don't think that I have ever been on one when they haven't had some kind of re-union afterwards. That's a regular feature of the thing. That seems to apply not just to [Milby School] but to everybody - Dartford, or there was a school in Biggin Hill who had a big 'do' up in Covent Garden. So it's all part of the social set up."

BG/HS/int.

7.32 Teacher Perceptions of Value to Staff

The field course at Slapton is regarded not only as having educational value to pupils in the ways outlined above. Teachers also argue that they benefit from the experience. Teachers repeatedly refer to its importance for providing an opportunity to be with their pupils, engaged in a learning activity, but without the direct responsibility for teaching and organising the course. This section examines why teachers value fieldwork at the Centre in this way.

Teachers justify their decision to take students to a field-centre for a centre-run course at a number of different levels. At a practical, administrative and contextual level, the constraints and difficulties of organising self-run residential fieldwork for a large number of 16-19 year-old students are not insubstantial, as this Head of Department makes clear:

Anthony: "...the logistics of setting up a course of our own are frightening bearing in mind that I have an unwritten rule that when I take students away it has to be when the second year are doing their mock examinations. Now I don't know how many first year students will be doing the course until the September, and if I had to make a detailed provision for an A-level physical geography field course for

let us say 90 students, with booking accomodation, transport, sorting out all the equipment, getting all the handouts done and all this sort of thing - bearing in mind that during that term all the references have to be written for students going off to College and University, and all the things that go on in a place as busy as ours - I just couldn't do it! On the sheer problem of trying to find the time to organise it, I couldn't manage it. [Also] the actual use of equipment is something that I would find hard to justify on the basis of one week per year...

MG/HVIC/int.

At this level the decision to take students on a Centre-run field course could be objected to as a means of absolving a teaching responsibility and spending a week away from the routine demands that school life places on teachers. Indeed, there is an element in the interviews with teachers which confirms that absolution from the role of teacher as authority/inculcator and a break from the regular pattern of school life are valuable spin-offs from the field course for teachers. At this level, the objection could be sustained:

Steve: "I look on it in some respects as a bit of a holiday, in that you can get away from the normal teaching set up and relax a bit and see geography from a different, more relaxed angle and think about a few things."

BG/HS/int.

But the extract also indicates a second, deeper level of meaning; the importance that teachers attach to the chance that the field course at Slapton provides for reflection. Boud, Keogh and Walker (1985) have developed learning theory which emphasises the significance of what Dewey (1933) called conscious reflective activity. It suggests adopting teaching strategies to maximise the opportunity for the learner to reflect on a learning experience in order to process the information given to them by a teacher or that elicited from an event, to relate this to previous knowledge, and to test their understanding. Their argument can be extended to the need for teachers to reflect on their pupils and their professional

lives. Interviews with teachers provide empirical evidence to support David Boud's assertion that teachers intuitively know the value of conscious reflective activity. Two examples of this are provided.

First, teachers identify that fieldwork at Slapton provides them with a chance to reflect on the progress of their pupils and an opportunity to observe other pupils taught by a different member of the geography staff in school and to share their collective observations:

"Anthony: ...I want a residential course where staff can come away and we can basically use it not to do the teaching, although we are around to help and to chip-in, but to give us a chance to get to know the students better. It also gives us a chance to see them in a different environment, which is often very interesting, and it gives us a chance to assess all sorts of qualities which are not apparent in a classroom. So one of the things that we can offer the students after we have been on a field course with them is a much more constructive reference because we've seen them under lots of different situations - sometimes under pressure to get work done, and to try and get things right or if something goes wrong then they have to get over it and sort it out."

MG/HVIC/int.

Steve: "Obviously the responsibility is the centre staffs' anyway, in terms of the teaching but also in the behaviour aspect as well... it's controlled, and I would always step in if I felt that things were getting out of hand..."

Researcher: So they [Centre tutors] take away a certain amount of responsibility from you in dealing with the mundane organisational aspects, and that leaves you with time to play a slightly different role, do you think?

Steve: Yes. It's interesting in that this year I've come down with a group that I don't teach (I teach three of the four lower sixth) and this is the one that I don't see, and it's probably quite handy because I'll probably see them next year, and you get to know them and you get to know their strengths and weaknesses much more obviously than otherwise you can do in a whole year at school."

BG/HS/int.

The importance of time for reflection on pupil learning provided by the different learning context of the field-centre was made manifest during my research by one school whose five members of staff at the Centre made notes

of their observations on pupils during the week and shared their views at the end of the course. The 'observation diary' was not used by staff in any formal sense but gave the teachers a chance to share professional judgements about students and so build cross-teaching group discussion in the department.

This point leads to a second function of time for reflective thinking provided by fieldwork at the Centre. The week is an opportunity for teachers to reflect on their own attitudes towards teaching and geography. A chance to step out of the confines of the single-teacher classroom and to observe and discuss different approaches to teaching and different ways of teaching content:

Sheila: "We spent most of the morning in the lab working rather slowly over Spearman's Rank Correlation test - it is interesting for me to see student reaction to something being taught in a different way to the way I do it in College. I am sure it is highly beneficial - and also very good for their egos when they know something in advance and can be confident of using it."

MR/HVIC/diary

Finally, building on the theme of reflection, fieldwork facilitates an equality in the learning experience which teachers find motivational for staff as well as students; the equivalence of the shared experience provides a team-spiritedness for staff and pupil participants. This principle of equivalence of experience is regarded by some staff as a key component in their decision to visit a field centre for a Centre-led course, for fieldwork offers a rare moment to work with colleagues in a relationship with pupils that is not based on a singular 'authority-to-recipient' model of teaching. The transfer of teaching responsibility to the Centre staff enables a teacher to become a facilitator and resource jointly sharing with pupils in the solution of problems rather than an inculcator of knowledge; an opportunity to work

with pupils heuristically rather than teaching didactically. We can see here the value of the opportunity fieldwork provides for meeting the second of what White (1988) describes as the twin functions of the teacher's role. The first, he defines as: "the responsibility to put appropriate information in the way of the learner, and to arrange it in a form that maximises the learner's chance of understanding it. The other part, ignored in most current practice, is to promote the learner's ability to construct meaning" (p.160).

We saw in the previous section looking at Centre staff perceptions of the field course, that Centre tutors recognised these reflective and role-change benefits for teachers as a crucial aspect of what they are able to offer teachers from the course. The following extract from a teacher's diary, illustrates graphically the extent to which teachers value this aspect and mirror Centre staff views:

Sheila: "Nice to be back at Slapton again! Always a very hesitant period of anticipation - part dread (of cold, rain, snow, tiredness) and part elation (change from college routine - nice to get to know the students informally, nice to meet old acquaintances). This time I am thoroughly tired before I start - a very exhausting term so far, a continuous dose of 'flu and trying to slim for the Ethiopia appeal - I just don't feel like going to Slapton this year. But we have used Slapton in every lesson with the first year since September - "you will be seeing an example of this at Slapton" - "when you are up to your neck measuring the wetted perimeter" - "all this calculator work will stand you in good stead when you are at Slapton" - I would hate not to be here to see the reactions of my own students to the place and the work we do. Fieldwork made me into a geographer - how many of them will become geographers because of it?"

A good, easy journey down on the coach - but I dozed off with tiredness for most of the way. But the group at Slapton before dinner soon establishes its warm informality - plenty of laughs and I begin to feel elated by it all - the adrenalin starts to flow! By the middle of the evening lecture it's just as though we haven't been away for a year. It is just as important socially for us as a staff as it is for our students. We are fortunate to have such a happy group of staff in the geography department and we seem to revel in that fact more perhaps than we should - contrasts with other departmental relations at the College!"

MR/HVIC/diary.

7.33 Teacher Perceptions of the Field-Centre

The interviews with teachers and their 'field diaries' illuminate the importance of context in shaping their perceptions of the value of the field experience they provide to their pupils. Many of the points made above concerning teacher views about the role of fieldwork for pupil learning and for staff development and professional reflection, are not general points which could be transferred from one field-centre to another or even to the whole concept of fieldwork in geographical learning. Rather, they are comments addressed to the value of the experience which Slapton Ley Field Centre provides them and their pupils, and even more specifically, to the individual tutors at the Centre who teach the Centre's field courses. Ultimately, the experience that one group has of the Centre in one week will be a different learning experience from another in the next and may be subject to the serendipity of factors as simple as the weather. Yet, teachers make their first visit to the Centre because of a reputation within the teaching profession or make repeated visits with groups to the Centre because of the maintenance of high-quality learning experiences it provides their students and the historical precedent of that experience. When asking teachers to identify factors specific to the Centre which have influenced their choice, they refer to factors which are common across courses at the Centre and unrelated to particular individuals and particular teaching methods. Teachers hold a set of criteria which, when combined, establishes a standard for fieldwork and field teaching against which each course at Slapton is judged. It is these factors or set of criteria which are the subject of discussion in this section.

This section, however, does not explore a number of influential factors. For example, it does not explore the concept of ability to choose; many teachers may wish to take groups to a Field Studies Council Centre but financial constraints such as LEA grant-aid, school governors' policy on fieldwork, or more recently, government legislation restricting the ability to ask for parental financial support, may simply remove a teacher's option to make a choice. Neither does it explore the local school factors which influence when and how a field course may operate; a school or college who places the limitation of a field course only being allowed to take place during the vacations or that it must co-incide with other A-level out-of-school activities or second-year sixth mock examinations, limits the teachers' ability to select a learning experience which is geared only around the different learning needs of his/her students. The teacher is continually required to balance these two sides of the equation; the reinforcement in the field of one particular aspect of geographical theory or technique for one student may not be necessary for another, and both students' needs may be out of synchopation with the pattern demanded by the school. Burgess (1983) made the point in his study of Bishop McGregor secondary school that research studies in educational settings frequently overemphasise the ability of the teachers working within an institution to be autonomous in their decision-making.

Nevertheless, several aspects of the Centre and its geography courses reappear in teachers' statements. These can be summarised:

- local climate
- varied local environments
- high quality field sites and field equipment
- staff local knowledge
- staff enthusiasm
- staff field teaching expertise
- staff flexibility
- staff and Centre links with geographical research in higher education
- long-term monitoring data

- reputation

I have grouped these factors into three themes which will be explored below, namely: physical, teaching, and research.

(a) Physical factors influencing teacher perceptions

The reader is referred to section 6.3 of this thesis for a description of the quality and variety of environmental sites readily accessible to groups visiting the Centre for fieldwork and to extracts from HMI's report on the Centre (1983) which summarised the range of ecological habitats and sites of scientific interest available for field investigations - the report described the choice of the location of the Field Centre as "inspired".

Geography teachers visiting the Centre clearly place high value on the ability to access a rich and diverse local environment for a number of geography related themes relevant to the A-level syllabus. Acidic moorland, pasture, deciduous woodland, depositional and erosional coastline environments, fresh-water marine, dune systems, and contrasting local catchments provide opportunities for biogeography, geomorphology and hydrology related fieldwork. For human geography, rural settlements show the conflicting demands on the area that effect the local working population, the social and educational services they require, and their disparate economic activities; the seasonal migration of visitors for tourism, the effect of local authority housing policy and the high proportion of retirement homes on rented accomodation and housing prices, the changing face of the agricultural landscape, and the dominance of service industries in the local economy, are some of the themes which can be explored within the environs of the Centre. The urban landscapes of the cities Exeter and Plymouth are within reach of the Centre for a day's

fieldwork but teachers note the cost-distance variable in terms of available time for adequate fieldwork and follow-up. Local sites such as the ruined village of South Hallsands and Torcross illustrate the long-term effects of adjustments to natural systems, and the periodic efforts to protect settlements and livelihoods from the sea offer teaching opportunities to show the complexity of interaction between people and their environment.

The quality and range of the physical environment in conjunction with the historical nature of course development, and the demand from schools located in urban catchments for physical geography fieldwork has skewed the distribution of themes covered on the field course towards physical geography.

In addition, it is important to stress that those teachers restricted to conducting fieldwork at particular times of the school calendar do regard the availability of sites in the early Spring or late Autumn as significant in their choice of Centre. During my research at Slapton, conducted at different periods in 1985 and 1986, only two days fieldwork were substantially affected by weather conditions when access to Dartmoor or to the coast was prevented by snow and high winds.

Teachers also acknowledge that the level of equipment resourcing in the Centre is a major contribution to their reason for visiting Slapton for a field course. Portable field equipment such as flow-meters and surveying equipment, permanent site equipment such as V-notch weirs, a weather station and water quality monitoring equipment, and data analysis hardware and software permanently set-up for the analysis of field samples and data-sets, are three areas of resourcing mentioned by teachers as

particularly valuable. Teachers make it plain, as we saw in an earlier interview, that the resource per head of school population available to a Head of Department would not be sufficient to purchase similar sets of field equipment and the frequency with which it would be used means that even if higher levels of resourcing were available, field equipment would come low down on their list of priorities.

One teacher summarises the physical attributes of the Centre in these terms:

Steve: "...In the first instance it was recognised that if we were going to do it [fieldwork] we might as well do it properly, and also to a certain extent to take the work load off ourselves - in the sense that you are teaching all term and if these things have to be run in the holidays (and that means that you are basically losing a week and when you work out the preparation time you're talking about losing maybe two weeks of your holiday) - so why not go to a place or somewhere or an organisation which has this already set-up. Therefore, you end up with the FSC and well, where do you go? Well, Slapton's always had a pretty good reputation, in terms of the variety of environments that you have got. You've got the coastal stuff, Dartmoor, rivers and that sort of thing and certainly all the instrumentation and the sort of the results that they have got down here, and which are more sophisticated and which have been worked up over a much longer period of time, than most of the other centres, I think. It's well respected. Plus, it's always been a very go-ahead and very thriving place and everyone has always been very keen - it's got a good reputation."
BG/HS/int.

(b) Field teaching and the field-tutor: teachers perceptions

I shall examine in detail aspects of the teaching by Centre tutors in Chapter 8 when the focus moves to the practice of different teaching styles at the Centre and their outcome for pupil learning. Meanwhile, it is worth introducing the notion here of the characteristics of the field-tutor as perceived by visiting teachers. During the research at the Centre it became clear that teachers held very clear views about what they were looking for in the teaching of their field course; perceptions of the

field-tutor that were orientated around intellectual calibre, subject knowledge, knowledge of field techniques, local knowledge of places and environments, enthusiasm for subject, and flexibility in meeting visiting teachers demands. The comments made by teachers visiting the Centre establish a set of characteristics for the field-tutor which, in turn, constructs a role-model for the field-tutor; a role-model which is an important part of the criteria teachers use to judge the quality of the field course offered at Slapton. Central to these characteristics were the concepts of expertise, professionalism and enthusiasm.

These three concepts were used holistically by teachers to define the field-tutor and to help justify their decision to take students to a centre-led residential field course, for, they argued, the combined effect of expertise, professionalism and enthusiasm for the pupils was to bring the subject 'alive' and to show that learning could be fun as well as intellectually rewarding. Pre-eminent in the teacher's perception of the role of the field-tutor was to provide a stimulus for learning by shaping pupils attitudes positively towards the concept of learning geography - to promote affective learning by shaping self-image and confidence in a challenging situation. The cognitive aspects of the field tutor's role of being a supporter in the learning process and assisting the pupil to establish meaning out of context were not subordinate to the affective benefits of the learning experience, rather teachers viewed the field-tutor's role in cognitive development as a stepping-stone in providing positive attitudinal change in pupils.

The following three extracts exemplify the teacher's concept of the field tutor as expert, professional and enthusiast:

Sheila: "...The advantage from our point of view is that we aren't

teaching it. People from outside are, who are specialists in their field, to whom the children can relate because they are young enough and the staff there are all young, and yet they are intellectual - they are excited and enthused by what they are doing otherwise they wouldn't be at Slapton and they give...the students can suddenly see that academic work is tremendously exciting. That you can get all sorts of wonderful experiences out of it. It's not just school at a higher level. It's very different and here are people who are terribly enthusiastic about what they are doing, and I think that that's all important. I would never want to take a field party away to a non-teaching centre because I think that in the long run that is the most valuable aspect of the course. They are meeting people different from ourselves, totally motivated, thoroughly involved in what they are doing, practising what they preach as it were."

MR/HVIC/post-fw int.

Anthony: "...it's part revision for some groups and some of it will be brand new. So they see some of the same work from a different viewpoint, and a new introduction to some work as well. So hopefully it will be a very stimulating week. It's very hard work but they don't seem to notice the fact that they are doing an awful lot of work. Somehow they get the work done and somehow seem to enjoy themselves. That I think is a tribute to the enthusiasm that a full time professional fieldwork geographer can convey because even if I had managed to put it all together; to take my staff away and ask them to contribute in the form of a day would be fairly difficult for them, and I don't think that you would generate the enthusiasm.

Researcher: Enthusiasm from the staff...?

Particularly from the student. I think that if I had said "right, get in the river...", there might not have been the same response as when Rob said "Come on in, who's coming across to do the wetted perimeter with me?" and it's that sort of relationship which they so quickly build up. I mentioned the problem of age range, but here they can come and be taught by, in the case of Rob, someone who's much younger than we are. David is a bit older but his approach is still that of a young enthusiast and that I think is something which is the right sort of fillip at the right sort of moment.

MG/HVIC/int.

Tim: "Well, we come here mainly because of the teaching, because we get a really enthusiastically taught course which is... well, that's the crucial thing [...] not just their enthusiasm but their intellectual calibre as well. They are well-versed and up-to-date, and also they are flexible, because they don't say "this is the course and this is what happens" and they'll listen to the students and take their views. If they need to do their ideas differently then they can, which comes from experience, I think, so it's experienced staff as well. I think also that the sense of humour of the staff is a crucial bit and that's very nice for staff to visit the Centre and have someone else do it - especially if they are good. I mean not only is it a rest but it's very invigorating..."

MH/HVIC/int.

In concluding this section of teacher's perceptions of the characteristics and role of the field tutor, the interviews reveal some interesting issues which need to be explored further when we examine teaching strategies in more detail. First, is the need to consider the teaching at the Centre within the novelty of the learning context - "it's not just school at a higher level. It's very different..." To what extent do the teaching strategies used at the Centre contribute to creating this novel learning context? Is the novelty of the learning situation created by other, more powerful, factors, such as the intensity and the challenge of the learning experience, or the result of new social relations accompanying the learning event? Second, what is the meaning behind the teachers' conjunction of experience with youthful enthusiasm? The ability to be adaptive and flexible in teaching to suit the needs of both students and visiting teachers is regarded as an important professional characteristic of the field-tutor which teachers suggest is the result of teaching experience. But at the same time teachers argue they value the youthful enthusiasm of the teaching at the Centre. What is the "approach of the young enthusiast" in an "experienced" field-tutor?

(c) Research at the field-centre: teachers perceptions

Teachers frequently mention the importance for their pupils of taking them to a Centre with well-established research links with geography in higher education. Teachers claim that recognition by A-level students of the Centre's involvement in research projects is in itself a motivational factor and a stimulant to learning since it is further demonstration of the application and testing of geographical theory in practice and an enhancement of the student's concept of the professional geographer:-

fieldwork is what geographers do:

Anthony: "The thing is that Slapton is very active with research and it has this very long-standing link with Sheffield University in fluvial geomorphology. Here you are very much in the forefront of what is going on now in geographical research - hydrology and so on and you're right in the thick of it. And that comes over to the kids because there are people who are actually working in there, and they are trying to produce some new idea or to work on an idea and refine it, so that in five years time they can read in the textbooks and say "Oh yeah, I remember him!" - that's good as well."

MG/HVIC/int.

The interaction between Centre staff and staff in higher education operates in a variety of ways. As well as teaching A-level geography courses, David and Rob teach components of undergraduate field courses. Polytechnic and university geography or environmental science departments would bring student groups to the Centre for their fieldwork, to use the high-quality laboratory and computer facilities, field and experimental equipment, long-term data banks, and field monitoring sites. David and Rob's local expertise would be called on to advise such visiting groups on site quality, location, and access, and equipment availability. Or, in some cases, to teach one or two 'centre-led' days in their overall weekly field programme. These polytechnic and university courses were regarded by David and Rob as valuable opportunities to keep track of developments in the subject at higher education level, and to exchange views and ideas on the research work being conducted at the Centre. Several of the polytechnic and university staff who brought their students regularly to the Centre had close associations with the Centre and the FSC; either from teaching at the Centre in previous years, or from using the Centre and its surrounding sites for their own research work. Many have become closely involved with the overall management and running of the FSC by being invited to work on the Executive Committee which is ultimately responsible for the FSC's policy and the organisation's welfare. Their input into the work of the

Centre meant that Slapton was host to doctoral and post-doctoral geographical research during my period of fieldwork, and the research students' supervisors regularly visited the Centre to keep an up-date on the geographical research in progress.

The close liaison between the Centre and institutions like Exeter University, Plymouth Polytechnic, Huddersfield Polytechnic, Sheffield University and Oxford University were regarded by Centre staff as providing valuable spin-offs for the A-level work done at the Centre: through the provision of long-term data records which could be incorporated into the day to day teaching, provision of expensive monitoring equipment which the FSC's equipment budget could not afford, and through the establishment of useful sixth form/university links which were utilized in promoting the work of the Centre and the FSC. David describes the value of incorporating research data into his day to day teaching:

David: "There are university and polys which use the Centre and they bring their groups here, not as many as I would like. There are university and poly students who are doing research at the Centre so they are providing an input. An example would be that on the Schools' Council 16-19 course that I was running last week, I was referring to ideas that Brian [a post-doctoral researcher working at the Centre] had discovered two weeks previously, for his nitrate work. You can't really hope for a more immediate input than that because they are things that he hasn't even had time to get written-up and published. So, I think that the research can be pretty important from that point of view. The kids are interested when you talk about a piece of research that's going on at that moment and they are made aware of some of the findings, very quickly often, after they have been discovered."

DJ/SLFC/int.

Another example of this liaison between Centre teaching staff and higher education, would be articles written by academic geographers about the work of the FSC in geographical journals such as *Teaching Geography* (eg Trudgill, 1983), and more recently by geographers using the Centre, and Centre staff, in a series of feature articles and the 'practical geography'

section of the journal 'Geography Review'. This liaison also had a more direct impact on the A-level students studying geography at the Centre, through the write-up of research results by academic geographers in the FSC's journal 'Field Studies'. Articles that have particular bearing on the content taught at FSC centres are reprinted by the organisation and sold at the FSC centres as a supplement to the students' own field notes and results.

Teachers perceptions of the value of applying research data to topics in the A-level covered by the field course mirror Centre staff views. Steve describes it in these terms:

"Yes, I think that that's one of the good things about it really, in that you've got people actively doing research down here who pop in from time to time or who are here for periods of time and they get data banks and whatever. People like Dave and Rob recognise that these have reasonable implications from an A-level point of view, and that applies to equipment and data and so on. From that point of view the days have become tighter from a scientific base than when I first came down, - the 'rural settlement' has also been developed quite a bit - the stuff we did yesterday - the central place theory."

BG/HS/int.

7.3 Summary

In this section, I have attempted to illustrate through extracts from interviews with teachers and from their 'field diaries' the aims and purposes of fieldwork at Slapton Ley Field Centre from the perspective of visiting teachers. I have cited some comparative evidence from other studies which suggest that the group of teachers using a field-studies centre are numerically an important group within the overall pattern of fieldwork provided to A-level geography students. But I have warned the reader that the perceptions of teachers included in this research are

contextually bound to the case-study. Many of the attributes teachers see in the field course are attributes which are specific to Slapton and its geography field course. Teachers blur the distinction between the general efficacy of fieldwork to their pupils's learning and the specific contribution which the Slapton course makes to their own pattern of A-level teaching. Nevertheless, their views do have implications which beg comparison to other field centres, both LEA controlled and those run by charitable or private organisations like the Field Studies Council. Such comparison is beyond the remit of this study, but some of the issues which could be analysed in further comparative research are summarised here.

Teachers regard the contribution that fieldwork can make to pupil learning in both cognitive and affective terms, although they justify fieldwork to a range of audiences largely in terms of the cognitive benefits for pupils. But these two components of a pupil's intellectual and personal and social development are seen as an inseparable and unified product resulting from the novelty of the whole learning experience that the Centre provides. The contrast of this experience to classroom learning is regarded by teachers as essential in stimulating pupils' initial interest in the subject of geography and maintaining their interest during the two year course. Conversely, the novelty of the experience is recognised by some teachers as having a negative and de-motivating effect in some pupils. However, like Centre staff, visiting teachers consciously develop strategies to manipulate the aspect of contrast to reinforce the novelty of the fieldwork experience for their pupils and to trigger in pupils' memories events that took place during the fieldwork. Implicit in their rationale is the educational assumption that a novel learning environment promotes motivation to learn in the majority of pupils which, in turn, promotes understanding.

In the cognitive domain, teachers perceive that fieldwork has a exemplifying role in the illustration and qualification of geographical theory. But teachers are less certain of the respective relational functions of fieldwork and classwork in this process or of the link which joins real-world examples to conceptual understanding. Teachers are more definite in their assumption that fieldwork supplies pupils with an understanding of the way to approach fieldwork in their projects or individual studies and provides a specific knowledge of field techniques which can be used in their own investigations.

In the affective domain, teachers look again to the novelty of the experience to argue that pupils benefit from new social interaction arising from mixed-group, mixed-school and mixed-sex fieldwork. In addition, the social unfamiliarity of the learning context and the highly focused and intense nature of the field course is regarded as providing a base-line of equality of experience for the pupils which contributes to removing from the learning experience the prejudices and biases built up in the daily patterns and sub-cultures of school-life. These factors assist in separating the social organisation of learning at the field centre from that of the school or College in the memories of pupils and staff.

In the research literature examining the educational efficacy of fieldwork (Chapter 4) little has been written analysing the value of the field course for the participant teachers. The interviews with teachers in this study reveal the ways in which fieldwork contributes to their own professional well-being. The effect of removing the direct responsibility for teaching students on the course and the novelty of the learning experience for the pupils creates a new set of teacher/pupil relations. Teachers are able to

use the opportunity to reflect on the learning progress of their pupils and to observe their social and personality development - "you get to know their strengths and weaknesses more ...than you could do in a whole year of school." In addition, teachers use the experience to reflect on their own attitudes to teaching and for their own professional motivation towards the subject of geography.

Finally, teachers identify particular attributes of the Centre which impinge on their perceptions of the value of fieldwork to their pupils and to themselves. These were defined as the importance of access to a wide variety of environments and sites relevant to the topics in the A-level syllabus; the role of the field-tutor as expert, professional and enthusiast; and the contribution that research studies and links with geography in higher education could make to the field course.

The focus of attention now moves to the students to see in what terms they describe the aims and purpose of fieldwork.

7.4 Students' initial perceptions of Slapton Ley Field Centre and their expectations for the course

Data in this section is drawn from the 'field diaries' of eighty-two students who made an entry each evening during the week's residential field course at Slapton Ley Field Centre. In requesting the students to complete diaries on their arrival at the Centre, the research did not begin by asking students to synthesise their views on the aims and purposes of fieldwork; a theme which had been explored at interview with FSC managers, Centre staff and visiting teachers. Rather, it was hoped that the diaries would capture the students' subjective and immediate response to their experience of the whole course without the research 'steering' them to the agenda for enquiry. As a result, the pupils' entries into their diaries on the first evening at the Centre were a collection of reflections on their initial perceptions of the Centre and their expectations and aspirations for the week ahead.

The total sample of students were drawn from three separate Centre-led geography A-level field courses over a three month period from February-April 1985. Students attending these three courses were from six different schools: four state funded (two mixed 11-18 comprehensives, one from the metropolitan borough of Doncaster and one from Essex LEA; an all-girls grammar school in Lancashire; and a sixth-form college from the Welsh Borders) and two independent privately funded schools (an all-boys school in South London and a mixed-sex independent in Dorset). Two schools were visiting the Centre for the first time and four schools had used the Centre regularly for fieldwork in previous years. Two of the six schools were sending students unaccompanied to the Centre. A total of eight staff accompanied the remaining four schools. All students were intending to

take the A-level geography examination (London 210; JMB syllabus B; Cambridge 9050) and all but four students were in their lower-sixth year i.e. aged 17.

The diaries of students show, almost without exception, that students are apprehensive about the field course; an apprehension stemming largely from the fact that it is an unknown quantity. During my research no students had visited the Centre before the field course and many had not done any fieldwork before the course. Students refer to their apprehension resulting from their unfamiliarity with the field course and the Centre in three ways.

First, students hold an apprehension of expectancy and excitement. They regard the week prospectively as a physically and mentally tiring experience but one which is also likely to be intellectually and personally challenging and rewarding. Students make reference to the intensity of the learning experience - the 'hard-work' they anticipate in the field course and to the challenge of undertaking fieldwork in unusual environments. The origin of their perceptions of what the Centre will be like, what the course will contain, and how they will be expected to work, is the folk-lore generated by the upper-sixth students in their school - the inherited "fishing stories" recounted in the school after the field course - or is the result of information given to students before the course by their teachers. Both peer group comments and staff information prior to the course establish a mythology for the course as a whole and for particular events which the course contains, which serves to strengthen the separation of the field course from the pattern of school life. Particular events, such as students having to immerse themselves in rivers and streams as part of the fieldwork, are referred to by students as part of the

folk-lore surrounding the course. Indeed, much of the mythology of the course is based around 'the rivers day'; a topic normally covered during the week, which the Slapton staff refer to as 'fluvial geomorphology' and in the course description as 'stream channel processes'. At three different sites on Dartmoor, students are required to step into streams of increasing stream order to measure characteristics of the stream such as water velocity and cross-sectional parameters in order to produce data which assesses the relationship of energy budgets in streams to channel form. The Davisian model emphasising the importance of gradient in determining stream velocity is tested and the empirical data from the field is used to consider the concept of dynamic equilibrium in different stream orders. The mythology that surrounds the rivers day is, to some extent, a definition of fieldwork in the student's mind; it symbolises activity, the out of doors, the challenge, and perhaps as we shall see later in this section, a lack of clarity of purpose.

The interviews with teachers reveal that teaching staff actively reinforce the mythology surrounding events such as 'the rivers day' prior to the field course:

Researcher: I was just wondering whether you had found yourself talking about the forth coming visit to Slapton with either of the groups...?

Bob: "Yes, I find that I pre-empt the fieldwork quite a bit. We are just doing streams at the moment and I get them going a bit... I tell them that they'll be up to their necks in water, and this kind of thing, and get them keyed-up for Slapton!"

TM/HVIC/post-fw sch int.

The apprehension of students that results from teacher and peer-group folk-lore of the field course is expressed by almost all the students in their first diary entry, although on arrival at the Centre their first reactions differ. For some students their initial perceptions support

their prior concerns, for others, the 'relaxed' atmosphere, the standard of teaching and residential accomodation and the introduction to the course on the first evening ameliorate their apprehension about the week ahead:

John: "A little apprehensive about the field course; for rumours spreading from the group who came last year surely couldn't be true. Could they?"

JB/MEX/diary

Simon: "Arrived in the early evening after a very long laborious journey. Settled into our rooms which were alright. We had been told a lot about Slapton by friends who had been here before and I was consequently a little apprehensive, especially about the dreaded 'wetted perimeter'."

SW/DFS/diary

Andrew: "I didn't know quite what to expect on this field trip. People at school gave the impression it would be one long hard slog, but having arrived, had a look around and met some of the staff and students, I was pleasantly surprised. The outline of the week's events seemed fairly straight forward and possibly quite enjoyable."

AJ/DFS/diary

Daniel: "Arrived feeling tired, bored of travelling and wondering why we were here. The general feeling was one of apprehension and this was not helped by first impressions. The accomodation was basic but comfortable, better than we had expected from what we were told by last year's group. The food was quite good. The lectures did little to help the group feeling that the week was not going to be a lot of fun. It sounded like hard work and if the weather continued, the week was going to be a horrible experience."

DW/DFS/diary

Etholle: "My first impressions were: the Centre seemed pleasantly welcoming, the picture we had been given was very bleak but things were looking good - the room was comfortable (but chilly!) and the food was excellent. The tutors seemed very friendly and approachable. I believe the feeling amongst my group was that the work etc was something to look forward to."

EW/DFS/diary

Sally: "When I got here on Friday I must admit I was really quite impressed with the Field Centre itself. The accomodation was much better than I'd anticipated - a bit like a boarding house in Southend! I'd been told about the workload before I came and it sounded really daunting but as soon as I got into the first session on the Friday night these fears disappeared. The work and the subjects being covered really did sound interesting - but then geography is my best subject."

SW/DFS/diary

Some female students were apprehensive about the 'masculinity' and 'macho-image' of the course. The prospect provided by the mythology of fieldwork as symbolized by the physical challenge of 'man' battling against the elements of nature in search of data (see also Goudie, 1990) was daunting for some students. For some young women, such as Sally, the perception of a male-orientation of the course and of geography as a subject meant that she responded by being the first to volunteer to take readings in the river - the icon of fieldwork and geography as a male-orientated subject was one to be broken. In this context, it is also interesting to note her use of the term 'instructor' to define the Centre tutor's role:

"When we were actually at the river it started hailing when we were measuring. I remember thinking that I don't believe I'm standing here in driving hail measuring depths. I must be completely mad. I volunteered to go in the water to measure 20 readings. I'm sure the instructor was surprised that a girl should volunteer. It's sexist! But then geography is a boys subject. But I'm out to prove them wrong!"

SW/DFS/diary

Second, students were apprehensive of the new social relations that would exist by working and living in mixed-school groups during the field course. We shall examine, in detail, the significance for student learning of a novel social context later in this chapter. Meanwhile, we can note that the students' diaries reveal how important the social context is for the learning of 17 and 18 year-olds; their awareness of social relations between individuals and between groups or cliques (Dunphy, 1963), the sub-cultures within each group, and their self-consciousness during social interaction (Damon, 1983). The level of awareness of these sub-cultures amongst peers is an important indicator that students seek to establish a self-identity and a group-identity in new social settings. For example,

the students attending one of the field courses from an independent school were particularly apprehensive of having to meet and work with students from two 11-18 comprehensive schools because they felt initially that their public school education would segregate them from their peers and they would become marginalised from the rest of the group. Their apprehension stemmed from their perception of their differing sub-culture which they feared would disassociate them from the crowd in a new learning context.

"Alex: Arrived Friday. Usual uncomfortable feeling of meeting new people. I was pleased to be put into a form with the other [Waverley] blokes - a great weight off my mind. I think we all feel [Waverley] a little uncomfortable due to the differences in background between us and the other parties, some seemed to want to brand us immediately as Sloanes! I hope we don't give that arrogant impression. Saturday, we talked to some nice people, started to feel more at home..."

AT/WT/diary

Robert: "Most of the other students and teachers seem to be O.K. though it is bound to be very cliquey and I feel conscious of not having been state educated. I think we all felt embarrassed this morning when the four of us from [Waverley] seemed to be the only people answering the questions in class."

RH/WT/diary

Becca: "My view on the grouping system is mixed - obviously I would rather have been in a group with everyone I knew i.e. just [Waverley], but I suppose from mixing purposes it was best to split us up. However, I think I'd have died if I'd been with 3 people I didn't know, and the 'polite conversation' which would have occurred would definitely have made me more self-conscious if I didn't understand something and I wouldn't have enjoyed doing the experiments in groups much. Happy medium is definitely to put people with 1 person they do know and 2 they don't."

RBB/WT/diary

Third and finally, students were apprehensive about their ability to cope intellectually with the fieldwork and the relevance of the experience to their A-level course:

Sarah: "I was dreading the work on this field course, not the actual trip, because not having studied Geography at O-level I thought I'd be at a loss but, if today is anything to go by, I should be O.K."

SP/HVIC/diary

The concept of time is repeatedly referred to by students. Many students make reference in their diaries to the amount of time spent doing an activity in the field or the amount of time 'wasted' on a mini-bus or in a laboratory; students appear to maintain a mental cost-benefit analysis of the learning experience against a criteria of relevance to their A-level course and, more particularly, the final examination. Activities or content which is thought to deviate from the objective of the A-level examination is of questionable value. The diaries reveal the perceived significance of the A-level to the students:

"Karen: "The Centre and the course seems very impressive and very well organised. The actual fieldwork done so far was exciting compared to the normal routine life led at school as far as geography goes. However, at the moment I cannot grasp what conclusions we are trying to come to as regards rivers and how it will actually help in writing good 'A'level answers, which at the moment is my prime concern, as my career depends on these exams in June."

KJ/MEX/diary

Richard: "We concluded last night's work after breakfast. Good to be able to relate Central Place Theory with actual examples. Who cares? A good question which I thought about for the first time today and decided that it was good to learn about things for general knowledge and therefore not get worried by people who hassle you for working till 1am doing extra notes.

Talking of which... biogeography today, something which isn't even on the syllabus. Posed two questions here: Why should I do this? And why should I have to write the notes up neatly, even though it isn't included in the A-level. Argued about this and decided that:

- 1) it's good to have this idea straight as it may be useful when looking at other things;
- 2) even though this won't be marked, I may be able to use the work in examples in questions. Also it trains the old brain cell into thinking hard and presenting information neatly."

RD/DFS/diary

7.4 Summary

Students' expectations of the course and their initial reactions to the Centre are dominated by a pre-course apprehension of the intellectual and physical challenge of the week ahead. The course is perceived as likely to be arduous as well as exciting and fun in the field, and taxing in the classroom because of the expectancy of working long hours. These perceptions are the result of a mythology developed around the field course and particular events within the course such as the 'rivers day'. The mythology is created by the folk-lore of tales from other groups in the school and from the strategies adopted by their teachers. In addition, students are apprehensive of the change in social relations that will be required by working in new social groups. They identify that the social context of learning during the field course is a critical factor in determining their affective response to the learning experience and thereby, the value they place upon it. Finally, students express apprehension about the relevance of the field course to their A-level examination. The time expended on the course, rather than its monetary cost, is perceived as an investment which demands a return. The educational return expected is based on the utilitarian value placed on fieldwork's benefit to the A-level examination. Few students refer to an expectancy of longer-term benefits such as a development of geographical understanding for an appreciation of the surrounding physical and human landscape, or the learning of new skills. No students refer to an expectancy of changes in personal values, attitudes or beliefs resulting from the field course.

In Chapter 7, the aims and purposes of undertaking fieldwork at Slapton have been examined from the perspectives of the three participant groups: Centre staff, visiting teachers, and students. In Chapter 8, attention is directed towards an analysis of the learning process experienced at the Centre and the learning outcomes which resulted from that process.

CHAPTER 8

PROCESS AND OUTCOMES

8.1 Introduction

In Chapter 8, attention shifts from the prior perceptions of the role and value of fieldwork in geographical learning of the various participants involved in the study, and focusses on the practice of fieldwork and the field course at Slapton Ley Field Centre and the outcomes for pupil learning resulting from the experience. I attempt to explore in detail four themes which have emerged from the interviews and diaries of Centre staff, teachers and students, and which have been the subject of 'progressive focussing' during participant observation at the Centre and in post-fieldwork follow-up at a school. The four themes examined in this chapter are:

- Fieldwork and pupils' learning of skills;
- Fieldwork and pupils' affective learning;
- Learning transfer from fieldwork to school: fieldwork and the exemplification of theory;
- Fieldwork and environmental education.

The data presented in this section that explores these four themes is also examined in the context of the considerations of fieldwork's role in geography in Chapter 3 and research evidence investigating fieldwork's educational efficacy in Chapter 4. The investigation of these themes leads the thesis to a conclusion in Chapter 9 which seeks to draw the themes together in a discussion; to outline some implications for the practice of teaching geography through fieldwork; and to make suggestions for further research.

First, however, a methodological note is required to consider what is meant by progressive focussing and its use in this study.

Progressive focussing on emergent themes or issues is a characteristic of much case-study and ethnographic research in educational settings.

Hammersley and Atkinson (1983) argue that progressive focussing has two distinct components in the analysis of qualitative research data. First, they claim that "over time the research problem is developed or transformed, and eventually its scope is clarified and delimited and its internal structure explored" (p.175). In this way, the research problem becomes progressively redefined and may emerge having concentrated on issues remote from the initial research problem or the starting point for the investigation. It holds the attraction of allowing categories of analysis to emerge from the data; reducing the chance of the data being divorced from its empirical reference and increasing the chance that theoretical abstractions will be relevant to the participants in the research. Hammersley and Atkinson's second characteristic of progressive focussing refers to a "gradual shift from a concern with describing social events and processes to developing and testing explanations" (p.175). Some researchers such as Glaser and Strauss (1967) and Glaser (1978) have developed this component of the concept of progressive focussing and have established a constant comparative method to analyse categories for their data and to generate from these categories substantive grounded theory or formal abstract theory (Burgess, 1984a). Bulmer (1979) has criticised a central tenet of Glaser and Strauss's grounded theory on the grounds that the researcher in practice may not be able to avoid regarding data from the perspectives and insights provided by previous research, and some authors (for example, Delamont, 1981; and Hammersley, 1985b) have extended this criticism to suggest that the demand for understanding of social events and

behaviour only in terms of specific milieu being investigated has inhibited qualitative research from developing adequate theoretical explanation.

Bryman (1988) sums up the debate by saying:

"Thus, while there is a groundswell of opinion which favours a growing sensitivity to theoretical issues in qualitative research, the tension of such a standpoint in juxtaposition with the preoccupations with the unadulterated exploration of participants' views of the social world is very evident." (p.87)

This study has been sensitive to the need to bring to the surface the presuppositions and beliefs which have informed the research (Chapter 2). But it has also attempted to use the results of research investigating the role and value of fieldwork in geography (Chapter 3) and studies analysing the educational efficacy of fieldwork (Chapter 4) to present a series of arguments, hypotheses, and contradictions which can be used to inform the analysis of the case-study data. This is not to deny the importance of revealing and seeking to understand the issues which participants in the case-study regard as of importance within the contextual confines of Slapton Ley Field Centre. Rather, the intention is to utilise the two in a symbiotic relationship of explanation and understanding.

8.2 Fieldwork and Pupils' Learning of Skills

Chapter 7 of this case-study has shown that the field course at Slapton aims to, inter alia, (a) teach pupils, through first-hand experience, how to approach, structure and implement a geographical investigation and, (b) provide pupils, through first-hand experience, with a knowledge of specific methods and techniques which can be used in geographical investigations to collect data in the field or from other primary data sources, to analyse the data, and to appropriately present the results and findings of the investigation. The Centre tutors and visiting teachers refer to these aims as a central aspect of learning geography through fieldwork, although in their diaries the pupils do not, at the outset of the course, specify this an outcome which they expect the field course to provide.

Central to these two skill-based elements in the aims of the course at Slapton is the concept of hypothesis-testing. In Chapter 3, I considered the roots to the hypothesis-testing approach to fieldwork. A brief outline is provided here to revise the main characteristics. Derived from the methodological changes taking place in geography in higher education in the 1960s and the ascendancy of positivism, hypothesis-testing was considered to be a central component of the new 'scientific' approach to fieldwork known as field-research. In this, it was thought that pupils would follow the same procedures being used in higher education to develop new theory. Pupils would test the hypotheses that underpinned the models being developed by geographers to explain geographical spatial distributions against that which existed in the real world. The educational rationale for pupils following this approach was that by following a clear procedure of inquiry aimed at relating geographical theories to the real-world, theory would become more exciting and rewarding and be more understandable.

The by-product would be a knowledge of techniques of data collection, analysis, and presentation.

Field-research and hypothesis-testing was also an attempt to bring geography into line with the developments occurring in science education. Close parallels exist between the educational purpose of adopting a field-research approach in geography and those being advocated by science educationalists in the 1960s and 1970s, although as we have seen in Chapter 3, the impetus behind changes in fieldwork in geography was from the methodological and philosophical shifts occurring in geography in higher education. Atkinson and Delamont (1976) describe the trend in the 1960s and 1970s to move science curricula towards the principle of guided-discovery, in which the role of the teacher was to become less of an authority figure imparting knowledge to pupils and more of a resource from which information could be retrieved by pupils. The learner's role was to become more involved in the discovery of phenomena by conducting experiments, analysing results and drawing conclusions. These new approaches manifest in Science Teacher Education Project (1974) and in Nuffield Science were, according to Atkinson and Delamont, attempting to involve pupils more in the process of being scientists by stressing "pupils' engagement in 'real' experimentation and 'real' discovery, rather than the empty, unrealistic recapitulation of classic demonstrations." (p.133). The engagement of pupils in practical work was central to this process of making phenomena more real to pupils through actual experience because it brought pupils into contact with equipment and processes and gave them experience of the ways in which scientific knowledge was acquired.

We can see how aspects of this argument mirror those being presented by

Centre staff and teachers as the aim of fieldwork at the Centre. Staff and teachers argue that fieldwork enables the teacher to adopt a more resource-based role, and by engaging in fieldwork pupils discover the process of being a geographer, the means by which geographical theory is developed, and the techniques associated with the process of geographical inquiry.

The extent to which these objectives were realised in practice is revealed by participant observation and the students' diaries. At Slapton Ley Field Centre the starting point of many field investigations was the principle of collecting data in the field to explore the validity of a geographical theory or model. At the beginning of the course, Centre staff would introduce the geographical topics which would be covered in the week. During the introduction staff would occasionally refer to field research or hypothesis-testing as the means by which the topics would be explored. Sometimes, this would be reinforced by staff drawing a diagram that summarised the structure: 'observation - hypothesis-formation - collection of data - analysis of results - acceptance or rejection of hypotheses'. On other occasions, Centre tutors would introduce the idea of field research and hypothesis-testing more informally:

"...we'll set off with nice fixed ideas and we'll decide whether they're right or wrong - and once you've done the thinking to start with, that makes your life an awful lot easier. You can put things forward called 'hypotheses' and you can go out and say "was it right or was it wrong?" And we can have the satisfaction of saying "yes it was or no it wasn't, and did we want it to be anyway?"

(RL/SLFC/extract from transcript of 'Introduction to the Field Course')

The adherence to this procedure of inquiry was more evident on some days during the field course than others; the fluvial geomorphology day, small catchment hydrology, coastline of deposition, and the rural settlements day

would invariably follow an hypothesis-testing approach. A typical pattern to these days would be an introduction to the theme of the day's investigation in the morning, during which hypotheses for investigation would be constructed, usually in one of the Centre's teaching laboratories. The introduction would be followed by work in the field and follow-up work in the lab. conducting experiments on samples from the field or sorting data. The evening was spent synthesising and collating data from the various field groups and subjecting data to statistical tests. A conclusion, usually in the first part of the next morning, analysed the data and decided whether the original hypotheses could be rejected or accepted.

The ways in which these elements of hypothesis-testing at Slapton Ley Field Centre (constructing hypotheses, collecting data, and processing and interpreting the results) contribute to pupil learning of general and subject-based skills are considered next.

8.21 In the Classroom: Constructing Hypotheses

The following is an observation of an introduction to a topic referred to in the course description as 'Small Catchment Hydrology'. The aims of this day in the field course are outlined in the 1989 course description as:

"The aim of the hydrological fieldwork is to attempt explanations of spatial variations in runoff between catchments with different characteristics, as well as to consider temporal variations of runoff response for different storm events within a single catchment. Initial discussion will focus on the different pathways whereby water may be transferred from the slopes of a catchment to the channel, and the different delays and the amounts of storage associated with each runoff process. The role of infiltration will be considered in relation to the control it exerts over the relative amounts of the

rapid surface and slower sub-surface flow generated. Fieldwork will cover techniques of hydrological measurement, including different types of raingauges, "V" notch weirs and stage recorders, soil tensiometers, throughflow troughs, and infiltration measurement. A major theme will be to compare two local instrumented catchments with very different runoff responses and to consider the effects of their different land uses on infiltration rates in order to account for the contrasting hydrological responses. Analysis of different storm hydrographs from different times of the year will be undertaken to assess the role of antecedent moisture conditions in determining the amount of quickflow after rainfall"

(extract from course description: Geography at Slapton Ley Field Centre)

The group consists of 20 students from two schools: 8 male students from an independent school in South London which I shall call 'Thameside School' and 12 female students from a all-girls state grammar school in Lancashire with the pseudonym 'Milby Grammar School'. David is the member of the Centre's staff leading the course. The visiting member of staff accompanying the students from Thameside was not present at the introduction.

9.05am David enters Lab 3 armed with a pile of handouts and a steaming mug of coffee, together with the students who filter into the Lab in ones and twos. Although the students have met their new companions and know their working groups from the previous night's introduction, they seat themselves in the same places as in the evening before - the girls from Milby on one side of the Lab and the boys from Thameside on the other. The atmosphere mirrors that of the traditional classroom: students wait attentively, paper and pens poised, to 'receive' and 'record' an introduction to the day's events.

David obliges by writing a title on the board which he underlines:

'A Tale of Two Catchments'.

He begins by asking the students to identify the catchments of Slapton Wood and Stokley Barton from the O.S. 1:50,000 map of the area by using the contours to trace the watersheds or interfluves. As this is being done, James is handed part of the pile of handouts and asked to distribute them amongst the group. On one of the handouts, the catchments are clearly marked. Dave asks the students to make comparisons between the two catchments in terms of their size, and poses the question:

David: 'Which catchment is likely to have the larger discharge?'

The general response is of Slapton Wood but a few students look mystified. Dave turns back to the board and writes:

'Hypotheses: 1) Discharge - Slapton Wood greater than Stokeley Barton
- size of catchment'

While students busy themselves by writing the information down, Dave asks what other factors could affect the difference in discharge between the two catchments. Samantha offers vegetation as a possible variable. Dave agrees and writes this on the board. He draws their attention to the storm hydrograph handout:

David: 'Are you all familiar with storm hydrographs?'

General nods of agreement.

David: 'O.K. Can you fill in the boxes 1,2,and 3.'

David wanders behind the desks of the Milby girls looking over their shoulders as they write. He reaches Samantha and then returns to the front of the Lab and using a group list, asks Claire for the answer to 1:

Claire: 'Base-flow'

David: 'Yes, what about 2?' (offered to the whole group)

Paul: 'Overland flow and DCP'

Paul's response causes uneasy glances between some of the girls.

David: 'Yes, overland and direct channel precipitation'

Rachel sitting next to me whispers to Sarah:

'That Paul, thinks he knows it all?'

Rachel has not completed any of the boxes on her handout and is filling the answers in as the Thameside boys respond to David's questions.

David: 'So, let's think about the differences in the two hydrographs and try to come up with some hypotheses to explain the differences. So why should the types of runoff vary between the two catchments?'

Sam: 'Because of the differences in vegetation. With a wood all the leaves and branches catch the water'

David: 'Yes, that's interception'

Rachel and Juliet look worried by the unfamiliarity of the terminology. David continues to receive many responses from the Thameside students to his questions on infiltration rates and the factors which could increase or decrease infiltration. The girls become steadily quieter, content to make notes on the discussion between the tutor and Paul who by now is responding first to most of the questions.

David: 'We also want to look at the differences in the load carried by the two streams. What kinds of load are there?'

Paul: 'Bedload'

Rachel: 'Suspended Load'

James: 'Solution'

Dave discusses the nature of the solute load in the stream and the impact of agricultural fertilizers and sewage and then draws a summary table on the whiteboard, summarizing the hypothesised differences:

	Bed Load	Suspended Load	Solute Load
SLAPTON WOOD	More, due to higher relief?	Less, due to smaller overland flow?	?
STOKELEY BARTON	Less, due to gentler relief?	More, due to greater overland flow?	?

As David constructs the table and students draw it, he asks the students for their assumptions about which type of load will be greater or smaller for the two catchments and their reasons for their assumptions.

Paul, however, is the only student who is outwardly involved in the process of hypothesis-construction. Many of the other students look restless and rather lost.

Paul: (towards the Milby girls) 'Look at them, they're so thick!'

Rachel to

Sarah: "He's so clever, he can do all the fieldwork!"

Dave continues by reinforcing the variables which will need to be measured in both catchments and the means by which students will measure them:

Discharge: He briefly describes the means by which a level on a V-notch weir can provide a discharge figure using the rating curves

Vegetation: By assessing graphically the amount of different types of vegetation in both catchments using a land-use map.

Infiltration: David points to the long plastic tubes sitting on the benches in the Lab and says he'll describe this process in the field.

Soil: David suggests a soil moisture and soil texture test by taking soil samples in both catchments. A student suggests that the number of worms could indicate differences in soil texture!

Load:

Solute - Samantha suggests a conductivity test.

Suspended - David suggests a filtering test.

Paul suggests using a centrifuge.

David: 'Yes, we've got a centrifuge at the Centre, we'll try both'

Bedload - David describes the bedload traps in both catchments and says we'll take along a spade to dig out the traps and weigh the bedload.

10.05am David instructs the group to meet at 10.30 with all the equipment to be ready to walk up to Slapton Wood. As we leave the Lab. he remarks to me: 'If you hadn't been here I would have squashed the worm hypothesis!'

HS/LGS/po

Two points are of interest in this example of hypothesis-construction. The first concerns the need for pupils to have conceptual understanding of the component parts of an hypothesis prior to them engaging in hypothesis-construction and, more specifically, the importance of allowing sufficient time for new information to be adequately processed before it can be used by pupils to reason conditionally.

In the example, David begins by assuming a common level of knowledge and familiarity with hydrological terminology and principles. He relates this assumed prior knowledge of the variables involved in the hydrological system (discharge, runoff, stream load etc) to observations of the information contained on the handouts (catchment map, storm hydrographs) and thereby proceeds through question and answer to assess the relationships between the variables. Understanding how one variable is related to another in the system is the precursor to the students becoming engaged in setting-up hypotheses as to how different hydrological variables will behave given certain conditions existing in the two catchments. These hypotheses are written-up on the board and thereafter the introduction to the day's work moves to reinforcing the importance of particular variables by identifying them for measurement in the field and considering how best they may be measured i.e. the particular field techniques to be used. In terms of learning theory, what is required of the students in the process of hypothesis construction is that they engage in 'formal operational thought' (Piaget, 1953) - a chain of reasoning that need not begin with concrete or direct observation but that which commences with a theoretical

or abstract proposition and results in a logical conclusion dependent upon a set of cognitive operations applied to the proposition. In terms of teaching strategy, the question and answer routine is an example of 'higher cognitive questioning' (White, 1988) in which questions are intended to guide the learner to make links between propositions by applying the student's prior knowledge to a problem.

Observation of the events in the Lab. reveal, however, that not all students actively participate in this process of hypothesis-construction. Most are content to let the same individuals respond to questions and passively record answers. This does not mean, of course, that those students who are not verbally responding are not able to follow the chain of reasoning in the tutor's questioning. Indeed, the attention given by some students to following the pattern of reasoning leading to an hypothesis may be preventing them from adequately considering solutions to the problems posed in the tutor's questions and, therefore, from participating in the question and answer routine. However, it is clear from the students' behaviour and diary entries that some of the students who are not responding verbally are experiencing difficulty in linking propositions together in a way which made the hypotheses understandable since they possess insufficient processed conceptual knowledge to answer a number of sequentially linked problems while at the same time understanding the chain of reasoning leading to hypothesis-construction. The learning task confronted by the students having to learn new information whilst developing hypotheses about that information is problematic for these students and poses problems for the linkage between the introduction and the fieldwork. A diary entry made by a student mid-way through a course at the Centre makes the point in these terms:

'I think we were all very tired this morning after the large amount of

work we had to do the day before, especially in the evening. I thought that the topic today lacked explanation and didn't seem as interesting as the previous day's work. I thought today we went into our fieldwork not necessarily not knowing what to do but more of what it would lead to. The previous day was perhaps an opposite because we has established certain hypotheses and once you got to grips with these your fieldwork really went into place.

Perhaps not having studied settlement before in great detail (we don't do human geography) I wasn't perhaps as keen on today's work, although I enjoyed the fieldwork itself.

I think my main problem is that on previous day's work (rivers etc) I had studied the topics in depth before and the work we did really put into place my previous knowledge, but now I am coming across topics I haven't done before I am becoming perhaps a little frustrated with the work, and we seem to be battling through it at a terrific rate of knots.'

AG/UNK/diary

In terms of teaching strategy, it is interesting to note in the hydrology example that the problem of acquiring new knowledge during hypothesis-construction is eased by the tutor initially addressing questions through the use of the storm hydrographs and catchment maps. Questions concerning the handouts require the students to make simple observations of the data and provide time for the students to 'process' new information before manipulating it in comparing the variables in the two catchments. White (1988) describes this 'processing' of information as an important cognitive strategy or skill and an aid to learning which can be taught by encouraging students to paraphrase and make associations with received information, and by developing their ability to reflect on new information by posing questions and seeking to form explanations.

However, as the pace of the introduction increases and David moves on to developing a list of the means by which data would be collected in the field and the key variables to be measured, without making any recourse to simple observations, the level of interaction and response of the students diminishes. By the end only three students continue to regularly respond

to his questions. At this point the students are being required to engage in conditional reasoning: to think and answer questions of the 'if A then B' type. The presupposition being that the students had already successfully processed the new information and were now able to mentally manipulate it in formal operations. But the quick-fire response of some students allows no time for processing information and making links between propositions by other students. Therefore, for some students in the group, the difficulty of following the process of question and answer towards the point where they could reason conditionally and construct hypotheses is because they were engaged in new learning of the hypotheses' component parts with little time for reflection and processing. This problem of encountering new learning while trying to follow and engage in the tutor's reasoning resulted in uncertainty and anxiety for some students. The diaries written by students later that day reveal that some were unclear of what they were entering the field to measure and why:

Bridget: 'We were pushed into work straight away which surprised me and rather frightened me when Dave, as leader, started firing questions at us about topics which were rather unclear in my mind.'
 'Our school is with a boys school in the group and all of us seemed to leave the answering to them. They were much more confident and seemed to have much more idea about what they were saying.'

BJ/LGS/diary

Sarah: 'I thought it was really good the way Dave really involved us when making our initial hypotheses and he just stimulated us to form them for ourselves rather than the tutor providing them as had been the case on the previous course. We set off unsure what was to happen later on in the day...'

SW/LGS/diary

Kathryn: 'Everyone seemed rather reluctant to leave the warm Lab wondering where? why? and what to do? with me no exception.'

KF/LGS/diary

In summary, participant observation and information from the student diaries suggests that individual differences in the knowledge of components

in an hypothesis coupled with lack of time for adequate processing of new information combine to cause learning difficulties for some students in following a chain of reasoning towards hypothesis-construction. For these students, being unable to follow the steps of logical thought in the chain from proposition to hypotheses to the point where conditional reasoning is possible, may weaken the link between the theoretical basis of the introduction and the events which follow it in the field.

The second point arising from this example regarding hypothesis-construction is the fact that the process commences from teaching a set of concepts which underpin a theoretical model of the real world and not from direct observations of the real phenomena. Students 'receive' an introduction to a topic such as hydrology and are guided towards establishing hypotheses which the tutor knows are firstly, testable and practically achievable in the time available, and secondly, by being testable and workable in the field will be relevant to illustrating the basic geographical concepts in question. This approach is quite different to that advocated by exponents of discovery learning, and also differs from Everson's field-research model in which initial observation precedes the statement or definition of a problem (Chapter 3). Data from this case-study shows that the stimulus behind hypothesis-construction being conducted through a classroom-based introduction to theory and concepts rather than direct observation in the field, is rooted firstly, in teacher and student expectations of the aims and process of learning geography through fieldwork, secondly, the pragmatism generated by the field-tutor teaching a course to a range of students with little or no opportunity for pre-course preparation and post-course follow-up, and thirdly, the degree to which the tutor recognises that the learning task needs to be matched to pupils' own cognitive strategies i.e. their ability to assess the

objectives of the learning task, planning their path through the learning task, and their capability of processing information (White, 1988 pp 83-96).

First, teachers expectations for the field course are that it should teach new concepts as well as new skills; teachers demand a wide range of information to be 'covered' during the field week partly because they perceive the value of the field course in terms of the coverage and exemplification of geographical theory in the A-level syllabus. We have seen that students also view the value of fieldwork in terms of its function of supplying a number of examples studied at first-hand of a wide range geographical concepts relevant to the syllabus. Thus, the expectations of students and teachers are geared around the objectives of achieving coverage of geographical concepts with the back-up of practical examples and less on the process of acquiring enabling skills or cognitive strategies for students to conduct their own investigations. Teacher and student expectations are that these skills are to be acquired en passant rather than be the principal purpose of fieldwork. There is, therefore, a latent pressure from the outset to stage-manage the construction of hypotheses which satisfy the criteria of conceptual relevance to the syllabus, which can be tested in the field by the use of particular techniques, and which produce data that show clear trends appropriate to the explanation of geographical concepts. Introducing a topic in the Lab. is seen as increasing the likelihood of making it clear to students the purpose of the investigation and how field observations relate to that purpose. Furthermore, it seeks to ensure that students produce a step by step record of the chain of reasoning which established these relevant hypotheses for investigation so that the fieldwork can be referred to at a later stage back in the school classroom.

Second, introducing a topic in the Lab. by teaching the essential concepts and principles associated with a geographical model or theory affords the tutor the assurance that a common base-line of knowledge has been reached before venturing into the field. Because of factors outlined earlier in this case-study - the lack of contact between teachers and Centre staff prior to a course, the desire by teachers for the field course to be a divorced and distinct unit from previous classwork, and the problems posed by mixed school groups - the Centre tutor can not rely on any benchmark of experience from which to teach. Furthermore, in introducing a topic to a set of students by setting-up hypotheses for investigation based on the tutor's knowledge and experience of what is workable and achievable, the group is, in the eyes of the tutor, comfortably confined to addressing problems which have known results in terms of the data produced by the fieldwork. The context for teaching and learning holds less uncertainty and less likelihood of producing unforeseen learning outcomes.

Third, commencing work in the Lab rather than in the unfamiliar context of the field is a recognition that students have developed their own strategies for learning usually in the context of the classroom and as the receivers of information. Placing students immediately into the role of observers or discoverers in the field could result in confusion and anxiety because students do not hold the appropriate cognitive strategies to cope with the new learning context.

In conclusion, we can see in our example of the introduction to the hydrology fieldwork that the field tutor faces a conflict or tension in purpose. On the one hand, the tutor knows that faced with the complexity of the real world pupils need a conceptual map against which their

observations can be tested and be made meaningful. Students conducting fieldwork without such a conceptual map can find the experience irrelevant and unclear in purpose. The purpose of an introduction based on a normative model of the real world is to provide such a conceptual map from which a clear statement of the fieldwork's objectives can emerge. But the tutor cannot short-circuit the process of conceptual learning by simply delivering or listing a set of hypotheses without involving the students in the chain of reasoning which produced them from the original proposition. Instead, the field tutor stage-manages the hypothesis-construction process through a question and answer routine similar to that of the BBC radio quiz programme '20 Questions' in which the participant is led to the 'correct' conclusion by the quality of his/her conditional reasoning and the helpful clues which steer the participant's questions to the right solution. In fieldwork, the process leads to the statement of a problem or set of items which the tutor knows can be successfully tested through data collection and analysis, and produce results of relevance to illustrating theory.

But on the other hand, the tutor is also seeking to develop the students' ability to develop cognitive strategies such as objective-setting, selecting and planning the path of an inquiry, reflecting on information by asking questions, in order to construct and test hypotheses for themselves. Or in other words, to develop a set of transferrable skills of use in addressing different problems in new contexts and situations. The question is then one of balance in the time available; weighing the advantages of a 'closed' inquiry in which the hypotheses and the methods of inquiry are constructed by the tutor and recorded by the students, or a more 'open' investigation which allows the students room to develop hypotheses based on their own, possibly partial, understanding of geographical theory. Does the tutor follow-up the hypothesis that worms will be an indicator of soil

texture? ! The 'open' inquiry holds the advantage of students developing hypotheses based on their own level of conceptual understanding and differentiation of the concepts involved but runs the risk that the fieldwork may produce less student understanding of the key concepts which we have seen to be a primary teacher and student objective of fieldwork. The degree to which learning is overly stage-managed allowing little room for exploring ideas other than those shaped by the teacher's questions or an experience which is much more in the discovery-based tradition is central to this tension of purpose in fieldwork at the Centre. David describes this tension in these terms:

"Introduced small catchment work. Determined to make the catchment comparison simpler and more direct with clearly stated hypotheses. (Often the hydrology intro. is far too woolly and relates poorly to the fieldwork).

Tried to get balanced responses from Thameside and Milby. Felt on occasions I was directing and manipulating the hypotheses too much and not allowing the day to follow the students' inclinations. (Do catchments have a spontaneous interest anyway?)

Intro. a bit too long but for the first day quite a relaxed atmosphere in class..."

DJ/HS/LGS/diary

"...Hydrology intro. better than usual as students were participating well. Ended up with some weird hypotheses but at least the students felt the day was more of their own making...

...Shingle Ridge: some good ideas from the students who I think felt more in control of what was going to happen than usual. The big let-down came when it was necessary to mention the equipment we were going to take out viz. 'You've had all these great ideas about what we should measure and over here... hey presto... we just happen to have all the right equipment conveniently set out in 7 sets!' "

DJ/DAV/MEX/diary

8.22 In the Field: Collecting Data

Participant observation of the work undertaken by pupils in the field during a course at Slapton Ley Field Centre revealed three sets of skills

which the field tutors were attempting to teach pupils. The first resides in providing pupils with experience of collecting 'first-hand' data relevant to testing the hypotheses established during the morning's introduction; the objective being to teach the intellectual skill of linking the data collection process with the concepts under investigation and to thereby elicit greater understanding of the concepts which had formerly been only considered 'second-hand' in the classroom or through texts. Such an intellectual skill involves recalling, ordering and processing information, and synthesising and evaluating information by weighing-up evidence and making judgements. The second skills-based component rests in the activities which pupils carry out during data collection in order to achieve this process of linkage and the development of conceptual understanding. These activities involve the use of practical skills such as the setting-up and use of field equipment, applying knowledge of sampling procedures, and developing observational skills like field-sketching. Finally, a third group of skills involves the social aspects of the activity; the team-work or group-work skills of sharing workloads, negotiating and deciding on priorities, and combining efforts to reach objectives under certain time constraints.

During the research at the Centre, data collection in the field would usually begin by the field tutor describing the field experiment(s) to be conducted and outlining the techniques to be used during the day. This introduction took place in the classroom or in the field, depending on the time available and the distance to the field sites. It was normally followed by a field-based practical demonstration of the use of field equipment and a review of the procedural steps in the investigation. This would be done by assembling or setting-up the necessary equipment with the students gathered round to watch and make notes; the equipment having been

selected, checked and prepared ready for use by the tutor either prior to the morning's introduction or during the morning break. The tutor would talk about the equipment's function and how it should be used, giving a practical demonstration of the data it provides and by using a series of field handouts showing the way in which the data is to be recorded. For example, in the case of the fluvial geomorphology, the field tutor would demonstrate the set-up of the flow-meter and impellor and the location, depth and duration of its use in measuring stream velocity, how to measure the wetted perimeter and average depth by using tape and metre rules, and how to use the surveying equipment - levels and staff - to measure the gradient of streams along a stretch of water. To use another example, in small catchment hydrology, the field demonstration would involve the tutor showing students how to set-up an infiltration experiment using infiltration rings, graduated tubes, clamps, etc. In hydrology, as well as conducting experiments themselves, pupils would be shown larger scale permanent field stations and their monitoring equipment and would take readings from 'V'-notch weirs or empty bed-loads traps to take sediment samples.

The instructions given by the field tutor to students would emphasise the need for accuracy in recording data and systematic and rigorous in the location and timing of an experiment. The instructions would also focus on the need for the students' groups to consider before they commenced an experiment how they would distribute responsibilities and activities particularly when several variables were to be measured, and how they would plan their investigation with other groups to ensure that equipment was exchanged and time was not unnecessarily wasted waiting to use equipment. Finally, the tutor's instructions regularly involved considerations of personal safety when conducting experiments in difficult conditions, and

the precautions students needed to take to ensure that expensive field equipment was not damaged.

Once these instructions had been given, the students were then transported in their different groups or would walk to designated sites to conduct their experiments on their own. The field-tutor and the visiting teachers would move between groups to ensure that technical problems concerning equipment use were solved, to reiterate instructions over procedure which had been 'missed' in the field demonstration, and to ensure the safety of students in the field. On completion of their experiment(s), students and staff would congregate before moving on to the next site and at these points staff would take the opportunity to, for example, hear from the students of any major problems they had encountered (often with the tutor's thoughts focussed on the effects of one group's data on the 'global' table of conflated data to be produced that evening), or to point out more general characteristics of the landscape and to give, often through story-telling, a sense of people and place. (see also Section 8.3)

Field centre staff invariably gave precise sets of instructions and a clear introduction in how to operate equipment with the result that usually students completed the experiments with a high degree of accuracy, providing good data sets. The back-up in the field of Centre staff and visiting staff sharing the load of checking student groups and their progress promoted a useful balance of support and supervision while allowing students the autonomy to conduct their investigations and to solve minor problems themselves as they encountered them. More problems ensued when the field tutor was the only member of staff taking a large group into the field, but even in this situation groups were rarely left for long periods of time unsupervised. Because of the nature of repeating an

experiment in several locations and the in-depth knowledge of the sites by the Centre staff, problems arising from a failure by a group to use equipment successfully or choice of a problematic site, could usually be solved before the group repeated the investigation at the next field site.

This pattern of field research at the Centre, which involves student groups conducting repeated field experiments at different field sites under the direction of the field tutor, is termed here as 'directed experimentation'. Elsewhere, Hall (1976) defines the relationship between the teacher and pupil in such "controlled inquiry" fieldwork as: "Pupil as researcher and teacher as laboratory supervisor with duty to safeguard contamination by irregularities of conduct in research and miscalculations in computation." (p. 250).

Students placed a high value on the experience of using equipment to collect data and made positive reference to the importance of seeing instrumentation at work in aiding their conceptual understanding. Students also valued the opportunity which group work afforded them to develop their social skills to achieve results from the experiments they conducted. The following extracts from students' diaries illustrate graphically the significance of directed experimentation for promoting firstly, the intellectual skill of linking first-hand observation of geographical phenomena and processes to provide a deeper conceptual understanding of such phenomena, secondly, the excitement and pleasure which pupils take from a practical involvement in their subject and learning through such development of new practical skills, and thirdly, the valuable experience of working effectively in a novel environment in new peer groups. Their comments demonstrate that the outcomes of the whole learning experience, if measured against one of the central objectives of Centre staff and visiting

teachers which we analysed in Sections 7.2 and 7.3, i.e. that of motivating students and stimulating their interest towards the subject of geography, support staff perceptions of the educational value of fieldwork.

Gary: "The highlight of the day was getting drenched and cold while trying to study a couple of streams. This is what geography at Slapton should be. We do all the theory and calculations in class but you only get the real feel of geography when you are getting cold and wet collecting data."

GS/HAM/diary

Diana: "Hydrology, the topic of the day was rather interesting and much easier to grasp rather than reading books and looking at diagrams (which aren't a very good reflection of reality) in a classroom."

DB/LGS/diary

Malcolm: "...However, seeing the theory in practice made a great deal of difference to my understanding of hydrology. I found the ways of measuring everything extremely fascinating and it made me discover how much more of a practical person I was rather than a theoretical one."

MG/LGS/diary

Andy: "The work, although quite miserable at times, was thoroughly interesting. One could actually put into practice what has been taught, and sometimes not thoroughly appreciated. Learning how to use geographical equipment, I think, is a great advantage and better helps people wishing to continue with education beyond 6th form level... My knowledge of geographical concepts has been greatly increased. Seeing how drainage basins operate and the various instruments i.e. 'V'-notch weirs, to measure the processes has greatly increased my understanding."

AS/MEX/diary

Rob: "Out in the open we do have plenty of work to do ourselves and we don't have to just stand and watch. It helps to make you feel as if you are doing something worthwhile if you do it yourself. It is a good idea to collect your own data then discuss and write it up...

... Once again when you have to do the work yourselves such as measuring angles and stream velocity you understand far better than in a normal geography lesson where you are told about it."

RH/HAM/diary

Anne: "Watching the different apparatus actually in use was good - it made it easier to understand how things work. I feel I understand hydrology much more clearly after today's experiences."

AS/LGS/diary

Steve: "Such things as infiltration, soil moisture deficit, soil

texture etc, I also found it not only exciting, but very useful in being able to take measurements ourselves, dig out bed-load traps and take water samples. This gives an appreciation of the work which is studied and results in further knowledge of hydrology."

SW/HAM/diary

Karen: "I did enjoy today the feeling of team spirit that was captured as we did the river study, a feeling of doing things for each other not just working for yourself - often the feeling I get in the classroom where the emphasis is on competition with your neighbour not co-operation with each other to achieve something."

KJ/MEX/diary

On days characterised by the tightly structured experimental approach (notably, fluvial geomorphology, hydrology, coastal deposition and beach morphology, rural settlements) doubts were expressed by several students on the relationship of the period spent in the field to the overall objectives of the day; students found difficulty relating their 'in field' activities with the hypotheses established during the morning and the data analysis to be conducted on return from the field:

Karen: "Much as I enjoyed getting drenched by sea spray, I failed to see the point of taking the measurements on the beach even though I can see how by taking pebble samples we may be able to tell the process of formation of the Slapton Sands..."

"...I did enjoy today's fieldwork, for once we weren't standing around taking loads of various measurements that we weren't sure of the reason for. However, I'm not sure what we were actually looking for today and hope the follow-up will explain things for me. I can't think of much else to say about today other than I can't remember much."

KJ/MEX/diary

Alan: "I didn't think we really got down to sorting out hypotheses in the field today, whether that's to come tonight I don't know. I felt the fieldwork was more of a ramble compared to yesterday but that might be because we spent so much time this morning working out our hypotheses"

AG/DAV/diary

Field Centre staff were aware of the need to relate the observations and measurements of the day's fieldwork to the ideas being discussed in the

introduction but frequently felt unable to allow sufficient time during the introduction or in the field for students to fully process new information by considering the ways in which their hypotheses could be tested. This point echoes that discussed in the earlier analysis of hypothesis-construction. Tutors were unsure of whether to maintain an 'open' discovery-based inquiry, building on the hypotheses constructed prior to going into the field, by allowing students freedom to plan their own path through the data collection and select appropriate techniques, or to 'close' the inquiry around a prespecified set of learning tasks:

David: "Shingle ridge: some good ideas from the students who I think felt more in control of what was going to happen than usual. The big let down came when it was necessary to mention the equipment we were going to take out viz. "You've had all these great ideas about what we should measure and over here.... hey presto.... we just happen to have all the right equipment conveniently set out in 7 sets!"

DJ/SLFC/diary

The pressure on staff to gear the course around a core of 'closed' highly structured days of directed experimentation came from visiting teachers and, interestingly, also from the students. Because visiting teachers placed such emphasis on the importance of teaching quantitative data collection and analysis techniques at the beginning of the field week, staff were encouraged to teach particular topics by directed experimentation early on in the course. Students began to equate the period spent in the field as simply a process of measurement taking which needed to be undertaken as efficiently and quickly as possible. As a result, many students criticised the course on the grounds that better use could have been made of their time if they had been able to move quickly between field sites taking measurements and returning to the lab, where data analysis and the 'answers' to the day's problem could be found. Students regarded the field tutor directing their observation to phenomena which lay outside the narrow sub-system and its processes under

investigation as a costly and irrelevant deviation:

Becca: "I didn't feel as if today was very beneficial, as I have felt most of the other days to have been. Mainly due to the fact that we didn't actually see that much in the time we were out in the field. When we actually stopped to record data and discuss things it was good, but I don't feel that the walk was beneficial - from the point of view that it took up valuable, paid for, time in which we could have actually learnt something either in the classroom or by visiting more sites by minibus."

BBB/WT/diary

There was, therefore, a strong positive feedback mechanism operating which actively discouraged tutors from pulling a group together after an experiment to consider results between sites, to point out processes at work which linked into the day's theme or to engage in higher cognitive questioning. Thus, Centre staff rarely began to synthesise the group's observations in the field following an experiment or to start to explore explanations for the data they had collected; the learning activities were structured so that the solutions to a problem or the test of a hypothesis were dependent on students following the hypothetico-deductive process through to a conclusion based on the Lab.-centred processing and analysis of the field data. Fieldwork was dominated by the techniques of data collection for later analysis almost irrespective of the subject matter to which they were applied; the techniques tail wagged both the geographical and educational dog.

An outcome of directed experimentation was that the fast pace of the fieldwork with its dependence on comparative data drawn from a range of sites, precluded much opportunity for discussion in the field. The atmosphere was often one of high-pressure; a race against the clock to collect data at the various field sites and return to the Centre in sufficient time for adequate analysis. The tutor and visiting teachers were engaged fully in the practical aspects of taking a group into the

field: ensuring that equipment worked, that students were using the equipment correctly, that groups were at the correct sites, that students were working in safe conditions, that the complex logistics of transport between sites were implemented etc. As a result, there was little time in the field for students to stop and explore ideas with the field tutor or to simply reflect on their surroundings.

These twin factors of the pattern of the day's activities being governed by the techniques and the experiments to be conducted in the field, and the lack of time for adequate reflection and discussion held the advantage for the students that the objectives of the day's field-based activities were well defined and clear-cut. But the student diaries reveal that the pattern and pace of the work prevented some from relating observations and experiments to broader concepts and to the overall purpose of the investigation within the context of geography. This was particularly evident in situations where students were faced with new topics and had been unable to process new information in the classroom beforehand. In situations where insufficient time had been devoted to processing new concepts and students generating hypotheses, the fieldwork activities held less meaning and relevance for the students:

Chris: "When taking measurements, your mind is focussed singly on what you're measuring and what to do next which is good in its own way. Doing the measurements and using the instruments is enjoyable and educational. When you return to the lab. you put your measurements into shape and find conclusions but a lot of the very deep impressions that can be gained from studying a feature or a process, are not gained so the conclusions become almost statistical."

CH/DAV/diary

Alan: "Perhaps not having studied settlement before in great detail (we don't do human geography) I wasn't perhaps as keen on today's work, although I enjoyed the fieldwork itself. I think that my main problem is that on the previous day's work (rivers etc) I had studied the topics in depth before and the work we did really put into place my previous knowledge, but now I am coming across topics I haven't done before I am becoming perhaps a little frustrated with the work,

and we seem to be battling through it at a terrific rate of knots."

AG/DAV/diary

Karen: "The fieldwork was interesting but we seemed to be rushing around so much there was little time to actually appreciate the environment. With the conditions so good, I felt we should have been able to sit and have a more general chat about the landscape around us instead of just rushing from one place to another and concentrating solely on the experiments we were doing."

KJ/MEX/diary

In summary, directed experimentation at Slapton is marked by the operationalisation by pupils of a series of teacher instructions within a tightly structured framework determined by the field tutor. The fieldwork is intended to appeal to the students through the fun and excitement of working in different, sometimes challenging and spectacular, environments, through the implementation of techniques and utilisation of equipment, and through the simplicity and clarity of the objective - performing a series of tasks identified by the tutor to collect and record data. In this, it is successful. Students are motivated towards the subject by the activity of collecting data about phenomena they have previously encountered in the classroom, the experience of using equipment and learning new techniques, by the social relations in group-work and by the contrast of the learning milieu. But there is less evidence to suggest that students are able to relate the 'in field' activities with the hypotheses under investigation. The focus on techniques, the pace of the activities, and the 'closed' nature of the inquiry can divorce the experience from hypothesis-construction and analysis, and for some students provides little opportunity for reflection, processing of new information and conceptual understanding.

8.23 In the Classroom: Processing and Analysing Data

At Slapton, the range, amount and type of data collected varied widely according to the topic of the investigation and the techniques used. Thus, for example, the examination of the high-energy environment coastline would frequently involve compass and clinometer work to assess orientation and dip of clasts in coastal head deposits, but would also involve more traditional methods such as field sketching to record landscape morphology or transect surveys using quadrats to examine the impact of coastal processes on plant succession and colonisation on the rocky shore. In rural settlement, group surveys of services and housing in a range of settlements in the South Hams combined with analysis of different census data provide information to show temporal and spatial variation. On Dartmoor, landscape evaluation exercises conducted at a number of different sites are used to consider the impact of changing landuse on the moorland ecosystem.

In general terms, the physical geography topics covered during the field course involved students collecting quantitative data by using a wide range of techniques and equipment. In human geography, a smaller range of methods produced more qualitative data and secondary sources were more prevalent. Interviews video taped with local residents or with key individuals such as those from the local planning authority or South West Water, were supplemented with media resources, to avoid the problems arising from a steady flow of students continuing to press the same individuals for information.

Students soon became familiar with a pattern of work on returning from the field with their samples and data. The first step was usually to analyse

any samples collected so that the evening could be spent conflating the results from the student groups and applying statistical tests. Water samples needed to be filtered for suspended sediment measurements; soil samples were subjected to a variety of tests (presence of ferric or ferrous iron, field moisture content, soil organic content, soil texture); shingle and pebble samples would be sieved for particle size distribution; clasts from the local 'head' would be measured for sphericity. These sample tests were conducted in the wet-lab by students working in their groups. The field tutor would arrange the equipment, introduce the test, and usually supply a demonstration on one sample by working through a worksheet provided to each student. The carefully tailored sheets written by staff provided a step by step guide on method and equipment, and pointed up to students particular problems such as unit conversions which frequently led students into difficulties. The repetition of experiments by groups over several years meant that the worksheets had become honed to the point where they were simple and easy to follow and students had little difficulty in conducting the tests on samples. This was important since this was a busy time for Centre staff. The teaching was logistically complex and required considerable experience and expertise. Frequently the size of the whole group would prevent all students from working in the wet-lab. Workloads had to be shared. Some students would convert their field data into tabulated form and then place their results onto a unified table drawn on the board and the tutor needed to be available to answer queries relating to their calculations. Other students would be shown how to enter their field data into analysis programs on the Centre's micro-computers. Often, three groups of students would work at different tasks and would rotate between them with the Centre tutor taking a peripatetic supervisory role in the wet-lab, the computer room and the classroom. Although complex and potentially confusing, this process quickly reinforced the relationship

being established within and between student groups. Students had to work together to achieve their results and benefited from maintaining the group or team spirit which pervaded the fieldwork, back in the classroom and lab. Students automatically sat in their groups with their newly met peers without reverting to school or sex social patterns. The atmosphere was one of industry, enthusiasm and camaraderie welded by the tutor being available to answer problems to individual groups or calling the whole class together periodically to take the students through the next stage of data processing.

In the evening session which would begin between 7.00 and 7.30pm, the pattern of group activity interspersed with periods of teacher instruction continued, often until 9.30 or 10.00. As the evening progressed the 'picture' of the day's fieldwork would emerge on the large table on the board. Groups would bring their data to the tutor who would check and enter it onto the board. Depending on the speed with which students completed their data processing, field centre staff would start to teach techniques of data analysis and begin to attempt to relate the data to the concepts discussed in the morning's introduction. Usually this would focus on comparing and correlating variables in the field data. This process would begin by students being invited to look at the whole-group table of data and establish general trends and relationships between the measured variables and write them down in their own words. These qualitative descriptions would then be converted into graphical form to show the relationship between variables, and finally, simple statistical tests would be used to assess the significance of the relationship. It is interesting to note that this form of processing first-hand data by asking students to summarise relationships in their own words (i.e. listing propositional knowledge) and then using the descriptions as a basis from which to

statistically assess the relationship between variables, conforms to the suggestion for good practice from White (1988) which I noted in Chapter 4, who argues from the research evidence of Tasker (1981) and Moreira (1980) that students should be encouraged to create their own explanations for the purposes of experiments in order to link episodes with propositional knowledge.

To illustrate this process at work, I shall take an example of data processing for the topic fluvial geomorphology. In order to discover how processes and energy vary along the course of rivers students collect data in the field examining changes in velocity of streams in relation to a range of channel parameters: hydraulic radius or efficiency, calculated by the cross sectional area of a stream divided by its wetted perimeter; gradient; and a measure of friction or bed roughness called Mannings 'n'. The particular focus of the work is to test Duvian theory which hypothesises that the energy of rivers increases according to gradient. Students are asked to examine the data to discover which factors appear to be affecting the velocity of streams. During David's teaching of data analysis of this subject, once students had described the relationship he would ask them to plot graphs from the data table of velocity against key variables such as efficiency, friction and gradient. These graphs would then be used to introduce simple tests such as Spearman Rank correlation to test the significance of the relationship. David would explain the perfect positive and negative relationship by means of drawing three graphs on a continuum between positive correlation, no correlation, and negative correlation, and define critical values. An example of using Spearman to test the significance of the correlation between velocity and hydraulic radius would be worked through with the class, and then the students would be asked, by sharing the work around their groups, to apply the same test

to other relationships. Usually, in the following morning, students would return to the lab. and spend an hour and a half 'concluding' the results of the previous evening's work. Students would construct systems diagrams showing the relationship between variables and label the direction of flow between variables with the correlation coefficient. At this point, David would start to summarise the important causal relationships between variables by drawing his own flow diagram working from the data. Finally, comparisons would be drawn between this diagram "depicting our data" and the flow diagram describing the Davisian hypothesis, by students being asked to summarise in short paragraphs the differences in processes and energy along the course of streams according to their own data and that proposed by the Davisian model. An invitation to students to read out their paragraphs, would lead to a discussion reflecting on the complex relationship between velocity and gradient and the concept of graded profiles and dynamic equilibrium.

The approach used by David in his teaching of this subject and in other subjects at Slapton was one, therefore, of building towards conceptual understanding from the analysis of first-hand observations in a series of levels of increasing complexity and sophistication of analysis, each level interspersed with a technique involving numerical analysis and computer skills or experimentation with directions to follow. Following each level of analysis would be an opportunity for reflection, summary and discussion. The learning process was one, therefore, of observation and description of results, leading to analysis, interpretation of the data, review, and concept formation. At each of these stages, the teaching process was characterised by a cycle of teaching strategies which switched the balance of the stimulus between the teacher and the student; from teacher instruction and group experimentation, to an exchange of views in groups,

to student summary and portrayal, to discussion, and back to teacher instruction, and so on. The skills being taught are similar to those on which students are assessed in their A-level examination in data-response questions; they need to be able to quickly evaluate data sets for trends and anomalies, graphically depict relationships between variables using different techniques, be able to conduct simple statistical tests to quantify the significance of the correlation, and synthesise information and communicate it through short written answers. The teaching of these skills at Slapton conforms to the aims inherent in five of the six core skills which have been identified by the National Curriculum Council (1990) as a requirement for A and AS level subjects for pupils aged 16-19, namely:

- communication
- problem-solving
- personal skills
- numeracy
- information technology

Participant observation and the student and staff diaries reveal important evidence which suggests that this skills-based process of teaching was successful for pupil learning in certain respects. Firstly, visiting staff valued the opportunity which the teaching provided for students to volunteer their own interpretations of data, secondly, to test these interpretations, and thirdly, to summarise relationships in systems or flow diagrams:

Ron: "I felt Dave's approach was good - he didn't just force-feed the information down their throats - good to see - All too often students are not given the opportunity to think for themselves... It was good to see the students given the chance to think for themselves i.e. with the interpretation of the data, graph drawing and wetted perimeter drawing etc.

... It was pleasing to see the main emphasis being put on the students providing the ideas, and not straight from Dave. The same faces

appear to be forwarding ideas frequently. I like the idea of drawing 'box-type' diagrams to illustrate the main point of a theme, and then getting everyone concerned to write concluding paragraphs. I find Dave's box diagrams very useful and know many students do also - I just think that they are not very used to drawing them - or what they should be showing! But it would appear they are getting the hang of it. (It will be interesting to see if they adopt the style of note taking for themselves)."

RO/DAV/diary

Students also mentioned these aspects of the data processing work and regarded them useful for their own learning. Their comments confirm the importance which MacKenzie and White (1982) attach to episode formation in aiding conceptual understanding (see Chapter 4) since students valued the experience of generating concepts from data which they had memories of collecting in the field; students noted that the data collection process enhanced their ability to develop meaning from the figures they produced. Students also repeatedly referred to the value of being involved in putting forward their own ideas and scrutinising them in relation to the data:

Alex: "The evening session made my understanding of the day's work much clearer. The construction of graphs and pie charts, although tedious, enabled one to understand the model and to see it from an entirely different angle."

AJS/MEX/diary

Becca: "it was much more interesting to actually do the experiments etc ourselves at Newbridge than to watch at Austins Bridge so although my body complained at being cold and wet - I learnt a lot more than I would have done just by watching. Also beneficial, therefore, when we later wrote down the data table I found I could relate the figures we'd produced, whereas to me the last week's figures [data collected by the previous course used for comparison] were more just 'figures' if you see what I mean."

...Today went well - not too strenuous but I like rural settlement so I feel as if its been really worthwhile. The lecture this morning helped my understanding of the topic because Dave goes through things step by step, so one has time to store in your mind what you understand before going on to the next bit - consequently my overall picture is much clearer. I don't find those diagrams with the boxes very easy to understand, but its gradually sinking in so there's hope for me yet.

I liked the way Dave explained the Central Place stuff - because he hasn't yet gone through the statistical K-value stuff etc but has

concentrated on what was relevant to the fieldwork we did this afternoon. I think this is good because you can digest all that instead of being totally confused by Christaller which I was when I did it in class at school. Am looking forward to analysing the settlement data because it is in relation to central place theory so the theory will come 'alive' if you see what I mean, as we actually did the fieldwork ourselves."

BBB/WT/diary

Steve: "Finished off our beach data and analysed it this morning. Dave let us develop our own ideas - guiding us if we went a bit astray. This seemed a good way to learn to channel and build up your ideas with specific reference to data. This is something I think most students neglect to do. They very often discover the correct reason for a geographical problem but fail to relate to the evidence and data that they have at their disposal. This is why I feel that this course is of real benefit to the A-level student, for without it he/she can never have a comprehensive understanding of geography."

ST/HAM/diary

Sharon: "This morning when we were analysing and concluding our ideas about the shingle ridge I felt that Dave wasn't really sure himself about what was going on with the formation and processes involved, unlike river and hydrological processes, and he didn't tell us whether he was positive that what we decided was definite. The way we looked at the various ideas about formation was, I thought, very good. I think everybody questioned the formation involved and I realized thinking back that this is what Dave wanted us to do."

SM/LGS/diary

Diane: "...this morning I finally sorted out the relationships between the hydraulic radius and a stream's efficiency connected with Mannings 'n' and a channel's roughness. We did lots of 'flow' diagrams helping me to understand connections between different concepts. At school we tend to deal with things in isolation and piecing things together into a large interrelated unit and also seeing it in the real world adds dimensions to a textbook page of facts."

D6/LGS/diary

Anne: "This morning I found very helpful, especially when Dave left it to us to work out why the shingle had developed as it had and to put forward ideas which we then discussed. It will be very useful when it comes to data response questions which require a good deal of this sort of thing."

A2/LGS/diary

However, despite students referring to the importance of being engaged in the data analysis process, by bringing forward their own ideas concerning environmental processes and examining them in light of their

data, students also testified to the difficulties they experienced in relating the evening's pattern of data processing to the concepts under investigation. Many students found that they lost sight of the overall objectives of the fieldwork in the plethora of information which they were required to process and had to wait until the 'conclusions' in the morning for the tutor to guide them through the data towards concept formation and understanding. It is worth recalling here that students are being asked to complete a number of complex learning tasks simultaneously within a hypothesis-testing framework that is densely packed and restricted by time. Students are actively engaged in: the procedural aspects of experiments on samples, applying statistical tests to data and understanding the relevance and limits of the test, slotting their group's data into a much larger data set and understanding its temporal and spatial relevance to comparative data sets, applying their conceptual knowledge learnt in the classroom at school to new problems in a novel context, and processing information to generate deeper conceptual understanding.

Faced with these multivariate and complex tasks, it is perhaps unsurprising that students focussed their attention on the ultimate purpose of the investigation - reaching a solution to the day's problem - and did not make reference in their diaries to their learning of data processing skills. Rather, the data processing was seen as an isolated and mechanical experience to be 'got through' by following the tutor's instructions. It was tightly structured by the field tutor, and relied heavily on the tutor's ability during the conclusions to carry the group through an interpretation of the data. At each stage of the investigation students saw the objective of the fieldwork as being the solution to the hypothesis and capture of its key terms and ideas, and much less the process of inquiry:

Karen: "Last night's session in the lab. was the worst so far. I became totally confused and lost sight of any conclusions we may have been trying to reach. All we appeared to be doing for hours on end was writing lengthy tables and complicated graphs which wasn't helped by the fact that I could get no consistent answer to the question, 'What am I supposed to be doing?' Having said that the analysis of water and soil demonstration was interesting and I now understand a little more on how the names such as sandy loam etc are arrived at.

Following what I felt was a rather unproductive evening, this morning's lesson returned my confidence when we actually began interpreting the hydrology data. I now feel I understand the influence of different things in reaching the runoff stage in a certain catchment area. The way the conclusions were all logically and systematically drawn sorted out the muddle in my mind that was felt last night."

KJ/MEX/diary

Alex: "Beginning of the week, knackered already. A bit of a slow start to the day, would have preferred not to have spent the first half working on yesterday's data. Last night was hell! All the graphs we had to do were delivered like a shot-gun cartridge at the beginning, it was all very confusing. I would have preferred to have been given the tasks at intervals through the evening and the disappearance of any help at 9.30 didn't help matters at 10.30! I think too much was tried to be crammed into too little space of time."

AJ/WT/diary

David: "Morning's work helpful. Far more so than the evening before which seemed to go on and on and not really get anywhere. Graphs done do still not seem to be particularly relevant."

DC/DAV/diary

Sean: "...spent several hours in the lab. this morning which I found helpful to consolidate all the previous day's data easily. This was a surprise since the previous evening lasted for several hours and by the end of the session I was exhausted and totally confused. The pace that we worked at was also very fast and there was no real time to think matters out."

S8/HAM/diary

Paula: "Last night's work session was a bit hectic, with so many calculations to make with so many figures, but I think I still managed to follow why the calculations were being made. Every now and again my mind just gave up and I had to stop and think of the subject more generally."

P13/LGS/diary

Bridget: "Finding the theory back in the lab rather hard going. I never really have much time to sit back and take everything in. All my time seems to be taken scribbling notes down and punching figures frantically into my calculator."

B2/LGS/diary

James: "I think my only criticism of the day is that we never really had the opportunity to collect our thoughts between each piece of work"

J11/HAM/diary

In summary, data processing and analysis at Slapton is characterised by a three-stage process of firstly, conducting tests on field samples and manipulating the data recorded in the field into a unified form, secondly, applying graphical techniques and statistical tests to the data to reveal relationships between variables and the significance of those relationships, and thirdly, an interpretation phase which seeks to relate the trends in the data to the hypotheses for the fieldwork, and to develop students' understanding of the concepts and processes at work in selected physical and human systems. Students on the A-level course generally exhibit few problems in following instructions for the testing of field samples, in numerically manipulating data, or in applying simple statistics to data sets. They find the experiments on samples and the computer equipment used for data processing interesting and motivating. However, the pattern of the evening's work is regarded as protracted and many students find the pace and the length of the data processing stage hinders their ability to relate the data to the overall objectives of the fieldwork. There is also little time for reflection on the methods used for sampling, for data collection and for processing.

The tutor's role in striking the right balance between closing the teaching around a set of instructions for students to follow through the data processing and analysis, and opening the discussion to generate students' ideas for data interpretation is central to the success of the exercise for student learning. Closing the teaching by asking students to work quickly

and methodically through data processing offers the prospect of a larger and more comprehensive data set for analysis and a more definitive conclusion, but runs the risk because of the pace and pattern of the work that students are not required to try and see the relevance of the data to their investigation, or set that investigation wholistically into a geographical context. Opening the inquiry by allowing students more time to reflect on their observations, to share ideas in discussion with their peers, and to synthesise and communicate their observations to others is clearly a preferred option by students, but only with the security of knowing that guidance from the tutor is available to steer the discussion towards a definitive conclusion. Although students value the opportunity of developing core skills such as problem-solving, numeracy, and communication, student and staff expectations on the importance of 'covering' conceptual content and possessing clear and detailed notes for revision remain the overarching priorities. David Job summarises the tension in these terms:

"Tried to get students to arrive at their own interpretations of the shingle data. Got off to a good start but with several conflicting ideas to deal with it became protracted and confusing. What matters most, scientific "truth" or getting students to develop their own ideas and interpretative skills..."

"...Speedy data analysis but slow going on the stats. as many had not done Spearman. Wondered a bit about the value of spending so much time on correlation when the basic concepts came out from plotting the graphs. The less mathematically inclined seem to find it a distraction which diverts attention away from the main purpose i.e. how rivers work.

Sunday morning. Tried to get students to develop own interpretations. As always a conflict devlops - do you pick on those students who've produced a coherent explanation to come up and explain things to others or risk asking somebody to come up who's struggling? If the latter then the whole class may get confused and the individual who's presenting his/her interpretation may get discouraged. Tried to play it safe and ask for people to volunteer contributions - as a result the same three or four tend to supply the explanations each time..."

DJ/SLFC/diary

8.2 Summary

This description and analysis of the hypothesis-testing approach used at Slapton has focussed on revealing the learning process and its outcomes from the point of view of the participants, and in particular the students, during the course at the Centre. No attempt here has been made to follow students back into schools and colleges to see if the intellectual, practical and social skills acquired on the field course, which are seen by Centre staff and visiting teachers as central to the learning experience, and some of which are important assessed components of many A-level geography syllabuses, have been successfully transferred and applied to other investigations and other problems in different settings. This task must await further research.

Nevertheless, this study has revealed some important issues which could mark a point of departure for future research examining the value of fieldwork in pupil learning and the teaching of skills. Notably, it has shown the superordinancy of a concern with content above the process of inquiry. Thus, despite teachers' aims for fieldwork being to develop their pupil's ability to conduct their own investigations and to understand how an inquiry can be structured and implemented, the objective is not translated into practice. Staff at the Centre recognise a tension between closing an inquiry around a clearcut structure with prespecified aims, methods and content, and opening the process by involving students more in negotiating the direction and course of an investigation. And in their teaching they seek to strike a balance between the two. But the emphasis of the course remains on reinforcing and making understandable geographical models and principles taught in the classroom through the study of examples

in the field. As a result of seeking data which clearly illustrates the geographical principles and processes at work in physical and human systems, field tutors and teachers place insufficient stress in their teaching and in pupil learning on developing pupils' general skills or cognitive strategies. White (1988) identifies these as the development of pupils' ability to pose self-directed questions: to assess a situation to discover the objective of a learning task; to plan what to do next by setting out and selecting the options; and to process new information by trying to reflect on it and produce explanations. Too often, these questions are answered by Centre staff and not the students in the rush to collect sufficient data in the field or to reach a definitive conclusion within the time available. The result must be to question whether the lack of attention to developing pupil awareness of their own thinking and how to control it ('metacognition', Flavell, 1976) inhibits the pupil's capacity to go beyond the imposed learning task and to take responsibility for their own learning.

However, where opportunities do exist for students to work independently, to summarise or paraphrase information individually, discuss conclusions with their peers and communicate their findings to others, the students' comments testify to the importance of such an approach for their own conceptual understanding and the value they place on that understanding. Students also find the fieldwork valuable and interesting in developing their practical skills in using field equipment and information technology. They note that by studying environmental processes in challenging situations and sometimes spectacular environments with new equipment and technology, theory and its associated technical vocabulary is 'brought alive' and the data produced from their own measurements is made more meaningful and comprehensible. Teachers view these aspects as central in

motivating pupils towards the subject of geography and in this respect the students' diaries are evidence that the course is successful in stimulating an interest in the subject and in creating for the students a role model of the geographer.

Finally, the extracts from the students' diaries have suggested that the experience is valuable for their personal and social development. This is the theme which will be taken up in the next section.

8.3 Fieldwork and Pupils' Affective Learning

In Chapter 4, I reviewed the results of research which attempted to investigate the impact of fieldwork and the field experience on pupils' emotional or 'affective' states and their outcome for pupil motivation or "commitment" (Stones, 1979) to learning. Crompton and Sellar (1981) categorised a series of psychometric studies investigating fieldwork and pupils' affective learning into three groups: the impact of the experience on self-concept and notions of self-esteem; socialization processes including peer socialization, ethnic and socio-economic group integration, and teacher-student relationships; and pupil attitudes towards the environment and school. Kern and Carpenter (1984) compared pre- and post-experience scores on pupil value, interest, and attitude for laboratory and field based courses and argued that increased post-experience scores and attendance levels in the field based program demonstrated enhanced motivation, and in a follow-up study (1986) produced evidence that this increased motivation led to students exhibiting greater conceptual understanding.

However, as I attempted to show with reference to the case for more process orientated studies, psychometric work has to date been unable to reveal explanations for learning differences purported to be measured in pre- and post-experience tests in ways which have contributed to curriculum planning. The examples taken from Fink's (1977) study, however, throws into sharp relief the importance of the field experience encountered by students on the three geography courses for crystalizing, developing or redirecting students' interests and values, changing their image of self, the establishment of role models, and the quality of social interaction. But Fink's research also does not satisfactorily explore the learning

process which elicits the student interview responses in the study and, therefore, much of the significance or meaning of those responses for teaching and learning remains unidentified.

Earlier in Chapter 7, I used interview and diary data to show that visiting teachers to the Centre and Centre staff saw one of the objectives of fieldwork as being to stimulate their students' interest in the subject, and that they considered that this was conveyed by the motivation students received from:

- working in novel social settings (new peer and teacher relations) and in contrasting learning context to that of the classroom (the pattern, intensity and excitement of the week's activities);
- the enthusiasm from field tutors which provided a role model for students of the geographer and his/her work;
- and the removal from the learning context of the teacher as authority figure bound by the cultural confines of the school.

Visiting staff particularly valued this last point for the opportunity fieldwork afforded them to step out of the teaching "limelight" and engage with their students as a resource and facilitator working alongside their students, and allowing them to take on an observational role of watching their students work together and socialise together. Furthermore, staff testified to the long-term benefits of this aspect for their relationships with their students back in the classroom; the field week provided a reference point in the A-level course of shared experience which bound a group together, and to use Fink's phrase, "humanized" the whole learning

experience (Fink, op.cit. p.104). I also noted that this use by teachers of fieldwork as a reference point in the course further separated and made distinctive the experience from the daily pattern of school life.

In this section I shall examine the role of the field course at Slapton in relation to the aims identified by visiting staff and tutors for pupils' personal and social development and to compare the results with the research studies set out above. Three aspects of affective learning will be considered: the impact of the experience on a student's self-concept; the social relations operating between students; and the social interactions between staff and students. Before this analysis, however, it is important to remind the reader of the attitude of students arriving at the Centre and the unfamiliarity of the context of the field week. First, I noted earlier in Chapter 7 that students acquired attitudes and expectations of the field week that were socially transmitted via a 'folk-lore' from staff and from peers at school who had visited the Centre on previous occasions. Students had developed a 'picture' of the course from such folk-lore which made them apprehensive as well as excited about the demands they expected to be placed on them, especially the physical challenge of some of the fieldwork, walking long distances, working in streams. Some women potentially viewed the experience as having a 'macho-image' in which fieldwork activities were equated with outdoor pursuits. Students were also apprehensive about the mental challenge of the week; the expectation of studying geography for long working hours in contact with teachers for 12 or 13 hours a day, 72 hours a week - the equivalent of two thirds of a school year on a normal A-level timetable concentrated into six working days. Secondly, students were aware of the new social context in which they would work and were concerned about their own identity and status and their interaction with others. For many

students, this was also their first experience of being away from home, their family and parents, and away from the important familiarity and security of those social relations with parents which, as Damon (1983) suggests, remain a "primary source of advice and emotional support during adolescent years." (p.265). Finally, students' attitudes reflected a utilitarian concern that the field week would benefit their A-level course; they wanted reassurance that the course would be an efficient use of their time and value for money.

8.31 Self-Concept

The extract from David Job's field diary with which I concluded the previous section (8.2) examining pupil learning of skills through fieldwork demonstrates that as a teacher he is aware that self-confidence and how an individual perceives themselves in relation to others are important factors in affecting pupil motivation for learning, and need to be taken into account when considering appropriate teaching strategies. David's comments reflect the concern of a teacher who is seeking to ensure that those individuals who have insufficient understanding to solve a problem, or who do not display outgoing characteristics, continue to be given the opportunity to put forward their ideas and to communicate their interpretations to others, without becoming discouraged if their clarity of thinking or their communication skills of expressing ideas and opinions, or arguing a case, are not as well developed as some of their peers. And yet he is also aware that public demonstration to peers of a lack of understanding or poor communication skills can be a serious impediment to motivation for their own future learning and have implications for the learning of others.

Educational psychologists such as Bloom (1976) and Stones (1979) have referred to the significance of self-concept for motivation to learning and stress that one's self-concept is a learnt phenomena generated from the experiences and feedback pupils receive from peers, teachers, parents, examinations etc. Stones (*ibid.*) argues that because of its importance for learning, teachers need to consider a pupil's previous history of learning and the way it is likely to affect any new learning task:

"The teacher is more likely to obtain a useful indication of a pupil's motivation in respect of a new learning task by examining his record of success or failure than by administering some form of projective test. Success and positive attitudes towards learning augur well for any new learning task. A history of failure and negative attitudes indicates a much more difficult teaching task." (p.45)

In this respect the field tutor's teaching task at Slapton as at other Centres is made problematic because he/she has no prior contact with or knowledge of individual students. Centre staff contact with school staff before a course may yield simply a list of male and female students with their particular dietary or medical requirements, age of the students (notably whether they are first or second year sixth-formers), the A-level syllabus they are studying, and perhaps a list of topics they have already covered in the syllabus. In contrast to the teacher's knowledge of particular students built on the interaction developed over months and even years in school, the Centre staff have no prior knowledge of the student's individual personal development, their academic strengths and weaknesses, or their social skills. Interestingly however, this unfamiliarity of Centre staff of students and vice a versa can serve to further enhance the simple informality of the teaching relationship between staff and students at the Centre and the equity between students perceived by the teacher; neither groups possess preconceptions to inform any discrimination or stratification of students, nor do Centre staff make any formal assessment of pupil performance - the context, therefore, in which the students work

at the Centre is uncompetitive in marked contrast to that found in the classroom:

Karen: "I did enjoy today the feeling of team spirit that was captured as we did the river study, a feeling of doing things for each other and not just working for yourself - often the feeling I get in the classroom where the emphasis is on competition with your neighbour and not co-operation with each other to achieve something."

KJ/MEX/diary

The 82 student diaries reveal that the field week was an experience for almost all students which helped to improve their self-concept:

Sally: We had to wander around our village. It was a pretty awful place. It all seemed to consist of newly built old people's bungalows on large impersonal estates. The main street of the village with the post office etc on the through road had lost all its character. It was like a large council estate like I get in Essex. I found myself getting really annoyed at what had been done to this village. I'm not sure that geographers are supposed to get worked up - they're just supposed to analyse. But this was the reason I got reasonably enthusiastic about what we were doing so it can't be that bad...

Thursday: ...We didn't collect much data today. I think I preferred the days when we did because it made me feel that I was doing something really worthwhile. It also made me feel like a real geographer and not just someone who wants to get an exam. If this week has done anything it has made me feel like something more than a schoolkid..."

SW/DAV/diary

Students criticised particular aspects of the course as we have seen, but as an entity the week boosted their self esteem and confidence in subject-centred terms through developing a template for the subject of geography - a framework of its principles and procedures; by generating understanding of concepts which had hitherto been vague or only partially understood; and by bringing the subject 'alive' through observation of processes and form. And in student-centred terms, by testing their ability to pose and solve problems, and work successfully with others in new social settings. Becca's summary of her perception of the benefits of the week mirrors that of many students in focussing on its utilitarian benefits for

her understanding of subject and confidence in answering questions in the A-level examination, and reveals the importance which students attach to their learning being 'relevant' to the examination as an objective:

Becca: "Generally though, I've enjoyed the week here. I'm absolutely knackered and can't wait to get back home, but if I ever got the choice again before June I would definitely go on another one - and advise it to every single A-level geography student I knew. Basically because:

1. gives you a chance to actually see what may otherwise be tedious to learn in the classroom - which helps you remember it and is much more enjoyable
2. gives you a chance to form own hypothesis on things and see if their right or wrong
3. learn to interpret data so when you get a graph or something like that in a paper you don't panic
4. get a different approach to what you have already been taught at school - see different aspects of it
5. it helps you realise what you know and what you don't know. So you know what to revise more than others.

In addition to the concept of relevance of fieldwork to a perceived objective which serves to enhance pupil confidence and enthusiasm, two aspects of the course are regarded by students as particularly important in promoting their self-image. First, is the achievement which students felt that resulted from them successfully meeting the intensity of the intellectual and physical challenge. Students were often surprised and pleased to find that they were able to meet the demands of the course, not in terms of the level of the intellectual challenge since many students found the course consolidated understanding rather than providing them with new knowledge or skills, but more in terms of the motivation students gained from their enjoyment of successfully completing a concentrated period of study. Thus, improved self-concept came from being motivated by the process of learning as well as the knowledge of facts, concepts, and examples resulting from that process:

Sally: "The weather had improved by this morning and I was feeling more relaxed. I must admit to feeling pretty tired. Last night we worked until about half past nine. I still find it hard to believe that I sat through a three and a half hour geography lesson. What surprised me most was that I really enjoyed it.

Kathleen: "...We then walked to Hallsands... I was amazed to find I could actually keep up with everyone. I thought I would be the straggler in the group..."

KH/MEX/diary

Etholle: "By now, I found that I was beginning to talk to the people from other groups; the common room had a friendly atmosphere and despite the cold the general feeling was one of tired contentment... And so, out of the damp of the drying room, into dinner and not even minding that I had to go straight back into the lab. to finish my work. I don't usually want to work this hard - I have definitely been captivated by the atmosphere!

Saturday evening: Well, I now know that I can sit in a lesson for two and a half hours and still almost be attentive."

Second, students valued the experience for the trust placed in them to take responsibility for their own learning and to work independently, whether this was to bring forward ideas and test their own thinking, organise their own and their group's work, or, at the simple level, being responsible for themselves and their equipment in the field. Many pointed to the contrast between the way they were treated as adults on the course and not as school children which they regarded as characteristic of their school-based or college-based learning. The maturity and equivalence of the interaction between field centre staff and students is a point which I shall refer to later in this section when I examine staff-student relations, but here it is important to note that this aspect of responsibility for learning and perceived maturity of attitude held significance for students and contributed to their motivation to learn. The experience offered them the prospect of placing their own beliefs and value systems against those of others, developing a sense of autonomy and independence, and enhancing their self-understanding; characteristics which Marcia (1980) has identified as being central to adolescents consolidating their personal

identities:

Joanne: "From what I've seen of the Centre so far there's two things wrong with it (1) the meals are horrible and (2) It's so far away from home, South Yorkshire that is. Seven and half hours on and off trains yesterday - it's dammed ridiculous. But when we finally arrived and were shown to our rooms it was great. Hundreds of miles away from grotty [Hillsborough] and best of all away from my nagging Mum!!"

JS/MEX/diary

Gary: "The afternoon work was really interesting and enjoyable... I enjoyed this afternoon's fieldwork as everyone joined in - getting really wet in the last river. The equipment was really good - and the staff were really trusting with it. At school the teachers would have been bugging us - worrying about the equipment or us getting washed down stream"

G3/HAM/diary

Etholle: "...a lunch time session in the pub. - This 'change of heart' on behalf of the tutors was much appreciated, and, as far as I'm concerned made a welcome change! I was surprised at the way we were left well alone, but again, this left us all thinking how 'well' we were being treated (in as much as we were being treated like adults rather than schoolchildren)."

EW/DAV/diary

John: "On the second day I tackled my first piece of fieldwork. Although cold and uncomfortable, I was surprised how relatively painless an experience it was and I think I did the work quite well. I was in a group where I had to speak and work with other people I'd never met before and this in itself was a useful experience."

JB/MEX/diary

8.32 Social interaction between students

Sections 7.2 and 7.3 made clear that Centre staff and teachers visiting Slapton drew particular attention to the fact that they valued the field week in providing pupils with an opportunity to work and live with new peers. Where a school brought sufficient students to warrant a tutor teaching a course to pupils of only that school, student groups were usually mixed between class teachers to ensure that new peer groups were

established. More commonly, however, were situations in which pupils came from mixed schools; drawn from different parts of the country, from large inner-city and rural schools, sixth-form colleges and 11-18 schools, public and state sectors, and from single-sex and co-educational schools.

Becca: "The uneasiness of being public school educated compared to most of the others is gradually wearing off. The words spoken to me yesterday by anyone other than my own friends here was "OK Ya" as I walked past some 15 people - that made me feel at a disadvantage initially as I thought no one would mix with us because of how we spoke - but, thank God, today has been OK - have chatted to quite a few new people, none of whom seemed to differentiate between "us" and "them" - this may sound snobby - but it's not supposed to be - just fact. I couldn't give tuppence for who came from what background - it's what you're like inside and at least the ice seems to be breaking between us all..."

BBB/WT/diary

Observation and the student diaries produce data which are uniform in supporting staff perceptions of the educational value of this social aspect of the experience. More significantly, however, the diaries illuminate which aspects of student interaction are regarded as educationally valuable by the students themselves.

First, the students' comments particularly well illustrate the importance of fieldwork's role in developing pupils' group-work skills. Group-work skills have been recently defined by the National Curriculum Council (1990) in its 'Core Skills 16-19' for A and AS level syllabuses. This document stresses the importance of 16-19 year old students having personal skills which include:

"the ability to:

- work in a team: undertake a variety of roles and responsibilities, exchange information, understand group roles and relationships, recognise, and show sensitivity to, the values of others.

Students should be able to take responsibility for their own learning and its management in individual projects or through supported self-study. Group tasks will enable students to contribute as team

members and team leaders." (pp.9-10)

Students at Slapton (see for example, Karen above) identify that an educational outcome of working and living with peers is the 'team spiritedness' or 'sense of camaraderie' that the experience engenders. Karen's comments in her diary explain how she finds this team spirit motivating and she contrasts this with the competitive and individualistic atmosphere of her school classroom where there was not the same sense of "doing things for each other" or the feeling of "cooperation with each other to achieve something". A key component then in the creation of this team spirit which suffuses the learning experience at the Centre is the creation of a learning milieu which is absent of a competitive element that is derived from any formal assessment of the course. This factor has important implications for teaching through group-work and could reveal that the emphasis in the classroom on competition between individuals reduces the capacity to work effectively in teams towards the solution of a common problem or achievement of a shared goal. Certainly, it highlights the importance of understanding the relationship between the goals of group-work and how an individual's performance can be assessed. Secondly, it also illuminates the significance of the unfamiliar learning context such as that found on fieldwork in acting as the catalyst to change pupils' "scripts" for the ways in which they learn (see, Schank and Abelson, 1977). White (1988, pp.110-115) argues that changing such scripts or generalized episodes of the learning process and its purposes and procedures as understood by pupils is a more difficult teaching task if attempted within the more familiar context of the classroom. Fieldwork's unfamiliarity of context may offer, therefore, the prospect of changing pupil's scripts towards group-based learning in ways which are transferrable to the classroom and thereby offer a potential mechanism for more widespread change in developing students' understanding for the ways in which they can

learn.

Second, many students refer to the value of group work during the field week in providing them with an 'independent' experience and that this autonomy of working together in the field separated from the close management and instruction of teachers provided a sense of importance for their work, perhaps because students could see how their work impinged directly on the performance of the whole class and was a more real and relevant situation to that which they would face in completing tasks in daily life. The independence of group-work geared to some shared objective is, therefore, central to students taking responsibility for their own learning. More particularly, students focus on learning or developing specific social skills through such a independent experience: skills such as negotiation, prioritisation, time-management, sharing workloads, and exchanging views:

"Sam: "I enjoyed working alone (well the group alone) as you felt as if your work was really important - felt independent."

S3/LGS/diary

Phillip: "Everyone did something today such as digging out the bed-load pit and that helped to bring the group closer together with each other because everyone 'mucked-in' and did their share of the work."

P14/LGS/diary

Sharon: "What I get vexed about is that although our group tries really hard we are always the last people to put our data on the blackboard and are the only people to 'get it wrong'. Other people on the course are now even expecting wrong results from us but I think that makes us even more determined to get it right next time."

S6/LGS/diary

John: "I like the system of 'integrating' students from different schools into a group, it's good practice for perhaps full-time work, where one has to work alongside with strangers in many instances..."

JB/MEX/diary

Amanda: "I think the idea of splitting into groups with people you

don't know is a good idea because you are not separated into schools sort of thing, also many new and different ideas can be gained."

A12/LGS/diary

Simon: "Today was probably the most enjoyable of the three so far. I think this is probably because we were actually let off on our own in our own groups with tasks to do. This gave us freedom to work out our own plan of attack and time schedule within the two hours in the village. There were no adults around to help us, so we had to sort ourselves out, not that the work we were doing was too complex..."

SW/DAV/diary

Third, the group-work in the field also led to a change in roles for some pupils within their groups as they negotiated who was to collect data, who was to record results, who was handle the equipment etc. In particular, the experience prompted a reflection by some women on their perception of themselves as women in group situations. Some were reluctant initially to become involved in the data collection activities and were content to let the men in a group take the lead in handling equipment or organising a group's activities. More infrequently, other women such as Sally as we have seen, saw the male image of the subject - men being the first to volunteer to take readings in a stream - as a gender role to be broken: "I'm sure that the instructor was surprised that a girl should volunteer. It's sexist! But then Geography is a boy's subject. But I'm out to prove them wrong!" The following extract clearly demonstrates the shift in roles which the group-work provided Kathleen during the week, and the growing sense of confidence which this experience offered her:

"The weather was awful the next morning and I was beginning to wonder why I had come here. After breakfast and a short lecture we went to find a river to study. Due to the weather we didn't get to our intended destination. We did however study another river. As group leader I had to carry our equipment, well I was supposed to but one of the lads felt sorry for me and took it. I was really pleased I never had to go in the river, the two London lads volunteered..."

2nd Day

Sara set the alarm for 7.30 but none of us got up til 8.00. Karen and I to put it mildly are getting fed up, the other two do nothing but

talk, jump around and generally be stupid. I guess it must be my age because it didn't appeal to me. Today we walked, and walked, and walked, mainly through mud. Despite what beauticians say it's not good for you. Having run out of luck I had to drag the bucket around all day, though the group I'm in are really nice. Today was not half as exciting as yesterday, the weather was nicer but the work was not captivating. I did however enjoy myself, especially when I was sat down doing nothing...

3rd Day

...My face is getting a bit of colour at last, though everyone else is redder. Although I like it here I've suddenly realised last night I miss my two sisters yelling at me or asking to borrow clothes etc. I'm not only learning about geography while I'm here. I'm also enjoying mixing with different people from other areas of the country. I'm not a native of Yorkshire and have lived in several places in Britain and two in Europe so I'm used to mixing. As I'm the only girl in the group I get the least exciting things to do, but there's three days left to change that situation.

4th Day

...It's true what they say you don't know a person until you've lived with them. I couldn't live with the people I share a room with, well only one and that's because we're so similar... The thing I enjoy most about the trip is being with lots of new people, who are generally more friendly than the people you come down with... At last I got to do something - measuring depths of soil strata, it's not the most exciting things to do but at least it was something...

5th Day

Today was freezing. We had to measure coastline deposition. It was great fun, the tape measure kept flying off, even one's fingers were freezing so no-one could take notes. We then walked to Hallsands discussing and looking at deposition. I was amazed to find that I could actually keep up with everyone. I thought I would be the straggler in the group. Karen and I were at the front most of the time. Although by the end of the day I was freezing cold and had discovered I'd ripped my coat, I felt really invigorated, all the sea air seems to be quite good for me. While you're standing on the beach working in your groups I found you have to be aware of what's going on, it's no good waiting for someone to do the work for you. Everyone has to do his/her share each claiming to have done the most. By having to be aware of what you're doing you learn more about the process you are studying...

6th Day

...to sum up the whole week, I've enjoyed myself working nearly all the time. The work we've done has developed ideas we cover in the classroom and allows you to see it in real life rather than in pictures. It's been great meeting all the people from the other school. I just wish we were here longer so that proper friendships could develop..."

8.33 Social interaction between staff and students

In Chapter 4, research findings reviewed by Crompton and Sellar (1981) suggested 'improved' staff/student relations resulting from a field experience with tentative conclusions that increased contact time and improved staff-student ratios were partly responsible. Fink's (1977) study was more precise in identifying that fieldwork provided greater accessibility and interaction with staff but also that it changed students' perception of teachers away from them being distant authority figures with whom they had little in common. Fink argued that fieldwork 'humanized' the learning experience partly by students acquiring personal and professional role models of their teachers and lecturers. In personal terms, students saw their staff in a different setting, displaying aspects of their character, their beliefs and values, previously undisclosed: "When students looked upon the professor as a personal model, they tended to be sensitive to such things as the way he treated life, his sense of humor, his interest in what he was doing, and how he related to other people." (*ibid.*, p.103). In professional terms, students developed an image of their teachers as not only members of an academic community but as a role model for the professional geographer; fieldwork offered the opportunity for students to develop images and aspirations for what geographers are and what they do.

At Slapton, the two groups of staff - Centre tutors and visiting staff - complicate the relationship between teacher and learner by occupying different teaching roles. While Centre staff undertook an expert, leadership, professional, and management and administrative role, visiting teachers occupied (to different degrees) an observational, fellow student, support and back-up, and discipline role. To this list of roles taken by

visiting staff, I should add that staff also assessed their pupils' performance by watching them undertake various tasks during the week - taking the opportunity to 'find out more about their students'. In this situation, students perceived the Centre tutors as the 'teachers', 'leaders' or 'instructors' of the course but were also aware of the roles being taken by their own staff or those of other schools visiting the Centre. As a result, some of the perceived functions of 'being a teacher', particularly as assessor and disciplinarian, were in the eyes of the pupils removed from the teaching role occupied by Centre staff. The separation of these aspects from the responsibilities of Centre staff immediately rendered the relationship distinctive from that to which they had become accustomed at school, and helped to divorce the experience from the daily pattern of school life. The change in teaching roles was part, therefore, of the distinctiveness of the week.

Other aspects of the week also served to mark the teacher/student relationship as distinctive, namely the opportunity which the regular and intensive contact-time of staff with students offered teachers to discuss matters outside those of the subject; draw comparisons with different 'home' environments; share in an experience other than that generated by teachers in the classroom; tell stories of events and people in the locale; or make bridges between subject knowledge in different disciplines; or simply provide a different perspective on the subject of geography.

Time, however, is not the only factor at work in distinguishing the process of social relations between staff and students at the Centre from those operating at school. The social structures and culture of the two institutions are at variance. Many of the daily routines and social events which we associate with school life, and which are so graphically described

in the ethnographic descriptions of Ball's Beachside Comprehensive (1981), or Burgess' Bishop McGregor School (1983) such as lesson-bells, bustling corridors, morning assemblies, timetables, and registration, are not present in the daily regimen of the Centre. A visitor to Slapton would find by way of contrast to most schools, that life is not geared around an influx of staff and students into classrooms at nine and an exodus at four, with the working hours in between broken into 40-minute or 60-minute 'periods'. Similarly, terms like 'homework' are absent from the dictionary used by staff and students; students refer to the Centre staff and occasionally to the visiting teachers by using their christian names; teachers and pupils wear the same uniform of jeans, sweaters and waterproofs.

These distinguishing features: change in teaching roles, the brevity and the intensity of the new learning experience, and the social and cultural differences of the Centre, provide a base line for a different kind of interaction between the teacher, Centre staff, and learner. The absence of many of the cultural cues with which students associate school and teachers serves to 'deregulate' the interaction between staff and students; students talk of a more "relaxed", "informal", and "friendly" atmosphere. But the relationship is also sufficiently familiar not to estrange students completely from the experience; it is a balance of motivating unfamiliarity and reassuring conventionality.

The student diaries are imprecise in pinpointing the ways in which the field tutor's approach to teaching at the Centre differs or is similar to that of teachers they have encountered elsewhere. However, their reflective comments on aspects of teaching and the learning experience which they found valuable and those which they found less helpful, provide

some evidence to suggest characteristics of the relationship which are central to creating the combination of motivation and challenge and relaxed informality.

First, students are stimulated by the friendly enthusiasm of teaching staff - the energy and enjoyment which they demonstrate in their approach to teaching and their personal excitement of the subject. This enthusiasm is particularly important at the beginning of the course, as students make clear, since it helps to dispel any apprehension they hold. But it is also part of the establishment of a personal and professional role model of the field tutor. Observation of a series of courses at the Centre for this research would suggest that enthusiasm is partly contrived, to excite the students to become involved in activities, and to create a sense of fun and enjoyment that can be gained from fieldwork, but it also a real display of attitude, emotion and belief of the teacher of their own personal motivation and commitment which they get from their teaching, their environment and subject - the "buzz" which David talked about earlier in his interview. It is hard to convey how this is transmitted to the students. However, key elements are a willingness to see students on a course as not simply a group to be processed through a set of activities or work schedules during the week; a desire on the part of the tutor to get to know students as individuals and develop a rapport by simply learning the christian names quickly of a group, or talking to them over dinner to find out more about their school and their lives and interests. It is also evident in the tutor wanting to share experiences of places, events, and people which they find meaningful - to engage with students in ways which allow their own environmental awareness to be revealed without trying to inculcate their own value systems. David's own diary conveys something of his own identity which students go on to capture and distill into his

enthusiasm and love of subject:

David: "Postponed analysing the remainder of the settlement data because the weather was perfect and the thought of Prawle Point was too tempting... Everyone seemed to feel the warmth, colour, and splendour as we turned into the field above Gammon Head... Felt a building euphoria as the rays of sun slowly dispelled the struggle against cold and wind of the last 10 days..."

"...Terrific drive through the lanes around Blackawton - sun, celandine and catkins contrast with the residual snow banks along shaded places. Most of the van seemed to feel it."

DJ/SLFC/diary

Sam: "The enthusiasm for the subject that Dave has struck me straight away and I was rather embarrassed that I did not share this enthusiasm to the same degree."

S2/LGS/diary

Steve: "Dave, I found, is so keen, his enthusiasm is infectious, and he keeps his descriptions and explanations interesting."

S13/HAM/diary

Paula: "Dave is very lively and seems to love the subject so much that I think his enthusiasm is instilled into us."

P6/LGS/diary

Second, students make it clear that staff commitment to their own teaching and their enthusiasm for their subject needs to be combined with a competency, professionalism, and knowledge of subject. Indeed the two aspects of personal commitment and competency are frequently enjoined in students' descriptions of what they perceive as 'good practice' in the teaching they receive at the Centre. In particular, competency is referred to by students as making clear the objectives of work in the class or in the field, or setting out the structure of events; students value teaching which specifies what they are expected to achieve and what they are required to do:

Philip: "The man in charge seems to know his stuff without being boring which is a good thing from my point of view."

PS/DAV/diary

Etholle: "The morning briefing was inspiring and made me feel more eager to get into the field (but not into the river). I found the lecturing style very relaxed and David made everything very clear. I understood exactly what the aims of the day were and was looking forward to it.

Dartmoor was wild and barren (as expected). I must admit that I was worried as we drove on through the snow and seriously wondered if we'd ever come out alive! All I can say is "thank heaven for snow-drifts". Once down by the river I was still aware of what had to be done. Despite the snow, the morale of David and his colleagues had not dropped which I found comforting! They inspired us to be enthusiastic. When we returned, I was very unsure of what we would have to 'write-up' in the evening, but again because of the enthusiasm and competence of the lecturers I did not find myself worrying for long."

EW/DAV/diary

Richard: "I like it how things are laid out easily with hypotheses at the beginning and their conclusions at the end. This makes it simple and easy to understand."

RD/DAV/diary

Third, there is a symbiotic relationship operating in the learning experience at the Centre between teaching techniques and styles which enhance students' conceptual understanding and the emotional response of the students to their interaction with the teacher. A positive feedback mechanism operates which serves to increase the level of interaction between staff and students according to the value of the experience as measured by pupil's perception of their enhanced understanding. Thus, at Slapton observation of students at work in combination with their diaries show that students link increased levels of interaction and discussion (asking questions, putting forward ideas to formulate an hypothesis, responding to questions etc) with greater understanding; a "good" discussion is often expressed with terms like 'being able to grasp concepts more easily' or 'things falling into place'. Anne and Andrew describe it in these terms:

Anne: "After discussing some rather interesting data about material and wind-wave directions coming on to Start Bay we had a breather for

once but I felt this was one of the best discussions so far. Even people that had been previously quiet or silly were putting forward good ideas and I felt people were really thinking about possible reasons for our data for once, myself included! I now understand that, due to relative sea-level changes, how the Ley at Slapton was formed."

A6/LGS/diary

Andrew: "Feel I ought to mention Dave's method of teaching - I like it very much, pleasant alternative to the text book approach. Asking questions, putting forward ideas and then going out to see if those ideas are correct - a lot better than the parrot-fashion teaching back at school. Makes it more interesting to see form and processes etc - also easier to grasp and take in."

AJ/DAV/diary

Fourth, a characteristic of the social interaction between staff and students which is evident in all the courses I observed for this research is the importance of humour in the learning experience. The social and psychological processes of humour have been thoroughly investigated (Martineau, 1972) and researchers have examined its particular function and role in classroom processes (Woods, 1976; Walker and Goodson, 1977; Woods, 1986). Building on the work of Martineau (*ibid.*), Stebbins (1980) argues that there are four broad functions of humour: conflict, control, consensus, and social comic relief. I shall focus on the last two of these categories since at Slapton the first two, involving satire and ridicule, are entirely absent from Centre staff/student interaction. This in itself is significant since it would indicate that humour as a mechanism of social control is an unnecessary device at the Centre and suggests that few behavioural or discipline problems occur within the pattern of staff/student social interaction during the field week. Stebbins states that in consensual humour "a solidarity or bonhomie is created; the social interaction exudes a warm feeling of good-natured friendliness." (p.86) More specifically, he argues that comic relief is frequently found in classrooms and that this "offers a momentary respite from the seriousness of lengthy concentration on a collective task, a respite facilitates the

completion of that task by refreshing the participants... Put otherwise, social comic relief reduces fatigue which, if allowed to increase, threatens role performance and motivation." (loc.cit.). The research evidence to which Stebbins refers, suggests that comic relief can be aimed at improving academic performance by being used intentionally to sustain concentration, but although there is some evidence to suggest that improved recall results from its use, levels of comprehension appear to be unaltered.

Stebbins identifies several forms of humour occurring in classrooms which have one or more of the above functions. One of these forms which is used extensively at Slapton intentionally by field tutors as a mechanism for comic relief is the 'narrative joke' - "or the oral presentation of a brief humorous story" (p.94). For example, during students' investigations of the formation of the shingle ridge which extends in a 9km arc around Start Bay, students would often walk from Torcross to South Hallsands after surveying beach levels, collecting shingle samples from beaches as they went. The walk would culminate in David recounting stories in the ruins of the South Hallsands village about the place and its destruction and the villagers who lived there. The stories blended truth with fiction in true 'fishing-story' style. Tutors would also cue the students into some of the narrative during the introduction to the field week when showing students slides of the area they would explore and the themes of their investigations. My field notes from one such introduction describe this cueing process:

Dave moves towards the centre of the lab. - centre stage. A series of three slides show the dramatic effects of storms on the village of Torcross in 1979 and the theme of coastal erosion and natural and man-made coastal defences is extended in slides of the ruined village of South Hallsands - further round the coast towards Start Point. Slides from historical archives show the village prior to the last devastating storm of 1917 and afterwards, and the students are invited

to consider why such dramatic erosion could take place over such a short period. The ruined houses of the village and the strewn remains of belongings from the more recent storms of 1979 at Torcross give a graphic picture of the impact of natural processes but David elaborates on this theme by developing a sense of place and personality. The students are shown a slide of four 'grave-faced' and weatherbeaten sisters who lived and worked as fisherwomen in South Hallsands prior to the 1917 storms:

David: "Here are the famous Trout sisters! That's old Edith on the right, and then there's Clara, Patience and Ella. Now, Clara who was a little more feminine than the rest (giggles from the students, a few express doubts that Ella was female!) escaped and married, but Ella received fame and fortune, and was awarded the OBE - perhaps we can find out why when we get down to Hallsands on Monday"

PKH/field notes

Down on the ruins, perched precariously above the waves, David would recount the story of Ella who braved the elements in the First World-War, by grabbing her cousin Willy and rowing out to a steamer that had been shelled by a German ship and saved the only survivor of the sunken vessel who clung exhausted to driftwood. She was given the OBE for her actions and received a sizeable reward from the African family of the survivor who lived with Ella in the village while he recuperated. Which was the worst ordeal is left unclear!

However, the anecdotes or aphorisms narrated to students by teachers at the Centre often have a secondary purpose additional to that of reducing mental fatigue and providing a break in concentrating on a learning task.

Narrative describing particular events in the local area such as the night of 1917 storm provide an historical perspective and serve to put the highly focussed nature of the students' investigations into a broader, longer-term and more humanistic context. Thus, the accounts serve to develop the students' empathy with the locale and sense of place but also have an educational value in placing their geographical studies into a holistic context. These two components become forged in a successful humorous narrative to assist pupils in forming episodes of the learning experience.

The narrative has not only a strategic function, but as Stebbins notes, it is a form of self-expression; it supplements other information acquired by students during the course which expresses the beliefs, attitudes, and feelings of the tutor. Finally, as Alex's comments below reveal, intentional humour such as that used by Centre staff reinforces the belief in students that they are individuals with whom the tutor is trying to relate and not simply recipients of knowledge; humour therefore is central to the creation of informality and sense of equivalence between staff and students which I have highlighted in earlier parts of this thesis. Stebbins describes the self-expression role of intentional humour in teaching situations as: "Any form of humour with a subject or audience communicates the message that those people are worthy of some sort of attention, favourable or unfavourable. Humour that works to promote consensus indicates to the audience (and perhaps the subject) that they are worthy of sharing an atmosphere of good cheer with the humorist. Moreover, such humour tends to convey, albeit only temporarily, a degree of equality between humorist and audience. While they are laughing together at something, status differences are momentarily forgotten." (Stebbins, op.cit. p.95). The student diaries testify to these various strategic and self-expression functions of humorous narrative operating at the Centre and graphically illustrate its impact on the quality of social interaction with their teachers:

Alex: "The other thing I would commend about today was the variety of statistical data collected interspersed with maybe less important but very interesting walk and look at Hallsands. The lighter sides of the day were all very refreshing, a great change from the gruelling work of rivers on the first day. All these points I think personally really kept me thinking and made me feel that I was not just being churned through some straight forward boring course."

AJ/WI/diary

Gavin: "The actual walk along the coast was of great interest

particularly the 'extras' that David told us of, such as the Trout sisters since these broke up the factual work. The remains of the cottages I also found very interesting and the history of the village, perhaps this is because I am interested in historical remains and the subject itself."

G8/HAM/diary

Sam: "The walk this afternoon was really good fun. Dave was ace, telling us all the local gossip - seems an exciting place around here! It was good in the way that we walked and stopped - learning lots of bits on the way. It was enjoyable as it seemed like a walk with friends and not a geographical exercise... It was interesting to watch a river rapidly cutting a channel in the sand. Flow diagrams of the process were clear in our minds, so watching it actually happen was useful."

S3/LGS/diary

Andrew: "The field work done today has made up for these points - good weather, good company and interesting. This looks like a major factor (the company) as a laugh is essential to help the work go down."

AM/DAV/diary

8.3 Summary

In this section I have sought to investigate the impact of fieldwork and the field experience on pupils' emotional or affective states and their outcome for pupil motivation or commitment to learning. I have drawn together the results of research reviewed in Chapter 4, which suggested that fieldwork was significant in improving some characters central to pupils' affective learning: self-concept and self-esteem; peer socialization; and the social relations operating between teachers and pupils. However, the observation, diary and field note data from the research at Slapton has provided some additional insights into the processes at work in generating the kind of responses evident in the quantitative results of affective measures in the psychometric studies, and in the qualitative data found in the study of college geography in the USA.

In particular, this research shows that the aims of fieldwork in the enhancing the affective dimension of learning as perceived by centre staff and visiting staff are supported by empirical examination of practice, namely the significance of the novelty of the social setting, the enthusiasm and commitment of the field centre staff, and the cultural differences of the Centre from that of the school. Within this contextual framework, the empirical data focusses on factors operating to improve self-concept, peer socialization and teacher/student interaction.

In terms of self-concept: firstly, self-confidence accompanies a motivation for the subject of geography that fieldwork generates by providing a 'template' for geography and geographers, and by the experience 'bringing the subject alive'; secondly, self-concept is enhanced by students recognising they are able to meet the mental and physical demands placed on them by the course; and thirdly, the opportunity to work independently brings a sense of personal value to the students' work.

In terms of peer socialization: the data shows the positive impact of firstly, a team-spiritness and 'togetherness' in working in a competitive free environment. This point suggests further avenues for research in examining the nature of group-work and assessment procedures, and supports White's (1988) suggestion that new "scripts" (Schank and Abelson, 1977) for learning through group-work may be better learnt in unfamiliar learning contexts such as those found on residential field courses. Secondly, peer interaction is enhanced by the sense of autonomy and independence which group-work during the field course provides the student. Thirdly, evidence of group-work at Slapton reveals that the experience is successful in changing pupil perceptions of their own roles in social work-related situations and this feeds back into notions of self-confidence and

self-esteem.

Finally, in terms of teacher/student interaction: data suggests that the level of interaction and the quality of interaction between teachers and pupils is improved by the intentional and unintentional states of the teacher's enthusiasm for subject and commitment to teaching; the level of competency and expertise of staff; the strategies employed by teachers to improve conceptual understanding of pupils; and the strategic and self-expression functions of humour, and in particular, the role of narrative humour in the process of teaching.

In the next section of this Chapter, the focus of the analysis of the case study is directed away from the teaching and learning process experienced at Slapton Ley Field Centre and towards the means of integrating that experience into the broader context of school-based teaching and learning.

8.4 Learning Transfer from Field Centre to School: Fieldwork and the Exemplification of Theory

In Chapter 5 of this thesis, I analysed the ways in which current A-level syllabuses make reference to the functions of fieldwork. Syllabuses show a marked consensus in focussing on two aspects of fieldwork's role in pupil's geographical learning. Firstly, syllabuses refer to the importance of doing fieldwork to develop a pupil's ability to learn and apply geographical skills and techniques, the handling of primary and secondary data sources, and the experience of conducting independently or in groups geographical enquiries and investigations. These skills are assessed by a range of methods including data response questions in 'seen' and 'unseen' papers, decision-making exercises, and individual studies or projects. Secondly, syllabuses refer to the importance of pupils applying knowledge gained from fieldwork to their written answers by incorporating geographical case-studies to exemplify and illustrate geographical concepts, theories and their application to real-world problems and processes. Syllabuses such as the Cambridge Local Examinations Syndicate (9050, 1989) state that questions are set to encourage the use of knowledge in this way, but emphasise that candidates should ensure that they "integrate" case-study material into their answers to "illustrate or qualify general points being made".

In Chapter 7 (Sections 7.2 and 7.3), evidence was produced from interviews with Centre staff that tutors perceived these two aspects as a primary function of their field courses they offered to students and both elements were central to course design and their teaching. Visiting staff to the

Centre focussed in particular on the value of the course in respect to the second function of fieldwork in the exemplification of theory which could be used by their students to qualify and expand their written work. Teachers regarded it as important that students should have a knowledge of examples but also that the successful integration of such knowledge into answers demonstrated to examiners that students had fully understood concepts which they were discussing. Listing examples studied in the field was regarded as insufficient. Interviews with visiting staff revealed a lack of clarity, however, in explaining how examples could be used to effectively demonstrate conceptual understanding. The precise role of fieldwork in this regard was unclear: whether its purpose lay in aiding recall through the formation of episodes of examples; whether it provided students with a memory of events which illustrated the process of inquiry that they had undertaken to test hypotheses; or whether its function rested in supplying understandable data to quantify and qualify students' answers. These questions are the subject of this section, and are approached by analysing the results of a second component to the case-study of Slapton Ley Field Centre - an assessment of pupils transfer of fieldwork from the Centre into the overall pattern of their learning in school and its use by students in their writing of examination answers.

Fieldwork Transfer: A Case-Study of Deerbridge Sixth Form College

The sample of students and teachers which was used to study the transfer process came from a sixth-form college in the maintained sector located in a large county town in England and which will be referred to as 'Deerbridge College'. The College is one of two sixth-form colleges in the county. In 1988, there were 570 young men and women aged between 16 and 19 enrolled at Deerbridge. The proportion of students at the College who undertook to

study geography to A-level was high; the average enrolment to the lower sixth to take geography during the mid-1980s was 70, having climbed from 50 during 1983 to over 90 in 1985 (over 12% of the total student numbers and nearly 25% of the lower sixth). Accordingly, it had a large geography department consisting of five members of staff, three men and two women, who shared the geography A-level teaching of 5 or 6 teaching groups, and who contributed to other teaching programmes such as geology, liberal studies, and technical and vocational education (TVE). The teachers were all graduates and one held a PhD in geography. This member of staff, Tim Whetton, was in his mid-thirties, the remainder were in their mid to late forties. In September 1985, staffing numbers and the distribution of teaching was as follows:

Staff	A Geog (1st yr)	A Geog (2nd yr)	A Geol (1st yr)	A Geol (2nd yr)	O Geol (1st yr)
MG	x	x x			
ALM	x x	x			
EMJ	x	x			
MJH		x			
MR	x	x	x		
IM				x	
WS					x

All the students taking geography A-level studied the Cambridge Board syllabus (9050), and most submitted an individual project in their second year as an assessed option. The A-level results of the College for geography in 1985 were:

Grade	A	B	C	D	E	'O' Pass	Fail
No. of Students	10	11	17	16	15	14	4
% sitting exam. (N=87)	11	13	20	18	17	16	5 (100%)
% of A-level pass (N=69)	15	16	25	23	21	-	- (79%)
% of O pass/fail (N=18)	-	-	-	-	-	78	22 (21%)

In 1985 and 1986 approximately one-third of the students taking A-level went into higher education to study geography and geography-related subjects. At the beginning of the course in the lower sixth year, students were informed that the field week at Slapton was a compulsory element in the programme and would take place while the upper sixth were taking their mock A-level examinations in the Spring term. The LEA contributed to the field week as an 'integral part of the course' by funding students' travel and tuition costs with the students' parents being asked to pay the balance for the cost of residential accommodation.

In March 1985, I attended the field course which Slapton ran for 72 Deerbridge College students and their staff and observed one of three groups studying at the Centre. Many of the observations, extracts from the interviews with staff, student diaries, and field notes which have been included in this thesis were made during this period and were a useful counterpoint to the perceptions of staff and students who came to the Centre on courses that were an amalgam of different schools from different parts of the country. Following the course, I approached the College via the Head of Department in October 1985 to ask staff if they would be prepared to contribute to a further phase of the research. I explained that I was interested in looking at post-fieldwork transfer in school but that participant observation to assess the range of reference made by teachers to fieldwork and the context in which it was referred, on a regular basis at a school or college which had visited the Centre and which I had had the opportunity to research, would be difficult logistically to do. As an alternative, I asked staff to complete a classroom diary for a four week period after half-term during the Autumn Term i.e. during the first term of the second year of the students who had undertaken fieldwork at Slapton the previous Spring. The diary consisted of a series of sheets,

one for each lesson, which could be completed at the end or during each lesson over the course of the study. The framework of the diary sheets concentrated on five aspects of the field week: the geographical content covered by each of the six days of the field week; social interaction between pupils, Deerbridge staff, Centre staff, local people or particular social incidents or events; techniques (equipment, statistical techniques, use of Centre computer); projects (choice, planning, methods of data collection, analysis, and presentation); use of fieldwork in examinations (integration of fieldwork in revision and examination answers). These were themes which I became interested in during my period of research at the Centre and which were the starting point for later progressive focussing. I visited the College in December 1985 to interview members of staff about the diaries they had completed. In fact, of the five teachers in the Department I had approached to participate in the study only three completed the sheets but all participated in the interviews. As I shall attempt to show, the sheets were more useful in providing points for discussion at interview than in presenting a comprehensive picture of the ways in which staff incorporated fieldwork into their classroom teaching. Nevertheless, the data produces some interesting insights.

A second piece of research at Deerbridge College concentrated on examining the students' (1985 intake) responses to their end of first year examination which the lower sixth sat in the Summer of 1986, 3 months after their fieldwork at Slapton and immediately prior to them starting their fieldwork for their individual studies as part of their A-level assessment. I visited the College on three occasions to read the scripts of 53 students of three of the A-level teaching groups. In July 1986, I returned to interview 5 students selected from the three groups plus 2 students from another teaching group, about their examination answers; working from

copies of their scripts and discussing with them their reference to their fieldwork or its absence in their answers.

The results of research into pupil's references to fieldwork in examinations are described below. This is followed by an analysis of data from teachers' diaries and from interviews which explores the ways in which teachers make reference to fieldwork in the classroom. Some tentative links between teaching strategies in the classroom and pupils' use of fieldwork in examinations are suggested.

8.41 Reference to fieldwork in examination answers

It is important to preface the remarks I make in this section with two caveats which need to be borne in mind when making any interpretations of the data. The use of the phrase 'reference to fieldwork' describes the incidence in students' end of first-year examination answers of specific reference to fieldwork studied at Slapton i.e. examples of processes, description of investigations, and data from investigations resulting from their week's visit to the Centre. I have also included in this analysis any references made by students to fieldwork conducted at other locations but where this occurs they are highlighted. The data is unsatisfactory in two respects. First, the examination taken by students at the end of their first-year will clearly not represent the same results of the final A-level examination when the students have completed the whole course, submitted their field projects, and have gained more experience in answering examination questions and writing assessed essays. Yet, it is my view that the results analysed below of examination answers are indicative of problems that students encounter in relating their experience from a week's fieldwork at Slapton to the final A-level examination. Moreover, one might

argue that since the experience was only 3 and not 15 months' distance from an examination, in the sample I have studied, then incidence of reference to fieldwork might be greater than that anticipated in the following year's examination. Nevertheless, a sample of actual A-level answers would be required if the tentative findings from this study are to be thoroughly tested. Second, it is also evident that attention only to students making specific reference to fieldwork in a script neglects to analyse the potential of the activity in developing student understanding of geographical concepts which students use in their answers, but which are not accompanied by specific exemplification; students may score highly on an answer for a coherent and balanced argument without making reference to fieldwork but the fieldwork may still have been central to their understanding and have influenced their performance.

Looking then to the results of the study, the first point to mention concerns the examination itself and its facility for incorporating fieldwork. First, interviews with staff stated that students were frequently reminded during their course of the clause included by the Cambridge Board at the top of their A-level papers: "Candidates are strongly advised to make reference to appropriate examples, studied in the field or the classroom, even where such examples are not specifically requested by the question." This clause is repeated at the head of the paper set for the first-year sixth (Appendix 8.1). Second, the paper itself offered students the opportunity to include references to fieldwork. It is divided into two sections along physical and human geography lines. Students were requested to answer three questions in the allotted time of 2 and 1/4 hours. In a marking scheme drawn up by one of the teachers, a maximum total of 30 marks were available per question. In Section A, Question 1 is a data response question in which students are required to

analyse the data set for a relationship between slope steepness, rock type and slope height and then to relate their knowledge of slope processes and slope forms to the data to see if it supports or negates models of slope development. The fieldwork should have helped students in their ability to analyse data sets for trends and to assess the significance of the relationships between the three variables but slopes was not a topic covered during the course - reference, however, to the impact of aspect and past processes in periglacial climates on slope development were made during the field week when students were conducting infiltration experiments downslope. Question 2 on river processes offered students the opportunity to incorporate their field data on the proportions of different types of stream load deposited by the Slapton Wood and Stokeley Barton stream and to draw attention to the significance of load availability during different energy regimes operating in a year. Question 3 specifically asked students to refer to selected examples in discussing the statement that coastal landforms are the product of interaction between rock type and processes of denudation. The example of the shingle ridge studied at Slapton clearly had a strong relevance to this question since it could be used to incorporate ideas of past processes effecting present beach form and work on the coastline between Start Point and Prawle Point could be used to show how similar rock types in an area can respond differentially to high and low energy environments. In Mary Spencer's mark scheme 20 of the 30 marks available on this question were awarded for reference to selected examples. Question 7 offered students the chance to include much of their Slapton work to discuss the contention that landforms were the product of past rather than present processes, and again the question asked for selected examples. In Question 8, human impact on the 'natural' environment of Dartmoor was a major theme of the last day of the field course. In Section B, the fieldwork on spatial and temporal

variations in rural settlements in the South Hams that resulted from growth or decline in rural services and population, and produced variations in housing type, age structures and social characteristics supplied a relevant example for Question 11. In Question 12, the fieldwork undertaken in Exeter to illustrate the discrepancy between geographic models describing functional zones in cities and the real world could be used to exemplify functional change in urban environments.

In short, of the 13 questions set in the paper, students could have utilised their fieldwork to illustrate and qualify points made in their answers in up to 7 questions and were encouraged to do so by staff and in the paper itself.

Tables 8.1A and 8.1B show the pattern of student selection and response to questions in the examination and the incidence of fieldwork references. Selection of questions was heavily dictated by the coverage of topics within the course by the five student groups taking the paper since teachers attempted to avoid overlap in their coverage of topics to prevent the overuse of limited classroom, library and computer resources at particular times of the year. Of the three groups analysed, Questions 1 (data response on slopes), 2 (river processes), and 12 (urban morphology) were the most popular choices; 54% of all questions answered. Only seven students made reference to fieldwork in seven questions (5% of questions answered); no student made reference to fieldwork in more than one out of their three answers. Of these seven references, five were in Question 3 (coastal processes) (63% of those students attempting this question). Of the 35 responses to Question 2 (river processes) and 11 responses to Question 11 (rural settlement) no students referred to fieldwork. Only in one response out of a total of 157 answers was fieldwork referred to in

Table 8.1A Deerbridge Sixth Form College
Geography A-level: First-Year Examination, June 1986
Student Choice of Questions

A. Group Tutor: Sheila Appleton

	Section A Question Nos.								Section B Question Nos.				
	1	2	3	4	5	6	7	8	9	10	11	12	13
Pupils (N=16):													
Vanessa	x	x											x
Sharon	x	x											x
Jo	x	x											x
Rachel	x	x											x
Paula	x											x	x
Caroline	x	x											x
Tina	x	x											x
Sarah	x	x											x
Lance	x											x	(2)
Ian	x	x											x
Rachel	x	x											x
Abigail	x	x											x
Hilary	x	x											x
Robin	x	x											x
Linley	x	x					x						
R.		x					x						x
Total Question No.													
Response	15	14					2					15	1

B. Group Tutor: Anthony Stanstead

	1	2	3	4	5	6	7	8	9	10	11	12	13
	Pupils (N=21):												
Irene		x		x									x
Faye		x		x									x
Mark		x		x						x			
Andrew	x	x											x
Andrew				x			x						x
Andrew		x		x					x				
Guiddian	x						x			x			
Roderick			x	x						x			
Holly			x				x			x			
Daura			x				x			x			
Simon		x		x							x		
Stuart		x		x									x
Matthew	x	x								x			
Stephen	x									x			x
Mark		x		x						x			
Michael				x									x (2)
Iain		x		x									x
Christina		x		x									x
Julie			x	x						x			
Andrew				x									x x
David	x			x									x
Total Question No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Response	6,	10,	3,	16,	0,	0,	1,	3,	1,	9,	1,	8,	4

Table 8.1A Continued

C. Group Tutor: Mary Spencer

Pupils (N=16)	1	2	3	4	5	6	7	8	9	10	11	12	13
Richard		x				x					x		
Sean	x	x											x
Nicola							x				x		x
Julie		x				x					x		
James	x						x			x			
Steve		x		x									x
Edward	x										x		x
Louise		x				x					x		
Stephen		x	x								x		
R.	x	x							x				
Mark		x				x					x		
Diane		x	x										x
Christopher	x	x									x		
Justin		x	x										x
J.			x						x		x		
Arabella		x				x					x		
Total Question No.	1	2	3	4	5	6	7	8	9	10	11	12	13
Response	5,	11,	5,	1,	0,	5,	1,	1,	2,	1,	10,	0,	6
GRAND TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13
	26,	35,	8,	17,	0,	7,	2,	4,	3,	10,	11,	23,	11 (=157)

Table 8.1B Students making reference to fieldwork

Pupils	Q.Nos. answered	Q.No. inc. fieldwork ref.	Total No. of attempts of Q.No.	Refs. to fieldwork as % of total attempts
James	1,7,10	7	2	50%
Rachel	1,2,12	1	26	4%
Stephen	2,3,11	3	8	63%
Holly	3,7,10	3	"	"
Diane	2,3,13	3	"	"
Julie	2,3,13	3	"	"
Julie	3,4,10	3	"	"

answer to questions which did not ask for selected examples.

The quality of the use of examples from the students' fieldwork at the Centre varied. Some students simply mentioned a place name and even this limited reference was sometimes inappropriately used:

JS: "...Normal slope processes also occur on the cliffs. Cliffs with bedding planes sloping (down) the sea experience large slides and so produce smoother cliffs. Cliffs with the bedding planes vertical, horizontal or sloping inland (down) appear as jagged upright cliffs. To complicate matters the sea level can change its height as the land can so eustatic and isostatic features are produced e.g. Start Point near Slapton..."

86/EXAM/A3

Second, other students accurately described a piece of work they had done on the field course but failed to relate the findings of the investigation to the purpose of the question. Thus, part of James's answer below shows a good understanding of the fieldwork undertaken to determine the origins of the beach formation at Slapton Sands but he neglects to address his findings to the discussion required by the statement made in Question 7: "'Coastal landforms are the product of the most complex interaction between rocks and processes of denudation'. Discuss with reference to selected examples."

JF: "During fieldwork studies in South Devon studies were made of how past conditions had formed many landforms which were still being acted upon by today's conditions.

One such study was on Slapton Sands. Here a barrier beach goes right across the mouths of several bays trapping freshwater lakes behind it. Random samples of stones from the beach showed the main rock type to be flint. There is no chalk on the coast for many miles with the nearest being to the east in Dorset. With the prevailing wind being to the south west longshore drift did not seem to be the likely method of formation and just to make sure grab samples were taken at intervals along the beach. These were sieved into different sizes of material and each amount weighed to compare the distribution along the beach. No pattern was found so we were correct, longshore drift was not the cause.

Studying geology maps of the area gave us our answer. Thirty to forty kilometres out to sea lay chalk from which comes our flint. During the last ice age sea level fell with much of the water being

used in ice sheets so the coast line retreated out to sea. This new coastline was on the chalk. Waves formed cliffs and much chalk was eroded away.

As the ice melted sea levels slowly rose pushing the flint in front of it like a 'bulldozer' until it reached its present position. Since then other processes may have affected the barrier but made little change..."

86/EXAM/A7

Third, in the first-year examination set in 1985, students made reference to their fieldwork which investigated the formation of Slapton Sands, but as evidence of an hypothesis which their fieldwork actually disproved as a partial explanation of process and form. Students attempted to answer the following question: "Describe the transport of beach material by wave action. How does the study of wave transport help to explain the form and development of beaches, spits and bars?" Here are parts of three students' answers:

"A bar is an area of depositional material which extends, for example, from one area of strong resistant rock to another. An example of such a feature as a bar is Slapton. This bar extends across a bay and behind it there are two lakes of which one is forming a marsh. Where a river outlet enters a beach the river course is changed by a bar and it runs parallel to the bar until it is able to reach the sea. Bars can be formed offshore and moved inwards towards the beach. The bars of this sort are formed at the zone where the wave breaks..."

"...Eventually the spit will develop across the mouth of the estuary and form a sand bar. The river prevents the spit from curving round and filling in but eventually it blocks off the river and forms a lagoon. An example of a bar and lagoon is Slapton Sands in Devon. This has showed how the study of wave transport has enabled us to explain these formations, as they almost totally dependent upon longshore drift."

"A bar will only occur where there is ample supply of sediment and no river mouth to cause a diversion. The best known example of this is at Slapton Sands in Devon. This example at Slapton in Devon shows the drift of material all the way across and behind enclosing a lagoon, now partly filled with marsh. Such features are dependent of ample sediment, and of course the effect of wave action."

85/EXAM/Q1

In order to understand more about the reasons why students at Deerbridge referred to their fieldwork in these ways or, as in 95% of cases, made no

reference to fieldwork at all in their answers, I interviewed 7 students from four of the teaching groups. The particular focus of the interviews was to explore in more depth which aspects of the experience students remembered, how they perceived fieldwork should ideally be integrated into examinations or into essays, and the instructions and advice given to them by the teachers suggesting ways in which fieldwork could be referred to. The results of the interviews reveal some important characteristics of the transfer process from field to classwork. Firstly, it is clear that students had formed episodes from the experience; they held recollections of activities they had undertaken during the week, particularly the experiments and data collection exercises they had conducted in the field. But their recall of the ultimate purpose of those investigations in relation to the topics studied on the syllabus remained uncertain. When asked, students found it difficult to think of field examples which illustrated or qualified points they were making even though most of the students had revised from their notes taken during the field week as well as from classwork and texts:

Researcher: "Looking at Question 3, Holly, on coastal processes, if you had to write an answer to that question again or a similar question what fieldwork do you think you'd like to include?"

Holly L.: Well we did quite a lot on rocky coasts, didn't we.

Researcher: Yes. Which bits would you have brought in?

HL: ...I could have done about the wave-cut platform that we, well I can't remember where it was exactly.

Researcher: And said what about it...?

HL: Well, about how it's formed and how 'complex the interaction between rocks and processes of denudation' was.

Researcher: Right...

HL: ...What else could I have said about it. Not much. I can't really remember that much about the fieldwork.

Researcher: What sort of things about the fieldwork stand out in your mind? I mean, what do you remember most about it?

HL: I suppose the scenery on the whole. I remember, with David, on the beach, walking along... and doing the various experiments I remember quite well.

Researcher: Why do those stick in your memory do you think?

HL: I don't know, perhaps because I've got a visual memory, and because I had to take part in them as well.

Researcher: Can you give me an example of something that sticks in your memory like that?

HL: When we were on the shingle coast, collecting up pebbles, the area of the beach and that sort of thing. What else. I remember the soils quite well... It's a good way of remembering it more than anything else - recollecting it."

PKH/HL/int86

Researcher: "Rhiddian, you didn't include any fieldwork in your three questions. You did 1, 8, and 10. Now obviously 10 would have been difficult to use fieldwork in, but what about 1. Do you think you could have used your fieldwork there in any way?

RJ: Yeah, to show examples.

Researcher: When you say 'to show examples'. Can you give me an example of that?

RJ: No, not on slopes, no.

Researcher: If you had to do another exam or to write an essay on a topic what would you see as the ideal way of referring to fieldwork?

RJ: Well, with a good example from Slapton, explaining the actual general idea of the question and then give a detailed example. Off hand I can't say an exact example. Well you could say Slapton Sands if you were doing rock formation of beaches and things like that.

Researcher: What sort of detail? Would you include any data at all?

RJ: Well yeah, if I could remember it..."

PKH/RJ/int86

Secondly, students knew they were expected to refer to fieldwork and noted that their teachers frequently reinforced that they should do so, but they were unclear of the means by which this could be achieved:

Rachel H: "...When we were doing the revision, she [Sheila Appleton] kept on saying 'Come on! Where have you experienced this?' And we would all say 'Slapton!' ...But I don't know. I mean when I did the

rivers question I was thinking a lot of the things that we'd measured because that helps you to think of the processes and things, but I didn't really put much of that into my exam. at all. I suppose I could have done. But I'd forgotten quite a few of the results because I didn't look through the Slapton stuff I just sort of flicked through it.

Researcher: Did you not look at the Slapton stuff because it wasn't as important as revising from your classwork notes?

RH: Well, Miss Appleton said that we wouldn't be asked to tell about techniques, how we got the information. I think, it was just to put the information down. But I didn't really see how I could put the fieldwork into the answer, apart from saying, you know, 'Prawle Point' or whatever.

Researcher: How would you make best use of fieldwork if you had an ideal situation, do you think?

RH: Well, I suppose to prove what you had been saying, sort of thing... She kept saying remember your data from Slapton. But I don't think anyone took much notice because how can you remember columns and columns of figures?... The trouble is I know I've done it but the way I'm writing doesn't show that I've done it, if you see what I mean."

PKH/RH/int86

Researcher: Now, Jo you answered Question 1, 2 and 12 like most people, but no mention of any of your work from Slapton, why was that?

Jo B: "I don't know. I was writing away but didn't see any parallels to be honest. I wasn't really thinking about it, I was just writing it down - what I'd learnt. So I was just churning it out and I never thought about Slapton. I should have done I know, but I didn't really have time.

Researcher: Did you look at the stuff from Slapton at all before you did the exam?

JB: Oh yes. I read it all through.

Researcher: Yes, so why was that, was it just because you didn't think of it at the time?

JB: That's right because you learn all the notes and you've got to apply it to the question. I was just learning the Slapton notes but I couldn't sort of, you know, fit them to the question.

Researcher: Was that because you didn't know how to do that?

JB: Yes, I think so.

Researcher: How do you think the fieldwork should be included in an ideal situation?

JB: Well, if you sort of make a fact of it and describe the process and then say that you've actually seen it somewhere - you know

give evidence.

Researcher: So what about the data, Jo? Do you think you should refer to that?

JB: No. No I didn't learn those at all.

Researcher: Have you been advised to include any of the data at all?

JB: No."

PKH/JB/int86

Students were, therefore, aware that fieldwork could be cited as an illustration of a concept but were unsure of what more was required of them than simply mentioning a place which they visited as an example of a feature or a process. Students were unable to see how the process of an inquiry and the data it produced could be related to qualifying a proposition or discussing a theory or model. In other words, students' answers showed no evidence of them thinking in formal-operations terms by commencing with a theoretical or abstract proposition and producing results which were dependent on a set of cognitive operations applied to that proposition; their answers showed a marked inability to reflect on an experience and write about it using conditional reasoning - taking a theoretical proposition, applying questions to it, setting up an experiment to test the questions, and relating the results to the original proposition. And yet this process is what is required in order for students to score highly in an exam. As shown in the following correspondence, the evidence the examiner is looking for is evidence that the candidate has understood how and why data has been collected and how its results relate to the proposition(s) contained in the examination question.

"If a fieldwork reference is properly provided rather than a brief, e.g., then to be convincing (i.e. for me to feel they actually did do it and did interpret it!) I think the reference must be a full one covering data, methods and interpretation and making a substantial

contribution to the answer"

Personal communication from Examiner, University of London Board,
17/3/87

As was noted in Section 8.2, some students fail to see the links between elements of the hypothesis-testing framework applied to fieldwork when at the Centre. It is perhaps, unsurprising, therefore, that in the pressured environment of the examination room they are unable to recall the mental steps or cognitive operations that they followed at the Centre, carefully steered by the Centre tutor, and synthesise the process into a series of short statements describing the evidence and evaluating it in light of the question. A barrier between successful transfer of fieldwork to classwork may already have been built at the Centre by the students failing to link adequately observations made in the field (including episodes) to propositional knowledge being used to answer geographical problems.

Secondly, the interviews make clear that students claim they receive little instruction or practice in their classwork of knowing how to use the results of their investigations in the field in answering problems. I shall refer to this point again when looking at the classroom diaries of teachers and teacher interviews in the next section. Meanwhile, it is suggested that a further impediment to learning transfer may be an inadequate understanding of the means by which data from fieldwork can be most effectively integrated into illustrating and qualifying concepts in written work.

8.42 Teachers' references to fieldwork in the classroom

This section seeks to draw upon the evidence produced from the diaries

kept by teachers during a four-week period in 1985 and the follow-up interviews with teachers based on their diaries' entries, to consider specifically whether the ways in which teachers at Deerbridge College utilise the field experience at Slapton effect a learning outcome - the frequency and type of references to fieldwork made by students in their examination answers which I analysed in the previous section. However, this section also aims more generally to show: how teachers refer to fieldwork before the event to motivate and prepare students for the work and the experience which they will encounter at the Centre; the kinds of references made by teachers after the fieldwork for its use in the students' projects or individual studies; and reference to fieldwork to recall examples which students have studied at Slapton which illustrate or qualify a geographical concept.

In the research study, my original intention had been to focus on a period in the Autumn term of 1985 of the second year sixth's geography lessons to consider the ways in which teachers referred to fieldwork. After requesting staff to complete diary sheets for this period, it became clear during the follow-up interviews that several members of staff either did not complete the diary sheets for their upper sixth teaching or completed the sheets for the lower sixth who were about to go to Slapton, because the topics they were covering in their upper sixth teaching had no bearing on the topical content covered during the Slapton course. One member of staff said that he was unable to complete the sheets because he referred so little to fieldwork as a result of teaching 'industrial location'; a theme not covered at Slapton. Another teacher made a similar point, arguing that the exercise would have been more beneficial closer to the fieldwork since the themes of her teaching were not relevant to Slapton work; the fieldwork was seen as being 'too distant' from her present teaching and of little

direct relevance:

Mary: "...There was no problem in doing it [the sheets] at all, but the basic problem that I found with it was that I thought that we were just too far from it.

Researcher: Sorry "too far from it"?...

Mary: We were too far away from the fieldcourse in terms of time to still be using it a lot. If we had done this sort of thing for a month or so after the field course at Slapton we would probably have been using it a great deal more. Because I think we have all gone on to human and industry so it is not strictly relevant any more. I think I have made the point there actually that it would be better to use nearer to the fieldweek especially during year 1 when the bulk of the physical syllabus is covered.

PKH/MS/int85

Teachers who did refer to fieldwork in their teaching and who noted their comments from their lessons in their diaries, talked about fieldwork from three perspectives. Firstly, in the lessons with the lower sixth, teachers previewed the work which the students would encounter at the Centre. From this perspective, staff posed questions in their teaching of a topic which they told students would be investigated later at the Centre to see whether their ideas or answers were supported by field evidence. Teachers previewed the fieldwork by discussing its overall purpose in providing data from which geographical theory can be developed, and stressed that students would be engaged in this 'scientific' process; developing ideas from data which they would collect. Teachers also sought to develop an image of the environment in which students would be working by showing slides of some the sites which students would visit. By describing some of the data analysis techniques which students would be using, teachers aimed at preparing student expectations of the course, and in particular, its mathematical and statistical input. One teacher also referred to getting students familiar with working in groups prior to the course and to presenting their ideas to their peers. The extracts below are taken from interviews with Deerbridge staff discussing their diary entries, to

illustrate these aspects of teachers' preview references to the field course:

(i) Posing questions

Anthony: "The next one [referring to the diary sheets] was looking at rivers, and many of them come to the College with this Davisian model firmly placed in their heads - and I try to get them to think why, if Davis is right, are the areas of low ground being eroded away and the areas of high ground usually being left upstanding so it's really trying to get them to question what they have learnt...

...I then say that they'll be investigating this - "so what do they expect to find?" They say, "stream velocities decrease downstream" and I say "right, now remember that's what you are expecting to find". They do come to us with this very appealing model firmly fixed in their minds."

"...That was coastal deposition. Use of the idea and concepts of shelter from waves and wave refraction. Concepts of long shore drift. Hopefully they will carry that idea to Slapton to query whether in fact Slapton Sands is a long shore drift feature."

(ii) Explaining the purpose of fieldwork

"Researcher: Now, what have we got here [I turn to another sheet] - something under the 'techniques' heading?

Yes, and the way to solve a problem is to say "do the theories fit the facts?" "Theories should be changed to match observation and not vice a versa" and that's a basic rule of scientific investigation that they have to learn. You can't ignore the data once you have got it - you can't say "oh well, Davis is right and my rev. counter is wrong".

(iii) Developing an image of the environment

"...The next section that I introduced was some coastal geomorphology - I use quite a lot of slides in my teaching of geomorphology, usually my own because I think that they help to make my teaching more interesting and this inevitably means that I bring in slides of various parts of the British coastline including S. Devon. So they see a picture of Slapton Sands and ask if that's where they are going and I say "yes, and the field centre's just off the picture there..."

PKH/AS/int

(iv) Preparing expectations

Sheila: "...with the first years I am using it as a forward looking thing. Nearly every lesson, Slapton is mentioned in one form or the other and has been since the beginning of term. I have written down the type of situations where it has been mentioned. Now with the first year I have been doing settlement, and I am relating it to the patterns of settlement that are emerging, and what differences they will find when they get down there - talking about rural settlement and about Central Place Theory and the kind of work that we do down

there, or even more importantly the techniques that we use in the classroom to analyse material which we are collecting and which we will be doing again at Slapton. So every time I teach a new technique I stress that they will be using this again, so I want them to practice it so that when they get to Slapton they can use it and it's not unfamiliar and they are not thrown by the maths. In my own set, I don't know about any others, they never find the maths insuperable, and they are able to cope because we have done a lot of it beforehand...

"...This is the same sort of thing describing what they will be doing on the course. I think I have got this down twice. This is for the first year, discussing projects and techniques - project planning, how they would do their projects and how they would select them and the techniques that they would use in the classroom which they would ultimately use in their projects. Again that's first year work, but already we have got them up to their necks in water with icicles dripping from their noses, and getting them thoroughly alarmed before they go! It's better that they should know what it is going to be like, because the first thing is that they think that they're going for a holiday and we try and get them off that straight away. As time goes on they begin to realise that there is to be an enormous amount of work in a short space of time - I've calculated that there is 11 weeks of work in that one week there. Also that they are going to be working late and that there is very little time for them to spend on their own and that our expectations are high from what they are doing there, and that means that they won't be allowed to slack off particularly.

Researcher: Do you think that some of them find that a bit daunting?

Oh yes, but the more we say it the more familiar it becomes. When we we say it the first time it has a tremendous impact and the boys particularly look a bit glum but if we say it often enough they get used to it. We talk about it a long time before this because we have got to get it set up right."

PKH/SA/int

(v) Familiarisation with group-work

Anthony: "...The other thing that I do with my students is to get them used to working on detailed studies of coastal areas and to get them used to working in groups - I get them to split into small working groups of three or four and each have to prepare a short seminar on one area of the coastline so that my students are doing that now and they will present that seminar at the end of term. It prevents them from having to listen to me, and they can listen to each other for a while, and not exactly pick holes in each others' work but they attempt to make their work as convincing as they can, so they don't make themselves look a bit of a twit. And it's very interesting because it gives them the chance to display a talent that under other circumstances would lay hidden. The good talker can do the talking, the person who's good at doing maps and diagrams can do those for the OHP and it puts over the idea of "well, three of us are having to do this so how shall we split the work up". That's what I tell them to do, each do a bit so that they can feel that they have all contributed."

PKH/AS/int

Secondly, teachers at Deerbridge refer to fieldwork after the event from the perspective of its contribution to providing a body of techniques which the students can incorporate into their individual studies. Teachers such as Anthony and Sheila refer to particular methods of data collection which have been used at the Centre and which could be applied to problems the students are investigating in their own fieldwork. Similarly, in lessons devoted to assisting students with their project work, reference is made to ways of analysing and displaying data:

Anthony: "...There are a few pages on projects which you can go through. Mostly about techniques or about actual subject areas. You can imagine that we have students doing projects on all manner of things, and if they have a problem, for instance one girl was asking "what should she do with the sediments that she had brought back from the beaches she had been working on on the East coast?" I said, "well now, think back to what you did at Slapton." She said, "well can I sieve them?" I said, "yes, we've got sieving sets, and you can find proportions and you can find out standard deviations to see whether it's better sorted in one place as opposed to another". So she went off and she looked up the stuff that she had done at Slapton and so she had got the technique there and she had got all the information that she had used at Slapton."

PKH/AS/int

Sheila: "...I think that I have only made one more reference. This is the second years' diagrams. We did some ray diagrams for an aspect of industry - we were looking at the percentages of people who were employed in main order headings, and when they were drawing it they realised that they had drawn these diagrams before. I said "where?" "in Slapton", I said "what for?" "for the orientation of stones and for their dip" - and we pointed out the differences between the kinds of diagrams that they had drawn at Slapton and the ones they had just drawn in class, what patterns one would expect and the kinds of conclusions one should draw. The interesting thing was that there were these totally different kinds of work being illustrated by the same method. So real use of a technique which they had remembered from that time."

PKH/SA/int

Finally, a third category of reference made to fieldwork after the course are the instructions given by staff to students to include examples studied

in the field in their essays and examinations. Teachers confirm the comments made by students in the previous section; that they refer frequently in their teaching to the importance of exemplification. The following interview extract shows how one teacher in making this point to students used the high cost of fieldwork to argue that students needed to demonstrate the value of the course by including examples in their written work:

Sheila: "...They did an essay on periglaciation after half-term on periglaciation and a number of them, without any prompting from me whatsoever, used in their essay the coastal head deposits article by Mottershead, mentioned Prawle Point and one or two of them produced field sketches to show the orientation of material because the essay was on solifluction. So I hadn't mentioned it or reminded them and I just hoped for the best. The three good candidates I've got actually used their Slapton material and the others when I went over the essay and pointed out what they had missed, looked horrified, and they remembered and they went back to look over what they had got...

...after they had written the essay and I had read them, I remarked on the fact that these three good students had actually brought in their Slapton fieldwork, and again this was at the stage when you had just given me this and I hadn't really got this [the diary sheets] to my mind, but I had stressed that the cost of going to Slapton was so large that it meant that they really must justify its use, and we must see evidence of their Slapton fieldwork all the time. I really emphasised that they had spent £120 going there, and I wanted to see £120 worth of value back in the work that they were doing. I said, for example, that in the essay that they had just had, and I pointed out those people who had used their fieldwork, "do you remember the work that you did?..." and "oh yes, they did." They quickly gave me the information that I wanted, so it was in that context really."

PKH/SA/int

At the beginning of this section, I noted that an aim for this part of the research which focussed on references made to fieldwork by Deerbridge teachers in their classroom teaching, was to consider whether the kinds of references being made could be seen to influence the use made of fieldwork in students' examinations. It is clearly impossible from this data to identify a direct causal relationship between teachers use of fieldwork and the use made of fieldwork by students. Many factors come into play which have not been fully investigated such as: the psychological effects of the

exam room environment - students can be pressured into looking for key words in a question around which they can construct an answer and in the search for such key words fieldwork may become marginalised; the predominance in students' minds of 'getting-down' factual information learnt from texts rather than information discovered from fieldwork could suggest that students perceive fieldwork as peripheral to the main learning task; the lack of academic confidence and mistrust by students of their own data rather than that authoritatively depicted in texts could result in students being reticent to cite evidence which rejects a model or theory; the distinctiveness of the fieldwork experience from that of the daily pattern of classwork may impede its integration. The degree to which students have been successful or unsuccessful in transferring their learning from the field, to the laboratory, to the classroom, to the examination question, indicates the number of hurdles at which students' transfer of their learning may fall down (see also, McPartland and Harvey, 1987). All these are important aspects of the learning process which may impinge on the learning outcome, and the nature of references made by teachers to fieldwork in their daily teaching is, all be it an important one, only one of a range of influences.

Nevertheless, this research has thrown into sharp relief the extent to which students do not adequately use fieldwork in examinations. Teachers at Deerbridge recognise this as a recurrent problem despite the repeated references they make to fieldwork's important role in demonstrating to an examiner a student's geographical understanding:

Tim: "...I was going through all the statistical processes or techniques and one of them was rank correlation which we did at Slapton and I asked the group if they remembered the rank correlation that they had done at Slapton... And very few of them did remember actually. I suppose it was a help and provided a lead-in and they had done statistics before, so it was useful.

Researcher: How did you handle that? Did you get them to look back at the data that they had been working on...?

No, no I didn't. I started from scratch. I said "Do you remember that we did this at Slapton?" and one or two of them said that they did remember but the majority didn't and that was it really. From that point of view it wasn't a lot of use except that they had done stats before so it wasn't entirely a precedent..."

"... it's very hard to get them to refer to their fieldwork at all despite all the plugging that I do for it. It's very very hard to get them to even mention it in exams - it's just a throw away comment usually. They don't go into detail about fieldwork - it's something that they tend not to do. There's still this idea that students have that fieldwork is something to enjoy but it is put to one side and is a separate part of the course and is not really anything to do with classwork and the notes that they do in class. It's very hard to get it across to them that fieldwork is an integral part of their geography."

PKH/TW/int

In spite of, then, not being able to make causal connections from this data between teachers' type of reference and use of fieldwork in the classroom and pupil transfer of knowledge to examinations, two points are worthy of further consideration.

First, the evidence in this section shows that fieldwork was perceived by Deerbridge teachers as being thematically or topically orientated; making reference to fieldwork was dependent on the match of topics covered on the course to topics taught in the classroom. Because of the topical orientation of syllabuses and the desire by Deerbridge staff to 'cover' many of the topics relevant to the field course prior to the event, there is little time in a crowded curriculum to fully integrate fieldwork after the event back into a topic which has already been taught. Further, the distance of some topical coverage in the A-level course from the fieldwork event serves to enhance the sense of fieldwork being an isolated and idiosyncratic experience.

Second, with respect to exemplification, instead of the focus of staff

references to fieldwork being to rehearse and enhance the process by which information had been acquired by students during the course, (both intellectual and social processes), the emphasis is placed by teachers on illustrating a concept with the summative result of a student's investigation - the answer to a hypothesis or problem. The use of examples for illustration neglected to do more than ask students to recall the results of an investigation, such as reminding students that their fieldwork on river processes rejected Davisian notions of velocity and form. In discussing a topic in class and making reference to fieldwork conducted, teachers rarely reviewed in detail the logical set of operations by which an investigation had been conducted, or discussed the results in light of the actual data which the students had collected. There was little evidence that teachers reconsidered the steps which produced an hypothesis for investigation by referring back to the field notes, or compared the field evidence to other data drawn from further fieldwork or secondary sources in different locations. In short, the steps which had been taken during the field course to provide students with understanding of purpose, procedure and results of an investigation were not repeated or reviewed, or set into a broader geographical context. It is perhaps unsurprising, therefore, that students stated they found difficulty in relating field experiences which they did consider during an examination to answering a question, or that students lacked confidence in using their own data, or that students resorted to incorrectly quoting an example from the field to illustrate a different concept, since the steps involved in fieldwork which generated understanding, had not been recapitulated or considered more broadly.

8.4 Summary

This section began by noting the consensus among the A-level examination boards for the importance of students incorporating into their written answers geographical case-studies including those studied in the field to exemplify and illustrate geographical concepts and theories, and assess their application to real world problems and processes. Both Centre staff and visiting teachers to Slapton recognised this as an important aim of fieldwork in providing such examples. But interviews with teachers suggested less unanimity in fieldwork's precise role in this regard: whether its function rests in aiding recall of examples through the formation of episodes; or whether it serves to provide knowledge of a process of enquiry to test hypotheses; or if it supplies students with a body of understandable data that can be summarised to quantify and qualify students' answers.

A case study concentrated on two aspects of the learning transfer process; the results of an end of first-year examination, and the nature of the references made by teachers to fieldwork in their daily teaching during a four-week period. The examination scripts showed that pupils made reference to fieldwork in only 5% of a total of 157 questions attempted. When fieldwork was referred to in their answers, pupils often simply cited a place where they had observed a process or feature, or correctly described a piece of work they had undertaken in the field but failed to relate it to the broader discussion required by the question, or used a fieldwork example as evidence supporting a hypothesis which their fieldwork had actually disproved as supplying only a partial explanation of process and form. When interviewed, students found it difficult to recall examples

from the field which illustrated the points they were attempting to make, and they were unclear as to how they were expected to best use fieldwork in their answers.

The research which focussed on teacher references to fieldwork in the classroom produced data which suggested two features that could be operating to contribute to pupils' failure to effectively use fieldwork in their answers. First, the pattern of teaching and densely packed nature of the A-level course topically orientated around particular environmental systems served to divorce the field week from parts of the rest of the course, and in particular, where topics had been 'covered' prior to the field course, teachers allowed little time to review the fieldwork in light of the themes and ideas which they had explored in the classroom. Second, teachers did not revisit the fieldwork by reconstructing the steps which had been taken to develop an hypothesis, or review the data which the students had collected. Instead they made reference only to the investigation's ultimate findings. I have suggested that it is the process of doing fieldwork that renders these findings intelligible, and furthermore, that it is evidence of the logical set of operations applied to a proposition that the fieldwork process aims to provide which the examiner is looking for in a student's answer. Students need recapitulation of the process in order to be able to mentally manipulate the variables in a system and to set their case-study findings into a broader geographical context. Without such process-based recapitulation, the average student fails to understand the significance of their fieldwork results or how they can be effectively used to consider wider geographical problems.

In the final section of this Chapter, the study of the learning process as experienced by participants at Slapton Ley Field Centre moves on to consider the relationship of fieldwork to the concept of environmental education.

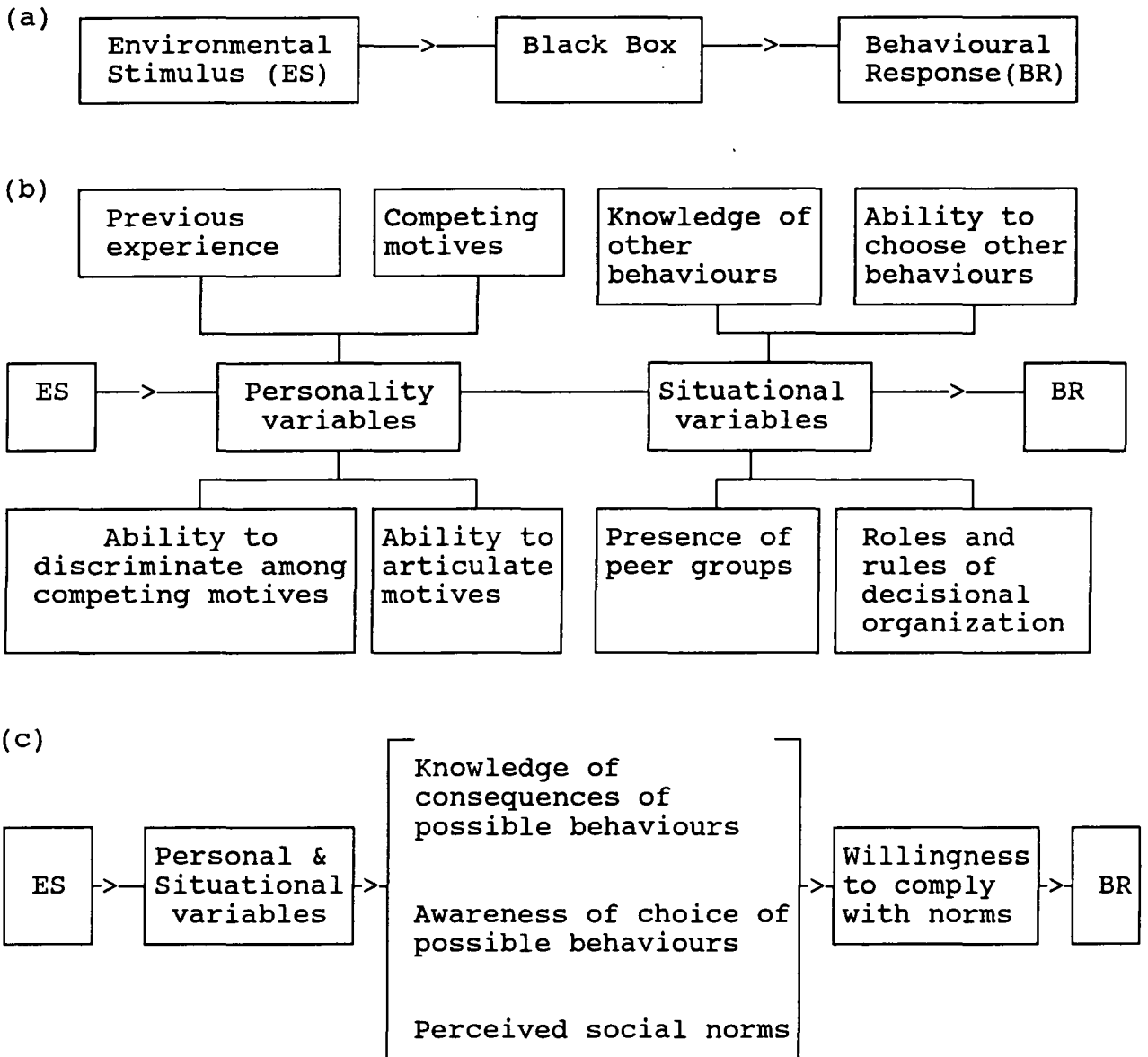
8.5 Fieldwork and Environmental Education

Chapter 5 (5.3) of this thesis introduced the notion contained in much of the literature produced by the Field Studies Council that a broad aim of their field courses was to develop in pupils an 'environmental awareness'. The Council make no attempt in their literature to define such a concept. However, imbued in many of their statements about the broader objectives of the educational experiences which fieldwork offers pupils, is the idea that through the cognitive learning and social experiences which pupils encounter on fieldwork, pupils become more aware of their own values and beliefs about and towards the environment. The experience also offers pupils the opportunity to understand the attitudes held by other individuals and groups, and to contemplate their own interaction with the environment. The long-term aim of developing such awareness is the intention that students should ultimately incorporate an environmental or bioethic in their attitudes and future actions. This bioethic is the development of a moral responsibility for the earth and an associated ecological understanding which influences personal decisions and actions concerning an individual's interaction with and use of natural resources. Fieldwork, the Council argues, is a catalyst for contributing to the development of attitudes and understanding towards the environment and through such an attitudinal change encourages social behaviour which demonstrates a responsibility and concern for the environment.

Some writers on environmental education have attempted to appraise the thinking implicit in such statements. Drawing on research from social psychology, O'Riordan and Turner (1983) for example, have attempted to summarise the complex variables at work in a such an environmental

stimulus/attitude change/behavioural response system (Figure 8.2). In this, an environmental stimulus such as fieldwork is proposed as a change agent affecting students' attitudes which are described as "a combination of beliefs about an object or situation and a positive or negative disposition toward that object or situation" (p.376). Attitudes can lead to a certain behavioural response. The central hypothesis at work in the diagram is that by establishing attitudes and by knowing which attitudes have been changed as a result of the experience, future behavioural change can be predicted. However, they rightly point out the complexities involved which militate against any simple one-way stimulus-response relationship. They highlight the importance of personality variables (previous experience and knowledge of the perceived costs-benefits of a situation), and the significance of situational variables, in influencing people's decision-making about the environment. In particular, O'Riordan and Turner point to the significance of variables such as knowledge of consequences of possible behaviours, awareness of choice of possible behaviours, and perception of societal norms. Clearly, their analysis warns against any conception which simplifies the relationship between the experience of environmental education gained from such an activity like fieldwork and the achievement of environmental education objectives such as 'awareness', or an 'informed citizenry' or the 'autonomous citizen'.

Bearing in mind O'Riordan and Turner's caveats, implicit in the FSC's ethos (explored in Chapter 5) is the vague and possibly ambiguous concept of environmental awareness as 'citizenship training'. In this, fieldwork provides opportunities for an environmental experience, logical thought, and enthusiasm for learning, which, it is argued, leads not only to a better understanding of our environment and its component parts and problems but also an individual autonomy in learning and decision-making.



"This diagram presupposes a one-way relationship between attitudes and behaviour. In practice the two may interact in a rather complicated manner but this hypothesis remains to be satisfactorily tested."

- (a) "illustrates the basic premise that knowing attitudes helps to predict behaviour."
- (b) "points out some of the variables in the 'black-box' especially those relating to personality and the circumstances in which the relationship is being analysed."
- (c) "there must also be knowledge (awareness of consequence) and sense of culpability (sense of blame and understanding of alternative behavioural options) before behaviour responds to societal norms." (O'Riordan and Turner, 1983, p.377)

Figure 8.2 Relationships between Attitudes and Behaviour (after O'Riordan T. and Turner R.K., 1983)

The 'autonomous citizen' trained in social skills, having acquired technical knowledge of environmental systems, and an independency in learning, develops an attitudinal shift from the field experience which promotes wider change in social attitudes and behaviour towards the environment. The whole learning experience promulgates and sustains a gradual reformation of a society into one which has a critical awareness of how its collective actions and political decisions are interdependent of the environment in which they operate. However, the mechanisms by which the field experience is said to achieve these goals remain unspecified in the FSC literature.

O'Riordan and Turner examine the outdoor pursuits and field studies movement to suggest two ways in which such an experience can make a contribution. Firstly, they suggest that the new learning environment (non-urban and social) is conducive to development of an individual's self-confidence and self-esteem and their ability to interact effectively with others - the experience encourages altruistic behaviour. A movement away from a system which encourages competition between individuals to one in which individuals seek collaboration and show respect for others, their alternative opinions and beliefs, is regarded by advocates of environmental education as of central importance. Secondly, the experience offers a more intimate and immediate relationship with the environment, and inculcates a respect for environmental processes and enhances an awareness of the difficulties and dangers of manipulating and controlling these processes. The ideas of personal fulfilment, altruism, and spiritual transformation or sense of wonder and respect for nature stimulated by an understanding of its mechanisms and processes that result from such an environmental experience are now elements which lie at the heart of a green advocacy for curriculum change (Randle, 1989).

However as I have argued earlier, inherent in this polemic and in much of the FSC's educational policy, is an ambiguity of position. This ambiguity rests in the Janus like stance which the Council has taken whereby its courses aim to offer training in skills that can be used to manage environmental problems and provide a technical and apolitical solution to environmental issues (which could be argued as maintaining a technocentric status quo in which values are subservient to the search for scientific truth and objectivity), while at the same time offering the liberation from such technocentrism by placing value on the individual's environmental experience, personal commitment and social responsibility, and political obligation (see also O'Riordan, 1976, p.314). This tension in the Council's environmental education policy, how it reveals itself in the practice of the courses taught at its field centres, and in the perceptions of the teachers and students who participate in its courses, is the subject of this final section of this case-study. Before examining the ways in which it is revealed at Slapton, some further aspects of the dialectic are briefly explored below.

Pepper's (1984) analysis of the role of education in environmentalism and social change, draws on the work of Huckle (1983) to suggest that a "considerable division" (p.215) exists in opinion about the form which environmental education should take. He cites Huckle's argument that education is focussed largely on 'education about and from the environment' rather than 'education for the environment'. He argues that education about the environment is techniques focussed, concerned largely with acquiring 'facts' in the search for a scientific explanation of environmental systems and is neutral as an instrument of social policy. By contrast, education from the environment is not only concerned with

acquiring knowledge about the environment but involves a moral dimension which is a determinant of action but it remains largely apolitical in its stance:

"Education from the environment is compatible with that ecocentric thought which argues for a new morality based on ecological pragmatism combined with bioethical regard for nature. In other words it is moral and ethical (values) education of the kind which Schumacher and Skolimowski (1981) propose - education in not only how to perform technical feats, but in what ought and what ought not to be done. This education, says Huckle, argues that environmental imperatives should impel us to forget political differences. 'In the tradition of Rousseau and others it employs environmental studies as a rationale for pupil-centred, topic-based, learning which often reflects a rather naive respect for children and nature.' It tends to ignore socio-political factors, emphasising consensus in the face of a 'common' universal threat of impending crisis. It holds not only that field study provides cognitive skills, but that such contact with nature also aids personal growth and moral development." (Pepper, op.cit. p.216)

By contrast, education for the environment increases pupil's awareness of the moral and political dimensions that affect the environment and by focussing on environmental issues and involving projects which culminate in community action it offers a radical perspective and a environmentally literate society that can participate politically. It falls short of imposing an ideology, rather its claim is to raise the pupil's consciousness to the point where other ideologies can be considered as offering alternatives to the conventional value systems and in this it would encourage pupils to believe in their capacity for self-determination.

Building on Huckle's argument, Pepper's thesis is that much which characterises modern education and in particular science education, is education about the environment which "sustains and enhances the political status quo and those who benefit from it" (ibid., p.217). It does so, he argues, by focussing on providing pupils with techniques of how to do things based on an educational premise that the building blocks of scientific knowledge, its objective truths and statements and knowledge of

how they have been acquired, must be learnt before pupils can engage in moral debate about environmental issues. As a result, environmental issues become relegated to the end of a long process of increasing subject specialisation concentrating on the learning of facts - "making students puzzle solvers within a paradigm rather than investigators of the paradigm itself." An outcome of this, Pepper suggests, is that students come to reject a moral dimension in the search for the security of objective knowledge, or that students who may want to explore values and express their opinions become frustrated by a system that discourages them from doing so or inadequately prepares them for alternative modes of expression.

Pepper goes on to suggest that there is a socio-political intentionality in the state's use of education to transmit knowledge and a set of prevailing ideologies which is regarded as in the national interest, which is achieved by a failure of education to generate in pupils a critical political and social awareness and by teaching which reinforces the "guise of 'value free' science". Drawing on the work of Hales (1982), Pepper suggests that "science figures massively as a product - received consensual knowledge - and not as a process which mediates an active reading and writing of the world. What passes for learning is 'alienated reproduction', where children work in 'transactional' exercises to regurgitate supposed free-standing truths, and where personal knowledge - of feelings, opinions, or experiences - is discriminated against in favour of a supposed need to give the 'right' answers." (p.220)

Pepper's analysis, however, offers no detailed or pragmatic resolution to the problems of modern science education curricula and associated teaching method which he identifies. He does, however, make the case for increasing attention to be given to enhancing a student's own awareness of their

beliefs and values and to critically appraise alternative ideologies by using teaching methods which encourage autonomous learning and which reduce the role of the teacher as authority. Despite arguing for an agenda which combines educational transformation within a new social praxis of 'lived' experience, for example, along lines being developed in alternative small communities, the tension still remains in knowing how to seek a balance between recognising, what Pepper terms, the "high quality" of much of the products of science, and a shift towards education which actively encourages self-awareness and environmental consciousness-raising in a social and political context. Pepper offers a framework for change but the detail of how to achieve it with a new environmental education curriculum remains unclear.

Is then this tension of purpose of environmental education as described by Pepper and others made manifest in the practice of teaching and learning through geography fieldwork at Slapton Ley Field Centre? In what ways do students express their environmental awareness and understanding gained from the experience of fieldwork, and is this awareness circumscribed by the utilitarian focus to the Centre's teaching?

8.51 Structural constraints on teaching environmental education through fieldwork at Slapton

Chapter 7 (7.2) drew attention to the fact that field tutors at the Centre recognised that they worked for an organisation which paraded a message of 'environmental understanding for all'. This was built on the principle, described by the Director of the Council and in its literature, that by engaging in the process of fieldwork - learning about the environment at first-hand - pupils would acquire a heightened awareness of their interdependency with their environment which would promote ultimately

change in their social behaviour towards the environment. Interviews with Centre staff, however, suggest that this principle was little in evidence in underpinning many of the courses they taught. They argue that they regard their teaching as being constrained by pupil and teacher expectations which subordinate the principle to the main purpose of geographical fieldwork - teaching geographical concepts and technical skills. For example, in the following interview extract David describes what he regards as the constraints placed upon his teaching of rural settlement by the expectations teachers hold for fieldwork's role in the teaching of this subject, namely its narrow focus being to test the application of central place theory to the spatial distribution of settlements in the South Hams:

David: "...I tend to do the Central Place model which satisfies teachers, because that's what they want - worked examples of applying a model to a real world situation and then seeing if the model fits or not. But then by including the social variations and demographic variations you can get to grips with some important ideas about how rural settlements are changing. Those things aren't really too much to do with the syllabus but they are the sort of things that people ought to know about. That little sample that we do, and it's a very biased sample - those eight villages which in a way have been handpicked to show certain points - yet they do illustrate some very vivid points - there is everything from depopulation to places being totally overrun by development. The stuff that Cloke has done on settlements around Kingsbridge is interesting because he recognises that there is some kind of spectrum between remote rural settlements at one end with decaying populations and pressured rural settlements at the other (the urbanised villages).

Researcher: Through the influence of tourism?

David: Well, in our case it's a combination of tourism and retirement, but elsewhere it might be due more to the influences of commuting in an urban village, and in that sample that we do you've almost got both ends of the spectrum. Sherford represents the declining and depopulating state which is very much the exception around here, and West Charlton which represents the high pressured village which environmentally has really gone down hill - I mean it's just like an urban suburb, in terms of appearance. I think that the hidden rural housing problem is something which it is important for students to know about because when you look superficially at these places they all look so affluent, don't they? You can't really imagine any deprivation, but at an individual level there's a hidden housing problem. For example, if you talk to people like Sam Bennett - people in their twenties who are living at home still and who would

have loved to have moved out and perhaps started living with their partners, they can't do so because of the lack of cheap rented accommodation which in itself is a function of the holiday trade/tourism. People who rent houses down here simply don't want to rent them out for £15 per week for the whole year because it's more profitable for them to rent them out for £120 a week in the summer and then leave them empty during the winter. East Allington has six people waiting on the council house waiting-list which is a lot for a little place like that, because no new council housing is being built and the council housing stock is declining as a result of the council housing being sold off. Similarly the stock of cheap rented housing is diminishing.

The sad thing is that teachers want the Central Place bit but don't want the social/demographic bit.

Researcher: Why is it important for students to know about those things, Dave?

David: Because they have a lot of misconceptions of what the countryside is like. A lot of them have preconceptions that most people who live in villages work on the land and that everything is cosy and rosy and pleasant and that there are no problems or deprivation. A lot of students would identify deprivation as a totally urban problem, but it's there; it's subtle and hidden and difficult to see because it all looks so superficially affluent and well to do, but there is rural poverty in Slapton, I would say.

PKH/DJ/int

The extract demonstrates the power of teacher and pupil expectations (and indirectly syllabus constraints) in determining the kind of teaching and learning pupils experience, particularly in the context of fieldwork at the Centre, where learning is regarded by both teachers and pupils as a package to be received and purchased rather than an educational process to be experienced. Justification of the value of the package is sought in terms of its ultimate utility i.e. in meeting the criteria specified in A-level examination syllabuses. David's diary reveals how deterministic these perceived expectations are in his teaching:

"...Extreme bout of self-doubt sets in. Unable to face the settlements introduction in the lab. so decide to transfer to the churchyard. Rosehill garden has a better view so we gather on the lawn overlooking the village... Marked dichotomy in the settlements introduction.

(i) inclinations tend towards general rambling about Saxon settlements, vernacular architecture, 2nd homes and Slapton people.

(ii) Demands of the day require some sort of background to Central Place Theory..."

DJ/SLFC/diary

Moreover, these extracts also highlight three elements which weaken the course in its effectiveness in meeting environmental education objectives.

The first rests in the conception of the course's relevance - relevance to whom and to what? I have shown that teachers and pupils expected the course to provide, to use Pepper's term, a "tool-box" containing a set of techniques which pupils could use to know how to go about solving particular geographical problems, but the strength of the expectations demanded that these problems were conceptually relevant to the examination syllabuses. Relevance in this sense then, is relevance of content and technical skills to developing an understanding of particular concepts and the application of this knowledge and skills to problem-solving. However, the problems alluded to in David's interview and diary suggest that many of these geographical concepts, such as human activity being a reaction to the frictions of distance, are environmentally irrelevant because firstly they fail to analyse contingent issues which effect how and why people live in particular places, in unique situations. They are geographical concepts rooted in the search for generalizations and for laws of explanation and neglect environmental considerations of how and why people live the way they do.

Furthermore, these concepts are studied within a systems approach to geography but the integrative function of environmental systems is lost because the focus is narrowly directed towards a series of sub-systems or compartments; the thematic and topical structure to the fieldwork at the Centre fails to link isolated concepts into a broader more holistic and

environmentally relevant geography. This is not to criticise the educative value of being able to apply techniques to geographical problems per se but rather to question whether the problems themselves are ultimately of relevance to addressing issues which individuals experience in their daily lives. Does an understanding of the rank-size rule contribute to our ability to answer social and demographic problems in the South Hams? As Johnston (1986) describes it: "On its own, theoretical study is of little value if it does not illuminate the empirical world for, I argue, people will be unconvinced by the theory as a guide to practice if it does not help them to appreciate the worlds of experience and events." (p. 83).

Second, the empiricist/positivist framework in which the fieldwork is conducted is problematic. Empiricism operates only at the level of direct experience and necessitates the investigator's role as one of a neutral 'objective' observer. Positivism uses the data empirically collected to seek an explanation of individual events as examples of classes of events; it is law-seeking and in its predictive function is concerned with technical control. Field tutors at the Centre recognised that the environmental focus of their teaching, if included at all, was set within this empiricist/positivist framework. Consideration of the relevance and applications of the students' investigations of a system and its findings for environmental planning and management was made at the end of a unit or topic studied and based on the 'objective' facts gathered. Environmental policy and future action could only, therefore, be considered in light of the 'hard' facts produced from the investigation. The students' and other participants' emotional response is necessarily obviated from policy and decision-making by the paradigm in which the fieldwork is being conducted, as Sally's diary reveals:

Sally: "...I found myself getting really annoyed at what had been done

to this village. I'm not sure that geographers are supposed to get worked up. They're just supposed to analyse. But this was the reason I got reasonably enthusiastic about what we were doing..."

SW/DAV/diary

In such a framework there is no opportunity to understand events in terms of the thoughts and motives prompting individual actions observed by the students in their fieldwork. Thus, if the study of a system had relevance for environmental decision-making, then the data may be discussed in light of its applications, rather than the main purpose of an investigation being to address environmental issues from the outset and to reveal the role of science as only a contributant to a debate which includes moral, philosophical and emotional dimensions. In short, this framework prevents an aim of environmental education of developing self-awareness, mutual awareness and respect for others from being achieved as a result of the intellectual (rather than social) experience, precisely because it does not seek as a principle aim reflection by individuals on their own values and attitudes or those of others.

Third, the conjunction of the environmental irrelevance of many geographical concepts to pupils' daily lives and their understanding of the lives of others, and the dominance of the positivist framework in which philosophical, moral and emotional dimensions are marginalised in the search for generalization and objectivity, come together in the 'closed' directed-experimental approach which prevails at the Centre. This approach which I described in Section 8.2 above throws the emphasis on the transmission and learning of consensual geographical knowledge via a set of neat topical packages rather than focussing on the process of geographical discovery and self-discovery. The latter occur, but as I have shown they are by-products rather than the primary purpose as required by environmental educationalists. Hawkins (1987) describes this problem with

prevailing fieldwork as "Too often fieldwork means that students are given a field investigation package and carry out routine observations, the results of which are already known by the teacher. This is on par with the average 'science' lesson in which deviant results are regarded as wrong rather than as the basis for further investigation. Too often students are plunged into what are, in process terms, the latter stages of environmental learning." (p.218) As I noted in Pepper's argument above, environmental education is more appropriately concerned with pupils understanding the roles that science can play in the solution of environmental problems and issues, and that the teaching of science must reveal the subjectivity of data interpretation, or an awareness of the moral, social and political dimensions of environmental problems, or develop skills of linguistic competence such as the presentation of coherent arguments and the recognition of the strength or weakness of others' rhetoric (DES, 1989b). These aspects necessitate a form of learning which emphasises experience and discovery and not the transmission of scientific knowledge via sets of pre-determined and closed classroom and field based experiments. Hawkins makes a similar point in arguing for environmental education which begins with pupils experiencing "techniques designed to heighten their awareness, and going on to equip them with relevant knowledge and understanding, develop in them a feeling of personal concern and responsibility, and lead them ultimately to participate in social and environmental decision-making." (loc.cit.)

In summary, the perception by field tutors of the expectations of students and teachers leads to a course which emphasises the transmission of conceptually relevant knowledge and the application of technical skills. The environmental relevance of many of geographical concepts, particularly in human geography, which have become a sine qua non of an A-level

geographical education is questioned, not least because of the positivist framework in which they are considered and the concomitant stress placed on teaching through directed-experimentation. These three aspects call into question the Council's success in meeting a stated objective in its geography field courses of seeking to equip students with the motivation, skills, knowledge and understanding to actively participate in a contemporary environmental debate that involves moral, social and political dimensions; to make informed and critical judgments about environmental issues; and to express concern and responsibility towards the environment in their future actions.

8.52 Environmental awareness, curiosity and informed concern:
student responses to fieldwork at Slapton

Students at Slapton Ley Field Centre describe a range of experiences of their fieldwork in their diaries. As I have shown in this case-study some of these experiences describe their reactions, feelings and attitudes towards the work they are doing, towards the places they are experiencing, towards their peers and teachers, and towards particular events which occur during the week. Their collective views and their individual insights present a collage which portrays a wholistic image of the process of learning encountered on the residential week at the Centre.

The previous section has revealed some weaknesses and ambiguities in the overall structure and purpose of the course at the Centre with regard to the achievement of environmental educational objectives. Some of the students' diaries do, however, indicate that despite the constraints of teacher and student expectations and their effect on teaching approaches and the content of learning, students have undergone an experience which meets certain environmental education criteria. As I have shown, the Field

Studies Council does not as part of its educational policy specify in detail what environmental education criteria it sets for its courses. Before looking at the student diaries, it would, therefore, be useful to briefly rehearse some of the goals for environmental education recently presented in a number of curriculum documents.

In 1989, HMI published in the Curriculum Matters series 'Environmental Education from 5 to 16' (DES, 1989b) which sets out a framework for discussion for policy and practice of environmental education in schools. The document makes it clear that environmental education is perceived as a cross-curricular theme which needs to impact on both core and foundation subjects in the National Curriculum. It states that by the age of 16 pupils should be able to:

- "appreciate the nature of the world's resource base and its limits;
- be able to justify their views, attitudes and decisions on the basis of informed, reasoned argument;
- gain a basic knowledge of ecological relationships and principles and of the effects of physical processes on the environment;
- have some understanding of the economic, technological and social factors and of the political processes affecting the planning and use of the environment;
- gain some insight into other people's environments, life-styles, predicaments, values and attitudes;
- appreciate the relationship between economic factors such as costs and prices and environmental decisions;
- refine and apply their general skills in:
 - (a) making and ordering accurate observations;
 - (b) developing and testing hypotheses, including the proper consideration of variables;
 - (c) defining questions for investigation and carrying out such enquiries carefully and self-critically;
 - (d) obtaining information from a variety of sources and interpreting such data to arrive at suitably warranted generalisations or conclusions;

(e) communicating their findings, ideas and feelings about environmental topics in a variety of ways;

develop a critical appreciation of their surroundings;

develop a commitment to the care and improvement of their own environment and that of others;

be aware of the interdependence of communities and nations and some of the environmental consequences of that interdependence;

be aware that the current state of the environment depends on past decisions and actions and that its future depends significantly on contemporary actions and decisions including, in some measure, their own."

(pp 5-6)

The National Curriculum Council has also identified environmental education as essential in the search for 'a broader and more balanced' cross-curricular approach to the post-16 curriculum. Many of the skills referred to in Curriculum Matters 13 are included in the core skills for 16-19 year-olds. In particular, overlap can be seen in the emphasis placed on a student's ability to analyse and evaluate information from different sources, effectively identify a problem and carry out an investigation, and communicate findings whilst being sensitive to the views and opinions held by others, cooperating with others to achieve a task, reflecting on one's own performance, and being able to take responsibility for one's learning (NCC, 1990).

The four major themes which underpin the details contained in the Curriculum Matters 13 list: curiosity and awareness; knowledge and understanding; skills; and informed concern, also lie at the root of the seventh attainment target in the National Curriculum Council's report on Geography 5-16 (DES, 1990) defined as Environmental Geography. The three strands in this attainment target of: the use and misuse of natural resources; quality and vulnerability of environments; and protecting and

managing environments highlight the particular focus in the curriculum which the subject of geography is thought to be able to contribute to a cross-curricular theme of environmental education. Geography in this sense, then, is regarded as a vehicle through which pupils will be able to acquire understanding of the complex relationships which exist between people and the environment, the problems these interactions create, and the opportunities which exist to conserve and enhance the environment (DES, 1990, p.14). The characteristic of geography's concern for area studies at a range of local, regional, national, and global scales is conceived as of particular relevance to such an education since environmental issues have a place focus at different scales (*ibid.* p.75). In this, fieldwork's role is in supplying first-hand investigation of case-studies at the local level to illustrate the resource, environmental quality, and conservation and management themes which operate at larger levels.

In Chapter 8, I have examined in detail the contribution which fieldwork makes to pupils' environmental knowledge and understanding, and to its role in developing pupils' personal development, social and intellectual skills. The remainder of this section focusses on the student's experiences described in their diaries which can be categorised as environmental curiosity, awareness and informed concern.

There are four distinct but interwoven dimensions to the students' references to their field experiences which can be categorised under the heading environmental awareness. First, is the experiential dimension. Essentially this is the students' willingness to communicate in their diaries their emotional response to a sensory experience or stimulus. Some students visiting Slapton refer in their diaries to the local environment in ways which occasionally capture the excitement, novelty and intimacy of

these sensory experiences. The experience of feeling the power of the sea against the shore at Hallsands and its impact on the community that once lived and worked there is an experience referred to by many. The shared experience of a sunset or a bay seen over the crest of a hill is remarked on by others as "making the day worthwhile". Others refer to the value of the experience of working in the field as giving a moment for contemplation and solitude:

Christopher: "The snow-covered landscape was magnificent: stark contrast to last summer when I walked on the same roads in a drought..."

CH/DAV/diary

Sally: "Found the elements on Hallsands really good. Seeing pictures of the houses there was not enough to get a real appreciation of what it must have been like to be a victim of one of nature's most fearsome elements..."

SW/DAV/diary

Etholle: "Slapton Wood was muddy but beautiful. It held for me a feeling of solitude and peace. Working there was very relaxing."

EW/DAV/diary

Second, there is a place dimension. In the students' diaries the sense of place is frequently conveyed by comparative information between the environs of Slapton and the home environment. Fieldwork offers students a glimpse at different wildlife from that seen at home, or the opportunity to contrast people's accents, houses and ways of living:

Andy: "The wildlife around here is very good e.g. buzzards which are never seen around our area."

AS/MEX/diary

Andy: "The pub contained some very interesting pictures of the old village. The locals' accent seems really strange and we actually had time in the day when we were in West Charlton to let an old man explain about his village".

AS/MEX/diary

Penny: "One old man in Strete came up to us, and saw our clipboards and in a broad Devon accent asked us if we wanted any information

about Strete. This was good because it allowed us to tie up loose ends which raw data had left untied such as if houses were inhabited all year round, and historical features like how old the manor house or the church was. This gave me a real feeling of rustic Devon that you always see in glossy brochures."

P14/LAN/diary

Paul: "I found it interesting wandering around the villages making these notes. It made a change to see a good mixture of old and new houses that blended in well. It was also interesting to see how just how cut-off a village is, as I live in a town, and have all the amenities provided."

PR/DAV/diary

Karen: "Today's fieldwork on rural settlements I especially enjoyed as I feel we are now getting to know on a more general basis a wider area. Coming from an extremely industrial area this fascination with very small settlements and their limited services is enhanced."

KJ/MEX/diary

Sharon: "I was also surprised by the great number of council houses in the very small village of Sherford. In Lancaster there are only council houses in the centre of towns and the big villages - all the small ones have expensive privately owned ones."

S7/LAN/diary

Third, there is a subject-specific dimension in which geographical concepts and knowledge is given deeper understanding and new meaning by the environmental experience of fieldwork. In particular, students refer to the speed of natural processes, the scale of natural phenomena, a new awareness of the complexity of environmental systems, and the impact of environmental management decisions on people's lives and their communities:

Steve: "Today really impressed on me just how fast processes occur - the 3m or more of shingle around the pill-box in just a week. Until today it hadn't occurred to me just how fast some things occur."

S11/HAM/diary

Angus: "Today, I think was the best day of the whole course. The approach seemed completely different. It was an excellent way to see what exactly the sea does to the coastline and what effect it has on local communities. I have always taken an interest in this type of geography because I'm able to go back to Scotland and relate it to a particular part - the Kintyre peninsula... I think the highlight of the day was the walk along the cliffs, despite the weather. It only really occurred to me today that there is whole 'geographical world'

behind the paperwork. Now I'm able to see why people take in and admire the surrounding countryside."

"I am taking a keen interest in what is going on around me. I especially enjoyed the walk up through the fields on the way to Slapton Wood..."

AM/WT/diary

Steve: "The main thing that impressed on me today was the dire effect that man's interference can have on our surroundings, for example, the removal of the shingle from the sands and the building of the road along the shingle ridge, which may cause the ley to flood... It seemed that the causes for the rise and fall of the shingle level on the beach are very much more complex than I feel everyone had envisaged."

S11/Ham/diary

Graham: "Well, I thought today was really great. I really learnt a lot and it has given me plenty of ideas for projects. I thought it was really interesting when we went on the walk, when Dave was telling us all about the history of the place - like at the Hallsands Hotel and at the Trout Hotel. I thought it was really amazing that a so-called educated group of people had allowed the removal of vast amounts of shingle from the beach. This really showed to me how one wrong decision many years ago can destroy a whole community. Today has given me an idea for a project - I have thought of investigating the way in which flooding is prevented in my local area."

G12/HAM/diary

Fourth, a values-dimension exists to environmental awareness which encompasses a reflective stance towards one's own values and attitudes, an awareness of the opinions of others, and that their environment may be perceived through different cultural lenses:

Steve: "I enjoyed all the time we spent in Exeter. I thought it was really interesting when we were going around the council estates as it made me aware that my feelings about the area would make me biased and that this sort of thing would have to be taken into account. I also realized that I was a snob and would hate to live in an area like that. The council estate was so awful, the buildings and gardens were so badly kept, nobody seemed to take any pride in their houses, the area was just so depressing, all the buildings looked the same - it was just horrible."

S11/HAM/diary

James: "A depressing introduction to Exeter. The housing was pretty awful and I felt as though we were prying into other people's business. You felt as if you didn't fit there."

J5/HAM/diary

It is clear from these diary extracts that these students have gained a heightened awareness of the surroundings which they have encountered on fieldwork and to some extent an awareness of their interaction with these surroundings. Both aspects of awareness are regarded by environmental educationalists as important starting blocks on which to base conceptual understanding, learning skills, and building towards informed concern and involvement in environmental issues. The students' comments suggest that such an awareness involves a mental comparison between the locale and the more familiar home environment, a self-reflective stance in which previous knowledge and experiences are evaluated in light of new information and experience, a contributant to the formation of episodes, and an expression of feelings and emotions. Awareness is, therefore, symptomatic of motivation, curiosity and inquiry, as well as self-reflection and self-expression.

However, in most cases such enhanced awareness is not a structured and integrated aim of the teaching programme at the Centre. Rather it is a spontaneous and isolated response to a particular environmental stimulus - the teacher relies on the impact of the scenery, or the ad hoc conversation with local people to stimulate and motivate interest in the environment, while the focus of the teaching remains the transmission of conceptual knowledge and acquisition of technical skills that are associated with a particular topic. Much reliance, therefore, is placed on the prior commitment and interest in the subject specialisms by the students, the relevance of the tasks undertaken in the field to the problem being investigated, and the intrinsic qualities of the environment to spontaneously motivate students. Only through story-telling and narrative, which I described in Section 8.3, do field-tutors regularly employ

particular techniques to foster awareness or to acclimatise students to their environment.

There is some evidence from this case-study that this reliance on the precept that students on the field course are self-motivated towards learning and the environment prior to the fieldwork event, and that the environment is intrinsically motivating, are an insufficient basis on which to rely if seeking to enhance environmental awareness in students. This point is central to Van Matre's (1979) and others' (see, for example, Hawkins, 1987) search for acclimatisation techniques in teaching and learning to break down children's sense of detachment from the natural world and its organising principles. The environment used as a laboratory and the narrow specialisms of the A-level geography curriculum in which interdisciplinary linkages and a wholistic viewpoint are rarely incorporated are not sufficient bases from which enhanced awareness can be assured. Thus, many students at Slapton who experienced the same walks, the same events, and the same teacher instruction and interchange as those students responding above, produced radically different insights into the level of environmental awareness generated by the experience. For these students simply encountering or experiencing the environment was a pointless exercise revealing little of "relevance" to their subject or to themselves:

HAM12/diary: "The talks about the many houses and families although interesting and in some cases amusing, were, in my opinion, irrelevant."

HAM12/diary: "I didn't see the relevance of walking for miles, as the erosion on the beach was very similar and the preventions of erosion rather obvious."

LGS5/diary: "Anyway, today was very tedious and the impression I've got from everybody was one of monotony. This I feel was due to the fact that we weren't so organised, we didn't have set assignments to perform. It was different to the walk on Monday for we kept stopping to observe the landscape more closely, but we hung around too long and

so the walk, and generally the day dragged on. I enjoy walking a lot but not when I don't understand why I'm walking whether it be for pleasure or necessity."

HAM2/diary: "I think that geographers would make good detectives. Today's work was all based on getting clues and then finding evidence which would prove or disprove hypotheses which we brought forward. Although this was interesting towards the end I began to wonder whether it was all worth the trouble."

LGS3/diary: "The main part of the afternoon seemed like a waste of precious time - we've only got a week here, yet we spend one day on a nature ramble.. It seemed boring as we've been so busy in the past - having set things to do. There was no way we could have made it more interesting as all we had to do was measure a few angles of rocks..."

In addition to the problems created by the assumptions being made by tutors for students' self-motivation for learning, the intrinsic motivation of the environment and the geography being taught, this research at Slapton shows that there is a marked absence of a fifth dimension integral to generating and sustaining environmental awareness and informed concern - the social and political dimension. In its simplest form environmental education concerns the exposure of the student to alternative ideologies, values and belief systems about the way in which people use, misuse and interact with our environment. This was described by HMI in Curriculum Matters 13 as pupils being able to "have some understanding of the economic, technological and social factors and of the political processes affecting the planning and use of the environment." (p.6) The complex and diverse sets of values and attitudes which underpin any consideration of environmental planning and management lie at the heart of contradictions which exist between individual beliefs and individual actions, and become manifest in the environmental issues and problems which confront our daily lives.

However as we have seen, the traditional A-level course at Slapton is topically structured and orientated around the transmission of geographical facts and information, the exposure to technology, and the skills-based

application of 'scientific method'. Even in more recent developments in the course at the Centre where attempts have been made to incorporate global issues of flooding and drought in the analysis of environmental processes at the local level (Trudgill, Thomas and Coles, 1990) the social and political dimension which is of crucial importance to understanding the causes and effects of flooding and drought in third world countries is marginalised in the maintenance of the status quo - the process-based study of contrasting catchments and landuse to investigate hydrological principles. The focus is not to confront the powerful economic and political factors which shape our lives and which manipulate the interaction between belief and action. The outcome is that students may acquire technological understanding and competence, and may be motivated by the experience, but remain oblivious of the conflicting ideologies which the actors and interest groups bring to environmental debate; the institutional forces which determine the translation of policy into practice; and the relationship between individual behaviour and the collective consequences of that behaviour. (O'Riordan, 1981) Finally, the danger of not including a social and political dimension in establishing environmental awareness and informed concern is that solutions to environmental problems can be seen by students to rest solely in scientific understanding of environmental processes and the technological application of scientific knowledge. The entry into participation and active involvement in environmental issues, widely held to be the ultimate objective in environmental education, is jaundiced by the hegemony of the technocentric ideology - "an apparent rationality, a belief in an 'objective' approach, and a conviction that ... man is able to manipulate and appropriate nature for his own ends - and is justified in so doing." (Pepper, 1984, p.37)

8.5 Summary

Embedded in the ethos of the Field Studies Council is the concern that the educational experiences offered to pupils and students on fieldwork enhance their environmental awareness. Such awareness involves concepts such as citizenship, citizenship training, and the autonomous citizen. In this, fieldwork is regarded as the experiential catalyst for individuals to gain understanding of environmental processes; to explore and articulate their values and relationship with environmental phenomena; to respect the attitudes expressed by others; to acquire social skills of participation and co-operation, in order to produce a member of society that is liberated by knowing how to discover and learn and evaluate, and enhanced by a capacity for self-determination. Acquiring environmental awareness, it is argued, leads to adopting attitudes which hold informed concern for the environment and which are ultimately demonstrated in changes in social behaviour.

The Council's position presents, however, a dichotomy common to much environmental education, namely the purpose of training a technically effective and rationally objective society in the management of environmental problems, counterpointed with the aim of educating a society in which individuals appraise their actions for their impact on the environment, foster personal commitment (thereby exhibiting a values position) and recognise a social and political obligation. These two aspects rest uneasily together in the teaching at the Centre. Teacher and pupil expectations of the course drive the teaching down the road of training for technical competence and the transmission of a consensual knowledge. The impact of such expectations throws into sharp relief the

irrelevance of many geographical concepts to an understanding of why and how people live given contingent conditions operating in particular places; the dominance of the empiricist/positivist paradigm which marginalises moral, social and political dimensions for both participant and observer; and the weakness of the directed-experimentation approach to cultivate an autonomy in learning through self-discovery and geographical discovery.

Despite the weight of emphasis being placed on factual transmission concerning environmental processes, or where applied, teaching a technocentric solution to environmental issues, students at the Centre undergo experiences which enhance awareness and informed concern. Four dimensions to such awareness were revealed in the student diaries: experiential, place, subject-specific, and values. However, similar experiences of students on fieldwork revealed radically different perspectives of awareness. This is partly due to the laboratory focus and topical structure to the course which militates against the use of humanistic approaches which acclimatise or sensitise students to their environment and locale. It is also symptomatic of a reliance on the motivation of subject matter, the intrinsic qualities of the environment, and the precept that students coming on the course are already self-motivated towards their learning. A fifth dimension to environmental awareness - social and political - is seen as being absent from the Centre's geography course although central to enhancing awareness and concern for the environment. Recent developments in the teaching at the Centre, whilst attempting to incorporate a global dimension to environmental issues in local studies, still fail to appropriate this social and political dimension and offer the prospect of students being restricted in discourse by the prevailing technocentric ideology.

SECTION IV : DISCUSSION

CHAPTER 9

DISCUSSION AND CONCLUSIONS

The discussion and conclusions which comprise the final section of this thesis are prefaced by a restatement of the aims and objectives of the research. The primary aim of this study has been:

'to analyse the role and value of residential fieldwork in geography advanced level courses, compare and contrast the respective assessments of the student and the teacher of the role of fieldwork in geographical learning, and explore frameworks and methods for evaluating the effectiveness of field instruction as a learning process'.

The study's objectives are:

- (a) to use case study material to describe and analyse what is currently being done under the name of 'fieldwork';
- (b) to examine the match or mismatch between theoretical statements on the purposes and process of fieldwork which appear in the literature and those provided by participants, and the learning and teaching strategies employed in practice;
- (c) to gain insight into how the field experience is being transferred into the wider geography curriculum and the ways in which fieldwork is incorporated into the day to day teaching of the geography classroom and ultimately into the A-level examination.

In seeking to meet these objectives and to gain an insight and critical understanding of the varying perceptions of fieldwork's role and value in geographical education for students studying for an A-level examination in geography, three groups of participants' perceptions of fieldwork have been explored by using a variety of qualitative research strategies: the field tutors of the case study; the visiting teachers who have accompanied their students on field courses to the Centre; and the students who have undertaken the fieldwork themselves.

Categorising observational data, written materials, and interview extracts into these three groups implies a reductionist perspective, even at the level of a case study based on an individual institution. Grouping data in this way can suggest a collective response to a standardised and prespecified investigational approach. This has not, of course, been the intention or practice of the present study. The questions I have asked participants and my own interpretations of their actions and the meaning I have attached to their statements have emerged from a dynamic relationship with the data and the social structure in which they were produced, and from the presuppositions which I took into the study. The categories also imply a consensual view by the participants which neglects to place emphasis on the individuality of their actions, attitudes and beliefs and the shades of dissonance or meaning - the nuances - which arise from such individuality.

For these reasons, I have attempted to show the variety, complexity and individuality of responses to the learning milieu which the groups encountered and embellished at Slapton Ley Field Centre, by attempting to immerse the reader in the 'raw' data as much as possible, and by providing sufficient information about the educational context in which the Centre operated in the late 1980s. Furthermore, I have sought to engage the reader from the outset in my own experiences of fieldwork and their internalisation into an agenda for enquiry (Chapter 2). Similarly, the data and its analysis have been informed by theoretical insights from a wide range of literature (Chapters 3 and 4); there has been no claim to a 'naturalistic' response to the case study (Hammersley and Atkinson, 1983 pp.1-26), a cultural description that is divorced from the theoretical generalizations drawn from the results of previous research. Indeed, the

case study has attempted to investigate and critically appraise hypotheses emanating from researchers working in different contexts and with different fields of study, or to extend the validity of their findings by confirming similar results under new conditions.

Thus, a research relationship exists between a triangulation of factors: my own 'individual' experiences and presuppositions which produced the initial enquiry agenda and the new experiences and learning which have reshaped the study during its course; the 'theoretical' perspectives from literature which have informed the study (and the guide to those perspectives gained from the autobiographical accounts of 'insiders'); and the 'empirical' data gained from the participants of the case study. In the centre of this triangle, which is the product of the research relationship between 'individual', 'theoretical' and 'empirical', is a study of an educational setting in context; a study which explores a world of events, experiences and mechanisms as perceived by its participants.

The results of this research study which follow should be seen in the context of this research relationship.

A study of literature has been guided and informed by an analysis of autobiographical or 'first-person' accounts from a survey of 'insiders', (PGCE method tutors, HMI, lecturers and teachers of geography). It represents an important point of departure for geographical education research as one of the first attempts to apply an autobiographical approach to a literature review following the research accounts produced by geographers in higher education: Buttner (ed.) (1981); Billinge, Gregory and Martin (eds.) (1984) and Eyles (1985). The review has explored the character of three generic trends in approaches to fieldwork: traditional,

hypothesis-testing, and humanistic. This pattern of trends identified in the literature confirms and extends the statements available elsewhere (Farms and Smith, 1984). Each trend has been examined in detail and shown to be largely the product of changes in geography's philosophical and methodological orientation, rather than pedagogic innovation. These trends have coalesced around seminal translations from developments in geography in higher education to the context of the geography curriculum at secondary level, or have been the result of an application of ideas to secondary geography from other disciplines. Key individuals such as S.W. Wooldridge, Geoffrey Hutchings, John Everson, Brian FitzGerald, John Fien, Colin Ward, Tony Fyson, Clive Hart and others have acted as curriculum catalysts for reshaping geographical concepts and methodologies into ideas and procedures for fieldwork in schools and for their dissemination through organisations like the Field Studies Council, Town and Country Planning Association, Geographical Association, and their associated publications.

The analysis of the literature and autobiographies has produced a set of questions and hypotheses which have formed a set of investigational 'entry-points' into the case study. In particular, attention has been focussed on the mechanisms by which pupils learn in the field when engaged in hypothesis-posing and hypothesis-testing, and the understanding teachers have of, and the assumptions they place on, these mechanisms. Analysis has been directed at exploring the relationship between geographical theory and practical work in hypothesis-testing, and whether the model produces an 'open' or 'closed' learning process. Further, the review of research studies examining the efficacy of fieldwork as a pedagogical device has shown that scarce attention has been paid by researchers to the processes which link prior states of learning to intended or unintended learning outcomes. Although earlier research has produced interesting insights into

the cognitive and affective dimensions of the learning experience, such as its impact on pupils' recall and retention of concepts and motivation for subject, conceptions of self-image, and teacher-pupil and pupil-pupil relationships, it has not explored the mechanisms or conditions in the learning milieu which effect such change. Nor has it explored the question of learning transfer and interchange between field and classroom. This study has investigated these dimensions and has provided new insight into fieldwork as a learning process. In so doing, it has formed a solid platform for further research.

9.1 Perceptions of Aims and Purposes

The Field Studies Council declares an intended curriculum for its A-level geography courses in the information it supplies to teachers and students. Two themes dominate this literature and are repeated in interviews with FSC management: firstly, reference is made to the courses meeting the requirements of A-level examination boards, that fieldwork should be undertaken to promote pupils' conceptual understanding of geography, and to teach geographical enquiry skills, and secondly, that fieldwork is valuable as an experience which develops an environmentally 'informed' and 'aware' society. In promoting the first aim, the FSC argues that its students are actively engaged in studying 'first-hand' the environment; that its courses utilise a systems approach as a means of thematic integration; and that its field sites and equipment together with local expertise combine to offer teachers a high quality and effective milieu in which to teach and learn.

The literature produced by the Council matches the utilitarian tenor of the A-level geography syllabuses in their emphasis on fieldwork's function in

the application of techniques and skills in testing problems, in supplying students with 'real' examples of concepts learnt in the classroom, and in the overarching systems approach to investigate people-environment relations. The enabling aim of the experience in developing in students an environmental awareness or a conservation ethic is not repeated in the published criteria contained within examination syllabuses, despite geography's recent 'greening' and its interest in a closer relationship with a broad environmental education.

The Council's overall educational policy contained within its statements on geography fieldwork are translated into information for teachers circulated by Slapton Ley Field Centre. A similar utilitarian theme is present in this literature concerning the field course's applicability to the A-level examination, in the stress it places on a hypothesis-testing approach and data collection and analysis techniques, and in a systematic organisation of geographical content. No case is made, however, for the affective dimensions of the experience or how the course can contribute to a pupil's broader personal and social development. Nor does it demonstrate to teachers how the Council's environmental ideology impinges on the learning experience.

Teaching staff at the Centre concur that their aims of the field course at Slapton are not fully represented in the material sent to teachers. The skills-based component of the course is a significant part of their aim that the course should meet the requirements of the A-level examination and that the quality of the field sites and other resources contribute to meeting this objective, but both aims are couched less in terms of their educational priority for pupils, and more in terms which are derived from the economic necessity of providing an experience to pupils which will

encourage teachers to repeat their visit with a new group. Centre staff, however, extend the written aims contained in this literature by making clear that developing a motivation and enthusiasm for the subject of geography is an important function of the course. Staff are more ambivalent over whether the principles of conservation and developing environmental awareness adequately underpin the aims of the courses they teach, and how proactive they can be in establishing a course with a stronger environmental core. The interviews with staff reveal an uncertainty in the aims of the field course in this regard, and a tension exists between the stated ideology of the FSC and what staff at Slapton perceive as the constraints imposed by teacher demands for courses driven by examinations requiring technical competency and exemplification of particular geographical concepts. Finally, Centre staff are of the view that their course aims to provide students with an opportunity to relate with peers and teachers in new physical and social settings, and that this novelty of the learning milieu and the new relationships it forges is a major motivator for students' learning of geography.

Visiting teachers to Slapton concur with many of the aims of the field course expressed by Centre staff. Like Centre staff they perceive the primary objectives of the course for pupils in both subject-specific and student-specific terms, but state that their justification of fieldwork to other teachers and school managers rests largely in the benefits they see for pupil's acquiring examples studied at first-hand of geographical theory learnt in the classroom, for the methodological and technical skills which pupils acquire by conducting practical investigations and experiments, and for pupils becoming enthused by geography. There is less unanimity in teachers' responses concerning the role of fieldwork in the elucidation of concepts and conceptual understanding. Most teachers clearly see the aim

of the course being a geographical equivalent to an extended scientific practical lesson, which by careful planning and stage-management leads students to understanding through the process of testing principles of theory in the real world. In this respect teachers frequently refer to fieldwork's purpose resting in the examples which pupils take from the course of theoretical abstractions studied in the classroom. Few teachers regard the purpose of fieldwork as a two stage process of conceptual discovery, in which initial observations in the field are translated into hypotheses that are then subjected to testing.

Teachers also regard the purpose of their visit to Slapton in terms which are not directly related to the educational value of pupils. Teachers regard the field course as an experience of professional and personal value to themselves. An aim of taking their students to the Centre is to take themselves out of the teaching 'limelight' and hand responsibility to the field centre tutor, and in so doing, 'see' their students from a different angle. Working alongside their students without having to 'front' a classroom or lead a lesson gives teachers, they argue, an insight into how their pupils are progressing, to have time to work with students on problems they are confronting, and to exchange views and opinions with their students about matters other than geography. Teachers state, simply, that one of their aims of the course is to get to know their students better. Teachers also perceive a purpose of the course being a timely opportunity to reflect on their own teaching and to exchange views with other staff about the teaching of geography. Divorced from the busy confines of the school, teachers value the opportunity the experience affords for their own conscious reflective activity.

Finally, teachers note that a purpose of taking their A-level students to

Slapton for their fieldwork is to enable them to use field equipment, have access to extensive local knowledge and a wide range of sites and long-term monitoring data, and to gain an insight into current geographical and environmental research. In this, teachers' statements match the views of both FSC management and Centre staff that such experiences offer pupils a breadth and depth of resources for integration into teaching which schools and colleges are unable to provide.

The comparative summary above of the perceptions from FSC managers, Centre staff and visiting teachers of the aims and purposes of fieldwork is the result of analysis of data from written materials, including publicity and policy papers, and from interviews. The research into pupil perceptions of fieldwork at Slapton took the form of an analysis of data from pupil diaries undertaken during their field week. As a result, the entries on their arrival at Slapton took a reflective stance on their initial perceptions of the Centre and their expectations for the week ahead.

The unfamiliarity and novelty of the social setting and the excited expectancy of students for what the week may hold, is vividly conveyed through the anxieties and aspirations entered by the students in their diaries. Their entries clearly demonstrate that the students view the experience as a new and challenging contrast to daily rhythms of school or college life. Students acquire a mythology of the field course from previous year groups visiting the Centre, and this mythology conveys an image of the course as a demanding intellectual and physical challenge. The establishment of new social relations between peers within schools and making contact with people from other schools is an initial preoccupation of students in their diaries. In addition, students repeatedly refer to a

cost-benefit analysis of how the course will contribute to their final A-level examination. Course details and structures provided at the beginning of the week by the Centre tutor are critically appraised for thematic or topical links and relevance to the A-level course.

A comparison of the respective assessments of the purposes of fieldwork by participants in this study with statements which appear in literature reveal interesting areas of concurrence and divergence.

First, there exists a marked consensus between the public and personal views of Council managers, Centre staff, and teachers and pupils on the utilitarian purpose of fieldwork as a prescriptive learning process which must impinge directly on the requirements of the A-level course. It should do so through the provision of 'worked' examples that empirically test the application of geographical concepts and theory in the real world; by students undergoing a process of enquiry which will enable them to apply the same 'scientific' procedures to their own research problems as part of their project work or individual study; and by gaining practical knowledge of analysis techniques applied to data collected by the students themselves. These 'subject-specific' purposes conform to the thrust of the published statements elsewhere (GA Sixth Form/University Working Group, 1984), with the exception that they neglect to include an aim of fieldwork as being to strengthen pupils' grasp of a specialised and technical vocabulary.

Second, teachers and Centre staff note that an often unstated and yet, they argue, important purpose of fieldwork is the social experience it offers pupils and the contribution it makes to their personal and social development. By contrast to the literature which emphasises the affective

benefits or 'student-specific' value of the experience on pupils learning in terms of teamwork, communication and life skills, teachers and staff see the prime benefit of fieldwork in this area being pupil motivation for the subject of geography cultivated through a sense of achievement, and the creation of a professional role model for the geographer. Centre staff and teachers regard this motivational purpose of the learning experience as possibly the preeminent reason for undertaking fieldwork at the Centre.

Third, teachers visiting Slapton for the 'standard' A-level field course, do not view a purpose of fieldwork in the 'student-environment' terms described in the literature (GA Sixth Form/University Working Group, op.cit. p.211) which perceives a more humanistic role of fieldwork as an experience in which pupils confront planning and decision-making issues in the environment; utilise geographical theory and ideas from other disciplines to examine such issues; and clarify their understanding of their own value position and that of others with respect to these issues. Centre staff, by contrast, view the development of these aspects of an environmental education as an important aim (one that they recognise as a stated educational purpose of the FSC), but argue that it is difficult to achieve within the confines of the expectations teachers place on the course. Once again, fieldwork's precise role as the exemplification of theoretical characteristics of people-environment interaction, or as a experiential process of engagement in a broader cross-curricular environmental education, remains unclear. Centre staff and teachers do not specify that fieldwork's ultimate function is to educate pupils so that their future behaviour and actions are conducive to conserving the environment.

9.2 Process and Outcomes

The translation of the rhetoric of fieldwork's various purposes into the reality of the teaching and learning process as experienced by participants was revealed through participant observation, interviews and diaries conducted during the research at the Centre. The analysis progressively focussed on four themes: fieldwork's role in pupils' learning of skills; its function in pupils' affective learning; the learning transfer between fieldwork and school; and fieldwork's relationship to an environmental education.

Fieldwork's function in the development of pupils' intellectual, practical and social skills is considered to focus specifically on the opportunity it affords students of gaining experience in approaching, structuring and implementing a geographical investigation, and through engagement in that process of investigation, a practical understanding of techniques which can be used. Central to the teaching and learning process in achieving these goals is the application at the Centre of a hypothesis-testing approach. Observation of its application revealed interesting insights into how hypotheses were constructed in the classroom, how data was collected in the field, and how, on return to the Centre, the field data was processed and analysed. Reflections on the experience of the course in student and staff diaries were analysed to consider what aspects of the process were thought by the participants themselves to have been helpful or to have impeded their own learning. Conclusions can be drawn from this data to suggest ways in which aspects of the learning process are likely to affect learning outcomes. But further research is required to test the following assumptions.

The results show that the hypothesis-testing approach to the teaching of

topics in the field course has been carefully planned, tried and tested by experienced and knowledgeable Centre staff. Students and visiting teachers welcome the structural clarity of the approach and gain achievement from following an investigation from hypothesis to conclusion in ways which they regard as academically stimulating and methodologically rigorous. Students find the task of conducting experiments in new and challenging outdoor settings with sensitive technological equipment an exciting and motivating feature of fieldwork at the Centre. The field experience does bring the subject of geography alive and the first-hand study of geographical processes renders its technical vocabulary more comprehensible.

However, data show that the process is riven by a tension of purpose which affects students' learning outcomes. Centre staff balance their teaching between two positions. On the one hand, pressure of expectations from visiting teachers and students cause Centre staff to regard the conceptual coverage of topical themes within the week and the provision of recorded examples for later use in examinations as superseding the objective of developing in pupils an ability to independently plan and conduct their own investigations. This has the effect that Centre staff stage-manage the construction and testing of hypotheses in ways that reinforce the conceptual relevance of the fieldwork to the rest of the A-level course. This position holds the advantage that the investigations are tightly focussed around particular areas of the syllabus, that pupils can see direct relevance of fieldwork to their classwork, and that the approach conforms to the cognitive strategies already understood by the pupils i.e. that the teacher is primarily responsible for the organisation of pupil learning in terms of assessing a situation and setting goals, planning a future course of action and processing information.

On the other hand, however, Centre staff do intend that the field course should provide pupils with transferrable intellectual and practical skills which they can use to address different problems in new contexts and situations, but these skills are left to be acquired 'en passant' during the process of the teaching. Improving learning through enhanced metacognition (Baird, 1986) by developing in pupils cognitive strategies such as objective-setting, selecting and planning the path of an enquiry, are not themselves the focus of the field tutor's teaching strategies.

The tension of purpose observed in practice and the superordinancy of transmitting concise packages of conceptual information over the objective of teaching fieldwork as a heuristic process, produces a densely-packed pattern to the teaching and learning at the Centre. The volume of information presented in the amount of time available does not enable students to adequately process new information and to reflect on it before having to manipulate it in formal operations. The result of the sequence and timing of the hypothesis-testing approach as applied at the Centre, is that students do not commence the learning process by forming episodes which they can link to propositional knowledge. Nor do they process information by applying new knowledge to a problem themselves - by constructing and testing of their own hypotheses. Instead they express individual differences in their capacity for information processing which are dependent on their prior knowledge base and their ability to follow the conditional reasoning employed by the field tutor. For some students, the result is a frenetic period spent in the field taking measurements and a busy evening of data processing, which is not clearly linked in the students' understanding to the purpose of the investigation set out in the introduction, and to the conclusions to the work. The weaknesses in the link between observations made in the field and information applied to

problem-solving in the classroom may seriously undermine the claim that fieldwork is an effective means of enhancing pupils' conceptual understanding. Further research exploring ways of testing the linkages between observations and the application of propositional knowledge to problems needs to be done to supplement the self-identified learning difficulties described by the students in their diaries.

Nevertheless, it can be concluded from this research that to overcome the weaknesses observed above, firstly, a shift in the balance is required between conceptions of directed experimentation fieldwork as the transmission of geographical facts and concepts, and fieldwork as a heuristic process. Centre staff and teachers must decide whether the experience is really aimed at providing pupils with the ability to undertake their own fieldwork and their own investigations, and if so, to restructure their teaching to allow students to be engaged more in the planning and implementation of work at the Centre, particularly in the latter stages of the course. Secondly, that greater attention needs to be given to the formative assessment of pupils prior levels of knowledge through planning and negotiation with visiting teachers, and through this process a more precise prior specification of the geographical concepts as well as the techniques to be learnt. Thirdly, that field tutors need to consider questions of sequence and pace of presentation to enable students to better link field observations, experiences and episodes with new information and to apply that information in problem-solving. And fourthly, the teaching strategy adopted by some Centre staff of asking students to make short presentations of their conclusions should be explored as one means of in-course evaluation to detect whether students have successfully understood relationships between system variables and can link them to a broader conceptual framework.

The social skills dimension was considered in Section 8.3 as part of the wider impact of fieldwork on pupils' affective learning. Review of research results available elsewhere suggested that a field experience produced marked improvements in measures of self-concept, peer socialization, ethnic and socio-economic integration, and teacher-student interaction, but previous research has provided little evidence to suggest processes at work which lead to changes in pupils' affective learning.

The present study marks an important point of departure in educational research in providing empirical evidence to support teachers' intuitive knowledge that the residential field experience can be a considerable motivating force for pupils in their study of geography. Teachers identify that this is caused by a combination of three factors: the novelty of the learning milieu; the enthusiasm and professionalism of the tutors; and the changes in teaching roles from authority to resource. But the data also provides evidence of particular features of the learning process, and this evidence serves to explain as well as to corroborate teachers' more general claims concerning the course's positive motivational influence.

First, the learning context is distinctive in that teachers have no prior personal contact with students to form preconceptions of their ability or to form other 'labelling'. The milieu is identified by pupils as a non-competitive context in that individual pupil performance during the course is not formally assessed by Centre staff. Also, the nature and duration of the daily contact between staff and students forges a distinctive relationship which separates the learning milieu from that experienced at school. The combination of these distinctions renders the teacher-pupil relationship more equitable, more relaxed, and more

empathetic - in Fink's terms it "humanizes" the relationship.

Second, motivation for learning stems from greater self-confidence and an improvement in self-concept. The course provides confidence through better conceptual understanding, and perception of geography's principles and practices, and through the development of a role-model for the professional geographer. It builds self-confidence by students gaining a sense of achievement from meeting the physical and intellectual challenge. And, on occasions, by giving responsibility to students for the organisation of their work in the field away from staff.

Third, the novel and uncompetitive context at the Centre contributes to changing pupils' 'scripts' for learning towards group-work and towards learning skills of teamwork and project-management. The 'team spirit' and sense of camaraderie between peers which emerges from the experience contributes to motivation. In addition, the independent nature of the group-work activities, structured towards the students meeting a common goal, is regarded by students as making the activity feel important and worthwhile, and a more real and relevant working experience. Finally, the data shows that group-work enhances self-concept and builds confidence by changing students' perceptions of their own roles in group learning situations; this factor was cited by a number of young women in the study as significant for their enjoyment of the course and their motivation for the subject as a whole.

Fourth, the change in teaching roles, the brevity and intensity of the experience and the social and cultural differences of the Centre combine to provide a context which is central in shaping the interaction between staff and students. In particular, students refer to the Centre staff's

enthusiasm and professional knowledge and competence as important factors in creating a relationship which establishes personal and professional role-models, and enhances their conceptual understanding. These factors were also central to Fink's 'taxonomy of personally meaningful learning' which was examined in Chapter 4, but the present analysis extends the range of their significance by stressing the strategic and self-expression role of consensus and comic relief humour, particularly narrative humour, in the interactive process.

Clearly this evidence points to the significant contribution fieldwork has to offer the personal and social development of young people. The movement of 16-19 education towards the identification of core skills which run across subject and curriculum boundaries, in which group-work and project-management skills are central, reemphasises the important and special role that a residential fieldwork experience such as that encountered at Slapton Ley Field Centre can play in post-16 education in the 1990s. Recognition of the importance of the affective domain in fieldwork in the FSC and Centre's literature to teachers and pupils needs to be made more explicit.

Insight into how learning from the field is transferred to the wider geography curriculum, into the day to day teaching of the geography classroom, and ultimately into the A-level examination, was considered by a study of pupils and teachers from 'Deerbridge College'. This LEA maintained sixth-form college with large first-year (Lower) and second-year (Upper) Sixth geography groups, regularly took their students to Slapton Ley Field Centre for a week's residential field course. In the course of this research I participated in three successive annual visits of the

College to the Centre and through the Head of Department negotiated access to conduct follow-up research in the College. Two approaches were used to explore the transfer process. Firstly, teachers completed a 'structured' diary of their classwork for a four-week period in the Autumn Term following the students' Spring visit to the Centre - i.e. in the first term of their Upper Sixth. At the end of this period, all staff were interviewed, and extracts from the transcripts appear in Section 8.4. Secondly, in two successive years, the scripts from students' mock A-level examination taken by Upper Sixth students in the Spring term were analysed for references to fieldwork. A sample of students were interviewed to explore the students' reasoning for including or not including references to fieldwork and how in an ideal situation they could make best use of their fieldwork. Reference was also made to the guidance given to students for fieldwork by the Cambridge Examination Board used by the College, and letters were sent to Chief Examiners for geography of all examination boards offering the subject at A-level to gauge their assessment of 'good practice' in this area.

The low number of students making any reference to their fieldwork was reported, but more importantly, the type of references made revealed that fieldwork was being used simply to cite place names as examples; or to describe experiments undertaken without relating their purpose or findings to the question; or to exemplify the test of a geographical concept. In the latter case, some students incorrectly cited evidence of a concept operating which their fieldwork had disproved as supplying only a partial explanation for the processes and forms which had been studied. At interview, students' understanding of concepts central to the fieldwork was limited, and they found it difficult to recall examples to illustrate or qualify the points they were making, despite many saying they had revised

from their field notes. More generally, students were unclear as to how they were expected to best use fieldwork in their answers.

The data from teacher diaries and interviews does not provide evidence of a causal link between strategies for the use of fieldwork adopted by teachers in the classroom and the results outlined above. However, two themes emerged which could form the basis of further research to test the relationship. First, the topical structure of the fieldwork at the Centre was mirrored in the form of its integration into classwork; making reference to fieldwork was dependent on the match of topics covered on the field course to topics taught in the classroom. Little time was given after the fieldwork event to review the concepts taught earlier in the year in light of the data the fieldwork produced. And topics taught later in the A-level course were seen as too distant from the fieldwork for adequate recall. Second, teachers' references to fieldwork concentrated on the relevance of the findings of an investigation to exemplify a concept. Teachers did not review through discussion the logical set of operations undertaken in the field, together with a reexamination of data, which produced these findings. It is suggested that it is this process which renders the results meaningful, and further that it is evidence of this process - the set of logical operations which have been used in problem-solving - which the examiner is looking for in pupils' answers. It is hypothesised that students need to be actively engaged over a longer period of classwork in discussing and recapitulating the process of problem-solving in order to be able to mentally manipulate system variables and reason conditionally about concepts, and to be able to set their findings into a broader geographical context. (see also, Lawson et al, 1984).

Finally, the thesis has explored through the case study of Slapton Ley Field Centre, the relationship of fieldwork to environmental education. It was noted earlier that visiting teachers to the Centre hold expectations for the course which stress its value in teaching the technical 'subject-specific' dimensions of geographical fieldwork. Visiting teachers place less stress on the 'student-environment' purposes of the fieldwork - to become aware and reflect on issues in the environment which are pertinent to their daily lives and their daily decision-making, and to see that decisions about such issues are laden with value judgements (which are often in conflict) and subject to prevailing belief systems within society. These student-environment objectives for fieldwork recognise that a moral discourse operates at a variety of geographical, political and economic scales in environmental issues.

The subject-specific dimensions to fieldwork express a technical interest in the transmission of geographical facts, the enhancement of pupils' conceptual understanding of geography, and knowledge of procedures and methods of enquiry. In this technical interest, visiting teachers' expectations for the course mirror, and are responsive to, the thrust of most A-level syllabuses. However, these technical expectations for fieldwork potentially conflict with the drive of the Field Studies Council's educational policy which is imbued with notions of environmental awareness, citizenship training, and conservation education, although the Council's policy is imprecise in specifying environmental education objectives and their intended means of achievement. Furthermore, teacher's technical expectations for fieldwork rest against the Centre staff's desire that their field courses reflect more the broad environmental education policy of the Council.

The case study has highlighted the dichotomy which arises from a mismatch between teacher and student expectations and the aims of the Field Studies Council and its Centre staff. The expectations are for students to acquire through fieldwork a 'tool-box' of techniques with which they can investigate the physical and social world, but its contents constrains them to rebuild it after investigation in its present form and structure. A purely technical concern with environmental problems and management emphasises scientific objectivity, a faith in technology to solve applied problems, and a belief that the resources to research and develop the technology to tackle environmental problems is a material measure of wealth-producing success of advanced industrial societies. But in so doing, its technocentrism maintains the status quo, which it is argued (Huckle, 1983), has caused and supported man's self-indulgent attitude towards nature and the exploitation of its resources - "the environment is reduced to its instrumental role in sustaining the economy." (p.102). Statements made, however, by the Field Studies Council in their literature and strengthened by interviews with management and staff (Chapter 5) suggest a case for providing pupils with an alternative fieldwork experience that liberates students from a technocentric perspective on environmental issues; one that places value on the individual's environmental experience, personal commitment and social responsibility, and political obligation.

This dichotomy in the relationship of fieldwork to environmental education is revealed in observation of the practice of teaching and learning at Slapton. The course is skewed by teacher and student expectation to the transmission of conceptually relevant knowledge and the application of technical skills. Three factors have been identified as contributing to the shift of emphasis in the course in this direction in ways which render

the achievement of environmental education objectives problematic.

Firstly, it has been questioned whether many geographical concepts which have become a sine qua non of A-level 'physical' and 'human' geography course are environmentally relevant since they fail to analyse conditions operating at a variety of scales which are contingent on how and why people live in particular places, in unique situations. Further, the topical focus of the course fails to integrate effectively information about particular sub-systems into a wider analysis of the operation of environmental systems. Secondly, the empiricist/positivist framework in which the fieldwork is conducted at the Centre pushes environmental planning and management issues to the end of the enquiry process. Decisions are considered in light of the 'objective' and 'neutral' facts which emerge from hypothesis-testing; the subjective response of observer and actors is avoided or only taken into account as a codicil to the environmental cost-benefit analysis - "I'm not sure that geographers are supposed to get worked up. They're only supposed to analyse" (Sally, diary). Thirdly, the directed-experimental approach to fieldwork is seen to close the enquiry around the operationalisation of procedures and tests rather than opening it as a process of personal and subject discovery.

Despite these constraints, students experiences of the course suggest that aspects of the field week contribute in meeting environmental education objectives. Experiential, place, subject and values dimensions to environmental awareness were identified in pupil diaries. Such awareness involves a mental comparison between locale and home environments, self-reflection, the development of episode formation, and an expression of feelings and emotions. In addition, the contribution of the field course to students' affective learning (8.3) noted earlier is important to recall. O'Riordan and Turner (1983) regarded the learning experience encountered on

fieldwork as important in developing a pupil's self-confidence and self-esteem, and their ability to interact effectively with others. Respect for others and an emphasis on collaboration instead of competition are regarded as important environmental education objectives. It is clear from the analysis of pupils' affective learning that a residential fieldwork experience has much to offer in meeting these goals.

Environmental awareness has, therefore, been identified as being symptomatic of pupils' intellectual motivation, curiosity and inquiry as well as the opportunity for self-reflection and self-expression. But teaching strategies which relied on the chance encounter or prior commitment to learning and interest in the environment were criticised as insufficient to foster such awareness. Further research is required to develop appropriate acclimatisation techniques for 16-19 students to break down the sense of detachment from urban and rural environments which some students experience. It was also made evident that a fifth dimension - the social and political dimension - to environmental awareness referred to in recent curriculum statements, was absent from much of the fieldwork observed at the Centre, and that this reinforced the prospect of some students being restricted to consideration of environmental issues through a technocentric ideology.

In concluding this thesis, the reader is invited to note that the results of the research and the interpretation of their significance in the discussion above, are bounded by the cultural confines of the case and the temporal confines of the mid to late-1980s in which the study was carried out. A study of a different centre in the 1990s is likely to lead to different emphases with possibly contrasting results and conclusions. However, the present study illustrates that geographers have periodically

returned to restate the role of fieldwork and to confront educational concerns over its purpose and effectiveness. Despite a rapidly changing curriculum in the 1990s, many of the issues explored in this study will reappear as geographers and educationalists seek to enhance the learning experiences we offer to a new generation of students confronting the environmental legacy of a post-industrial society. It is hoped that this exploration of the role and value of fieldwork in geographical education has illuminated the reader's interpretation of their own experience of working with pupils and teachers in the field, and that through new reflection on that experience, prospects and avenues of further research into pupil learning through fieldwork will emerge to assist teachers and policy makers in the advancement of practice.

APPENDIX

Appendix 8.1DEERBRIDGE SIXTH FORM COLLEGEFIRST YEAR EXAMINATIONGEOGRAPHY2 1/4 HOURS

Answer THREE questions, including at least one from each section. Credit will be given for appropriate sketch maps and diagrams. World outline maps will be provided on request: these may be annotated and handed in with the relevant answers.

N.B. Candidates are strongly advised to make reference to appropriate examples, studied in the field or the classroom, even where such examples are not specifically requested by the question.

SECTION A

1. The following table shows average maximum slope angle, and average slope height (equivalent to valley depth) in eight different areas A - H.

	Rock type	Average <u>max</u> slope angle (degrees)	Average slope height (m)
A	Clay	5	20
B	Clay	13	45
C	Chalk	18	55
D	Chalk	32	85
E	Chalk	31	120
F	Granite	14	100
G	Granite	33	210
H	Granite	33	320

- (a) What light do the data throw on the relationship between slope steepness, rock type and slope height?
- (b) What other factors are likely to influence slope steepness?
- (c) Explain what is meant by "slope decline" and "parallel slope retreat"? Can the data be used to support these theories of slope development?
2. Describe the main processes of transport and deposition at work in river channels. Show how these processes influence the formation of meandering and braided channels.
3. "Coastal landforms are the product of the most complex interaction between rocks and processes of denudation". Discuss this with reference to selected examples.
4. What evidence indicates that glacier ice is a major erosional agent?

5. (a) What are the dominant geomorphological processes in tropical humid and savanna regions?
- (b) How does the study of these processes assist in the understanding of distinctive landforms of these regions?
6. EITHER - What is meant by the term "rainfall effectiveness"? In which parts of the world, and for what reasons, is rainfall effectiveness low?
- OR - Discuss the geological conditions influencing water-tables. What factors cause fluctuations in the water-table, and with what results?
7. With reference to selected examples, examine the view that landforms are often the result of past rather than present-day conditions?
8. "Interference by Man is now so intense and widespread that it is no longer possible to talk of the natural environment". How far do you agree with this point of view?

SECTION B

9. The table below shows the rates of growth of population, and crude birth and death rates for a number of countries.
- (a) From the information given in the table below calculate the annual rate of net gain or loss of population by migration for each of the countries listed.
- (b) Suggest reasons for wide variations in crude birth rates among the countries listed.
- (c) Suggest reasons why crude death rates are higher in the UK and France than in Jamaica, Argentina and Hong Kong.

	Population 1979 (millions)	Crude Birth Rate/ 1000 1978	Crude Death Rate/ 1000 1978	Annual rate of growth (%) 1978
Zambia	5.6	48	17	3.1
Jamaica	2.2	27	6	1.2
Argentina	27.2	26	9	1.7
Hong Kong	4.9	18	5	3.3
France	53.5	14	10	0.4
UK	55.9	12	12	0

10. Compare and contrast the patterns of internal migration (excluding the daily journey to work) to be found within countries of (a) the developed world, and (b) the developing world.

11. Where, and in what ways, does modern rural settlement reflect activities not concerned with agriculture?
12. What factors govern the zoning of functions within cities? In what ways have those factors changed in recent times?
13. What factors explain the rapid growth of urbanization in the developing world?

Appendix 2

The full data set comprising participant observation notes; autobiographical accounts; unstructured and semi-structured interviews and diaries, resides with the author. Extracts from this data quoted in this thesis are coded by a two alpha character (or one alpha/one numeric) which refers to the personal source; a three alpha character which refers to the school or centre; followed by a reference to the type of data, e.g. MH/HVIC/int.

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