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ABSTRACT

This teacher's guide is to enable the teacher to promote thinking through the use of geography. The book lays out the rationale in learning theory for an issues-based, question-driven inquiry method and proceeds through a simple model of progression from identifying key questions to developing generalizations. Students study issues of geographic significance by pursuing answers to geographic questions, in the process developing meanings and understandings, skills, and personal perspectives, values and attitudes. There is a high value on active learning and higher-level thinking in the materials. Each chapter contains several classroom activities for student decision-making and analysis. The chapters include the following: (1) "Identifying Key Questions To Plan Learning Activities"; (2) "Planning Learning Activities To Reach Generalizations and Decisions"; (3) "Reaching Generalizations and Decisions through Processing and Interpreting Data"; (4) "Interpreting and Analyzing Attitudes and Values; and (5) "Learning through Geography. Extensive maps, charts and figures accompany the text. Contains 75 references. (EH)

A PATHWAYS IN GEOGRAPHY
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The National Council for
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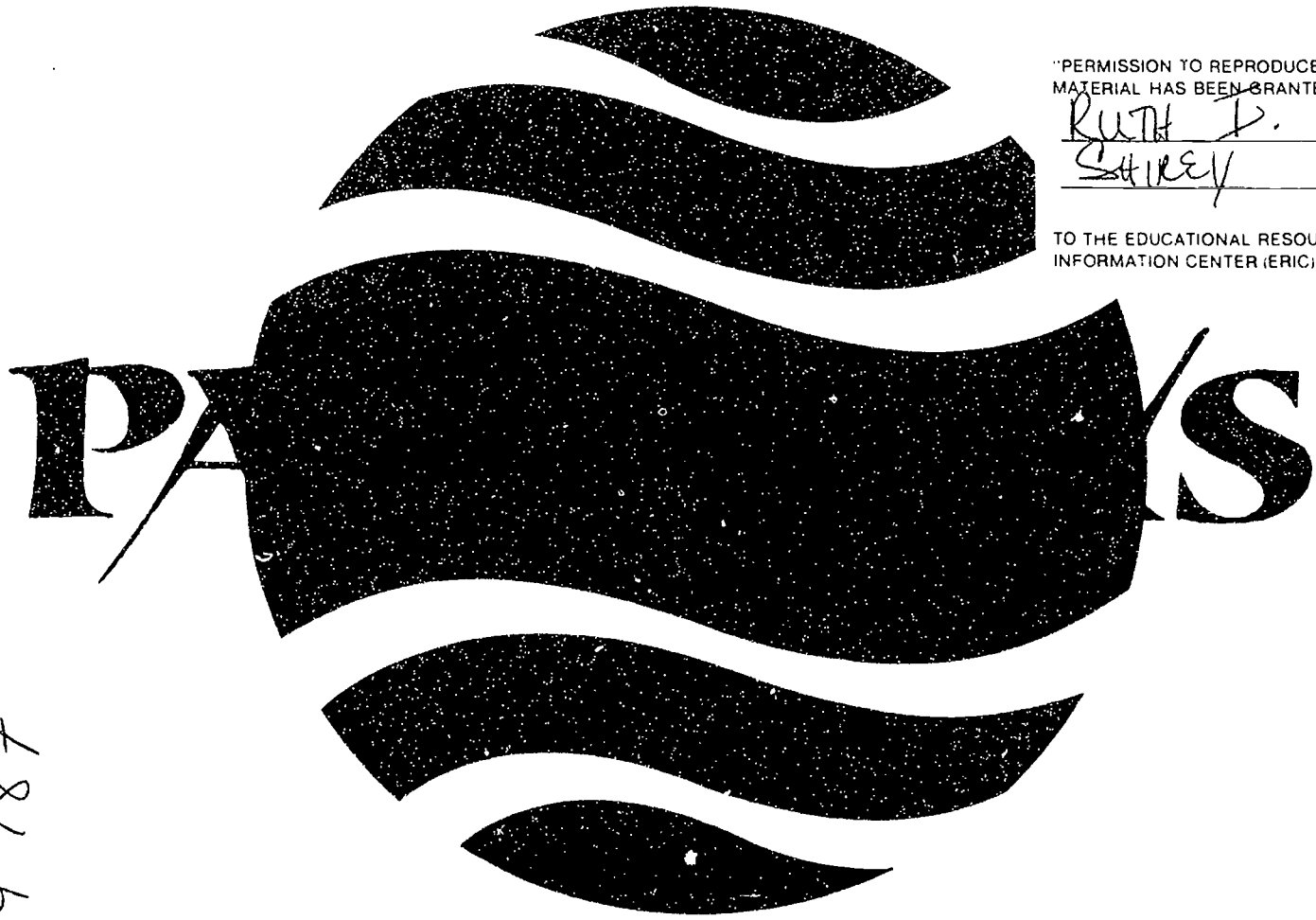
Learning Through Geography

by Frances Slater



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Learning Through Geography

by Frances Slater

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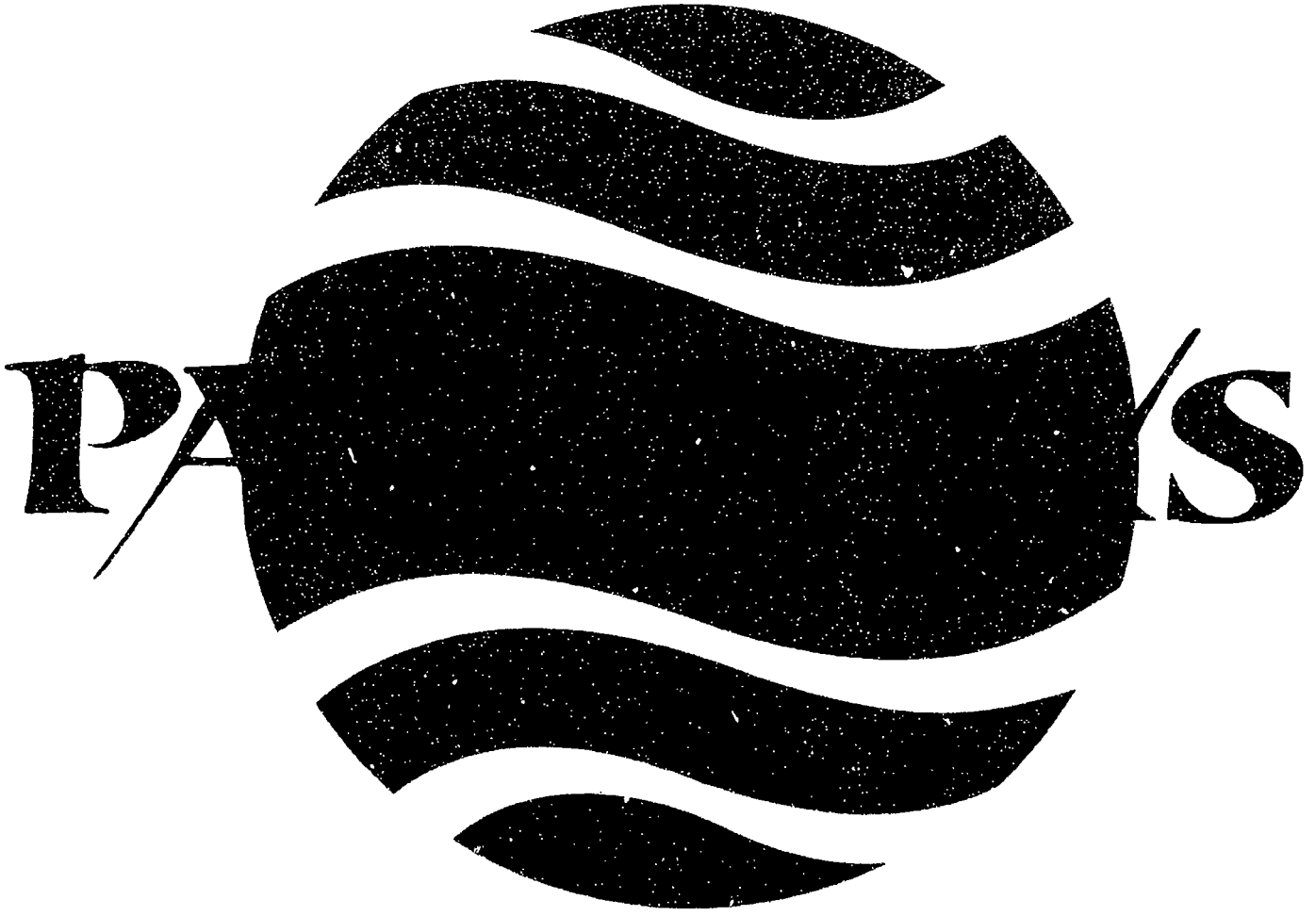

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To my parents,
Mavis Audrey (née Bradfield)
and Albert William Slater

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FOREWORD

In June of 1988 I had the pleasure of introducing Frances Slater to teachers participating in the fourth Colorado Summer Geography Institute. I had invited Frances to Colorado to help staff our Institute. Other members of that staff were especially thrilled to have Frances with us because they had used her book, *Learning through Geography* (the 1982 English version), in earlier summer institutes. In fact, until it ran out of print, this was the principal text for seven consecutive Colorado Alliance Summer Geography Institutes (1985-91). Because of the enthusiastic response to the book by Colorado teachers, I am delighted that NCGE is publishing this new edition so that teachers across the U.S. will also have the opportunity to use it.

Learning through Geography is not a geography text; one does not go to it to learn geography (although one can learn some geography from it). Rather, it is a wonderful guide and companion to the teacher who has chosen to use geography to promote thinking. It is this guide-and-companion quality that makes it so useful and appealing to teachers. In looking for a guide for a challenging and exciting trip to a new land, you want one who not only knows the terrain very well but who also speaks your language and "wears well" along the way—one who makes a good companion. Slater's broad experience both as a classroom teacher in New Zealand and the United States and as a mentor to teachers doing graduate teaching degrees at the Institute of Education, University of London, comes through clearly to the reader. She understands the constraints under which the classroom teacher works, but she does not suffer fools or shirkers lightly. She is intellectually demanding. A strength of her book is that it critically examines the research base for its recommendations. At the same time, she is broadly humanistic in her perspectives on both the content and the teaching and learning of geography. She tells you what she thinks and why but she doesn't make unsubstantiated claims or insist on narrow interpretation.

Slater helps teachers think through and carry out planning, teaching, and evaluation of learning activities in geography. She lays out the rationale in learning theory for an issues-based, question-driven inquiry method and then proceeds through a simple model of progression from identifying key questions to developing generalizations. Inquiry is essentially the method of science: It poses questions and proposes answers about the real world and it tests its answers with real data. Students study issues of geographic significance by pursuing answers to geographic questions. They answer these questions by analyzing and evaluating data, using geographic methods and skills. This "doing geography" approach leads to significant outcomes: what Slater broadly calls generalizations and decisions, which include meanings and understandings, skills, and personal perspectives, values, and attitudes. Obviously, Slater places a high value on active learning and higher-level thinking. She states that the progression from questions to generalizations "is crucial as a structure for activity planning and as a strategy for developing meaning and understanding. Meaning and understanding define the process of tying little factual knots of information into bigger general knots so that geography begins to make sense, not as a heap of isolated facts but as a network of *ideas and procedures*" (p. 60).

This new edition of *Learning through Geography* fills a major gap in the geography education literature readily available to U.S. teachers. Thankfully, it comes at a crucial time when geography's renaissance in the schools now faces its most significant challenge: the implementation of standards-based education. In order to address the standards coming out of the national Geography Education Standards Project, curriculum committees and individual teachers across the nation will need to plan and implement activities, lessons, units, and curricula that articulate with standards. These standards emphasize the importance of critical and reflective thinking in reaching the essential knowledge, skills, and perspectives of geography. Since this is also the sine qua non of Slater's book, we could not find a better guide to help us through the standards implementation process. Obviously, Slater did not have standards-based education in mind when she wrote this book so the good timing is serendipitous. Rather,

she was intending to help the individual teacher plan activities that would produce meaning and understanding for the student, which is highly important, whether or not we have standards-based education. The teacher who chooses to use geography to promote thinking is setting out on a challenging and exciting intellectual journey. I think Slater's book is the best guide and companion one can find for that adventure. Bon Voyage!

A. David Hill
Department of Geography
University of Colorado at Boulder
June 1993

PREFACE

I should like in the opening paragraphs of this preface to be a little more autobiographical than is perhaps conventional. I was born in New Zealand in 1940 and started school as the Second World War ended. I write this in January, 1993 when wars are still with us, and a little peace for some. I believe my academic pursuit of geography, always in severe competition with English literature and history, stemmed from holidays at an early age on my aunt's farm. I gave names for example, to all the little islands and promontories along the stream which bounded part of the farm. An aerial photograph of the farm still hangs in the home of one of my sisters. Each one of its paddocks, gorse hedges, wire fences, the idiosyncrasies of its gates and the pattern of its sheep tracks was well known to me. A sense of space out there on the farm, always went with a sense of excitement, freedom and adventure. On a mixed farm too, one easily appreciates that land use varies and changes. So perhaps the essence of my personal definition of geography: How is the world arranged? And why?

My childhood and teenage experiences were many: as feeder of kittens; cowherd; egg collector; separator washer; truck driver; hay maker; shearing shed hand. I recall too, early and frosty morning sledge rides driving Punch, an old draft horse, out to the lambing paddock; walks to collect the mail at the farm gate; playing in the orchard; furnishing the cave; listening to the "morepork" of owls as I read Dickens, secretly, by the light of a torch; watching the willows green each spring; finding a way over a flooding stream; holding a field mouse; playing in the barn; making small water mills for the stream; and sewing up bags of rich, golden, clover seed on the header harvester. Work and play were one. All contributed much to my emotional and psychological development. I believe my love for that farm led me to see as opportunity, the possibility of writing a thesis on the agricultural geography of my home area, North Otago. English literature and history were put to one side and further studies in geography taken up.

I didn't particularly wish to be the conventional New Zealander taking a year out of teaching to have a working holiday in Britain so instead I decided to do a PhD at the University of Iowa after meeting H.H. McCarty in New Zealand in 1962. Iowa City was the right size for me and graduate studies and new friends combined well with a Greyhound Bus ticket of 99 days for $99 in the summer of 1966 and a year later a Eurail pass.

More studies, more travelling, more teaching and then in January 1974 I began teaching at the University of London Institute of Education. This book both in its English edition (Heinemann, 1982) and now its US edition (NCGE, 1993) is one of the outcomes of my work there and of the added stimulus I have received from teaching summer schools in North America and elsewhere from time to time. It seems particularly gratifying that this book is published at a time of a renaissance in geography education in the US.

Since I wrote the preface to the English edition my ways of talking about lesson planning and where it fits into overall curriculum development and planning have changed a little. I talk now to beginning teachers in terms of a number of activities or episodes which go to make up a lesson rather than seeing activities as necessarily synonymous with a lesson or lessons. This book is full of activities or episodes which can become part of lessons. Numbers of lessons linked by a common theme or topic, issue or key question and perhaps guided by an enquiry route or framework go to make up, in their turn, a curriculum unit which might comprise a module or some clearly defined period of study. A collection of curriculum units then provides a course or study or a curriculum in geography. I expand on curriculum development

and the development of curriculum units informed by enquiry approaches in chapter 5, in particular. There is, as I see it, a nested hierarchy of concepts from activity or episode all the way up to curriculum.

My approach to planning at the four levels to which the concepts episode/activity, lesson, unit, and curriculum relate is based on a sense of enquiry as a way of motivating and engaging the capacities of those we teach. The pattern which I suggest for planning learning is composed of identifying questions to reach generalizations through data processing and interpretation. The next five chapters are an elaboration of what I mean by identifying questions, reaching generalizations, data processing and interpreting value laden "data" in the context of planning a sequence of enquiry to promote learning through geography as a worthwhile component in a person's general education. The last chapter also considers matters relevant to the process of learning as distinct from planning for learning.

I have undertaken the task as a whole in the belief that the quality of our planning, taking into account what we know of the role of motivation and other processes involved in learning, is one of the most significant variables determining a strong place for geography in education and in the minds, and feelings of learners.

ACKNOWLEDGMENT

I thank Joan Rose for her most patient and skillful typesetting of this volume.

CHAPTER 1:

IDENTIFYING KEY QUESTIONS TO PLAN LEARNING ACTIVITIES

The role of questions in planning

In this chapter, two main ideas are woven together. The first is the practical utility of identifying questions and sub-sets of questions as the initial task in organizing and planning learning activities. *Key guiding* questions it is suggested need to be sorted out. Once this is done the selection of teaching-learning strategies and resources for the activities can be decided. Question identification is emphasized throughout the chapter and several sample teaching-learning activities are worked through. These activities contain facts, ideas and issues currently acceptable as worthwhile geography. It is appreciated that identifying key questions does not of itself create intrinsic or extrinsic motivation for students. Sequencing resources and activities to engage the interest of learners has to be considered alongside the broad decisions of what questions, what data, and what generalizations.

Science and humanism

The second idea woven in is the notion that 'geography as science' and 'geography as personal response' to the environment both have a part to play in developing student understanding through activities based on geography. Both logical positivism and humanism have a contribution to make to geography. 'Geography as science' is characterized by its abstraction and modelling of reality, and it has made tremendous contributions to the development and rigor of geography in schools through its power to engage and strengthen reasoning skills. 'Geography as personal environmental-response' directs attention to our experiences and interpretations of everyday life whether structured cognitively or emotionally, but more especially, emotionally.

What is subjective and personally meaningful in our knowledge of places and spaces, and what is apparently objective, analytical, spatial enquiry are not juxtaposed in this and subsequent chapters but are presented as complementing one another. The complementarity is illustrated by examples of learning activities based on both personal preferences and feelings and also on objective knowledge.

Geography in a psycho-analytic age

Geography as science needs less defence or explanation than geography as personal response. The former is for the most part well-established in forward-looking educational systems and schools and should continue to play an important part in a geographical education. Geography as personal response perhaps needs a little more justification if it is to be given a chance to provide a necessary complement to geography as science.

Paul Claval (1978) seems to have a telling argument which strengthens the case for humanistic geography in schools.

Claval states that in French secondary education, the aim of geography for the last two centuries has been to teach children to locate themselves within their cultural framework, i.e. the framework of greco-roman civilization. Such a conception of education as initiation into a culture has stood for two centuries, with geography and history being accorded a place in the curriculum as cultural disciplines.

Today, however, there is a questioning of the ideological underpinnings of western societies which Claval feels has been opened up by concepts in psychoanalysis. Classical people located themselves in a broad society, by knowing its history and centering themselves in the larger world. Psycho-analytic humans do not look so far into time or space. They find keys to their evolution close by, in the society of the nuclear family. The problem he suggests is not now for western people to integrate themselves into a continuity of time and space but for individuals to build universes to their own measurements, as detached as possible from collective values and objectives.

It is at this point in Claval's analysis that I would assert that geography as personal response has a part to play in the geographical education of psycho-analytic humans. Humanistic geography offers possibilities for individual experiencing and meaning making, for elucidating personal introspection and emotional bonds with places and landscapes.

Whether the learning activity planned is akin to geography as science or geography as personal response or a combination of both, an identification of key questions is a feasible and practical opening strategy in lesson planning in geography.

The questioning activity in knowledge

A philosophical argument developed by R. G. Collingwood (1939), which caught my attention some years ago, points to the necessity to preserve a direct link between questions and their answers. He holds that this is necessary if an intellectually satisfying understanding of an issue, topic or problem is to be achieved and maintained. This leads me to suggest that in order to arrange and plan lessons or learning activities, the identification of a number of specific questions is necessary to provide guidelines for the ordering and selection of concepts and content within an activity or series of activities. My case for a key question identification approach to activity planning is modelled on one which Collingwood constructed in order to expose what, to him, was the false position of propositional logic. Collingwood maintains that the questioning activity in knowledge is of fundamental importance:

> . . . A body of knowledge consists not only of 'propositions', 'statements', 'judgements' or whatever term logicians use in order to designate assertive acts of thought (or what in those acts is asserted for knowledge means *both the activity of knowing* and *what is known),* but of these together with the questions they are meant to answer. . . . (Author's emphasis)

Collingwood illustrates his argument as follows:

> . . . If my car will not go, I may spend an hour searching for the cause of its failure. If, during this hour, I take out number one plug, lay it on the engine, turn the starting handle, and watch for a spark, my observation 'number one is all right' is an answer not to the question, 'why won't my car go?' but to the question, 'is it because number one plug is not sparking that my car won't go?' Any one of the various experiments I make during the hour will be the finding of an answer to some such detailed and particularized question. The question, 'why won't my car go?' is only a kind of summary of all these taken together.

Key questions and sub-sets of related questions need to be identified in a Collingwood type of direct and searching activity to get lesson planning under way. When questions have been identified a teacher can fashion an activity which step-by-step leads students more or less creatively towards an understanding of a problem or general idea. Collingwood argues that there can be no real understanding unless the *answers* can be *directly* correlated to the *questions.* The argument for the maintenance of a close link between questions and answers suggests that knowledge and understanding are incomplete when the

generalized answers alone and in bulk are presented to learners, whether these derive from research articles or textbooks, dictated notes or flowing expositions. 'What is she/he getting at?' is a familiar response to an activity in which the teacher has not made *explicit* the link between the question being explored and the answer or conclusion being presented. Failure to make the question—generalization link explicit to students usually means that students miss the point. If the point has been missed, how can new learning be related to old learning? In parallel with this line of reasoning, I am suggesting here that identifying key questions helps us to get started and know where to go in our lesson planning.

Product not process

Consider the regional paradigm and how it often came to be applied in schools. Regional studies were originally developed in order to answer a question which went something like this: 'What are the interrelationships among phenomena that produce this particular set of features?'

If this question is selected for investigation, then the regional paradigm provides a means of demonstrating the inter-relatedness of phenomena from place to place and an understanding of the factors which contribute to an areal differentiation of the earth's surface. In regional studies, very often the whole emphasis came to be placed on the distinctive set of features and not so often on the inter-relationships. So, in translating the use of the regional paradigm into schools and university teaching, what sometimes happened was that geography in the classroom and the lecture hall in its extreme form became characterized by the description of areas, by the compilation of inventories of the content of areas with, frequently, little emphasis on explanations or inter-relationships.

The process of investigation, of asking questions and developing lines of reasoning, became separated from the conclusions which alone were presented. The learning of hundreds of facts placed potentially meaningful material in danger of being learned by rote. The separation of *key* questions and answers deprived students of a source for structuring their learning material and cognitive activities.

Psychologists like Ausubel Bruner, and Gagné suggest in their different ways that a student needs hooks on which to hang new knowledge, that new learning needs to be related to the old. Indeed, not making clear the link between question and answer in our planning hinders the creation and development of learning hooks. Multiple choice or essay examinations in regional geography required the ability to recall and/or organize material but not necessarily critically to analyze or evaluate it. Indeed, given the world-wide coverage which many syllabuses demanded, teachers and students were forced to compile checklists of the relief, climate, agriculture, industry and settlement characteristics of places. The view that the uniqueness of each region required a knowledge of all regions all taught in a similar style produced a state of underdevelopment in critical and logical thinking skills in the geography classroom. Such was one of the consequences of the separation of question, process of investigation, and answer.

Exactly the same deconnection could happen in modern geography courses based upon thematic or conceptual structures. Consider what *really* happens in a lesson on the location of a settlement when activity is limited to students taking notes on:

1. Position and relation to routeways.
2. Influence of resources.
3. Historical reasons.
4. Site and situation characteristics.
5. Chance elements or other factors.

The danger of both teacher and students failing to see and develop the connection between a question and an answer is only too real, no matter what conceptual basis is being used.

Questions initiate. What questions?

The orientations in the last two decades of geography and geography in education with the identification of fundamental organizing concepts, especially those related to spatial organization or locational analysis viewpoints, has been paralleled by fresh approaches to classroom teaching. These developments could be in vain if the leap towards conclusions is made at the expense of tying such answers to the starting point— the question—which provides the initial impetus and guide. Teaching and learning are question-asking activities I am suggesting and planning these activities can proceed more readily after initial questions have been identified.

Very often the first in a series of key questions on a topic will contain one or more of geography's major concepts, e.g. Why are settlements *located* where they are? Is there a *pattern* to the distribution of cities in England, Japan and Canada? What *connections* (or inter-actions or links) are there between settlements? Has the *distribution* of settlements changed through time? Where should a new settlement be *located?* Are there different *patterns* of land use in a town? Why? Should there be, ought there to be pockets of poverty? What processes are at work? Are some places more *accessible* than others? Why? Why do settlement *patterns* and *densities* differ throughout a country or the world? What *patterns* or *regions* exist within towns?

Within any of these big questions (big, because they contain concepts fundamental to geographical studies), there are sets of other questions which can help to structure an activity or unit of work towards understanding and generalizations, as we shall see later in the chapter. Such a sub-set of questions for 'What is a settlement?' might include 'What characteristics of towns and cities do people prefer? What do people like best about their towns and cities? Is it helpful to classify settlements by size, function or desirability?' These questions pose problems or intellectual tasks of *identification, definition, description, classification,* and *analysis* which help to *explain* and answer the big question, 'What is a settlement?'

Concepts and intellectual skills

The intellectual skills brought into action to identify and define, describe and explain in order to tackle the 'big' question involves students in processes of thinking, rather than simply and solely in the digestion of the products of other people's thinking.

Practice in the skills of observing, defining, classifying, analyzing, inferring and so on helps train students to transfer such processes and procedures of working to new problems and new questions. Students are thus provided with first, a template of the concepts used in geography (e.g. location) and second, the processes involved in thinking (e.g. observe, define) which go beyond, and, indeed, link any number of specific questions. Essentially, most questions will be concerned with what and where things are, how and why they are where they are, or should they, ought they to be there, here.

Questions as objectives

Early models of curriculum development suggested that the first stage in activity planning should be the determination of objectives. Taba for example, defined objectives as 'paths to follow'. It seems to me that I am using key questions as an interrogative way of stating the content objectives of lessons and that key questions are signposts to the general paths of investigation we may identify as worth following. They are the form in which I choose at one level to state objectives.

Key questions, concepts or key ideas?

My choice of an 'identifying key questions' approach to activity planning parallels experiences and

practices some years ago in the Secondary Geography Education Project (SGEP) (1977) of the Geography Teachers Association of Victoria, Australia. The British Schools Council Geography 16-19 Project has also given a significant place to key questions in planning. Doubtless, other undocumented curriculum groups and individuals have adopted similar methods. Others, like the Bristol 14-16 Project and Geography For the Young School Leaver chose differently — key topics and ideas. Recent developments in the United States have gone for themes, concepts and generalization. Let me elaborate a little further before returning to SGEP.

Guidelines, GENIP and Alliances

In the renaissance of geography in education experienced in the United States since about the mid eighties a number of 'helping hands' have been offered to geography/social studies teachers (Hill, 1988). *Guidelines for Geographic Education* sets out five themes to give direction to lesson and curriculum planning. GENIP publications elaborate on these and generally speaking, at one level set out key ideas or generalizations teachers may teach towards, e.g. 'environmental change varies from place to place'. At a more specific level command words are used like analyze, debate, develop, research, demonstrate and so on to identify activities students might be engaged in. Third, the Geographic Alliances of the National Geographic Society promote the planning of geographical learning experiences through bringing teachers together for meetings and summer schools where the *Guidelines* and GENIP elaborations are usually used.

Themes, key ideas, concepts, generalizations are all valid means of going about the task of selecting content for a geography curriculum, a curriculum unit, a lesson plan. In this book I happen to use a key question approach at the lesson planning level for reasons I have already outlined. It is not to say it is the only or the right approach. I have found with people training to be teachers that some slot into the idea readily, others take up more easily key concepts, for example, and plan around those. What I am doing here is that having chosen a key question approach I follow it through illustrating by example.

SGEP

The experience of the Australian teachers and the very successful results of their curriculum planning provides welcome evidence of the viability and practical nature of the 'identifying questions' approach to lesson planning. Equally important for practical planning, the strategies they used are valid, replicable working methods for any teachers planning activities or engaged in curriculum renewal. For these reasons it is worthwhile to review briefly the origins and development of the Victorian Secondary Geographical Education Project.

SGEP guidelines

Until 1971, Victorian schools were required to give their students externally set exams in a number of grades. Subsequently, they were given complete freedom to design their own courses and examinations for years 7-11. Some years later evidence indicated that teachers wanted guidance in unit and curriculum planning but not a return to examination prescriptions. SGEP was designed to meet their needs in four stages through:

1. Developing and disseminating course construction rationale.
2. Arranging courses.
3. Developing and disseminating exemplar units of work and resources.
4. Developing and disseminating teaching/learning strategies and styles.

The initiative to develop materials in the latter three stages was placed on regional and local groups of teachers. From the beginning, teachers at SGEP meetings and conferences supported the idea of what came to be called 'enquiry' approaches to course planning. An enquiry approach in the SGEP context means a course consisting of a sequence of 'units' (learning activities) framed by geographic questions where each unit is broken down into a series of key *questions* which place emphasis on what students will actually do in the unit. The difference between the enquiry or question approach to course planning and thematic, topic or skills based approaches is illustrated in the following example from the SGEP publication. Consider the following:

1. 'poverty'
2. 'Are there "pockets" of poverty? Why?'

In the first case, it is not clear from the title exactly what students will be expected to learn about poverty. In the second case, there is some idea of what students will be expected to do and an indication of where the study is leading. Sample sub-questions which apply to this enquiry (and most others in geography) might be:

> Where is it? Where does it occur? What is there? Why is it there? Why not elsewhere? What could be there? Could it be elsewhere? How much is there at that location? Why? How far does it extend already? Why? Is there regularity in its distribution? Why? Where is it in relation to others of the same kind? What kind of distribution does it make? Is it found throughout the world? Is it universal? Where are its limits? Why? What else is there too? Do these things usually occur together in the same area? Why? Is it linked to other things? Has it always been there? How has it changed spatially (through time)? What factors have influenced its spread? Why? What is the area likely to become? Why? How should the area be used ?

Bernard Cox, a geographic educator in Queensland, Australia, more succinctly lists as key questions for geographical investigation:

1. Where are things located?
2. Why are they there?
3. What are the consequences of their location?
4. What alternative locations may be considered in decision making?

These questions have been used as guiding questions in the state's geography syllabus outlines prior to the more recent introduction of social studies type courses.

Generating questions

Throughout the development of SGEP courses, *brainstorming* for questions and ideas was a major activity. Brainstorming was a significant element in the development strategy of the 1960s' High School Geography Project in the United States also. The aim of brainstorming is to create as many ideas as possible, paying at first little attention to their worth. Criticisms and evaluations are suspended until divergent lines of thought are exhausted. Combining and recombining the suggested ideas produces a list of possible unit titles and learning activities. The SGEP approach recognizes the value of brainstorming as a procedure to be used with small groups and recommends that school geography departments use brainstorming as a starting point in their course planning. Once general areas of work have been decided upon, each area should be structured into a set of key questions or an enquiry.

Classroom activity

WHERE IS SETTLEMENT LIKELY TO DEVELOP?

The strength and utility of the question identification approach to activity planning now needs to be demonstrated. For this purpose, the settlement siting activity from *Geography of Cities*, Unit 1 of the High School Geography Project (1969,1979) has been chosen, since it is a good example of the question identification approach centering on the main question, 'Where is settlement likely to develop?'

It should also be noted that the exercise below has been amongst the most widely disseminated and successfully used and remodelled of the many U.S. High School Geography Project materials. Its teachability is well proven. It appears redesigned in textbooks outside North America.

As a springboard for this exercise illustrated in Figure 1.1, it helps to have students think about the location of their own settlement, through such questions as 'Is it in the middle of a mountainous region? In a desert? Is it near a river?' The answer to the first two questions may be 'no' but to the third 'yes'. Of course, it is possible for settlements to develop in mountains and deserts. Communities have been built in Greenland and Alaska and temporary settlements exist today in the North Sea. Most often, however, settlements have grown up in river valleys, on plains or undulating country and along coast lines. As a quick check ask students to see how frequently such locations occur for ten of the world's largest cities. A question to follow the initiating activity, which is judged to be motivating, could be 'If you were one of a group of new settlers in a country what kind of things would you look for before deciding where to set up a camp?' The teacher should decide time and setting. For example, a student could be a Scotswoman settling in New Zealand in 1840 AD or one of a group of Saxons coming to England in 500 AD. Typical student responses include the ideas that settlers would have to be able to farm and grow food, obtain water, fuel, and building material as first priorities; that settlers would be attracted to sites which they hoped would have fertile soil (How would they know whether the soil was fertile?). Similarly, if they thought they could take up some occupation such as timber milling, they might settle near places where supplies could be brought in with little difficulty, either by land or water and where connections for sending out the timber to other areas were reasonable. So a sheltered harbor becomes a top priority guiding choice. Some students are quick to observe that people often modify sites by draining swamps, filling in tidal lands, dredging rivers, levelling hills, and building flood protection walls. Tracks, roads, highways, canals, and railroads can be developed in the course of time to improve connections with other places.

Choosing a site

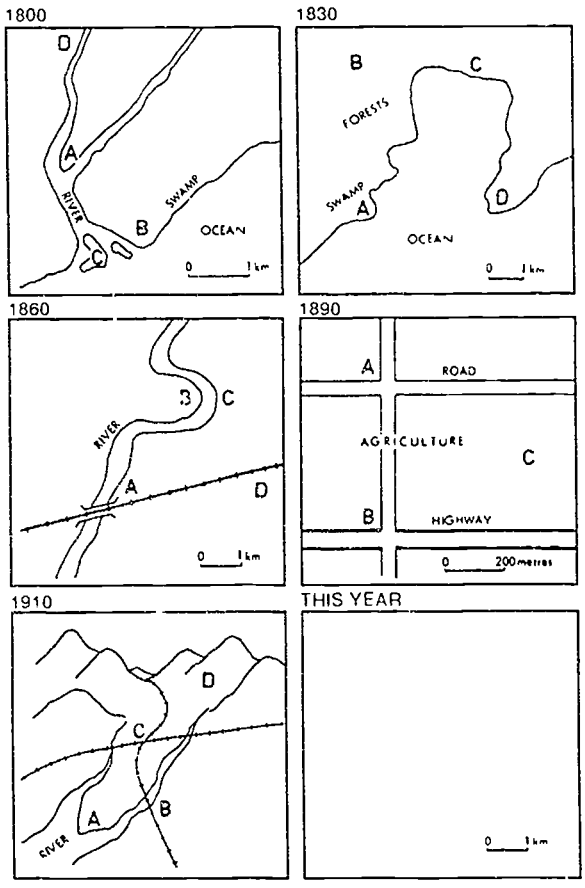
After such introductory discussion, students should examine Figure 1.1 in a North American context and answer the following question for each sketch:

'Where is settlement most likely to develop (or locate) in the year indicated?' Responses to the question relating to the sketch for 1800 have been found to take the following lines: Site B is close to the ocean and ocean-going ships. However, it may be vulnerable to wind and storm waves and it is very close to low-lying land. Although on a river, site B is relatively inaccessible and site C is also isolated, but perhaps easily defensible. There would be little room for the expansion of a settlement if settlers happened to think in terms of the future. Site A might be chosen for its location at the confluence of two rivers or rejected as a site liable to flooding. These and other suggestions, hunches or hypotheses provide feasible reasons for deciding among sites A, B, C and D as a place to settle.

Any additional information which a teacher invents about the sites will eventually tip the balance in favor

of one. Unless a firm conclusion is wanted such a strategy need not, and is probably best not, built into the exercise. It was an HSGP general educational intention that students should experience and come to tolerate some ambiguity. It is not the site chosen but the quality of the reasons for a choice which is most important. An ultimate decision, however, could be taken by a show of hands (indicating preferences) or a throw of dice— collective decision making and chance, after all, explain many settlement locations. Further justification for leaving the lesson open-ended, depending on the age and background of the students, is to have them consider the extent to which first settlers might have short- or long-term priorities and might have a comprehensive or perfect knowledge of the site, its surroundings and future opportunities in the area, e.g. a discovery of iron-ore could favor or discount the initial choice. This kind of initial activity could lead students into a study of the history of their own settlement or some other settlement for which detailed documentation on origin and growth exists. In that case, it is interesting to compare a list of the points which students wanted clarified in relation to any of the sketches and the kind of historical detail and fact which is actually available.

Figure 1.1 Selecting sites for settlements



SOURCE: High School Geography Project.

Expanding concepts

In the second sketch, labelled with the year 1830, site A may have offered a good harbor at a time when ships were a major means of transport and communication. Site B is within the forest, presumably exploitable but well away from the coast. At this point, the concept not only of location but also of relative location can be made explicit. Thus, in the Brunerian sense (Bruner, 1960), the concept of location is given additional depth, breadth, and meaning. Site B would require road links with the coast if timber were to be exported by sea. Such construction costs may be worthwhile if sites C and D are discounted. Site D appears to have an exposed location, though it may be defensible. Site C lies at the head of a bay and the mouth of a river.

Other attributes significant to location can be seen with reference to the other sketches. In 1860 the coming of the railroad added a new variable to the selection of a settlement site. This, of course, would modify many previous site constraints. By 1890 rural industries had been established and service centers in agricultural areas had developed. In the 1910 sketch, which facility dominates—rail, river or coastal transport? A tempting final question, future oriented, would be 'What reasons might, should or ought to inform our choices of a settlement site if we were to discover a new continent tomorrow?'

Using questions as a focus

By using questions as the key focusing mechanism on relatively simple settlement puzzles, the link between the question and reasons or answers has been made. Some teachers may prefer to go in for even more detailed planning than I suggest here and list the questions they intend to ask in the course of the lesson in order to have a balance between closed questions (the answers to which are generally fixed) and open questions (the answers to which may be speculative and promote an ability to go beyond the information given).

Types of questions

The five types of questions shown in Figure 1.2. could be useful as a guide in framing and balancing the proportion of closed and open questions asked within the ebb and flow of the classroom activity as distinct from the key questions guiding lesson planning in a broader sense. Normal prompting type queries made by a teacher, must include: 'Why do you think that? Can you give another reason for your choice? Do you

Figure 1.2 Encouraging critical thinking through questions

Closed ← → Open

Demanding recall	Encouraging classification and ordering	Encouraging the use of data to draw conclusions	Encouraging awareness of the limitations of the evidence or evaluation of evidence.	Critical Thinking Encouraging an awareness of the processes of reasoning to be used
What were the dates labelling the 5 sketches? To what extent had the area been settled? What kinds of transport were available?	Closed example: Can you make a list of those things which seem likely to be most important and not so important in site selection ? Less closed: Can you think of a way of sorting out the types of settlements that probably developed?	Do you consider the nature of the coastline may have influenced where the settlers settled? How do you know? Can you think of some examples from the real world to support your answer? What influence may the meeting of a river and railroad have had on settlement? How do you know? Why do you say that?	What do we know for certain about where people settle? What are we not so sure about? What do we know for certain about the sites we selected for settlement? What are we not sure about?	How did we go about deciding which was the best place to settle? What different kinds of evidence or information did we use? Were some pieces of information more useful than others? What effect might more information have on our decision about the best place to settle?

SOURCE: based on Blyth, W. *et al (1976) Curriculum Planning in History, Geography and Social Science,* Schools Council/Collins.

think 'X' or 'Y' could be important? Why do you agree/disagree with the previous answer? Is it possible that . . .? What do you mean by . . .? Let's look at the characteristics of site A again. Have you forgotten the importance of moving things by water in 1800? Why is 'Z' more important . . .? In other words . . .? Do you really think that . . .?' Can you say more about . . .?' What is suggested here is that the questioning approach be consciously built in as an essential guide to the nature and direction of the learning activity. Also needed will be such questions as 'Which sketch map are we looking at? What date is it given? What answer has just been given?' for those students whose attention wanders and for whom enquiry becomes wearisome.

The series of activities laid out for "Denver Disaster: Relocation of Forced Movers," by Besly and Morrow-Jones (Hill ed. 1988) provides an example of well balanced closed and open questioning within the overall context of a role-play.

From questions to concepts and generalizations

In using the same question in the settlement location enquiry 'Where is settlement likely to develop?' and in making evaluations of all the sites and considering them in relation to the different time periods, students are being guided towards forming generalizations or 'theories' about the variables influencing the decisions to settle at place A rather than place B. If, as is likely, students go on to link the level of transport technology with other variables, it may be considered that a principle or recurring relationship between two or more variables has been established. Linking ideas like this produces generalizations, and learning activities structured to this end are discussed more fully in the next chapter.

In addition, a notion of settlements as central places for goods and services in agricultural areas often emerges in class discussion. The specialized function of settlements as route centers or break of bulk centers, as tourist, forestry or mining centers is a related general concept. For example, looking back to Figure 1.1, site D in 1910 may have developed as a tourist center, depending on the level of economic development and the needs and demands of the population. In parts of Europe, the area undoubtedly would have been developed already by that date. In the case of the growth of settlements in New England and the Maritime states, for example, the related idea or concept that change in the predominant function of a settlement can occur over time may be developed. Change, of course, can *lead* to the decline *as* well *as* growth of settlements. To these possible conceptual developments, another may be added. Given the layout of the sketch for 1890, the idea of a settlement hierarchy may occur. In 1890, site B seems the most likely place for the development of a major settlement if site C is considered to be an isolated farmstead with perhaps site A as a minor town. The concept of a hierarchy of settlements can be developed from the single starter resources which Figure 1.1 represents, using suggestions or questions made by members of the class.

Making connections

The original question posed, 'Where is a settlement most likely to develop in the year indicated?' in relation to Figure 1.1 is as specific as Collingwood's suggestions demand. The concept of location is not explicitly used but it is the basic and underlying concept being explored. Students can be expected to provide very specific answers and a range of hypotheses. Responses will enable an understanding to be developed of the concerns which may be uppermost in the minds of settlers in new environments. The variety of suggestions, the range of possibilities for correct answers, yields an opportunity to develop generalizations. These might include the effect of new inputs into the system, such as developments in science and technology and their role in influencing people's decisions on what constitute suitable places for settlement. Generalizations about the size, spacing and hierarchy of settlements often evolve from the initial question and the student is enabled to make connections between hitherto unconnected concepts or ideas. This fulfils a Brunerian dictum that any way of structuring knowledge for learning should have the power to make students capable of realizing new connections.

An activity like the settlement siting selection lies at the very core of the scientific approach to geography adopted by those working in the locational analysis or spatial organization paradigm. The central and related concepts of location, relative location, distance (separation), and accessibility help to explain the possible or actual arrangement and structure of patterns.

Geography as science and Geography as personal response

As a reaction to scientific geography a number of geographers suggested alternative constructs of how the world might or should be viewed. New questions which had much to offer to the development of a student's sense of his or her world were put forward including those raising issues of social justice. Among the newer questions were those providing students with opportunities to explore their personal structuring of space. This can add to their understanding and complement the scientific and social justice approaches. A humanistic approach emphasizes the individual exploration of places. Students are encouraged to articulate their own meaning of places, a meaning which may or may not be shared with others.

There is a strong case to be made for distinguishing personal meaning of a geographical kind from its public meaning and devising learning activities in both. What personal meaning a particular place holds, what is liked and/or disliked about it, and what other places are associated with it, should be contrasted when possible with publicly held meanings. These public meanings include those generalizations about space/place which fit into a geographer's picture of the world, for example those formulations of space and place represented in spatial models.

Meaning-making

The questions around which learning activities can be structured may move from those having a good deal in common with geography as science to those which explore geography as personal response. The kind of answers or responses will depend on the meaning which students find for themselves. Geography as personal response type questions functions as an opportunity for meaning-making through oral, written or other modes of expression. The outcomes depend much more on how students structure their own thoughts and response than on how the teacher structures the exercise. Geography as personal environmental response type questions mirrors Eisner's concept of expressive objectives or expressive outcomes (Eisner, 1979), where students are provided with educational encounters in which it is not stated or known precisely what the student will learn in terms of formal content but which are judged to be constructive and fruitful for developing personal meaning and understanding. What is important is the enquiry process and the opportunity to explore personal environmental knowledge and experience. Two simple questions illustrate these points.

Classroom activity

'WHY DO YOU LIVE WHERE YOU DO?'

'WHAT DO YOU LIKE BEST/LEAST ABOUT THAT PLACE?'

The balance of objectivity and subjectivity is clear in these two different questions. They require an analysis of an outside real world and an inside personal world. The first question, 'Why do you live where you do?' was operationalized as it were in the worksheet illustrated in Figure 1.3. It could be accompanied by a subset of questions:

Figure 1.3 Choosing a place to live

You worked out a Convenience Number for your home in Level 2. If you live conveniently close to things like a railroad station, school or shopping center, that may partly explain why your home is where it is. Let's see if we can find out more about why people choose to live where they do.

Make a copy of Questionnaire A. Take a copy home and, with the help of some adults, fill it in. Bring the questionnaire back to school and compare the results with those of other people in your class.

Questionnaire A Choosing a place to live

1. What importance would you give to the following if you were choosing a place in which to live. Put a check under the heading which fits best.

	Very important	*Fairly important*	*Don't know*	*Not important*	*Not at all important*
(a) Suitable price or rent					
(b) Right number of rooms					
(c) Right size of rooms					
(d) Garden space					
(e) Garage or parking space					
(f) Near relatives					
(g) Near friends					
(h) Near work or good transportation					
(i) Near a school					
(j) Near stores					
(k) Little or no industry close by					
(l) A quiet place					

2. Write down any other reasons:

Copy out the following questionnaire and fill it in yourself. Again compare your results with other people's. You will find out how your views resemble other people's and how they differ.

Questionnaire B

1. Do you like most things about
(a) Your present home yes/no/don't know
(b) Your present area yes/no/don't know
2. Name some areas in your town you would not like to live in and explain why.
3. Name some areas in your town you would like to live in. Why?
4. What are the most popular and the most unpopular parts of your town or city?

From: F. Slater and M. Weller, *Skills in Geography, Level 3*, Cassell, 1983.

How long have you lived there?
Has your family ever moved?
Where did you live before you came here?

The data collected from students and parents may be analyzed to calculate a mobility/stability index for the class. This can simply be the percentage of students who have moved in the last five or ten years or, conversely, the percentage who have never moved. Further fieldwork can be undertaken to survey other classes or, perhaps, residents of streets or apartment blocks in the neighborhoods. The specific reasons for housing choice can be ranked from 'most frequently' to 'least frequently' occurring and histograms drawn. Comparative data can be collected from other classes or neighborhoods.

Expressing feelings and attitudes

The second rather different question, 'What do you like best/least about the place where you live?' is introduced to give students an opportunity to clarify and express attitudes and feelings they have towards a place or part of it. The key question and its sub-set, could be drawn up as follows:

What do you like best/least about the place where you live?
Why do you like it or one part of it best/least?
Describe what things are in the place. How are they arranged?
Describe your feelings when you come into your best/least liked place?
What kind of things do you do there?
Is it what's in this place or what's not in this place that makes you like/dislike it?
How do you feel when you leave the place?
How do you treat it when you're there?
Can you explain why you like/dislike it?
Does the mood you're in affect how you feel about the place?
Does the place affect your mood?

Here the questions are focusing on the emotional bonds between a person and a space or place which is experienced in ordinary, everyday life. The questions are attempts to help students to become aware that they have feelings and attitudes towards places in their environment. At a deeper level, older students could be encouraged to ask about the nature of the relationships people form with parts of their environment. Their environment could be viewed existentially, i.e. not as that space, place or environment which is there already but the space which they have the power to make and remake every day in their thoughts. From such a viewpoint they may be encouraged to interpret the qualities of various environments and the feelings which they have towards them. To give students the opportunity to create and to be aware of the process of meaning making provides a rationale for educational subjective encounters suggested by questions like those above.

A very geographically appropriate example drawn from an environmental education package, Essences (1970), is set out in Figure 1.4 which details an exercise requiring students to delineate environmental areas of comfort and unease.

More recent examples of geographers writing of places, the creation of places, the style of places (from Skid Row to Santa Fe and Niagara Falls) as well as of networks, nodes, and landscapes, are to be found in *Geographical Snapshots of North America*, a conference book prepared for the International Geographical Congress 1992. Essays like David Seamon's on Olana, the home of a landscape artist, is an exercise in diary keeping and interpretation which teachers might find ways of modifying substantively and methodologically with classes. An interesting scientific/humanistic approach is used in relation to an intersection place by Salter which again could possibly be modified for replication by high school students.

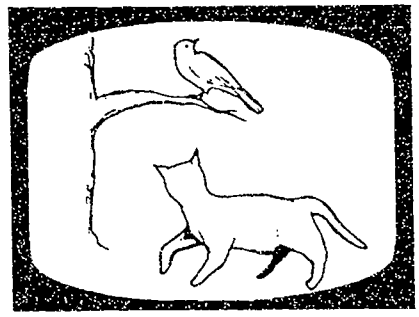
Figure 1.4 Mapping areas of ease and stress

— the action:

Map the places in your environment in which you feel the most and least comfortable.

more:

How about a cat?
How about a bird ?
How about another person?
How does your comfort conflict with the comfort of others?



SOURCE: based on American Geological Institute (1970) *Essences 1*, Addison-Wesley.

Private geographies

Exploring the sense and meaning of a person's felt relations with spaces and places allows students' subjective, and essentially private, geography to be recognized and delineated. Everyone has conscious and unconscious feelings towards, and a sense of how they feel about what is around them. Awareness and knowledge of one's surroundings are unique to each individual, as we do not all receive the same sensory inputs in the same manner or order. Private, personal geographies based upon the perception and experience of worlds real or imagined, and the resultant environmental feelings and images actually do exist. At the very least, private geographies should be recognized, respected and fostered in the formal teaching of geography. At the academic level there is a case that the existence of private geographies sets new grounds for the epistemological foundations of geography and the function of geographic education. Spatial experiences and feelings are an integral part of our living, just as locational analysis is part of our attempt to understand the structure and organization of space.

To Relph (1976) the elements which give identity to a place are: its physical setting, the activities common to the place; and the meanings invested in the place. These three attributes may be subsumed within the general meaning of spirit of place, sense of place, or genius of place—not a clear-cut concept to put across in a classroom. Some have suggested that while it is impossible to teach students how to perceive the uniqueness of a place, they may be introduced to the idea and reality of a sense of place. The following procedure is suggested as an activity for middle and upper grades. Direct the following questions to students who have been willing to bring in a slide of a place they feel strongly about: 'what do you like/dislike about it? In what way is the place shown impressive or depressing, exciting or dull? How did/ do you feel there—at home, frightened, calm, restless? What memories does it have for you? Is there anything about the place which is not captured by the camera?'

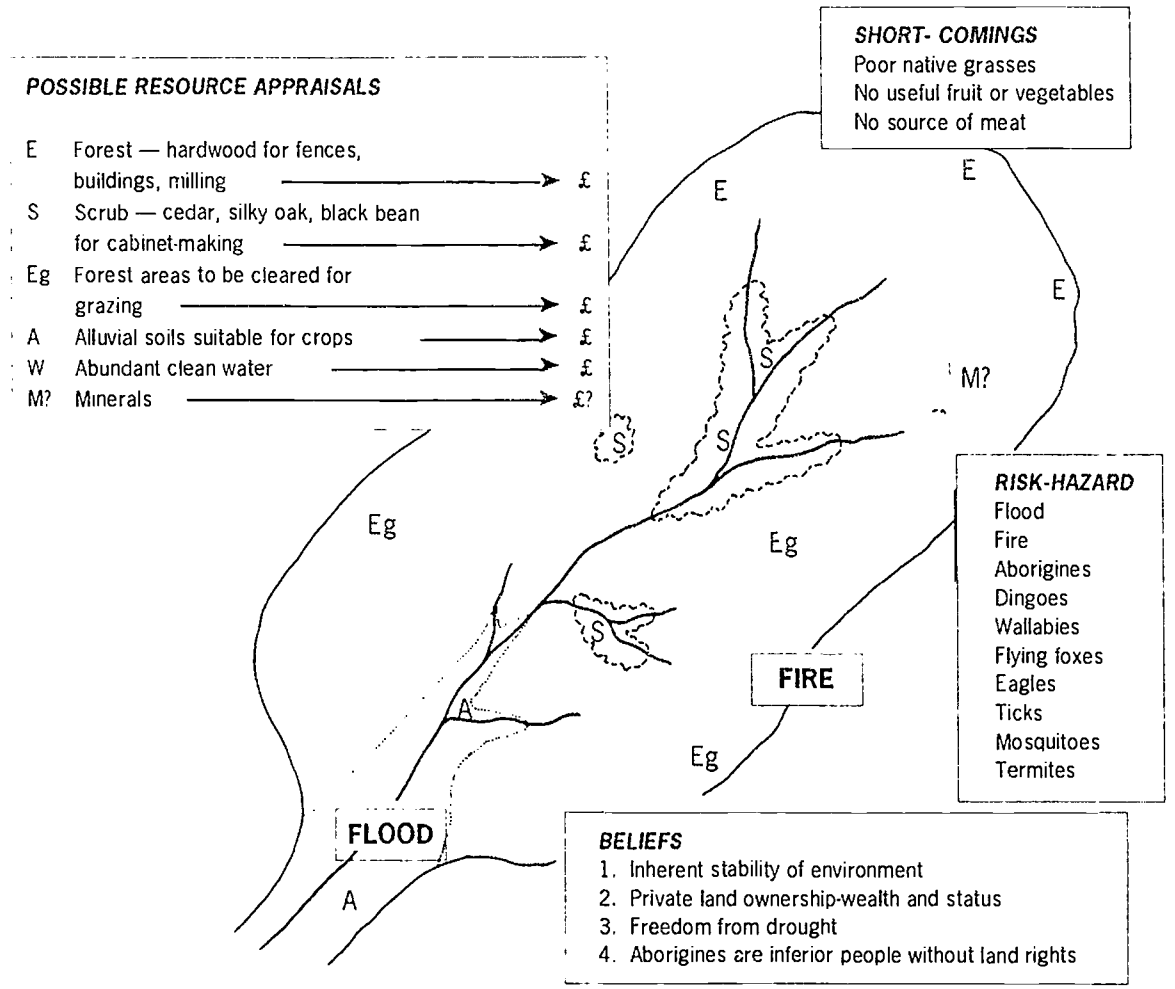
A discussion based on these questions may develop the idea of a 'spirit of place'. General ideas to be cultivated include the following: that sensitivity to the atmosphere of a place varies from person to person (and from culture to culture); and that the spirit of place can be intentionally created. For example,

we may ask to what extent can architects create atmosphere through design and building materials? To what extent can we create atmosphere by personal arrangement and decoration? What comparisons could be made between the intentional 'place-making' of eighteenth century landscaped gardens and modern New Town designs, for example?

The personal geography of early settlers

We may also go back to the American HSGP example used earlier in the chapter and consider it in conjunction with a model sketched in Figure 1.5. In his model, R. Simson identifies some of the possible sets of ideas, beliefs, and images which may have informed the environmental perceptions and behavior

Figure 1.5 Possible elements in the personal geographies of early settlers in assessing the river valleys of eastern Australia

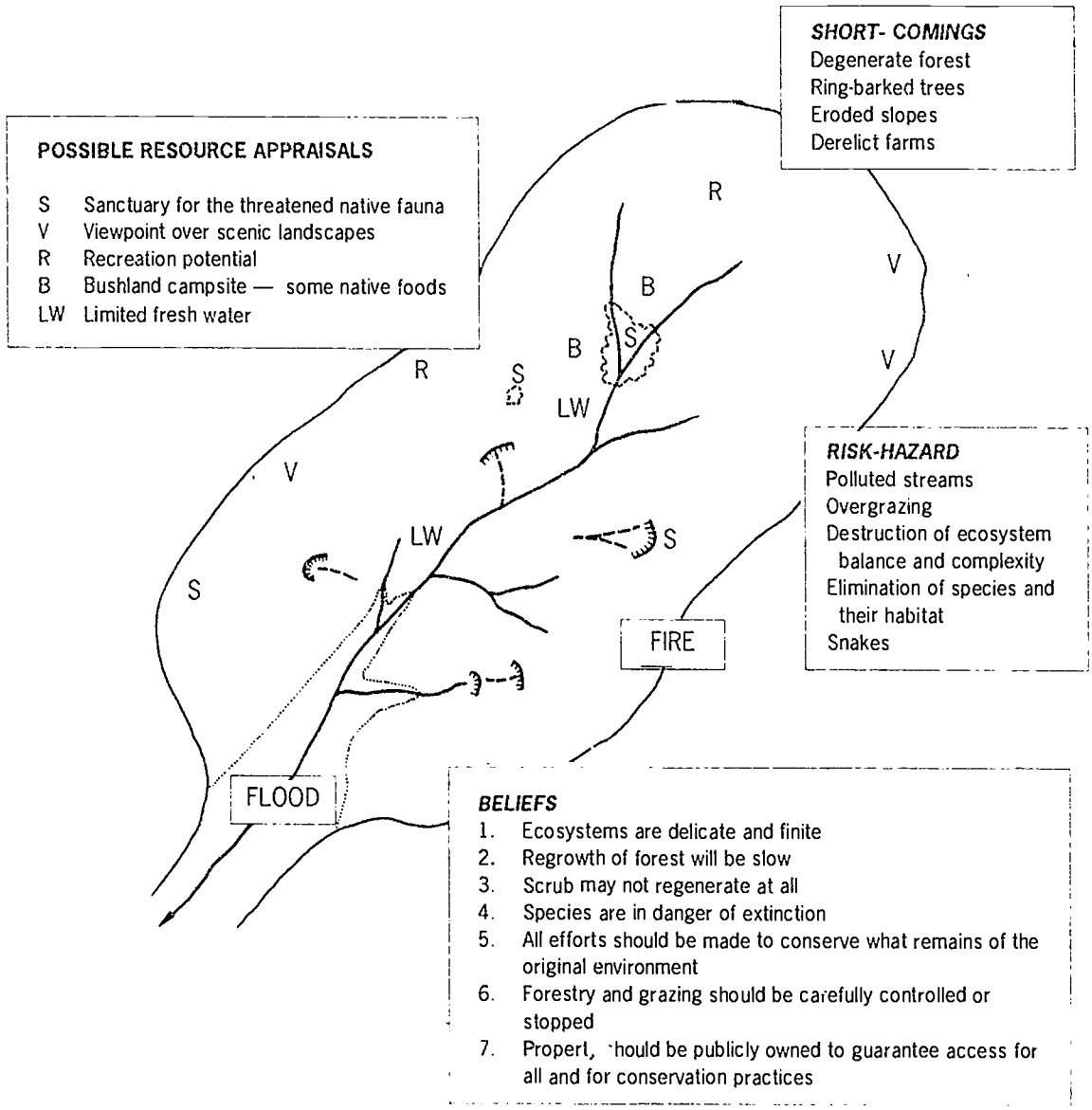


Source: Rob Simson, Principal, Maroon Outdoor Education Centre, Queensland.

of early settlers in the river valleys of eastern Australia. Given his scenario where might you decide to settle and why? How would you choose to earn a livelihood? How would you affect the environment? Simson suggests that settlers 'set about transforming the environment in a deliberate but unplanned way

until its ecological stabi ity had been lost and its environmental character drastically altered'. It is interesting to compare the appraisals accorded to early settlers with that of a present-day conservationist who has a very different set of attitudes, and goals. Simson sets these out as in Figure 1.6 where eroded slopes and derelict farms tell a story and in turn influence present attitudes and values. The potential for using these models in a values analysis exercise (see Chapter 4) is considerable. Here, they stand as scenarios exposing the influence of perceptions, attitudes, values, needs, and beliefs on settlement decision-making and quite clearly they may be seen as a possible variation on the earlier settlement siting activity.

Figure 1.6 Possible elements in the personal geographies of a conservationist assessing the river valleys of eastern Australia



Source: Rob Simson, Principal, Maroon Outdoor Education Centre, Queensland

Linking science and experience

An exploration of private geographies and an appreciation of their foundations in personal experiences, preferences, attitudes and feelings may give students a sense of how geography as locational analysis may be enriched. It may be enriched by bringing the dimension of felt experience to the surface. This experiential base to intellectual decision-making is poetically described in the following account of how a Japanese architect consciously plans to experience a place before he applies his rational knowledge of the design process:

> Quite simply, if designing say, a residence. I go each day to the piece of land on which it is to be constructed. Sometimes for long hours with a mat and tea. Sometimes in the busy part of the day when the streets are a bustle and the sun is clear and bright. Sometimes in the snow and even in the rain, for much can be learned of a piece of ground by watching the rain play across it as the run-off takes its course in rivulets among the natural drainage ways . . . I go to the land, and stay, until I have come to know it. I learn to know its bad features . . . I learn to know its good features . . .
>
> And so I come to understand this bit of land, its moods, its limitations, its possibilities. Only now can I take my ink and brush in hand and start to draw my plans. But, strangely in my mind the structure by now is fully planned, planned unconsciously, but complete in every detail. It has taken its form and character from the site and the passing street and the fragment of rock and the wafting breeze and the arching sun and the sound of the falls and the distant view.
>
> Knowing the owner and his family and the things they like and the life they would like best to lead, I have found for them here on this land the pattern of living that brings them into the most ideal relationship with their land and the space around them, with their living environment. This structure, this house that I have planned, is no more than an arrangement of spaces, open and closed, accommodating and expressing in stone, timber and rice paper a delightful pattern for their life on this land. How else can one plan the best home for this site?

Knowing and feeling

Geography as science and geography as personal response are not to be seen as opposing views of the discipline. The element of known attitudes and values in understanding and decision-making has been acknowledged in explanations derived from behavioral geography. It seems that more humanistic questions can be included in learning activities in order to enhance students' everyday ways of organizing spatial experiences. Once refined and expanded, these may then become conscious rather than unconscious dimensions of thinking and action. Perhaps the interplay between private geographies and 'formal' geography, will enable students both to clarify their feelings and attitudes about their environments, and to realize the reciprocal nature of the impact their *lived-in* space exerts on them and they on it.

Those who feel uncertain about the educational necessity of more humanistic approaches in geographical education might like to consider Kevin Lynch's *Growing Up in Cities* (1977). Lynch's work is an empirical investigation of the way small groups of teenagers use and value their environments. Much is revealed of the relationship of young adolescents to their environment. The reports are full of human detail, local color, illuminating fact, and vivid impression. The investigation procedures included observation, interview, recording time budgets, and sketching mental maps. Figure 1.7 illustrates how recording time budgets and sketching mental maps were written up in a textbook series for younger children (Slater and Weller, 1983). The questions put to the teenagers in the original Lynch interviews included:

1. As you go about your usual day's activities, what particular places or things give you the most difficulty? . . . Are there places you can't get into and wish you could?

Figure 1.7 People and environment

Using our environment

? Write down, with as much detail as possible, what you did yesterday: where you went, what happened, what you did and when you did it. Was there anything unusual about your activities yesterday? If so, what was it?

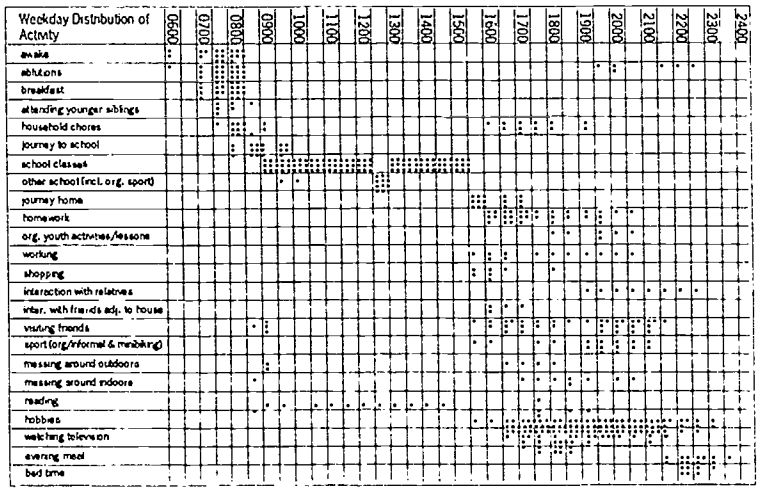
The table shows an hour-by-hour chart of the activities of twenty Melbourne school pupils on a weekday.

? Decide whether you could change how you spend your time and where you spend it. Write down what your ideal time chart would be like.

"I usually get up at six o'clock. I tidy the flat, light the stove. When I come back from school, I have dinner and do homework, and then I sew or embroider. Sometimes I meet my friends for an hour. At half past five I prepare food for the cattle and feed them. This usually takes until seven. Then I have supper and watch the 'goodnight' programme and a film if it is one I am 'allowed'."

Two teenagers describe their days, (above) a girl from Bystra in Poland and (below) girl from Ecatepec in Mexico

"I always have to be home around one-thirty. I come from La Villa and the bus is sometimes slow. And if I arrive late, I have to explain to my mother why I'm late—because I went to buy a book or something. And my mama knows if I'm telling the truth or not. And she either hits me or she doesn't. Afterwards I help her with what she needs to do. But there are times when I don't help her and she gets mad at me. Because sometimes I'm tired, or I have to study, or I'm being lazy! During the week I don't help her at all, because I go to classes, then have to study all afternoon. I don't do anything besides doing the dishes and cleaning the table and study all day. It's that at school the teachers don't give us vacations. If we don't do our homework they call our parents . . ."



Mapping our environment

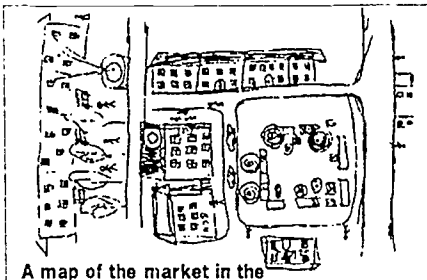
Let's think about our environment in another way.

? Draw a map of the environment you live in. Mark on the places where you like cycling, meeting your friends, playing games or being by yourself. Draw in the paths and roads you use to get from one place to another as well as places which you think are important in the area. Mark in any things which you think are beautiful or ugly and show any places or areas which you think are dangerous.

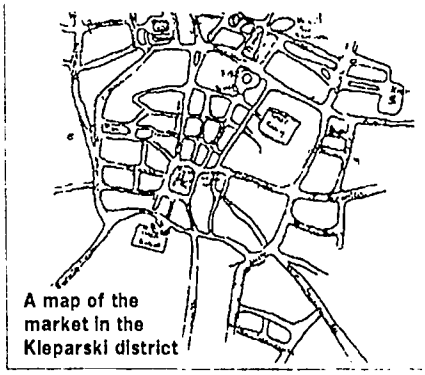
The drawings on the page 21 show a home neighborhood in Bystra, Poland, and a plan of the same village, both drawn by school pupils who live there. The main road is drawn in, the stream, the woods and a boundary. Places are shown by a large dot and named (we have added English translations).

The two maps of the centre of Cracow (right), also in Poland, are very different. Compare them with the maps you and other people in your class have drawn.

? Make a list of all the things shown in each of the four Polish drawings and then compare it with a list of what you have shown in your map. You can judge how similar or how different these environments seem to be from the evidence on the maps.



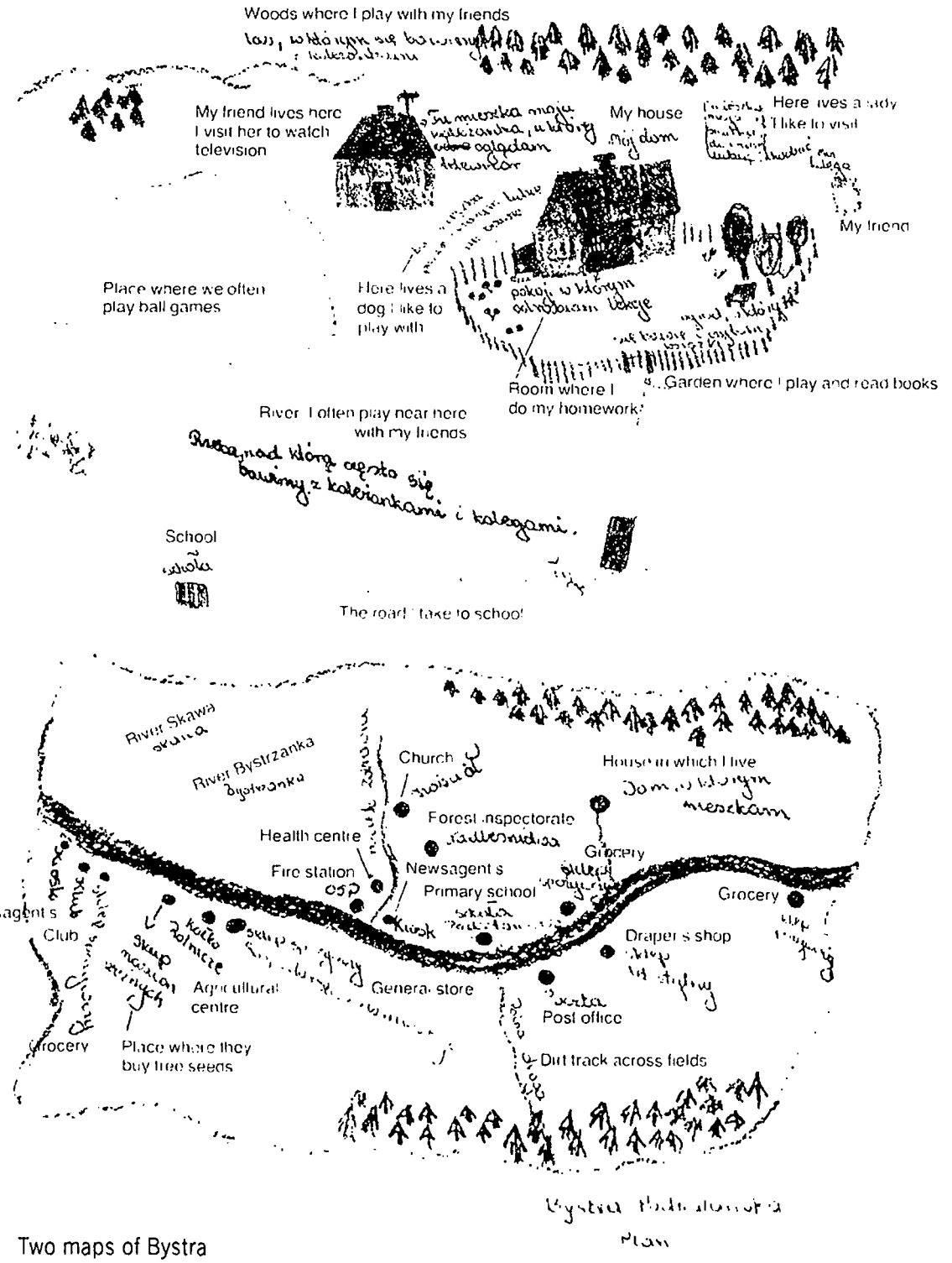
A map of the market in the Kleparski district of Cracow



A map of the market in the Kleparski district

From F. Slater and M. Weller, *Skills in Geography*, Level 4, Cassell, 1983.

Figure 1.7 People and environment (continued)



Two maps of Bystra

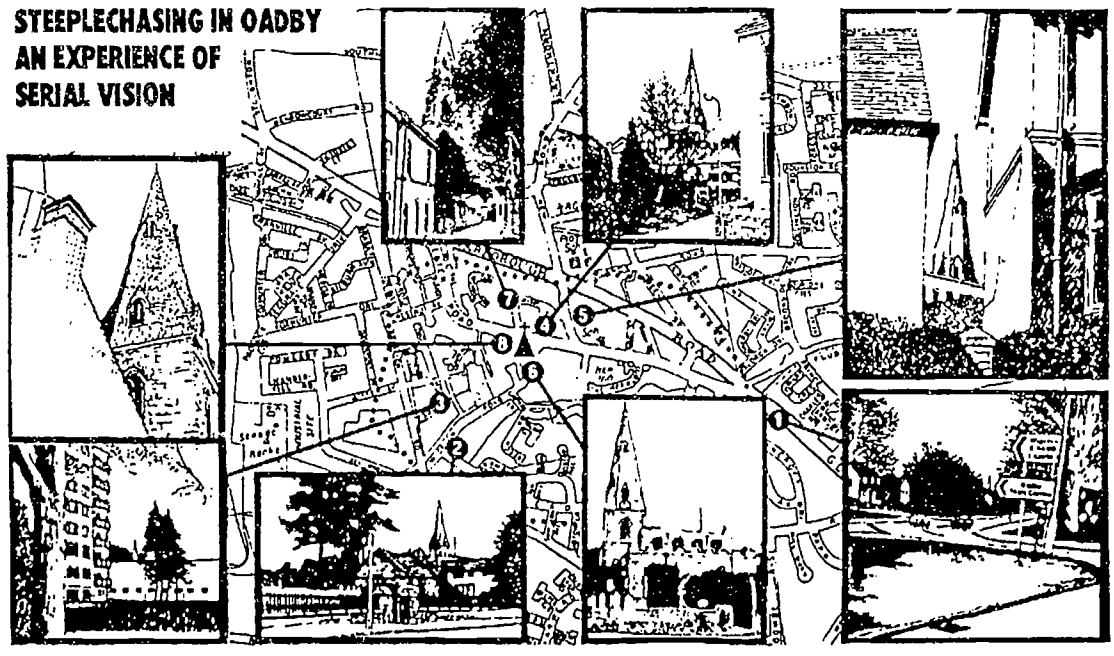
2. Do you help maintain or fix up any part of your area? . . . Are there any places that nobody owns?
3. Where do you best like to be? . . . Where is the best place to be alone?
4. Has your area changed in your memory? Do you think it has become better or worse?
5. On what occasions do you go out of your own area?
6. Are there beautiful places in the city? Why are they beautiful?
7. Of all the places that you have ever been in, or heard about, or imagined, what would be the best place to live in/the worst place?

The questions asked by Lynch deserve further elaboration and some incorporation into the spirit and purposes of learning through geography in schools. The answers he received from students suggest that they have *strong* ties with their environment but *limited* conceptions of its potentialities. Significantly, their ideas of their possible roles in environmental planning and decision-making are also limited. The evidence amassed suggests that children need more opportunities to explore and, both cognitively and affectively, evaluate their environment. Shopping survey and frequency counts are not designed to promote strong feelings of individual or collective engagement with environments. Personal dimensions of environmental-knowing need encouragement, analysis, and evaluation.

Questions like those quoted above offer opportunities for further exploration and elaboration in field work, for example, and could be used to plan a sequence of work. A study of beautiful or ugly places may require a photographic record or field sketches of various places. Wheeler's strategy of steeplechasing is represented in Figure 1.8. Students draw views of a church tower from different locations in a town.

I was reminded very strongly of this strategy in 1989 during the Ontario Association for Geography and Environmental Education Fall Conference and a visit to the Toronto Urban Studies Centre when Lorraine Clarkson using the materials reproduced in Figure 1.9 along with sets of photographs led a group of school students through the exercises. There is a nice blend of geography as analysis and geography as response in the exercises designed to observe Toronto's Towers.

Figure 1.8 Steeple-chasing in Oadby, an experience of serial vision — how does the appearance of the steeple change?



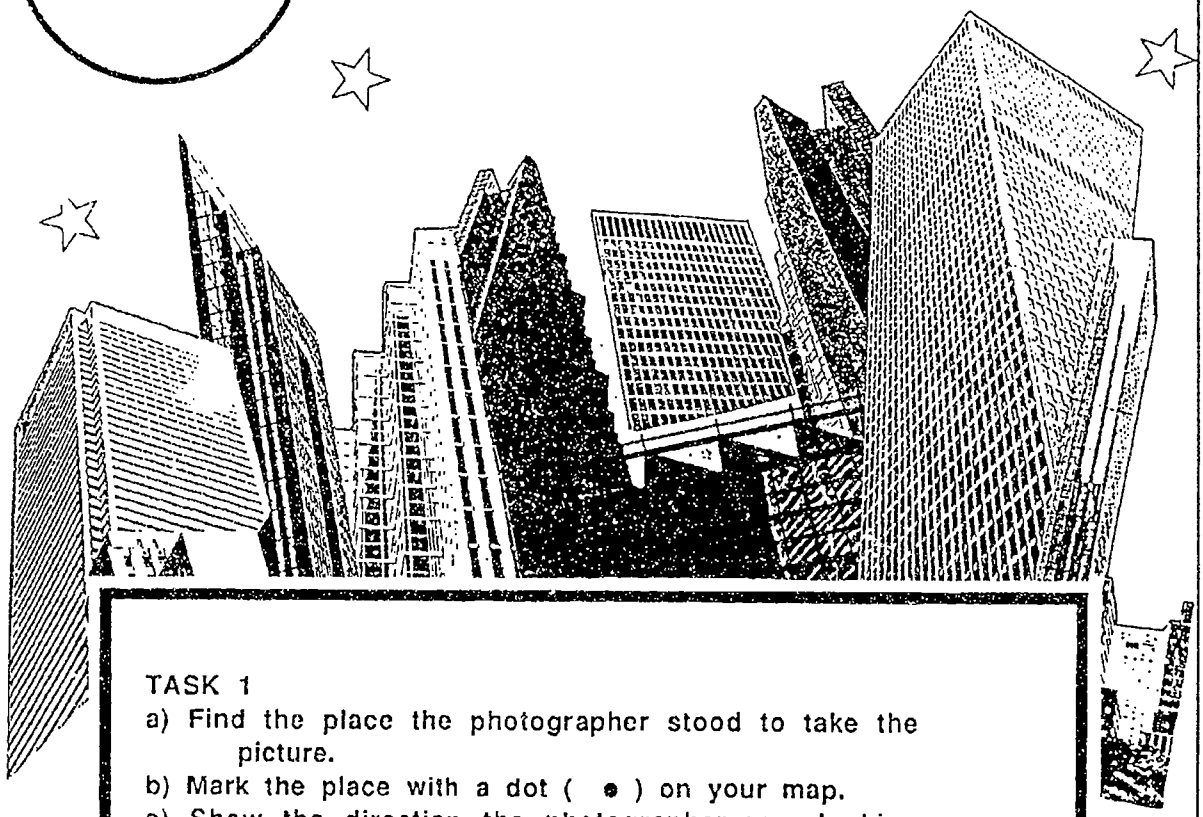
SOURCE: Wheeler, Keith, 'Assessing Townscape', Schools Council Art and the Built Environment Project.

Figure 1.9 Introducing Toronto's Towers

NAME:

TOWERS IN VIEW

WHAT ARE THEIR NAMES?



TASK 1

a) Find the place the photographer stood to take the picture.

b) Mark the place with a dot (•) on your map.

c) Show the direction the photographer was looking by using an arrow (• →),

d) Add the picture code (letters) (• ↘ CE)

TASK 2

Use the "sticky labels" to identify the name of each building.

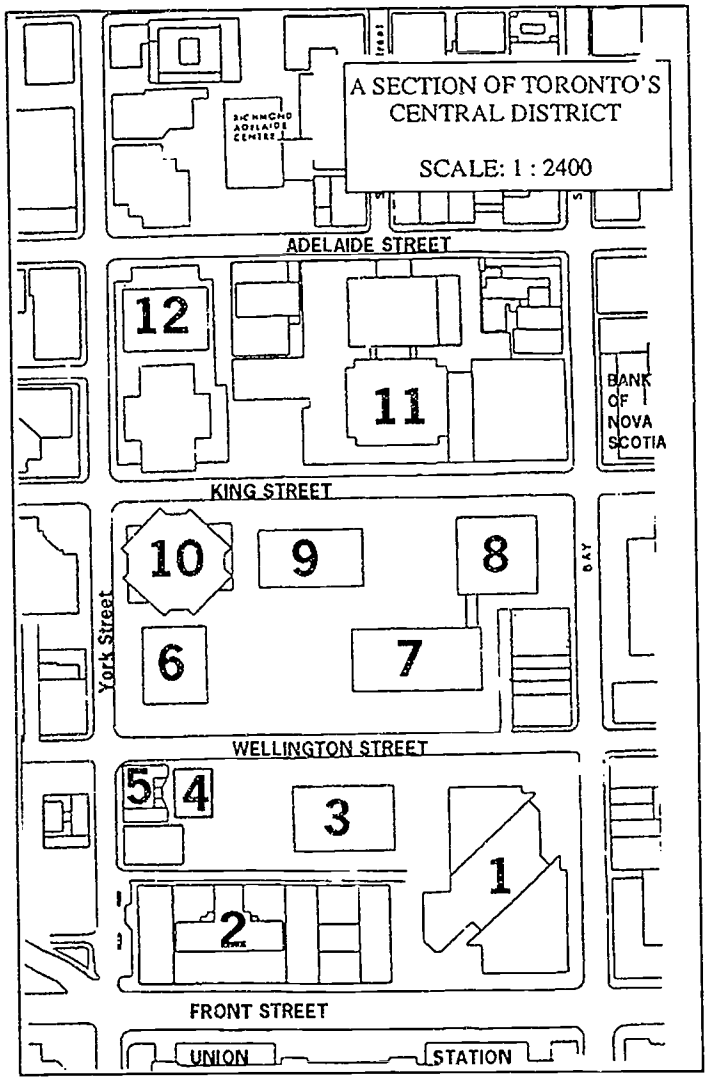
TASK 3 (TO DO WHEN FINISHED 1 & 2)

Think about walking through this area. What were you aware of? Use these words to help you.

COLORS SHAPES SMELLS TEXTURES SOUNDS FEELINGS

continued . . .

Figure 1.9 Introducing Toronto's Towers (continued)



1
2
3
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11
12

STANDARD LIFE CENTRE

TORONTO DOMINION CENTRE: COMMERCIAL UNION TOWER

ROYAL YORK HOTEL

THE EXCHANGE

TORONTO DOMINION CENTRE: IBM TOWER

FIRST CANADIAN PLACE

TORONTO DOMINION CENTRE:ROYAL TRUST TOWER

TORONTO CLUB

ROYAL BANK PLAZA

TORONTO DOMINION CENTRE: TORONTO DOMINION BANK TOWER

DELOITTE, HASKINS AND SELLS

TORONTO DOMINION CENTRE: TORONTO DOMINION BANK

Conclusion

In this chapter the case for structuring activities around key questions and related sub-sets of questions has been based on the idea that the process of generating meaningful learning and understanding is fundamentally tied to demonstrating quite explicitly the link between questions and 'answers'. 'Answers' mean less if we do not know the questions to which they are intended to be a response. If this is so, then it is logical to identify questions as the initial step in activity planning. Evidence suggests that the choice of questions and the planning of their presentation for analysis is often most easily and usefully achieved by a small group of teachers brainstorming and subsequently refining and structuring their ideas into balanced courses.

Question identification can be usefully adopted as the first procedure in planning a learning activity. Questions are thus the initial and continually guiding signposts which help us to organize and plan pathways leading students to meaningful learning through geography.

CHAPTER 2:

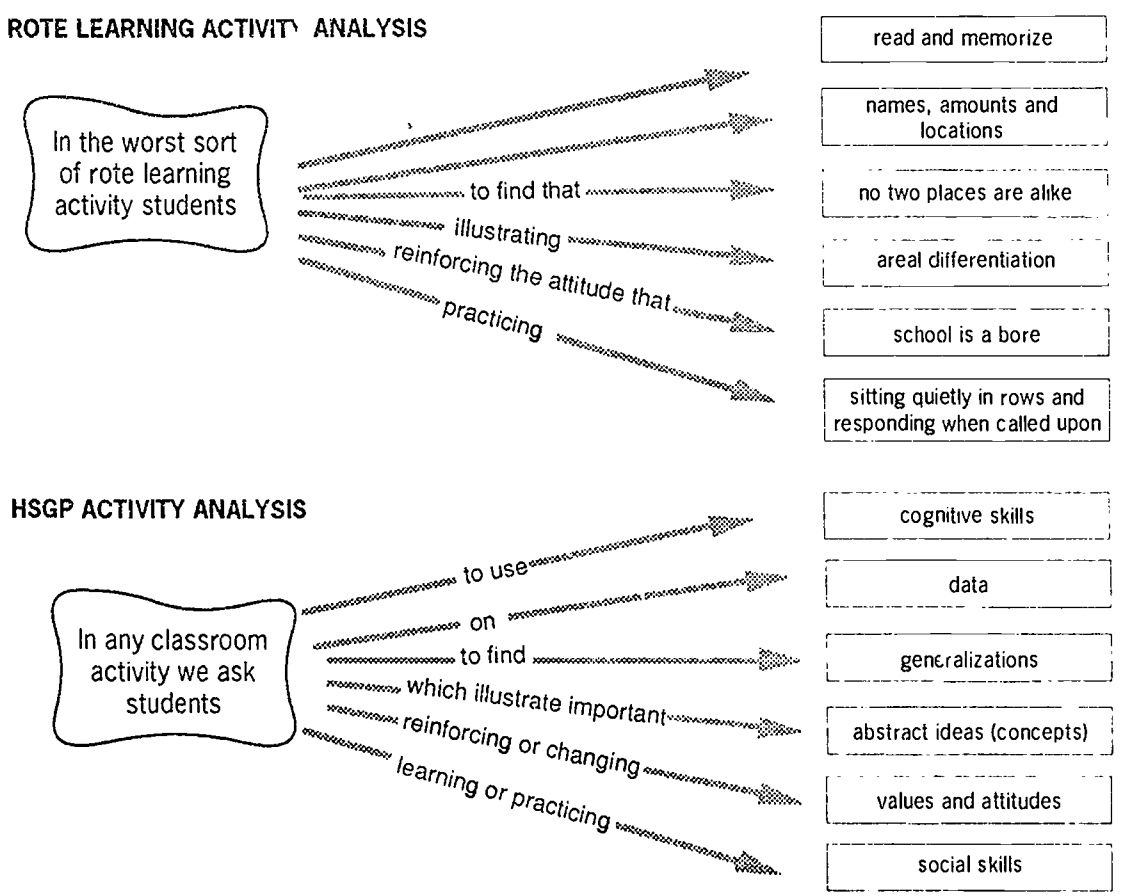
PLANNING LEARNING ACTIVITIES TO REACH GENERALIZATIONS AND DECISIONS

Planning for generalizations

In a telling analysis of two views of the teaching/ learning process, summarized in Figure 2.1, Nicholas Helburn (1968) drew attention to the importance of developing generalizations and broad understandings in the process of learning through geography.

This chapter is organized around the notion that the process of teaching and learning should lead towards an enriching of general concepts through reaching possible general "answers", and general ideas. The need to critically review and challenge general ideas as well as using them in subsequent thinking, very often decision making, is also emphasized.

Figure 2.1 **Two views of the teaching/learning process**



SOURCE: Helburn, N. (1968) 'The educational objectives of high school geography', *Journal of Geography*, Vol. 67, No.5, National Council for Geographic Education

A significant part of planning activities needs to be given over to organizing procedures and strategies for assisting the process of connecting ideas to, and focusing ideas and concepts around, a yet more generalized idea or understanding. By identifying questions and building links through the resources and strategies we use to reach generalizations and decisions we are going some way towards planning lessons which will stimulate thinking about relationships. When little knots of understanding are tied into larger knots, sense and learning coalesce.

When we are aware that the intellectual maturity of students is likely to predispose them to syncretic reasoning rather than logical thought then experiences and resources of an enactive (action based) and an iconic or image, graphic type presentation will be more appropriate than symbolic representations of data (Bruner, 1966).

The central message of this chapter is on planning for developing understanding to reach generalizations and decisions. It links logically to the question-answer argument of the first. This message will be expanded after a brief consideration of the place and positioning of objectives within planning as set out in Figure 2.2.

***Figure 2.2* Key steps in planning activities**

1. Brainstorm for questions.

2. Cull the list for the 'best' questions.
   Are the questions important?
   Are the questions geographic?
   Are the questions likely to be motivating to the learner?

3. Define sets of sub-questions (an enquiry sequence appropriate to each of the key questions).

4. List the concepts, generalizations, central understandings you consider you are planning for.

5. Brainstorm for appropriate student activities and teaching strategies — give special consideration to ideas for initiating the activity.

6. Consider resources and materials — consider what already *exists* and what could be *developed*. What data bases are appropriate?
   How could the information be explained and presented?
   In what order?

7. Select the most appropriate student activities and teaching strategies. Be aware that student tasks equate with specific objectives.
   Be aware that student tasks are a means of reaching generalizations. Is there a balance and range of tasks?

8. Decide on the form and organization of the tasks i.e. what data and what data processing methods will be used? In what order?

9. Consider the objectives arising from the questions at least in general terms and in the light of the general ideas to be developed.

10. Develop assessment and evaluation procedures. Match these to key questions and activities. Consider the range available, formal, informal, written, verbal. What congruence, what contingency, within and between activities?

SOURCE: based on Secondary Geography Education Project (1977) *SGEP-PAK*, Geography Teachers Association of Victoria .

Objectives—specific and general — a short discussion

Defining and making our purpose explicit is not an easy task. The chief difficulty very often lies in stating objectives at a level of specificity that enables one to have a clear idea of (1) what will be taking place in the classroom, of (2) knowing what the students will be doing and learning, and (3) what understandings they will be working towards.

Specific tasks

The difficulty of an appropriate level of specificity can be overcome if we set objectives at two levels of precision, the specific and the more general. For example, if students are counting and placing in a matrix the number of road links joining a set of places, then they are engaged in those very specific tasks or activities. In addition, it can be assumed that a teacher has set those tasks with a view to answering the question, 'What are the most and least accessible places?' so as to develop or reinforce the concept of accessibility and the idea of different places having differing degrees of accessibility. The tasks of counting road links and building a matrix are very specific objectives or tasks. These tasks are necessary prerequisites to reaching the more general objective or task of understanding accessibility as measured by road links.

I am saying that specific objectives may be equated with or seen as a mirror image of the tasks the students have to accomplish. Descriptions of planned student activities stand as specific objectives.

Cognitive preference

It may be that when specific learning activities have been listed, we should then ask ourselves, 'What is being achieved through these activities? Do they contribute towards answering the questions in the enquiry sequence? Why are we dealing with these questions?' The SGEP list raises evaluative questions about objectives in its latter steps.

General objectives and generalizations

What of general objectives? Let us return to the idea of a mirror image again. The general objective may be thought of as the mirror image, the equivalent of the generalization or principle, the general notion or idea which is being worked towards. The general idea will "match up" with the answers to the questions in the enquiry sequence. Hence the way in which, and the level at which, the questions and sub-sets of questions are posed will suggest the kind and level of generalization to be taught and stand in as our general objective. A generalization is therefore equivalent to a general objective, the end to which learning activities have been planned and organized. The point sometimes raised, that our objectives may be transformed as we respond to the dynamics of the teaching milieux we find ourselves in is nevertheless valid but we have to begin somewhere with some question or goal in view.

Going beyond the information given

Planning lessons to reach generalizations centers around arranging resources and tasks to work towards answers to questions. Activities should move towards the articulation of general statements or decisions which provide students with some kind of overview and resolution, however limited or tentative, of the *meaning* of the work they have been doing.

The generalization or decision represents, in Bruner's words, where 'going beyond the information given' takes one. In reaching an understanding of the meaning of the general point, in Piaget's broadest description of the learning process, students will be assimilating and accommodating new ideas and thinking to already existing cognitive structures. It goes without saying that as communication and

exchange among teachers and students increases, teachers develop a sensitivity towards, and an intuitive feel for, how best to arrange resources and activities to facilitate the assimilation/accommodation process and to promote the ability to go beyond the information given.

Classroom activities

MOVING TOWARDS GENERALIZATIONS

I shall now attempt to suggest ideas for lesson activities with a view to emphasizing the general notions and relationships that may emerge. In Chapter 1 we touched on the kinds of generalizations the settlement siting activity leads to—for example, the change in variables influencing location as transport technology develops (or the changing influences of cultural variables in England's long history of settlement development). An enquiry sequence which continues the settlement theme includes the following questions:

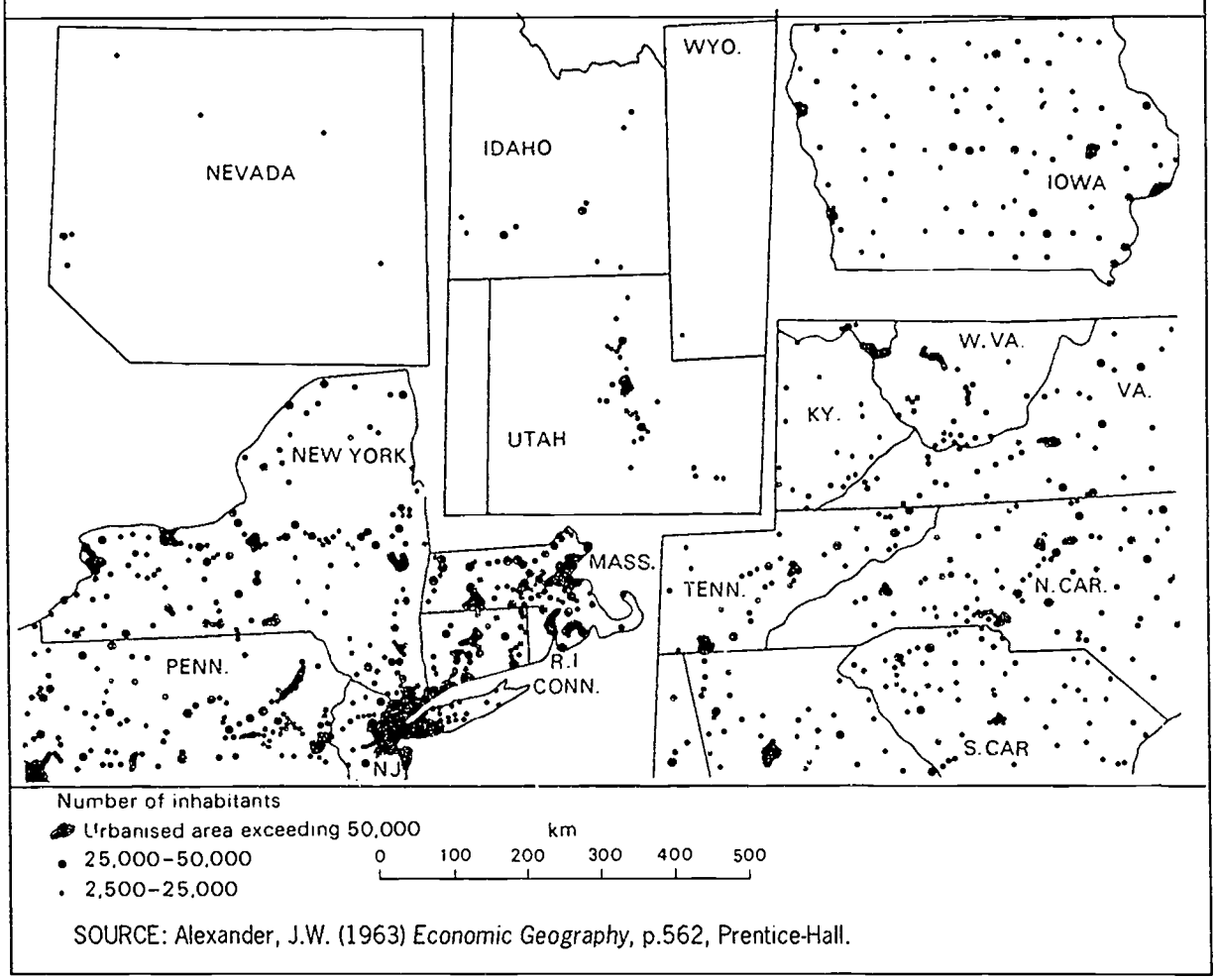
- Are there *patterns* to be found in the distribution of settlements?
- Is there a relationship between the size and *spacing* of settlements?
- What relationship seems to exist between the size of settlements and their number?
- What relationship exists between the size of settlements and the *distance* between them and their neighbors?
- What *relationship* exists between the size of settlements and the number and types of communication linking them?
- What pattern is there to the kind and number of *links* between settlements of the same size?
- What *pattern is* there to the kind and number of links between settlements of different sizes?

The map of the United States urban patterns (Figure 2.3) is intended to serve as an introduction to the activity planned for finding answers to this question sequence. It relates to the first question 'Are *there patterns* to be found in the *distribution* of settlements?'

Describing patterns

A number of adjectives could be used to describe and classify the patterns in Figure 2.3. In Nevada, settlements are very spread out or dispersed and there are few of them, while in New York and adjoining states there are many settlements which are very large and clustered together. By contrast, the Iowa pattern is a fairly even one with a greater number or density of settlements than in Nevada and the settlements are closer together. Idaho and Utah provide a contrast: a linear pattern of settlements related in fact to the irrigated farmland at the edge of the mountain ranges. An examination of a map of settlements in the United Kingdom would establish a similar variety in settlement arrangement or patterns, density and dispersion. Clustered conurbations occur around coal fields and ports for instance. Some discussion of the relationship of settlement distribution to resources and transportation connections might be useful if it were to relate back to the factors influencing the development of settlements. The activity is intended here, however, to be brief and introductory, to orient students to the idea of how settlements are

Figure 2.3: **United States: urban patterns**



SOURCE: Alexander, J.W. (1963) *Economic Geography*, p.562, Prentice-Hall.

distributed.

Patterns of settlements

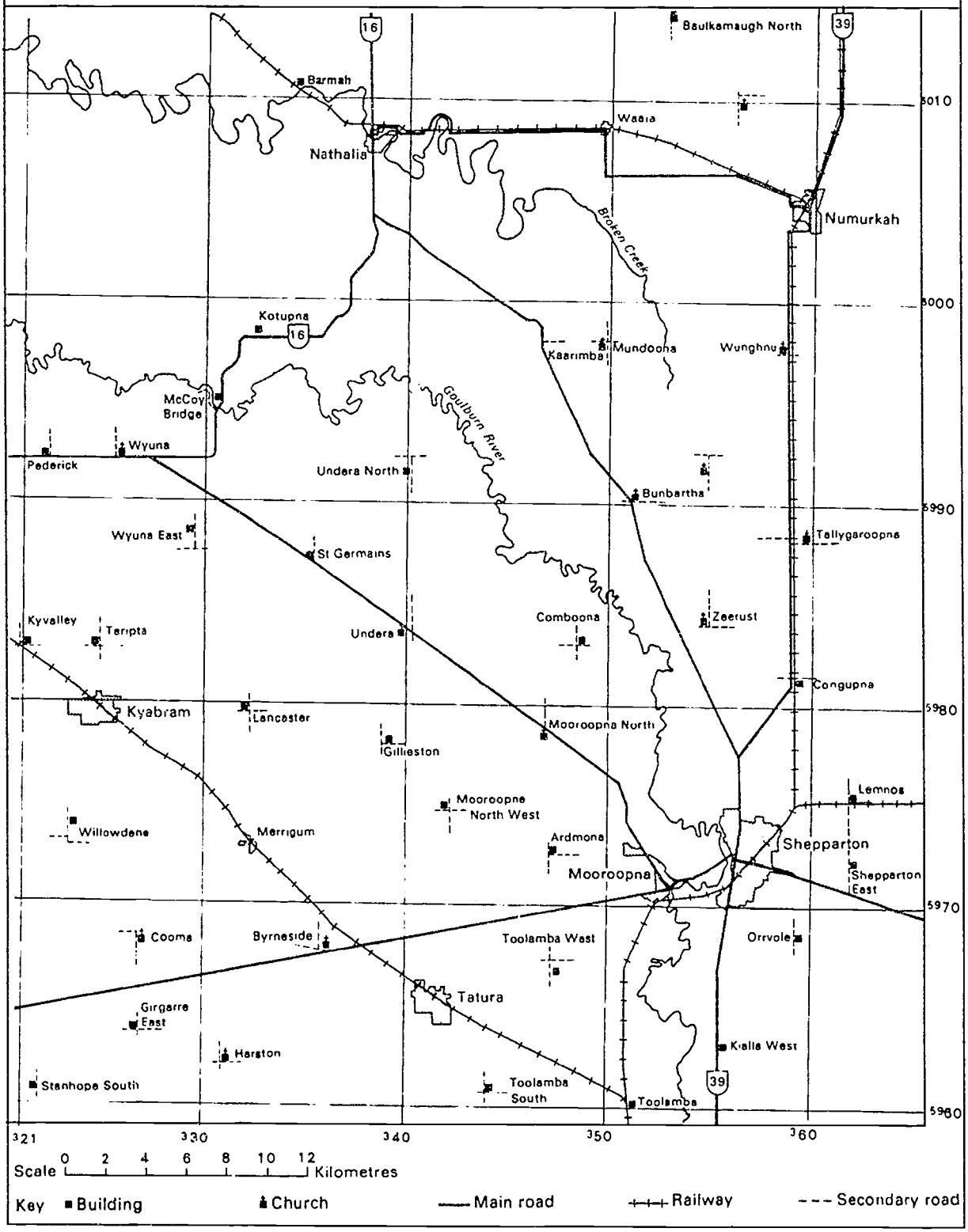
A topographical map (Sheet 7925 (Edition 1) Series R652) of the Shepparton district, a rural area in Victoria, Australia, has a distribution of settlements not unlike that of the larger scale Iowa map. Settlement can be seen to be fairly evenly distributed and the towns and cities are market places where people mainly buy and sell goods and services. There are no great port settlements, industrial cities or mining centers here. The Shepparton map may be used to examine the patterns and relationships between settlement and communications as an attempt to answer the remaining questions outlined earlier and reach general understandings based on relationships between the two features. Only a sketch map showing general relationships is reproduced here in Figure 2.4.

Classroom questions

The questions a teacher might actually use with a class to examine the patterns of settlements and communication on the topographical sheet could include:

1. What appears to be the largest settlement? Why do you say this? How many and what kinds

Figure 2.4: Settlements in the Shepparton area



of transportation routes serve Shepparton? How does this compare with other settlements?

2. Name settlements which are shaded but are smaller than Shepparton. On what kinds of roads are they located? What connection do these towns have with Shepparton? On average, how far are the smaller towns from Shepparton? On average, how far are they from each other?

3. What other settlements are shown on the map? What buildings do some possess and others not? On what kind of roads are these settlements located? How far are these places from their nearest neighbors of the same size?

4. Are there any other indications of settlement? How widely do they occur? What roads serve them?

The largest town on the map, by area, is Shepparton. With a class it is helpful to construct a grid — on the blackboard or on an overhead transparency, and to shade in Shepparton and other features mentioned.

It is the amount of shading — the built up area — which indicates Shepparton's importance. It appears to have, by implication, the most buildings and presumably the largest population. As well, Shepparton also has a greater number of lines of communication running through it than any other settlement. There are two principal highways, a number of secondary roads and a single track railroad converging on the town. No other town has an airport.

Let us examine seven smaller built up areas, Mooroopna which neighbors Shepparton to the west, Tatuna to the south-west, Kyabram and Merrigum due west and Nathalia, Waaia and Numurkah to the north. What connections do these smaller towns have with Shepparton? What kinds of roads link the towns to Shepparton, the largest settlement? Reading the topographical map reveals that all of the smaller towns are connected by rail to Shepparton and three of the seven are located on a principal highway. None, unlike Shepparton, is situated at the focus of two principal highways though three, Nathalia, Numurkah and Mooroopna, are on the crossroads of a principal and a secondary road. Three others are on secondary road intersections while only one of the smallest places, Merrigum, lies at the crossing of minor roads. Two towns are on principal highways directly linked with Shepparton; the remainder, apart from Merrigum, all have access via secondary roads. Quick sketch maps of the towns, in relation to the type of highway running through them, would illustrate the contrast with Shepparton. On average, the settlements are, as the crow flies, about six kilometers from their nearest neighbor, and about twenty-eight kilometers from Shepparton.

Two sizes of settlement, their number and distribution, together with their transportation connections have been examined. Other settlements are also shown on the map. Altogether, another thirty-seven places are named. With junior classes, it is advisable at this stage to confine the counting of settlements and their position on routes to one half or even one quarter of the topographical map if this is available or the exercise becomes too long and demanding of concentration. The position of places on communication lines can be labelled according to the highest order route serving them. A place at the crossroads of a main road and a secondary road, for example, is classified as being on a main road. Just less than one quarter of all places are either on a main road and railroad, or a main road only, or a railroad only. One eighth are on secondary roads. Two thirds are on minor roads and distances between the smaller places average four and a half to five kilometers. Of the isolated unnamed buildings many of which are farmhouses, it is estimated that over eight hundred are scattered over the map, the majority being closest to minor roads.

Generalizations which emerge

Let us now go through the enquiry sequence to indicate what general points emerge.

1. What relationship seems to exist between the size of settlements and their number? *The larger the settlement, the fewer they are.*

2. What relationship exists between the size of settlements and the distance between them and their neighbors? *The larger they are, the further apart they are.*

3. What *relationship* exists between the size of settlements and the number and types of communication linking them? *The larger they are, the greater the number of links and types of connections with other places.*

4. What pattern is there to the kind and number of links between settlements of the same size and of different sizes? *The smaller settlements are usually linked to one another by minor roads, which in turn join secondary roads leading to larger settlements and principal roads and railroads. Settlements are usually linked to one another by the same type of road and then to the next largest settlement by a higher grade of road.*

Analysis of settlement and communication patterns establishes several general principles of settlement hierarchies and central place theory — without necessarily using the term or introducing the associated geometry.

A lesson activity like this was originally planned by Alison Doggett for use with a class of twelve- to thirteen-year-old English suburban children examining the Ordnance Survey metric extract 149M/92 of Malton and Norton. A double-period lesson progressed to the stage where children articulated for themselves the general statements above. This seemed evidence that anything can be taught to any child at any stage of development in some intellectually honest form. The lesson was a positive example of the high levels of thinking which may be achieved when Bruner's more open philosophy of courteous translation replaces the rigid interpretation of mental development derived from Piaget.

Relationships between two variables have been examined and clarified. In order to work through the questions, it is necessary for a student to be able to identify and define from information on the map, settlements of different sizes and types of communications. In the process of identification and definition, a description and classification of these two elements emerges. It is the application of these four intellectual skills which then permits an analysis of relationships between settlement and communication. *What is* related and *how* they are related has been established.

Classroom activity

MAPPING SHOPPING HABITS

The previous question sequence did not encompass an explanation of the settlement hierarchy. We could move into another enquiry sequence and set of lesson activities by asking:

1. Where do you, or would you or your family most frequently buy: (a) bread, (b) other food items, (c) ordinary everyday clothes (d) rather special furniture (e) an original painting.

2. For which goods do you have the greatest number of stores to choose from?

3. How much money (small, medium, large amounts) do you and your family spend *per visit* on the different items?

4. How many visits are made per week, month, and year to the different types of stores?

5. What differences exist among the trade areas for the items?

6. What relationship seems to exist between the item purchased and the cost and frequency of purchase?

7. Why are there settlements of different sizes?

A mapping exercise is an appropriate way in to establishing evidence from which the answers might be reached. Four or five maps of the anticipated reach of shopping travel are needed. Each should be covered with tracing paper. One map will be used to build up each purchasing pattern. Before using the maps, each student should make a list of the places patronized and then mark in the location of home by a dot and rule a straight line from home to the stores where the goods are bought.

As the completed maps are studied in turn and the number of places patronized on each map counted, it will be observed that there are a larger number of food stores, and that they are closer to one another than, for example, furniture stores. Class discussion should establish that the number of sales a store needs to attract in order to make a profit and stay open is the threshold for that good. Lots of quite small purchases made often, of the kinds of things we need often, e.g. bread, can support more of the kind of stores selling those goods. Where people buy something more expensive, probably only once a year or even less, e.g. furniture, then the number of stores selling those goods will be fewer and people will travel further from home to reach them. The distance people are prepared to travel for daily needs is less than for more expensive, less frequently needed goods. The range of a good differs from one type of good to another.

A comparison of the maps will point up the usefulness of the concepts of threshold and range. The trade areas or hinterlands for each good will be different, the variations in the size and overlap of the trade areas illustrating the range of a good. The following generalizations, amongst others, generally emerge:

1. People usually travel only short distances for everyday items but longer distances for goods not needed so often.

2. The greatest choice of stores exists for everyday goods.

3. Less money is spent per visit at the stores visited most frequently.

4. More visits are made to stores selling goods needed often than to those selling goods needed less often.

5. The trade area is smallest for the stores visited most often, and largest for the goods bought least often.

6. The less costly goods are the more frequently purchased goods and the most costly goods are bought much less often.

7. Since some goods are needed more often than others, many small towns and neighborhood centers with just a few stores grow up to supply these goods. A few small towns and neighborhood centers develop into larger towns and centers as stores selling less frequently purchased goods are set up and attract customers.

These two learning activities concerning settlement size and spacing and shopping habits explore relationships and establish generalizations framing those relationships. The connection between questions and answers is clear.

Challenging generalizations through hypothesis testing

At this point, the reader may feel that the emphasis placed upon reaching generalizations in lesson activities has been unrelentingly pursued. At the same time it has been assumed that the data—the evidence—presented has provided learners with both necessary and sufficient means to reach accurate conclusions, conclusions which would enable a reasonable prediction to be made about the relationships among a set of variables. Forming general notions provides us with something on which to base our expectations and hypothesis-testing is a well established method in geography teaching for reviewing generalizations. Patterns of shopping and consumer behavior can be tested, using data held in computers.

For example, the computer programs GRAVITY may be used to test consumer shopping habits among centers. The programs is based on Huff's model or generalization and it estimates the probability of a consumer visiting a center by taking into account the attractions of all potential shopping centers simultaneously. A student used the program to test shopping choice in the St Albans area of England. The probability of shopping in each of four centers was calculated by GRAVITY. The model predictions were then compared with fieldwork results. The differences emerging were noted and an analysis of possible reasons made. The generalization embodied in the model—namely that the probability of a consumer travelling to a center is dependent on the size of the center, the consumer's distance from the center and willingness to travel varying distances for different goods and services, and the competing attractiveness of all centers—can be modified, enlarged, and re-established. It may be stated that generalizations are not for believing but for testing and the reformulation of generalizations is a constant process in learning through geography. Teaching strategies for challenging generalizations are often practiced in a hypothesis-testing manner.

Discrepant data procedures

An exciting and under-used elaboration on the 'teaching for general understanding' theme is the discrepant data procedure. Like hypothesis testing it also enables generalizations to be modified, tested, and reinterpreted. The American HSGP pioneered this technique (HSGP, Unit 1, 1969). Essentially the discrepant data procedure is designed to have students examine a generally held idea or belief. An activity is structured to reinforce the idea and then new evidence is introduced, which challenges the idea and leads to a restructuring of the generalization. In other words, the discrepant data procedure is a strategy for promoting more precise and accurate general notions .

Cultural diversity

For example, it is likely that most students have high expectations of being able to identify and accurately assign half a dozen slides of cities from diverse culture regions to the appropriate continent. A judicious selection of slides providing plenty of cultural clues serves to structure an activity reinforcing such a set of expectations.

The general notion is then challenged by a second round of slides showing the central areas of cities, from different parts of the world. It is much more difficult in this case to identify accurately the cities or their cultural regions since in commercial industrial aspects western style city architecture is spreading throughout the world (HSGP, Unit 3, 1969). The breaking down of the expectation forces a restructuring of the generalization and an attempt at explanation. What features of city landscapes are remaining culturally distinctive? What features are bringing about uniformity? What contributed to shattering the expectations? One of the points which should be drawn out of this latter question is the selected and inadequate nature of the evidence upon which the conclusions were based. The discrepant data procedure helps students examine ideas held and gives them an opportunity to develop more precise and accurate generalizations; it helps to motivate them because they realize they held a wrong idea and they therefore

need to make a fuller study; it helps them understand that they have certain values and that they have biases, stereotyped images and prejudices; and it helps them to become aware of the tentativeness of hypotheses, opinions, and generalizations and the need to check a variety of data sources before arriving at conclusions.

Discrepant data and the Third World

Professor Joachim Engel and his associates (Engel, 1980) constructed a discrepant data exercise to introduce a unit on Third World problems for the RCFP (The West German Geography/Social Science Curriculum Project).

In the first activity, after a word association discussion — 'What do you think of when you hear the word, Africa, etc.?'— one readily identifiable slide of each of the major continents is projected. More than 90 per cent of a class match slide to continent correctly. A high confidence level of world knowledge is built up. The focus of attention shifts. 'Do you know what a developing country, a Third World country, is like?' In the ensuing discussion, the teacher listens, neither approving nor correcting and then shows eight slides out of which ones taken in Third World countries have to be identified. The number of correct selections is much lower. Why? The need for more precise information is appreciated and students realize that if they do not have this, their ideas and perceptions of a country are likely to be inaccurate and undifferentiated.

Classroom activity

BROADENING PERCEPTIONS AND ASPIRATIONS

The lesson activities planned to broaden and fill out perceptions are built around a young Cameroonian boy, Tabi Egbe. Tabi Egbe reveals his life-style, his hopes and aspirations as a prelude to German students understanding the matches and mismatches between themselves and Tabi. In addition, the discrepancies between Tabi's aspirations and those of his school mates and the goals his society might set up are teased out. For Tabi Egbe, who lives in a small agricultural village, does not wish to be a farmer, yet city life may not offer him all he believes it will and it is in the nation's best interest to encourage people to stay in the countryside.

In a research survey of reasons for school attendance and hopes for adult lives, *123* twelve-year-old Cameroonian boys and girls gave answers which fell into four main categories. In 18 per cent of the answers, obedience to parents' wishes to attend school and to work hard dominated. A similar percentage made statements along the lines that education opens up one's mind and prepares one for a worthwhile occupation — that of being an electrician, a nurse, or a teacher. Nearly one third indicated that they believed education would lead them out of a 'Third World life' into a 'First-World' one. A wealthy life in the city as businessman, state officer or president was a dream. Another third of the children went to school for the future benefits to be derived from being able to offer more to their society and being a better citizen. They saw these two goals as not only helping themselves, but their parents and country. In the Tabi Egbe unit, two suggestions for using this information are made. In one sequence, German students are presented with an overhead transparency cartoon of four children saying:

1. 'I go to school because I should like to help my parents.'
2. 'I go to school because I want to become a useful citizen to my country.'
3. 'I go to school because I want to become an important government official.'
4. 'I go to school because I don't want to be a peasant; I would rather like to get a job in an office.'

The German students are then asked to write down their reasons for attending school and typical answers compared with the ones from the Cameroon. A discussion follows of why students in a Third World country look similarly or differently upon their schooling and their futures compared with those in a rich industrial nation. The second suggested strategy is a reverse of the first. A German class is questioned about reasons for school attendance. When these have been collected and structured, the Cameroonian results are presented in a letter from Tabi Egbe. He writes to say that a German visitor has asked them to list reasons why boys and girls in the Cameroon go to school. In the letter he sets out the answers given by him and his friends. A comparison follows.

Value judgements

The final activity in the unit exploits a tension which is built up between the knowledge of 'Why they/we go to school' and the question, 'What should the school provide?' The German class is to be involved in planning for a better school in the Cameroon. A local Cameroonian teacher has succeeded in mobilizing the community into building a new school close to the school farm. The teacher wants to run the kind of school which fits the needs as he sees them of young people in a rural area: the kind of school which might reverse Tabi Egbe's desire not to become a peasant. In a letter to the education officer for the district, the teacher requests new equipment and materials. Of the thirty requests, listed in Figure 2.5, the education officer can afford to supply twenty and the teacher is asked to prune the list. Pruning the list is the task given to the German students. It is accompanied by the instruction:

> 'The new school should be so well equipped that parents will want to send their children. The children should learn things useful to their likely futures. Since living in the countryside would be better than living in the town the school should prepare the children to be farmers with a knowledge of soil conservation, soil characteristics, and crop management.'

Figure 2.5 Making choices

From the list of 30 articles select 20 that the Cameroonian teacher should request from the government:

school benches
school tables
1 blackboard
10 books with stories about the United States, England and France
1 aquarium
5 stuffed birds
writing material for the students
1 wall-map of Cameroon
1 wall-map of Europe
2 microscopes
1 set of scales with weights for experiments in agriculture
35 saws
10 planes to work on rough wood
35 hammers, nails, screws, and hooks
2 footballs
35 hoes
seeds (corn), seeds (beans), seedlings (coffee)
fertilizer
6 washing basins and towels
1 ladder for gymnastics
flower boxes for the window
bowls and basins in which to keep harvest goods
a shed for the tools and agricultural equipment
wooden posts for a fence, wire for a fence
5 garbage cans
1 typewriter

German students must be prepared to defend the decisions they make. What value positions are they likely to take up? This is a crucial question, the implications of which are looked at in more depth in Chapter 4. The consistent use of examining discrepant data or match/mismatch throughout the unit is clear and certainly highlights the real world, value laden dilemmas involved in evaluating and deciding upon best solutions. The validity of generalizations and policy decisions is open to forceful challenge and in this case there is a strong suggestion that it is the geography teacher's inescapable lot to raise rather than obscure the choice of the value positions taken on controversial issues. An example of a student's responses to a simplified version of the Tabi Egbe unit is given in Figure 2.6 and supports well the view that further value clarification and discussion is necessary and possible.

Figure 2.6 **: Education in a country with limited resources**

There is a new school planned for a village in West Africa. Not a lot of money is available. Many of the children do not want to be peasant farmers like their parents. They want to be richer. The new school is to be equipped so parents will want to send their children. The children should learn things useful to their future in the countryside as *peasants* and *not* as *town dwellers*. BUT only enough money is available for 20 of the 30 articles the school board requested. Check those items you would select:

school benches
school tables
blackboard and chalk
10 story books from the United States, England and France
aquarium
5 stuffed native birds
paper and pencils
wall-map of country and Africa
wall-map of the world
2 microscopes scales for weighing food
35 saws
10 planes
35 hammers nails, screws, and hooks
2 footballs
35 hoes
seed-corn, bean seeds, coffee bushes
fertilizer
6 wash basins, towels, and soap
gymnasium equipment
flowerboxes and seeds
storage bowls for harvested food
tool shed
wooden posts for fences wire for fence
5 garbage cans
1 typewriter

Student answer

I have excluded *(10 story books from USA, UK, France, aquarium, 5 stuffed birds, 2 microscopes, 2 footballs, gym equipment, tool shed, wire for fence, 5 garbage cans, and 1 typewriter)* because *story books aren't necessary to being a peasant neither is aquarium and you don't need to know about birds to sow seeds. You don't need microscopes in the middle of the desert and footballs are a luxury for leisure and you can run round to keep fit instead of gym things. You can keep the tools in the school and you can cut down trees in Africa for fences and you can put rubbish straight into the disposal shoot. You can write in handwriting instead of print.*

SOURCE: based on Ray Pask, and RCFP.

Professor Engel (personal communication) has pointed out that some of the more obvious distractors in the students' list include stuffed birds, the wall map of Europe, the aquarium and gymnastics ladder, flower boxes for the windows, garbage cans, the typewriter, microscopes and seed-corn, bean seeds etc.. He recalls nevertheless, very good classroom discussions in which the apparently unnecessary items have

been defended. A group of girls argued vehemently for flower boxes on the grounds that Cameroonian children had as much right to decorate their school buildings as German children. The list quite definitely has been successful in promoting discussion and encouraging students to submit convincing arguments and defences. Where teachers feel that one or more items may not prove good distractors in their classrooms then they should be replaced, e.g. a Japanese dictionary might be a better distractor in some cultures than a ladder for gymnastics.

Different and incomplete information

To these strategies for challenging generalizations, another procedure may be added. It is so structured that generalizations based on partial and incomplete information have to be revised in the light of new evidence; Nicholas Helburn ascribes to it the acronym DAIS (Different and Incomplete Statements) .

Classroom activity

WASTE DISPOSAL AND ITS ENVIRONMENTAL IMPACT

How might *students* be introduced to such ideas and led to generalizations concerning perhaps the unity of the environment and the interrelationships between three forms of waste? A class may be divided into three groups (HSGP Unit 5 Habitat and Resources, Waste Management, 1969) or committees—one for each category of waste: solid, liquid and airborne. Specific roles are not necessary for students who can think of themselves as citizens with a duty to make recommendations on waste disposal. Each student is given a card with information about one of the three forms of waste and each is responsible for bringing the information and ideas to the attention of his or her committee. The cards feed in fairly specific ideas, on waste creation and disposal problems, the conflicts which can arise, and some of the solutions which have been tried.

The committees meet separately to hammer out a report to be given to the class as a whole. Each report is to be structured around the following questions: What goes on now? What do you consider to be the worst problems? What changes do you recommend? What difficulties do you foresee in putting these changes into effect?

Modifying generalizations

Initially students have to summarize and come to some conclusions based on their individual assignment. Then those conclusions and general ideas are refined as, during discussion, ideas are seen to overlap, reinforce, develop, impinge upon other ideas. Understandings reached by individuals may be modified in the process of discussion and concepts and generalizations given a reorientation. It is an opportunity for expressive talking, talking to explore ideas.

Finally, in class discussion of the three reports, two themes are basic and if these generalizations do *not* emerge the exercise has failed. First, the impingement of each kind of waste disposal on the others should come out. For example, if solid waste is burned, the dust could be a potential air pollution problem. Or if a dust catching mechanism is installed in the incinerator chimney, the dust may be worked into the sewer adding to the liquid waste problem. Second, the concept of the unity of the environment is important. The environmental impact of dumping waste on swampy areas is stressed in one or two of the individual assignments, for example.

This activity is carefully structured to build up the generalizations and decisions about one aspect of waste management. Those general ideas may then need to be changed as new perspectives are added from other reports and discussions. The strategy is simple and part of its appeal lies in its similarity to the way we come to change our ideas in everyday life. The strategy is also used in the Japan unit (HSGP, Unit 6,1970) where again committees work with data to reach conclusions which are then built into wider generalizations, in the guise of recommendations.

Classroom activity

AN EXERCISE IN ROUTE PLANNING

Rex Walford's 'Which route next? A problem for a Maritime Community of the future', is a striking example of a structured exercise deliberately building up from the simplest ideas and methods of analysis, to more complex analyses which allow the consideration of the effects of more variables to reach a 'best', most realistic solution to a problem. Generalizations are modified as the exercise proceeds.

Walford's scenario is set in the Maritime Provinces of Canada in the year 1997 and his verbal description and exposition is intended to humanize and give point to a numerical exercise which if presented as a bald arithmetic exercise could otherwise lose some of its impact and appeal. Undoubtedly, one of the problems attendant upon the quantitative revolution has been to persuade people as to its worth and relevance. The passage quoted below is from Walford's original exercise which has been changed only in small details. It is worth noting that it was devised for a group of geography students at McGill University. A guide to the necessary sets of calculations is set out in Figure 2.7.

Which route next?

It is the year 1997. Things have changed . . . Since Quebec separatists finally gained their way in 1988, Canada has had to face the increasing challenge of 'Provinces Rights'. British Columbia and the Prairie Provinces (intent on holding the majority of their oil reserves against proposed Federal laws) followed Quebec in demands for greater autonomy. So did Newfoundland, now newly rich with the giant plutonium strike, made in 1987. Thus in 1994, the three Maritime Provinces found themselves to all intents and purposes the masters of their own fate, but unable to depend on revenues from elsewhere, since Federal taxes and grants were now abolished and Ottawa's power severely curtailed.

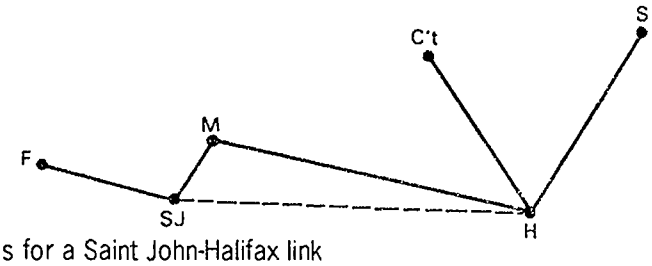
New Brunswick, Nova Scotia, and Prince Edward Island have decided to go it together as a Maritime Community and they are seeking to integrate their economies, their public services, and their governments. The new Prime Minister of this Maritime Community is a shrewd man; a geography graduate from Mount Allison University, he has been well-schooled in the ideas of Taaffe, Morrill and Gould. He knows that a nation is only as strong as its communications networks and that an integrated system is vital to the Community's future health.

Much travel these days is done by vertical take-off and landing (VTOL) and one of his first priorities on taking office has been to set up an hourly service between the *major* cities of the Community. These cities are:

Fredericton	(50,000)
Saint John	(100,000)
Moncton	(100,000)
Charlottetown	(20,000)

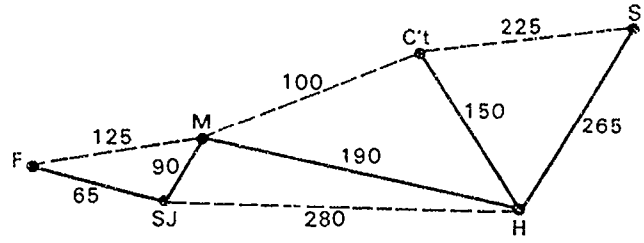
Figure 2.7 **Which route next?**

(a) What link should be added to achieve the fewest links in this network as a whole?



Calculations for a Saint John-Halifax link

Urban Centers	F	SJ	M	H	C't	S	Totals
F	0	1	2	2	3	3	11
SJ	1	0	1	1	2	2	7
M	2	1	0	1	2	2	8
H	3	1	1	0	1	1	7
C't	4	2	2	1	0	2	11
S	3	2	2	1	2	0	10
Total	13	7	8	6	10	10	54



Calculations for a Saint John-Halifax link

Urban Centers	F	SJ	M	H	C't	S	Totals
F	0	65	155	345	495	610	1670
SJ	65	0	90	280	430	545	1410
M	155	90	0	190	340	455	1230
H	345	280	190	0	150	265	1230
Ct	495	430	340	150	0	415	1830
S	610	545	455	265	415	0	2290
Total	1670	1410	1230	1230	1830	2290	9660

(b) What link should be added to achieve the least addition in mileage?

(c) What link is best in terms of likely traffic generation? The four possible links are:

Saint John-Halifax $\frac{310}{280^2} = 3.95$

Moncton-Charlottetown $\frac{120}{100^2} = 12.0$

Fredericton-Moncton $\frac{150}{125^2} = 9.6$

Charlottetown-Sydney $\frac{150}{225^2} = 2.9$

(d) What link is best in terms of all traffic flowing across the link?

A worked example:

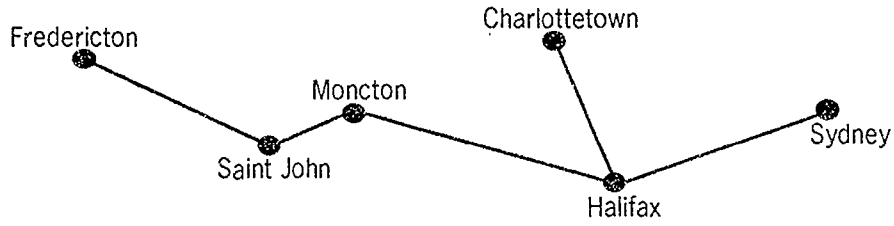
$$M\text{-}C't = M\text{-}C't + SJ\text{-}C't + F\text{-}C't$$

$$12 + \frac{120}{190^2} + \frac{70}{225^2}$$

$$12 + 3.3 + 1.4 = 16.7$$

Halifax	(210,000)
The Sydney region	(130,000)

But the Community (plus the new Maritime Airways) is chronically short of money. Thus the initial pattern of linkages from City center to City center is set up in the most economical way possible. The map of the initial network looks like this:



Now after two years, a chance to develop the network has come. There is enough money in the Maritime Treasury to develop one further link in the chain, and the Maritime Parliament is discussing the matter. The M.P. for Glace Bay is first to her feet, pointing out the need for better communications for Cape Breton, and its need to be more closely integrated into Prince Edward Island (where the Parliament is temporarily meeting until a permanent home for the Legislature can be settled). She suggests the development of a Sydney-Charlottetown link. . . .

The M.P. for Moncton North counters — 'Clearly a more central route would be most helpful' he declares. Thinking of his own arduous route to the Legislature (via Halifax by VTOL) — still marginally quicker than by car and ferry — he proposes a Moncton-Charlottetown link. . . .

The M.P. for Fredericton East then brings up a third proposal 'Let us cut down the extended western arm of the service by shortening a link' she says, proposing a Fredericton-Moncton link. . . .

'Ladies and Gentlemen', says the weary Premier (who comes from Halifax), 'Neither of these routes concerns my city — I clearly have no axe to grind — but I beg you, let us choose a route that benefits the Maritimers as a whole, not simply improves the advantage of any one city.'

(Here, he was being a little disingenuous, because all M.P.s knew that the more central the city on the network, the stronger the argument for it being eventually designated the capital.)

The arguing M.P.s then protested that they were not motivated by self-interest, and were concerned for the 'good of the network as a whole'.

At this point, the M.P. for Sackville leapt into the debate, 'Luckily I have been trained in the techniques of network analysis while a student at McGill University, and I think I can solve this problem', he said, passing a few scribbled calculations on an envelope to the Prime Minister whom he knew (as a fellow geographer) would understand them. 'I have analyzed the network and its links, and undoubtedly the best link of the three proposed would be. . . .'

1. What was the link that the McGill-trained M.P. suggested?

2. What were the tables of calculations that he showed the P.M.?

3. Was the P.M. (as an M.P. for Halifax) pleased on behalf of his own city, or not?

Some further episodes

An M.P. from Saint John (educated at the University of Toronto) was quick to challenge the apparently bewildering expertise of the Sackville member.

'Your calculations in links are the old crude approach to network analysis', she said. 'At Toronto they taught us to calculate in *linear* distances not simply in links. This gives a better, more refined set of calculations and incidentally changes the answer.' So saying, she handed an envelope with scribbled calculations on it to the P.M.

4. What were the second set of calculations?

5. How did they change the answer?

6. Was the Prime Minister (as an M.P. from Halifax) as pleased for his own city as he was before?

The M.P. for Sackville was not to be out-done — he leapt to his feet again. 'On the contrary', he declared, 'My friend is wrong. If we are going to calculate in something *other* than links, *we* should *use* not mere linear-distance, but the actual *time* that it *takes to* get between each place. This is not necessarily the same relationship as that of linear distance.'

7. What do you think of his argument as a general principle?

8. What do you think of his argument in this case?

Yet another M.P. entered the confused debate — this time a woman from Apple River, who had graduated at U.B.C. 'Out on the West Coast, we learned about network analysis the proper way', she said. 'Surely the Honorable Members *must* realize that these calculations are invalid if we do not include calculations of the *amount* of traffic that will be *generated* by each link. Now the amount of traffic generated by each link depends on two things: (a) the size of the places at each end, and (b) the distance between the places, and we can set up a formula to show this. The simple application of this formula — known as the gravity model — can give us an indication of the potential flow of traffic on each link, and on *that* we should base our decision.

The formula is:

$$\text{Index of Flow between A and B} = \frac{\text{Population of A and Population of B}}{(\text{Distance between A and B})^2}$$

I have some calculations here.' And here a third envelope was handed to the P.M. who acknowledged the validity of the argument.

9. Did the third set of calculations reverse the decision again?

The M.P. for Little Shenogue now stood up. 'I hardly like to contradict my learned U.B.C. educated colleague', he said, 'But I learned network analysis at the University of the Arctic in Yellowknife, and there at the newest of our Canadian universities naturally the methodology was the most up-to-date.

'Could I point out that the flaw in the last argument is that, for the calculations to be accurate, they must include *all* traffic flowing across the link — *not simply that generated by the two towns at the ends of it.* Thus the calculations for, say, Moncton-Charlottetown have to include not only the formula applied to those two towns, but also the formula of flow calculated for Fredericton-Charlottetown and St. John-Charlottetown, since traffic generated on those links would *also* use the new link.

I have an envelope here....'

10. Did the fourth set of calculations reverse the decision again?

The Speaker of the House then tried to quieten the increasing disorder and hubbub. 'Please, please, *please*', he said. 'As a history graduate myself, I am quite lost in all this—what *are we* doing?'

'We are doing what any literate, numerate, civilized person would do', said the geographer P.M., scoring handsomely against his old historian rival. 'We are simulating a model of a network and refining it as we go — that is how we should seek sensible answers to our problems. . . .'

The relevance of this exercise to the general point about modifying and refining generalizations and decisions is obvious and hopefully it will be adapted for use in other contexts and problems. It also provides a very convenient link into the third part of this chapter where the role of general ideas in decision-making and subsequent thinking is now stressed.

Generalizations for subsequent thinking

Decision-making, itself already part of earlier exercises, is highlighted once more by examples.

The first activity has direct appeal to many adolescents. It may be useful as an introductory lesson in some quite complex decision-making exercise. It derives from an environmental program of some originality and foresight (Group for Environmental Education, 1973). The necessity to make a choice from alternatives each governed by constraints is clear. And the process of weighing-up the advantages and disadvantages of alternatives, parallels reaching generalizations, as relationships between needs and constraints, for example, not settlements and communications are explored.

The second activity fulfils a double purpose. It illustrates how general ideas contribute to decision-making and it is an example of a learning activity which shows decision-making to be based on both personal, subjective reactions and objective knowledge. It combines, to some extent, scientific geography and the understandings derived from such analysis with more humanistic responses. Above all, it illustrates the necessity for students to combine and weigh-up ideas.

Classroom activity

LOCATING A CLUBHOUSE

This first activity illustrating the nature of decision-making is directly addressed to students.

'Your club is looking for a clubhouse. You feel that you need a place where you can get together after school, during the weekends and the holidays. You have searched your neighborhood for a place but so far every possible place has a disadvantage.

One place, the basement of a church, is ideally located in the center of the neighborhood but there are some real problems. You cannot use the room on Sunday morning, a time when you would be wanting to use it. The church wardens have also said that the room cannot be repainted and you were planning to be able to paint and decorate it the way you wanted to. Sixty dollars for paint and brushes has already been

set aside. The amount, together with a further sixty dollars for the annual party, is your total annual income. Another place not too far from the church used to be a garage and workshop. It is now empty. It would be just right except that it would cost a lot to do up. As well as painting, new lights, a new door, and possibly a new sink is needed. It could cost three times the amount of money saved. It would certainly mean giving up the party and there would be more money to find. There is a way to get the money but it would mean accepting new members. The club rules are against letting in any more members.

There is one more place, a vacant shop front, which you could use whenever you wanted and it could be decorated as you wish, probably at a cost of slightly less than sixty dollars. The problem with this place though is that it is in another area and, as well as its being further away, there is not a great deal of friendship between you and the teenagers living there.'

Alternatives

What is to be done? No matter which place is chosen, you have to give up something — using it on Sunday mornings, decorating it the way you wish to, having the annual party or keeping the membership as it is.

Consider the following questions:

1. What do you think a clubhouse should be for?
2. What would you want to do there? List some of the different activities.
3. What kind of space would you need for these activities?
4. Are there any solutions other than a 'clubhouse' which could work?

Now let us look at the club's resources again. You have 120 dollars and members who are willing to work. Perhaps this is your most valuable resource. Can you think of any other resources — human or material — which were overlooked? Can you think of ways to increase these resources, human and material?

Who is to blame?

The members blame the church's rules for some of their problems. But other rules are stopping the club finding alternatives. What are they? Whose are they? Which rules would you change if you could and how would you change them?

When you first looked at the clubhouse problem you felt there was no way of getting a place to meet. You had three alternatives but each of them had a drawback. Now that you have considered the problem, you have possibly found new resources, perhaps changed some rules or thought of solutions not considered before. What choices does the club have? List them. Which would you pick? Why?

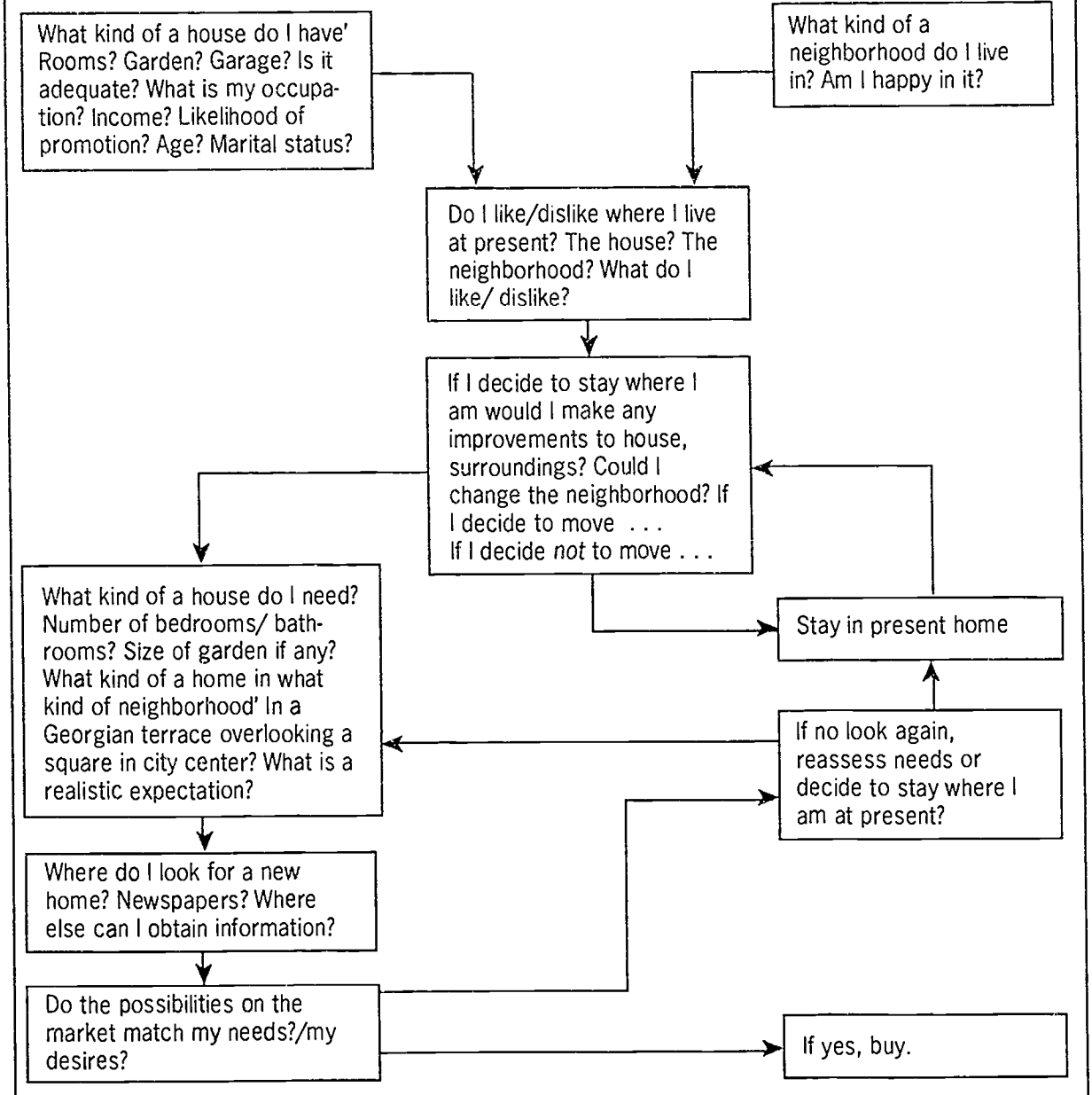
Personal decision-making

The second example of decision-making again emphasizes reaching general understandings of a multivariate problem. This example also illustrates further the complementary relationships between geography as science and geography as personal response.

Humanistic geography in its emphasis on the felt senses, the subjective knowledge of space, is highlighting the bonds between people and places, landscapes and spaces experienced. It can be argued that it is through knowledge of one's specific, personalized environmental bonds, combined with knowledge of the objective reality of how things are arranged in the 'real' world, that one may sort out the best place to live according to income, life-style, and personal preference. In teasing out the practical implications involved in buying a house, geography's objective and subjective dimensions are linked.

In the Metro housing game devised by Mhorag Ewing (1976), the outcome of the decision of where and what house to buy is assumed to contribute a great deal to a person's level of general satisfaction and so objective and subjective dimensions are fused in the game. The question sequence is a model of the decision-making process and the factors which need to be taken into consideration. It is based on a model by Brown and Moore (1968), identifying the order in which decisions are taken and the main factors ostensibly influencing the decisions. Their model postulates that at any given time an individual or household is liable to experience some form of stress. This stress is caused by any feature in the total environment bringing about discomfort, inconvenience or dissatisfaction.

Figure 2.8 **Buying a house—an opening question sequence**



SOURCE: based on Ewing, M. (1976) *Learning about housing and related issues: with specific reference to Metropolitan Montreal*, Unpublished M.Ed. monograph, McGill University.

The stress may emanate from within or without the household. For example, the decision to marry, the birth of a child, the decision to retire, the receipt of a large legacy, the conversion of a street to a one-way system, the arrival of undesirable neighbors, change in use of a nearby building, e.g. from office to liquor store, could all prompt a desire to live elsewhere.

The effect of the stress is dependent on the reaction to it, the strain felt. The personality characteristics of the household and its general housing and social experiences and aspirations and financial circumstances will affect the outcome of the stress/strain balance. Most people do and, in fact, must, tolerate a certain amount of residential stress since few people are lucky enough to achieve total residential satisfaction. Strain may reach a threshold such that a decision is made to move or the strain converted into a decision to improve the existing environment by double glazing, joining a residents' protection association, etc.

If a decision is made to search for a new location, then a series of plans and decisions outlined on the left of Figure 2.8 come into operation. The searching strategies will concentrate generally among alternatives that are familiar, e.g. places nearby, areas where friends or relatives live, areas visited, areas described by the mass media or alternatives discovered by a systematic search.

Classroom activity

METRO HOUSING GAME

The game 'Metro', devised by Mhorag Ewing as a role-playing game, focuses on the perceptions and preferences as well as on the sequence of decisions involved in house or flat purchase or rental. Each player in the game (with persona provided) becomes a family moving into a metropolitan area.

The game has two stages. In the first stage the family is dealing with and resolving the problem of searching for and buying a new house. In the second stage, during which the family must live in their chosen home for several years, they test their satisfaction with their decision against a number of events which can affect residents and residential areas. The unforeseen events are represented by chance cards involving family changes, governmental decisions, natural events, decisions emanating from neighbors and other groups of people in the housing system.

Sufficient information on the structure and the nature of the material is provided here to devise one version of several Mhorag Ewing suggested for 'Metro'. In this version all players are given the same role information and at the end of the game their decisions, house choices, and satisfactions can be directly compared.

The game needs a real estate broker or agent who must:

1. explain and interpret the rules of the game;
2. show properties for sale;
3. audit mortgages;
4. control the market cards, offer the purchase slips, bidding slips, and chance cards.

The teacher will probably decide to take on this role initially. The students are given a set of materials made up of:

1. family role information; (Figure 2.9)
2. maps of the physical land use and accessibility features of 'Metro'; (not provided)

3. The *Metro Home Buyer's Guide* giving step-by-step instructions for playing the game; (Figure 2.10)
4. *Metro News*, a real estate newspaper; (not provided)
5. chart for recording residential satisfaction and reaction to chance events. (Figure 2.11)

Figure 2.9 Metro Housing Game: a role description

Mr. Bernard Goldberg and Family

You and your wife are in your early thirties and have a son and a daughter, both under twelve. Your new job will be as a salesman for Office Equipment Co., whose headquarters are in Hampton, close to the central business district. Your annual salary is $40,000 and you have saved $15,000 towards your new home. You have a high school diploma but have also taken some business psychology courses in connection with your work. Your wife works as a secretary and earns $25,000 per annum. Your interests include dining out, coaching pee-wee hockey, going to football and baseball games and watching sports on television. Your wife's hobbies are dancing and gardening. Both you and your wife like to spend a lot of time and money on clothes and your appearance. For summer holidays you generally go to stay with your parents at their cottage, or sometimes your parents come to stay with you for one of the summer months. For work you drive a rented Pontiac while your wife drives a Mustang.

You have just arrived in Metro, a metropolitan area of approximately 500,000 people, located on the river Kelvin in the north-eastern area of North America. Metro has a humid, continental climate with long, cold winters and fairly heavy precipitation. Summers are hot and can be quite humid. The built-up area is expanding rapidly and there are several dormitory and industrial suburbs around the main city.

You are faced firstly with the problem of finding a home and secondly you have the objective of gaining satisfaction from living in that home over a period of years. Your sources of information concerning the city will be the *Metro Home Buyer's Guide*, *Metro News*, and several Metro maps. However you will also gain much information about the districts and housing types from your own experience of 'viewing' properties for sale.

SOURCE: Ewing, M. (1976) *Learning about housing and related issues: with specific reference to Metropolitan*

Figure 2.10 Metro Home Buyer's Guide

Metro is a delightful area in which to live. It offers a wide variety of employment along with extensive recreational and shopping facilities. Properties listed in the real estate paper, *Metro News*, have been grouped by district to enable you to determine quickly the price ranges and types of housing available in any given area. Mortgage information is listed below.

Mortgage Information
When deciding what price of home you can afford, consult the following table. Consider your annual income and also your savings, which can be used for your down payment.

Amount to be borrowed ($)	Minimum annual income required to borrow this amount ($)
75,000	30,000
100,000	40,000
125,000	50,000
150,000	60,000
175,000	70,000
200,000	80,000
225,000	90,000
250,000	100,000
275,000	110,000
300,000	120,000
325,000	130,000
350,000	140,000

Figure 2.10 **Metro Home Buyer's Guide** *(continued)*

Procedure for Home Buying

Step One: Define your *family needs* and preferences by completing the Housing Requirements Chart below. Circle the appropriate choices.

Housing Requirements Chart

Family size:	2/3/4/5/6/7/8/9
Type of home preferred:	apartment/ bungalow/ 2-storey colonial/ Spanish style/ 2-storey traditional cottage/ duplex/ split-level/ other
Building material preferred:	brick/ stone/ stucco/ wood/ aluminium/ combination
Type of area:	as close to city as possible/ inner suburb/ outer suburb/ rural fringe
No. of bedrooms:	2/3/4/5/6
Heating:	oil/electricity/ does not matter
Age of home:	brand-new/ less than 5 years old/ 6-10 years old/ 11-20 years old/ age does not matter if in good condition
Garage:	none required/ 1/2

Step Two: Define your *budget* by considering your *income* and *savings* in relation to the mortgage information chart.
Maximum loan: $ _____
Maximum house price you can afford: $_____

For example, if you earn $10,000 and have a savings of $10,000, you can use your $10,000 savings as your down payment and you can borrow $20,000 thus you can buy a home up to the value of $30,000.

Step Three: Study *Metro News* and the various Metro maps. From this information choose 6 homes that you wish to view. The exact location of each home is shown by the 6-figure grid reference system. *Plot the locations of homes that you wish to view* (plot locations on map 2).

Step Four: *View homes* with your real estate broker *(large index cards with photographs).* When you examine the information on the cards you can assess the nature of the homes and try to match the vacancies with your needs and budget. If you do not find a suitable home within one month (viewing of six homes represents one month) you must take a market card (red) which indicates fluctuations in price of real estate through time. You may then search for a second month, third month, etc. Each month that you do not find a home you must consult the market cards.

Step Five: When you see a home that you would like to buy within your price range you make a *bid* on it (fill in grid references, price, etc. on the yellow *offer-to-purchase cards). Your* broker will give you the *bid result (blue cards)* which tell you whether your bid has been accepted or not.

Step Six: When your bid is accepted, you move into your new home. Record which of the following statements is most applicable to your choice of home:

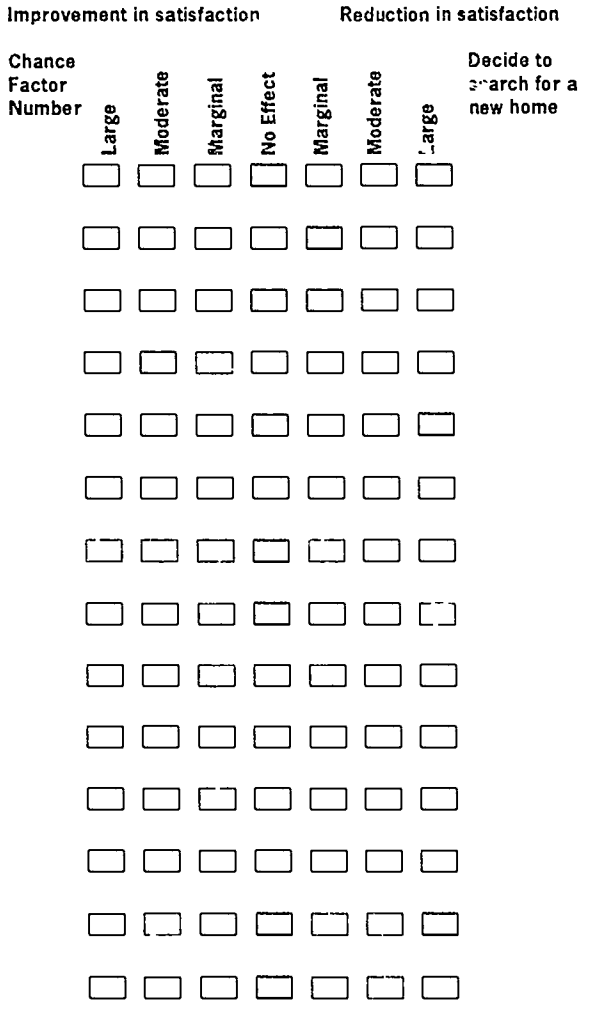
1. This is your ideal home at a price you can afford.
2. Close to your ideal house at a price you can afford.
3. Ideal home at a price slightly more than you can afford.
4. House basically satisfactory, although there are certain things you do not like; however price is right.
5. This home is not really what you want but you feel it is all that you can afford and perhaps you can move again later.
6. This is a nice home, but it is really too expensive for you.
7. You do not like this house but you feel you ought to buy quickly as prices are rising so quickly.

Step Seven: You must now *live in Metro* for a period of at least 8 years. During this time you will have the opportunity to discover some of the events both unforeseen and planned that happen within Metro. The events that happen each year are represented by *chance cards* (purple). It is up to you how many years you stay in Metro but you must stay at least 8 years. During this time you will record your changing satisfaction in the satisfaction chart below.

Step Eight: Consult your teacher for discussion and follow-up activities. *(Follow-up activities* are in Teacher Information Envelope.) (See also streetwork activities in Appendix I of Monograph 'Learning About Housing'.)

SOURCE: Ewing, M. (1976) *Learning about housing and related issues: with specific reference to Metropolitan Montreal,* Unpublished M.Ed. monograph, McGill University. (Figures updated to 1992)

Figure 2.11 **Residential satisfaction: perception chart**



After reading the family role, described in Figure 2.9, the playing proceeds with the help of directions in the *Metro Home Buyer's Guide* as follows:

1. Consider the mortgage information.
2. Define family needs.
3. Calculate family budget.
4. Study *Metro News* and the features of the residential districts and plot locations of homes to be viewed on the city map.
5. View the homes with your real estate broker (homes are viewed by studying cards with photographs and other information about the resident. (Figure 2.12)
6. If you do not choose any of the three homes—it takes one month to view all three—then take a market card which will reflect variations in the market over time and search again. (see Figure 2.13)
7. When you have decided on a possible house make a bid for it on paper and hand it to the broker or agent, he will give you a bid result card which tells you whether your bid has been accepted or not. (see Figure 2.13)
8. If your bid is accepted you move into your new home and evaluate your choice against a series of statements in the *Metro Guide*.
9. You now live in 'Metro' for at least six years. Each year you receive a chance card (see Figure 2.13) and record your satisfaction on the Residential Satisfaction Chart.

SOURCE: Ewing, M. (1976) *Learning about housing and* related issues: with specific reference to Metropolitan Montreal, Unpublished M.Ed. monograph, McGill University.

It is important to note that there is little direct competition with other players in this game. There are no defined criteria for 'winning'. The Satisfaction Chart is an original contribution to the art of game construction. The key debriefing questions include: On what basis did I make my choices? What factors affected my satisfaction or dissatisfaction?

Figure 2.12 Sample of possible homes to be viewed

HAMPTON
Well-kept condominium apartment building, inside garage. Thermostat control in each apartment. 2 bedrooms.

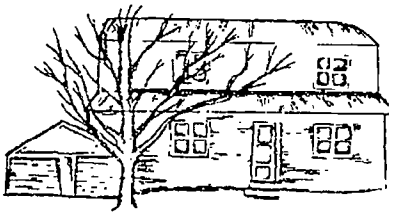
LIVE RENT FREE
2 bedroom apartment $150,000.

SOUTHAM
3 bedrooms, needs some renovation, solid brick.

SOUTHAM SPECIAL
$270,000

DURHAM
1960, 4 bedrooms, centre hall plan, beautiful garden. Air conditioning, de-humidifier installed recently.

A DELIGHTFUL FAMILY HOME — WELL PRICED
$230,000

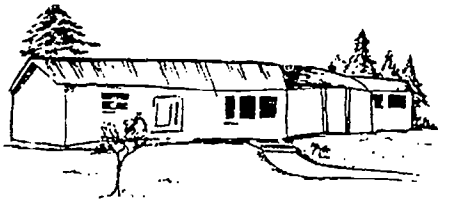


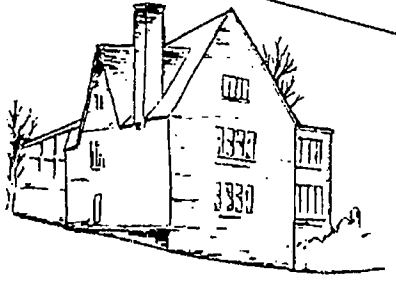
KELVIN HEIGHTS
Detached stone, large treed lot, sunken roman bathroom in master bedroom. 4 bedrooms. River view.

AUTHENTIC SIMPLICITY
$350,000

IONA
6 bedrooms, very luxurious residence fronting on the Kelvin River, large landscaped lot with mature trees.

ROMANTIC REFUGE
$470,000



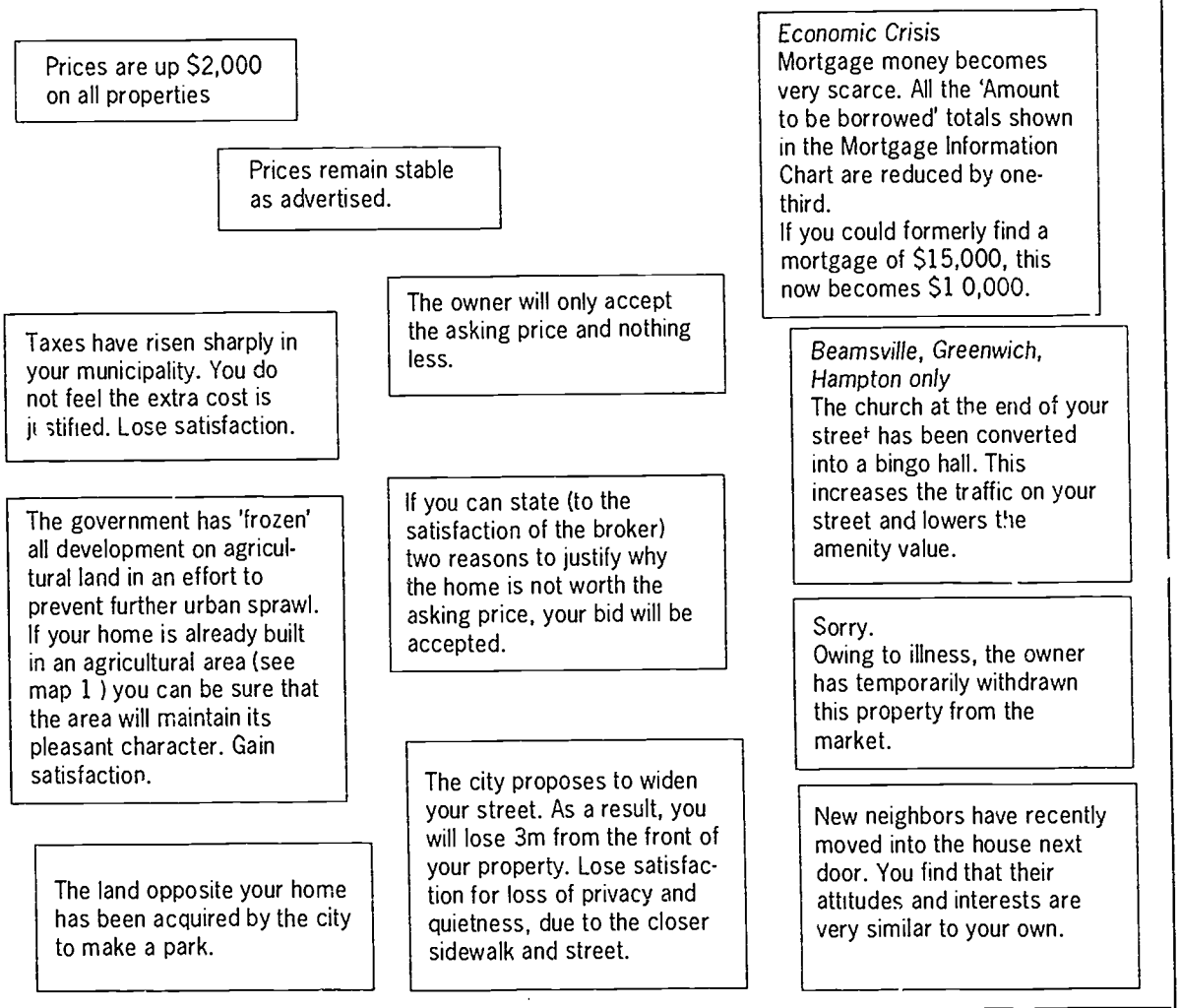


MOUNT FOREST
5 or 6 bedrooms. Detached stone, beautiful view, large reception hall, living room, dining room, modern kitchen, upstairs library, 2 open fireplaces.

PRIVACY WITH ROOM FOR ALL
$800,000

SOURCE: Ewing, M. (1976) *Learning about housing and* related issues: with specific reference to Metropolitan Montreal, Unpublished M.Ed. monograph, McGill University.

Figure 2.13: **Samples of market cards, bid result cards and chance cards**



SOURCE: Ewing, M. (1976) *Learning about housing and related issues: with specific reference to Metropolitan Montreal*, Unpublished M.Ed. monograph, McGill University.

Capital Theatre

A second simulation to do with the housing market devised for English students by Richard Palfrey (1984) makes the choice of housing and the operation of the market much more problematic. As he himself explains he began building the game around an idea from a passage in ***Social Justice in the City***:

"In the housing market with a fixed housing stock the (urban land use)-process is analogous to filling up seats sequentially in an empty theatre. The first who enters has n choices, the second has n-1 and so on, with the last having no choice. If those who enter do so in order of their bidding power then those with money have more choices, while the poorest take up whatever is left after everyone else has exercised choice. This conceptualization is suggestive. . . ." (Harvey, 1973, p.168)

The theatre analogy led to a play being written which finally reached "operational" form as a classroom simulation with the role cards illustrated in Figure 2.14 for thirty or so actors.

Figure 2.14: Capital Theatre

Role card for David Harvey **Seated $4 row**

You are David Harvey, aged 15, and you belong to a gang called "The Structuralists". You are brilliantly gifted in geography at school, with so much flair you are often mistaken for a rebel ringleader. Your thinking is way ahead of its time, yet your hero is long dead, the playwright, K. Marks. You have very firm principles, for instance, you detest all forms of inequality and injustice. Your project at school was called 'Social Justice and the Theatre'. Your best friend is Manuel Castells. You hate Mr. Cappy Thall. Your favorite Marks slogan is *"All history is the history of class struggles"*. It is important for the play that you really go mad when your moment arrives.

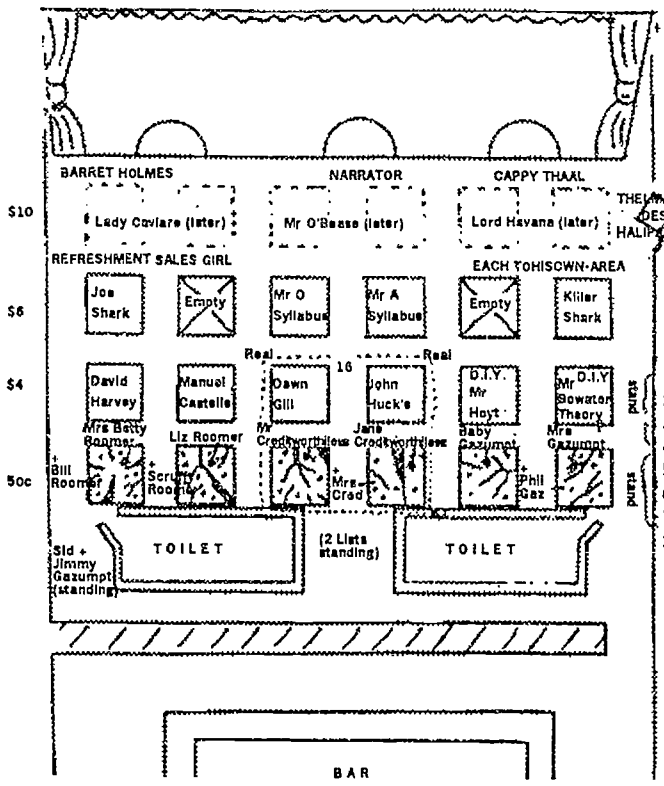
Role card for Mrs. Thelma Halifax **Management - Seated at door**

You are Mrs. Thelma Halifax, aged 45; a dour sturdily-built woman from Yorkshire, who acts as ticket seller, doorman and bouncer for the Capital Theatre. Over the years you have become rather narrow-minded, and automatically look up to wealthy people (hence your unswerving loyalty to Messrs. Thaal and Holmes), whereas you despise poor people., You are very strong and much too physically powerful for most men. You are ugly. Only allow the first 10 people to enter, initially.

Role card for the three wealthy people **Arrive late - then 2 $10 seats each**

You are Mr. O'Bease and his two friends Lady Caviare and Lord Havanna. You are all "stinking" rich. You look down on even upper middle class people, whom you regard as 'common'. You have champagne with every meal — money is no object. As you are all pretty fat and lazy, you like to buy two seats each — the best in the house of course — and sprawl across both seats with your feet up on one. Swagger when you walk in.

The Capital Theatre — Booking Plan



5. Mrs Tipple-Grate
4. Mr Tipple-Grate (arrive very late)
3. Lord Havana
2. Lady Caviare
1. Mr O'Bease (Arrive late)

1. Mrs Creditworthiless
2. Mr Bill Roomer
3. Scruffy Roomer
4. Phil Gazumpt
5. Jimmy Gazumpt
6. Sid Gazumpt
7. Wai-Ting List
2. Lee-Ming List

Role card for Phil Gazumpt **Outside then share**

You are Phil Gazumpt, third eldest of four brothers. Your mum lets you share her seat when you enter late. She is on the back row. She has brought you all up on her own, as you are part of a one-parent family. Feel free to grumble about the seat, the fleas and the toilets whenever they get to you, occasionally disturbing the narrator.

Role card for Mrs. Creditworthiless **Outside then share**

You are Mrs. Creditworthiless, married with one child, Jane. Your husband is unemployed. You enter the theatre late and share a seat with your daughter who is already seated in the back row. Feel free to grumble.

Role card for Mr. A. Syllabus **Seated $6. row**

You are Mr. Arthur Syllabus aged 71, and almost completely deaf. You have surprisingly still not retired from your important job in the world of education. You are here with your brother Mr. O'Syllabus. You are conservative by nature, and do not look favorably upon any form of change; for instance, you think your department runs just as smoothly now as it did when you first got it running the way you wanted, thirty years ago. You are very frail and have a very posh accent.

Role card for Wai-Ting List **Outside then standing**

You are Wai-Ting List, an immigrant from South-east Asia and work as a cutter in the rag-trade for 60c per hour. Unfortunately, you find yourself at the bottom of the social pile in this new country, and have to stand throughout the entire evening, along with your wife Lee-Wing List, who also works in the rag-trade doing sewing work at home for 30c per hour. Occasionally you shout out in a foreign accent "When are we going to get a seat?"

Role card for Each Tohisown-Area and Sons, Estate Agents **Management - standing**

You are Mr. Each Tohisown-Area and, along with your sons, Rich and Poor, you act as the ushers in the Capital Theatre. You are a meticulous man and like to see everything in (social) order. You have made it your business to painstakingly memorize all the row prices, and serve the management by carefully making sure that people are shown to exactly the seat they paid for. You have become rather snobbish and look down on the poorer classes. Your sons are just like you. Only the first 10 people will be allowed to enter initially. Remember the 2 empty spaces on the Front row.

Role card for Mr. Blowout-Theory **Seated $4 row**

You are Mr. Blowout-Theory, an odd sort of person. You do not take easily to sitting in close geographical proximity to poor groups in the audience. From the moment you realize who you are, you feel a social pressure being exerted on you from behind, at times through their mere presence, at others, through a gross exhibition of all those social pathologies associated with poverty. This makes you edge and uneasy and you keep turning round and "tutting", sometimes so nosily it disturbs the narrator. You feel hemmed in, and begin to discuss the problem with the rest of your row, who look to you for leadership. And yet at the same time you realize that the wealthier group in front of you do not take easily to sitting in close proximity to you, and your plan revolves around using this idea to your role's own advantage. In short, you are desperate to move. When you leave, your chair gets knocked over in the rush.

Role card for Mr. Hoyt **Seated $4. row**

You are Mr Homer Hoyt, a clever businessman from the United States, where you are employed in the U.S. Federal Seating Administration. Having studied 64 widely distributed theatres, you are the author of the best-seller "The structure and growth of residential neighborhoods in American theatres". Remember your American accent. You follow Mr. Blowout-Theory when he leaves for the New Theatre, knocking over your chair in the rush.

The play begins with an unfair test where ten easy questions on urban geography are read out so quietly (whispered) that the distance-decay function ensures a complete range of results from ten out of ten down to one out of ten. These marks are then used to generate incomes among the students, and their seat position in the theatre (and thus role) is hence determined. As can be seen from Fig.1 the rows represent social classes and the entire theatre represents a sector through Burgess's 'rings', with the 'bar' as the CBD and the 'stage' as the green belt. The play is completely unrehearsed: the narrator reads a short section of the play, then pauses as a signal to the actor, that the speeches and sequences s/he has just described are then to be enacted. An input from the narrator is followed by a burst of responsive activity from the 'audience' (in theory). This may seem ambitious but generally speaking, it tends to work very well in practice.

The story revolves around the 'struggle' of the back row families, (who are seated on broken, 'flea-infested' seats near the smelly, leaking 'toilets' — if they are lucky) to try to secure better conditions by moving forward when more expensive seats become available. Invariably, these attempts are thwarted by the system, a central role being played in its enforcement by Thelma Halifax, the ticket seller.

English classes who played "An Evening in the Capital Theatre" went through a debriefing and evaluation process. Figure 2.15 lists some selected student responses as an insight to the learning classes perceived themselves as achieving.

Figure 2.15: **Selected Student Responses to the Capital Theatre Simulation**

CATEGORY	RURAL INDEPENDENT BOARDING SCHOOL	INNER CITY COMPREHENSIVE SCHOOL
The value of the play as a successful way of getting across ideas	"Unexpected, and made you realize what is happening in real life". "I was constantly thinking about the reality of the play, and it helped me realize how bad the situation was".	"By presenting the city as a theatre it helps you to see things differently". "Problems were illustrated very well indeed and impressed on me something I was unaware of before".
as an interesting way of learning	"It is a more interesting way of learning, applying geography to theoretical techniques in a mock life".	"The play was a totally new experience and, for a while, I found myself more interested in it as a new teaching method".
as an aid to value clarification	"I was just left with the feeling that the very people who need housing and help the most, get put down the most i.e. the system .s totally unfair". "I think that the story makes fairly sound assumptions".	"I am undecided whether I would retain the present owner and management. I do see them in a slightly different light though. They do things which benefit their self-interest which means the lower classes are left out and often have to suffer".
level of awareness of real-world meanings	"It was not until after the play the full realization and awareness occurred". "You tend to think of them constantly". "Not much".	"At first I was not aware of the real world meanings, but soon I clicked and everything that was said, I realized, meant something in the real world". "I was constantly aware of them". "I did not really consider them at all throughout the play".

Figure 2.15: **Selected Student Responses to the Capital Theatre Simulation** *(continued)*

CATEGORY	RURAL INDEPENDENT BOARDING SCHOOL	INNER CITY COMPREHENSIVE SCHOOL
class-centricity	(In reply to 'who were the Sharks?') "Tax men". "The middle class feel offended and frightened of the lower classes". ". . . in the world there is only a certain amount of wealth and if it was shared out equally we (!) would all be poorish". "I have no feelings either way towards poor or rich people. If you're rich then that's good, if you're poor, you were born poor and should be used to it by now". "The test was not unfair". "People whose unions stop them from being able to get loans and mortgages". "The fleas represent immigrants, foreigners". (How did the front row people get there) "Through hard work enterprise and a little exertion".	(In reply to 'who were the Sharks?') "the Middle class" "I don't think the high income groups realize how the 'other half live'. If they did I expect they'd say we've earned it, and we're entitled to it'. But this doesn't compensate the poor . . ."
empathy	"Mrs. Gazumpt. I felt totally out of place because I am not used to being a member of the lower classes"., "Mrs. List. I could feel annoyed and as though I was waiting my time trying to improve my position. I felt she was a bit pathetic., If you took actions she would get a better deal, not just whimper like a scared dog". "Wai-Ting List. I think I had the most lowest of the low roles in standing up for the entire session (I am an Oriental immigrant myself in reality but not nearly as poor). I felt rather strange and awesome that I played someone who resembles myself in similar features but right at the wrong end of the stick". "A Socialist. I felt out of place I don't agree with what I stood for (probably due to my upbringing though)". "Mr Arthur Syllabus, comfortable no feelings". "Lord Havana: Rather out of place in a horrible little theatre. I felt that it was rather selfish and snooty to have two chairs and yet only used one". "Hoyt: Full of good ideas on how to improve the standard of living in society in general, but ill at ease with the position he finds himself in".	"Manuel Castells: I sympathize with this person as whatever he says is believed to be revolutionary talk. All Manuel probably wants is a fairer distribution of income. The ruling class will always be ready to oppress him as he possesses a threat to their life-style". "My role was Mrs. Gazumpt — a poor wife with four children to support. I felt worn out and depressed as one of my children had taken to crime and it was very hard to support the rest of my family". "Jane Creditworthiless. As well as being poor I was only 8 and had the problems that poor homelife would affect my future i.e. poor educational attainment".

Figure 2.15: **Selected Student Responses to the Capital Theatre Simulation** ***(continued)***

CATEGORY	RURAL INDEPENDENT BOARDING SCHOOL	INNER CITY COMPREHENSIVE SCHOOL
ice creams (the inadequacy of welfare)	". . . meant to keep the populace quiet, prevent unrest" "Social security payments, mean to shut up the commoners". "Cool people's temper down i.e. like new sports complexes or a new cinema" "It's meant to please the poor into quietness" "This is a cover up to help the short term situation not seem so bad but does nothing for the long term situation" "To give a brief respite" "Compensation (insufficient) to try and get the unprivileged to accept conditions".	"The ruling class hope small benefits will stop any protests" "It is a bribe to keep the lower classes quiet, prevent them causing trouble" "Enticement by the council to make the poorest stay where they are" "Government aid, in order to quash the discontent . . . used as a complement for the people living in this zone, as a 'benefit' for living there".
As a Marxian exposé of society-class	"The organization of the population into a class structure via an unfair grading process i.e. the test". "The poor can't break out of the social structure" "Less seats — less chance for the poor to move into better housing, improved facilities for the rich — greater gap between poor, class structure more prominent". "People in the position able to help, but make the most of it by ripping them off".	"The wealthier middle class could ***monopolise*** the lower class as did Joe Shark".
As a Marxian exposé of society — money social reproduction	"More people in a smaller space — more profitable". "I don't feel anything against *them.* (the rich) but against the price system which let them sit there". "I would rather change them and get a new set of management and another owner, because they are only really interested in money aspects of the theatre". ". . . they must be totally unbiased and not work for profit, only for the needy people and the homeless". ". . . they must be prepared for something in the interest of the public".	"The present management are fully aware of the national income distribution and so seeking maximum profits, crowd the low income groups into the worst seats so giving space for the better and more expensive front row seats". "The back row people . . . did not have the money for a better seat . . . all they could do was club together in order to buy a better seat between them, thus increasing the profit made by the owners".

Figure 2.15: **Selected Student Responses to the Capital Theatre Simulation** ***(continued)***

CATEGORY	RURAL INDEPENDENT BOARDING SCHOOL	INNER CITY COMPREHENSIVE SCHOOL
social reproduction	"There are certain people in the class structure i.e. the upper middle and upper classes who will have the 'gates to success' opened for them and will be helped/shuffled through them. Then there are those who will find all the 'gates to success' shut". "The rich have complete power over the poor". "The poor are destined for eternal poverty". "Fee paying school boys may not be very bright (but) they have opportunities open to them which those of other schools do not i.e. 'the old school tie network' and connections made 'through daddy' back door entry and biased selection. Many job vacancies will not even be publicized but he given to 'friends' sons. These are representative of the people near the examiner and have an obvious unfair advantage".	

Debriefing games

Debriefing is an essential and integral part of choosing to use a game or simulation. Failure to debrief may leave students with distorted views. The following questions provide a guide to debriefing:

1. What happened in the game? What were the goals? What strategies were effective in accomplishing those goals? Which strategies had negative effects? It is sometimes useful for students to keep diaries of what went on.
2. What would happen if the rules or values were changed/or the penalties or rewards changed? How would this have affected your actions?
3. How did the game or simulation compare with reality? What additional factors would have made the game more realistic? How could the game be redesigned to make it more realistic?
4. Did the outcomes of the game seem fair? Was this the fault of the game or reality?
5. What hypotheses about reality did the game suggest? What would need to be done to confirm these hypotheses?
6. Did the game go against any of your values?
7. Should the game be followed up by other materials, readings or films?

Evaluating games

An evaluation of the game itself may be undertaken by applying the criteria reproduced in Figure 2.16. It is a clear and simple chart covering the main questions that are likely to arise in selecting and evaluating games. It should be added in passing that games, simulations, and role plays are often organized on a group basis and they are one of the few teaching strategies that are genuinely suited to fostering co-operative learning in mixed-ability classes. A lengthy discussion of grouping strategies and class organization lies beyond the reach of this book on planning learning activities but the diagram in Figure 2.17 on the problem-solving techniques in a group situation from *Motorway* (Rawling, 1976) is an example of planning for learning through geography in groups.

Figure 2.16: **Evaluating a game**

Questions	*Parts of a game*	*Criteria*	*Score*
1 What is the central problem presented in the game?	problem	clarity conceptual content utility relationship to real-world	
2 What choices are available to players?	choices	soundness	
3 What are the different moves or activities provided for players?	moves	consistency	
4 What are the rules for the game?	rules	lack of distortion	
5 How is the game organized?	organi. tion	inclusive, sequencing, relationship to choices, moves, rules	
6 What summary activities conclude the game	conclusion	adequacy, applicability, relationship to activities	

SOURCE: Elliott, G. (1975) 'Evaluating classroom games and simulations', *Classroom Geographer*, October.

Figure 2.17: **The problem-solving technique in a group situation**

Stages in problem solving	*Group work*
Choice of problem.	Which is the best route for a new Motorway to link London with the Severn Bridge?
Identification of problem by defining it.	Formation of class into groups of five. Study of background information about the area under consideration. Allocation of roles and examination of memoranda.
Collecting, organizing and evaluating relevant information.	Individual study of the problem from a single specialized aspect by each separate member of the group. Preparation of two alternative routes.
Formulating hypotheses.	Board meeting. Group meets and the coordination of diverging viewpoints is attempted. Group's final proposal is decided.
Critically analyzing by comparison and discussion .	Presentation of the group's proposal to the class and the Department of the Environment. Comparison with rival proposals and discussion.
Evaluation of solution and acceptance or rejection.	Final evaluation and decision by the Department of the Environment, and comment from the class. Acceptance or rejection of each proposal within each group.

SOURCE: Rawling, E. 1976) *Motorway*, Geographical Association.

Classroom activity

A set of lessons on regional planning in Brazil is summarized in Figure 2.18 as a final example in this chapter of how we need to plan and teach towards the development of generalizations and decisions. The key question is: As a developing nation, what policies should Brazil follow to have more control over its environment and thereby maximize its ability to provide the best possible life for its citizens? A class divided into six groups is to use the information in their packets, discuss the resources and problems of their region, and develop a plan, i.e. work from an understanding of the situation to a planning decision, as outlined in the work sheet.

Figure 2.18: Regional Planning in Brazil: A Simulation in Decision-Making

REGIONAL PLANNING IN BRAZIL: A SIMULATION IN DECISION-MAKING

JUNIOR HIGH

Regional Analysis and Plan Development Worksheet

Region: _____

Members of the Regional Agency

1. _____ 4 _____
2. _____ 5. _____
3. _____ 6. _____

1. Is this region important to the nation of Brazil? Explain.
2. What resources are available in this region?
   a. Human
   b. Natural
3. What needs to be done in this region to:
   a improve life for the people who live there?
   b. make it more equal with other regions as part of the nation of Brazil?

Examine the following list of possible development plans and select one that would be suitable for your region or make one of your own. Then complete the Proposal Guide. When you make your presentation before the government "Development Council", use information from this worksheet to introduce your plan, describe your plan, and hand your complete proposal sheet to the council.

Possible Development Plans

An industrial factory	A convention centre	An airport or harbor
A center for scientific research	A university	A sports arena
A national park, zoo, or museum	A new highway or railroad	An electrical power plant
A shopping mall	A low-income housing project	

Proposal Guide

Region _____

Brief description of plan:

1. Population affected
2. Natural resources
3. Means of production
4. Goods and services needed to make the plan work
5. Labor
6. Transportation and communication links:

We believe that the government should support this proposal to develop Brazil because:

SOURCE: Sandra E. Hargrove, in A. David Hill (ed.) *Placing Geography in the Curriculum.* Center for Geographic Education, Department of Geography, University of Colorado, Boulder.

Conclusion

This chapter has been chiefly concerned to stress the need to plan learning activities towards general understandings and making decisions as a consequent. The idea has been developed that working towards generalizations may be seen as a three-stage process, sometimes with all stages being present in an activity, sometimes with one or other being dominant. Examples of learning activities have been described to illustrate the feasibility of such a view being put into practice. Planning to teach towards generalizations, to modify or restructure generalizations, and to use generalizations in subsequent thinking produces learning activities in which meaning is developed and cognitive and social abilities exercised and horizons broadened.

In addition to the emphasis on generalizations and decision-making, the strategies emphasized throughout the chapter can also be held up as particular pieces of evidence that geography teaching provides students with a chance to develop thinking skills serving both intrinsic and instrumental educational goals. It is to the development of intellectual, social, and practical skills that we shall turn in the next chapter. The identification of appropriate questions and answers or generalizations represent the first and penultimate steps in activity planning. What resources have we from which we identify questions and reach generalizations? What data must be presented to students and what skills need to be developed to promote learning through geography?

Postscript

Any of the units of HSGP may be analyzed from the viewpoint of developing generalizations and decisions as the following analysis of Metfab indicates.

EXAMPLE OF AN ACTIVITY:

LOCATION OF THE METFAB COMPANY

One of the activities from Unit two:
Manufacturing and Agriculture

PROBLEM

'In which of the 25 largest cities in the United States would you locate a metal fabricating company?'

↓

Students given data about raw materials, labor force, transportation facilities, financial structure, etc. about 25 largest cities.

↓

Students work in groups assuming roles of various officers in the Metfab Company → to analyze the data and make company location decision.

QUESTION

'What factors influence the location of a factory?'

↓

CONCEPT GENERATED
Optimum factory location depends on varying combination of factors:
- availability of raw materials
- adequate transportation facilities
- skilled labor supply
- healthy local economy
- personal preferences of company officials.

SOURCE: Gunn, A. M. (ed.) (1972) *High School Geography Project, Legacy for the Seventies, Centre Educatif et Culturel*, Montreal.

CHAPTER 3:

REACHING GENERALIZATIONS AND DECISIONS THROUGH PROCESSING AND INTERPRETING DATA

Codifying understanding

In the last chapter, a spotlight was directed at the importance of working towards generalizations and decisions. The generalizations and decisions developed in each exercise or activity lead on from questions raised. Reaching generalizations and making decisions has been balanced in importance with listing a set of questions in order to reach take-off point in lesson planning.

Generalizations complete an enquiry through the development of the understanding implied. The threads of our understanding are drawn together, inter-related and stored within a generalization or made manifest in a decision. In activity planning, it is as important to work towards a general understanding from a question as it is helpful to initiate an enquiry sequence through a question. The model of lesson planning being outlined is starkly simple:

Identify questions ---------➤ Develop generalizations

Such a progression is crucial as a structure for activity planning and as a strategy for developing meaning and understanding. Meaning and understanding define the process of tying little factual knots of information into bigger general knots so that geography begins to make sense, not as a heap of isolated facts but as a network of *ideas and procedures*.

The purpose of generalizing

Emphasis was also given in Chapter 2, to two major considerations within the task of generalization making: (1) refining generalizations, and (2) using generalizations in subsequent thinking. In this chapter, the emphasis is placed on a range of data forms as the evidence on which the generalizations are based and from which they are teased out.

How are generalizations to be formulated? What are some of the forms of data and data processing methods used to learn through geography? Examples illustrating some of the many possible answers to these questions provide the main body of the present chapter.

The nature of data processing

Searching for an answer to the question, 'Why won't my car go?' necessitates a specific examination of each spark plug. For Collingwood, there is a considerable amount of information to be examined, searched through, processed and interpreted, in order to move from question to answer. Here I am viewing the spark plugs as analogous to maps, statistics or whatever form of data we are working on.

In fact, as geography teachers we have a rich bank of data or resource items to aid us in the process of helping students achieve generalizations. Figure 3.1, expanded from documents published by a New Zealand geography curriculum renewal program, lists some of the data forms available in a bank as it were. It suggests the range of our borrowing capacity and along with this the opportunities that exist for

arousing interest and motivation through the selection and presentation of data in a variety of forms. After presentation, Collingwood's analogy implies, the data must then be processed.

Figure 3.1 **Bank of possible data/resource materials**

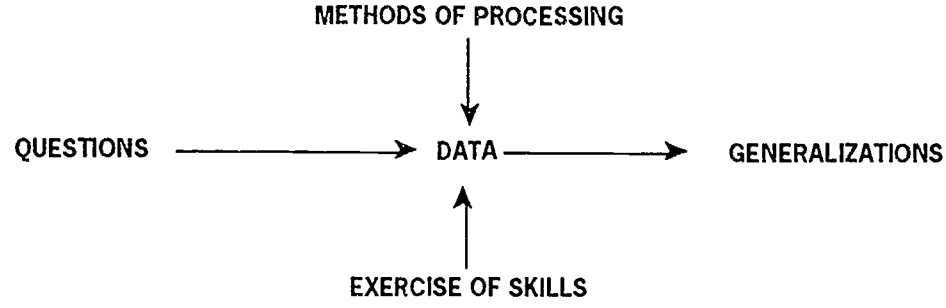
Diagrams	Photographs	Models
Maps	Posters	The Field
Newspaper articles	Cartoons	People
Advertisements	Sketches	Cassette recordings
Periodicals	Case Studies	Films/Filmstrips
Documents	Statistics	Videos
Texts	Graphs	Computer Programs
Resource packs		

SOURCE: based on an idea from a New Zealand geography curriculum renewal program.

In examining the spark plugs, Collingwood had to select a number of strategies from among available data gathering and processing methods. Undoubtedly, he somewhat unconsciously selected observation as one method and proceeded to collect and mentally record what he observed. After observation, he had then to analyze and evaluate the data by sorting out and recognizing significant elements in his evidence on the performance of the spark plugs. The evaluation may have enabled him to make a general statement about the relationship of individual spark plugs and engine performance.

Skills in data processing

The Collingwood example has been elaborated on in order to stress the general idea that data processing methods have to be applied to generalization-making and decision-forming tasks rather than generalizations being handed out to be learned by rote. It follows that in data processing, the learner applies a number of skills or goes through a set of tasks to reach a conclusion. The idea of the simultaneous impingement of methods and skills on data to form generalizations may be illustrated thus:



Intellectual, social and practical skills — overlapping categories

Skills are exercised in applying methods to tasks involving data gathering and processing. Many teachers have their own checklists of the skills and tasks most often used in geography teaching. Figure 3.2, again inspired by a New Zealand program, is probably broadly representative of such lists. A division into intellectual, practical and social skills has been widely adopted in recent years, often in the context of discussions about objectives.

Figure 3.2 **A bank of possible data processing skills/ strategies/tasks**

Intellectual skills

1. perceiving and observing
2. memorizing and recalling
3. understanding instructions/information
4. structuring information, classifying and organizing
5. questioning and hypothesizing
6. applying information and ideas
7. elaborating and interpreting
8. analyzing and evaluating
9. identifying and synthesizing
10. thinking logically, divergently, imaginatively
11. thinking critically and reflectively
12. generalizing, problem solving and decision making
13. clarifying and analyzing attitudes and values
14. communicating facts, ideas, concepts, arguments, results, values, decisions, feelings.

Social skills

15. communicating and planning *with others*
16. participating in group discussions
17. listening to other viewpoints and opinions
18. adopting a role
19. exercising empathy
20. working independently
21. helping others
22. leading a group
23. participating in field or research work
24. exercising choice and discrimination
25. behaving responsibly and courteously
26. accepting responsibility for learning
27. initiating and organizing a learning task

Practical skills

28. talking, reading, writing, drawing, acting . . .
29. manipulating instruments and equipment
30. finding books and resources
31. walking an urban trail
32. using a map
33. organizing a field investigation
34. preparing a wall display
35. administering a questionnaire
36. interviewing a town planner
37. designing a graph
38. taking photographs
39. sketching a building
40. presenting statistics
42. writing a report.

SOURCE: based on an idea from the New Zealand geography curriculum renewal programs.

The checklists of skills and data can be cross-referenced to provide yet a third type of checklist in the form of a matrix. This third checklist/matrix illustrates the possibilities for translating statements or descriptions, for example, into sketches, diagrams or maps. Similarly, sets of figures may be translated into statements, tables or graphs. This idea for the translation of data from one form to another is illustrated in Figure 3.3 and could provide a useful monitor to the mix and balance of the presentation of data being planned in activities. Any teacher wants to avoid an unvaried diet of data forms and tasks.

Figure 3.3 **A translation matrix**

	Statements	Photographs	Sketches	Maps	Statistics	Diagrams
Statements, descriptions, accounts ---						
Photographs, slides ---						
Sketches, cartoons ---						
Maps ---						
Statistics ---						
Diagrams, models, flow charts ---						

In the U.S. GENIP document, it is interesting to note that lists of learning opportunities are provided and these in effect equate with the idea of banks of resources, strategies etc. Figure 3.4 is a fragment from the K-6 document by way of illustration. We have to come to call the verbs introducing the activities/learning opportunities, command words.

Resources for learning

The emphasis given here to the variety of (1) data forms, (2) methods of processing data, and (3) skills to be applied to data may serve as a reminder of the resources available to us to promote generalizing and decision-making in learning through geography. But what does this add to planning considerations? There are now three distinct parts to planning learning activities:

1. identifying questions; (Chapter 1)
2. reaching generalizations; (Chapter 2)
3. processing and interpreting data. (Chapters 3 and 4)

The order in which learners will experience a lesson or lessons is rearranged to read:

Raise questions ----------➤ Process data ----------➤ Develop generalizations

Figure 3.4 **From K-6 Geography. Themes, Key Ideas, and Learning Opportunities GENIP no date.**

Central Focus: Neighborhoods in Communities

	Learning Opportunities
Places may be described or represented in different ways.	• Find place names in the local area that describe physical features, e.g., Ocean Drive, Grand Rapids. • Compare the appearance of land and water bodies on a picture, a globe, and on a map. • Compare advantages and disadvantages of maps and globes for finding information. • Use pictorial symbols and color to make simple maps. Make a key to show what the symbols represent. • Find poems or songs that describe how people feel about places. • Draw a picture of your neighborhood. Make a map of the neighborhood that you have drawn. • Tell a story to describe how a child from another part of the world might feel about your neighborhood.

Theme

Relationships Within Places: Humans and Environments

Key Ideas	*Learning Opportunities*
Relationships within places include how people depend on the environment.	• Draw or find pictures showing ways that people depend on the natural environment. • Differentiate between a "need" and a "want". • Identify common needs of people everywhere, and use pictures and stories to show how needs are met. • Compare ways students and other people use the physical environment to meet their needs. • Identify ways the physical environment is used in your neighborhood, e.g., gardens, parks.
Relationships within places include how people adapt to and change the environment.	• Observe responses of people to changing seasons, e.g., dress, recreational activities. • Decide whether empty land in your community should be used or left alone. If it is to be used, draw pictures to show how.

Selecting student activities

In the previous chapter a modified version of the SGEP model of planning set out a sequence of tasks to be undertaken in arranging learning activities. The instruction to define objectives in point 9 of Ten key steps in planning activities was discussed in the light of the particular learning tasks and broad generalizations mirroring specific and general objectives. Now, Figure 3.5 presents a six-step plan for enquiry-based lessons and identifies the next steps to be tackled in planning as selecting resources and devising student activities and teaching strategies. An exercise designed by some geography teachers in

Australia, using the question identification approach to planning, illustrates a judicious choice and amalgam of data forms, methods of processing, and application of skills. The student activities, slightly modified from 'How well placed is your school?' are tabulated and briefly described below (Blachford et al, 1976).

Figure 3.5 Key steps in planning enquiry based lessons

STEP ONE:	Identify questions
STEP TWO:	Decide what answers, what generalizations to work towards.
STEP THREE:	Gather and select appropriate data and resources.
STEP FOUR:	Sort out how to present the content and use the data: What learning tasks? What teaching strategies? Is there a balance and range of tasks?
STEP FIVE:	Examine the activity for likely educational objectives. Accept, reject, modify the activity.
STEP SIX:	Devise assessment and evaluation procedures.

Classroom activity

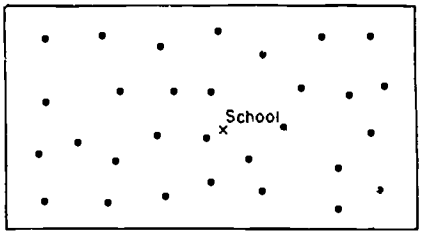
HOW WELL PLACED IS YOUR SCHOOL?

As an initiating activity, students presented with two hypothetical dot maps as in Figure 3.6 are asked:

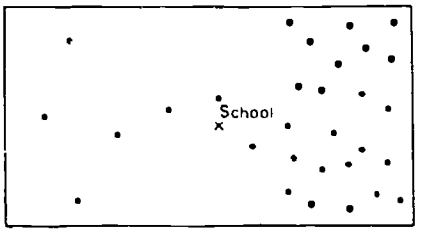
1. How well placed is the school from the point of view of students?
2. How well placed is the school from the point of view of teachers?
3. What would be the best place for the school?
4. What difference would it make if some students had to walk and others were driven in cars?

Figure 3.6 How well placed is your school?

Suppose a school had 30 students, as shown by dots in the sketch below



What if the 30 students lived in the area in the following way?



In this case what would be the best place for the school?

SOURCE: Blachford, K. *et al* (1976) *Way Out*, Rigby.

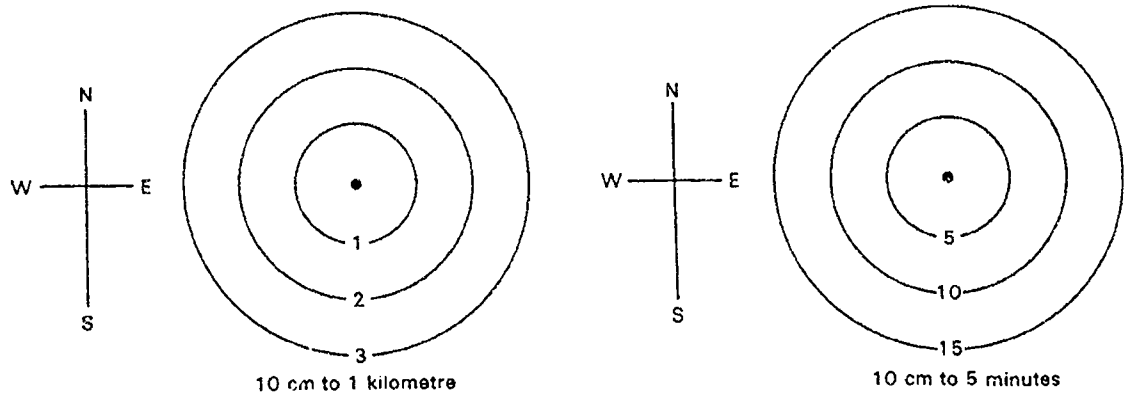
Maps form the data base for the student tasks of observation and interpretation. The second activity requires a survey to be made of the class as well as other classes and teachers in the school. Three questions are to be asked:

1. How far do you live from school?
2. In what direction do you live from school?
3. How much time does it take to get to school?

The results of the survey are plotted as illustrated in Figure 3.7 on

1. a distance diagram, and
2. a time diagram.

Figure 3.7 **Distance and time diagrams**



SOURCE: Blachford, K. *et al* (1976) *Way Out*, Rigby.

Examining data

Data are collected by a survey and students are required to plot dot distributions in order to examine patterns. The examination is directed by questions.

General conclusions about 'How well placed is your school?' can be reached by completing the following tasks or questions with reference to the data:

1. Is there an even spread of people all around the school?
2. Are there any parts of the diagram which have clusters?
3. Are there more people closer to the school or are there more people further away?
4. Are the students in your class spread about in a different way from other students and teachers?
5. How many people do you estimate are close to school?
6. Are there many people who are not far from the school but who spend a lot of time getting there? For what reasons?
7. Are there people who do not spend much time getting to school but who are a long distance from the school? Why?
8. What is the usual time taken and distance travelled to school?

Analyzing patterns

Students are being asked to analyze patterns and use such concepts as time, distance, proximity, distribution, pattern, clustering, accessibility, and average, to make a general judgement about the location of the school. Data have been collected and processed by using a number of intellectual, social, and practical skills to reach a conclusion in answer to a question. The work is arranged in a logical progression from an introduction to a development and conclusion with learning activities appropriately chosen to elaborate and reinforce points. The linking and intermeshing of data and skills to produce a generalization illustrates the balance which should exist between the three elements, (1) question, (2) data processing, (3) conclusion/generalization.

Subjective and objective data

Data collected by a survey yield what might be classified as objective data. Certainly in the exercise above it has been treated objectively. Subjective data can also be used, however, in learning activities and, indeed, it is such personal data and information about our environment and environmental experience that humanistic geographers claim we are in danger of ignoring. This point was brought home to me most strongly during a post field trip exercise. The exercise was a perception type of test modelled on one Hamelin had devised as a research procedure on perceptions of the Canadian North (Hamelin, 1972).

Classroom activity

FIELD WORK ON THE WEST COAST

A party of fifteen-to-sixteen-year old girls living in the Oamaru district of the East coast of the South Island of New Zealand had spent three days of a week-long field trip on the West Coast, the character of which is beautifully described in the following passage:

> The Coast, as it called itself, was a place for rain, beer and coal, almost to extravagance. There had also been gold in the fast rivers which rode from the white mountains. But this gold now lay locked in distant bank vaults and blighted towns were vanishing back into the bush. There was also, of course, a still earlier time, when only dragons of legend and thin, defeated tribes inhabited this slender length of lowland. Stronger tribes came from the north, to gather the greenstone which lay thick in the rivers and to harvest slaves. The Coast had never been in on a win. Now they took the coal away. There were still the mountains, though, in dense dozens above the bush, sometimes pushing peaks almost to the sea, and throwing off glaciers. There were the mountains, and the icy winds off them, and the heavy rains they trapped, and there was the creepered rain forest and the crashing sea; and there were the places where men felled timber, or dug for coal, because there was not much else.

Resource exploitation

I had drawn up a list of words typical of the Coast which were functionally related on a resource utilization basis — one of the dominant themes in the geography of the West coast and one then frequently examined in the New Zealand School Certificate examination generally taken at fifteen plus. The words were as follows: 'sluices', 'Maoris', 'gold', 'Europeans', 'coal', 'aerial cableways', 'rimu', 'tourists', 'glaciers', 'bush', and 'greenstone'. My intention was to have them group the words by resource association, e.g. Maoris and greenstone.

Discrepant perceptions

It became apparent that the twenty girls who had turned up voluntarily in the lunch hour for the debriefing exercise were not happy with the list. To them, the words were not at all representative of the dominant features of the geography of the Coast. It then seemed more to the point to have them suggest words for a list and as a result of an informal, free-for-all discussion, for which I acted as recorder, the following list of the most popular words and phrases was compiled: 'glaciers', 'dredge tailings', 'rain', 'dirty rivers', 'rough pastures', 'bogs', 'lack of roads', 'lack of farms', 'hills', and 'bush'.

They were most conscious of either (1) what the Coast lacked, vis-a-vis their own East coast which was prosperously farmed, though drought prone, and had plenty of well-graded roads and high quality pastures, or (2) aspects of the natural environment which were most distinctively different, such as glaciers, bush and the frequency of rainfall. By modifying the exercise as the girls wished, they and the teacher learned a lot more about their perceptions, subjective impressions, and levels of thinking.

Their experiences differed considerably from my geographically trained adult view. The exercise became an opportunity for revealing their private geographies of the Coast at that particular stage in their personal and intellectual development.

It was more disconcerting to find that in response to 'How do you see the West Coaster?' the group produced the following list: 'conscientious', 'sensitive to his or her environment', 'boring', 'impolite', 'ungracious', 'parochial', 'aggressive', and 'has strong regional attitude'. Some of these answers are indeed unintended learning outcomes and unplanned results of the formal pre-arranged meetings with national park rangers, farmers, and local councillors and the informal contacts with shop owners.

I have no doubt, despite their initial impressions and private geographies, that the girls could have written excellent answers to an examination question on the resources of the West Coast. They were capable of acquiring and using the right sort of framework and information for examination purposes.

I am convinced, however, that much of the lack of interest and motivation teachers experience is related to our not being sufficiently aware of and sensitive to 'where the students are at' before we begin the work of linking their experiences to other ways of viewing and structuring knowledge. I can recall a recent complaint from beginning teachers about the disruptive and even hostile behavior they observed in a group of inner city English girls during a field week in a national park. Each day was devoted to a hypothesis testing exercise. Few of the girls had ever been beyond London let alone in the strange environment of a semi-wilderness area. What might have been their attitudes and interests if some attempt had been made to begin at their beginning and simply orient them to the area through short pleasant walks with an emphasis on sensory experience and recreational activities—one of the reasons thousands of us throng to such areas for shorter or longer periods?

To return, however, to the West Coast of New Zealand, to explore perceptions further, the girls were asked to construct statements which they would use to test the way their parents and friends saw the Coast. The following three statements were voted to be the most appropriate:

1. I would like living on the West Coast. Yes/No.
2. The West Coast is an unspoiled part of New Zealand. Yes/No.
3. The West Coast has a very bright future. Yes/No.

The girls considered negative replies to all three to be the 'correct' ones, though they expected greatest disagreement on the third—the government of the day was strongly and persuasively advocating the exploitation of an almost non-renewable resource, the slowly maturing magnificent native forest, as one way of overcoming unemployment in the area.

Using slides

The final exercise was based on viewing sl' ides taken by the girls themselves as well as some from my collection. By a process of elimination, in response to the question, 'Do you consider this slide to be typical of the Coast?' it became apparent that those slides which featured the brightly painted houses, small settlements strung out along the roads, or buildings of any kind were judged to be more typical than those featuring the high snow-capped mountains or bush-clad slopes. These gross, well-known physical features had been successfully supplemented by less spectacular details.

Mediating public and private meanings

Discussion of this kind was, I believe, a valuable exercise in mediating and extending private and public meanings. It was certainly enjoyable and lively. We should pay more attention to private, personal meanings in the learning process as a way of developing meaning further. This may seem a utilitarian view of and role for humanistic geography. It is not. As I have already said, I believe that scientific and humanistic geography are complementary answers to the question: 'How is the nature of things to be viewed?' We all have our subjective and objective experiences of reality which may be used as data or evidence in learning activities. It is on this basis that the types of data-processing activities described in the main body of this chapter are classified.

Using one's own experience as data

The exercises now outlined should be seen along a continuum from those using data subjectively to those using data objectively. In the West Coast experiment, the students' own experience yielded the data. At the present time, cognitive mapping is probably the most developed and widely known strategy based on students' own experience and two activities fitting such a description follow.

The first gathers in data on a world scale; the second at a neighborhood level.

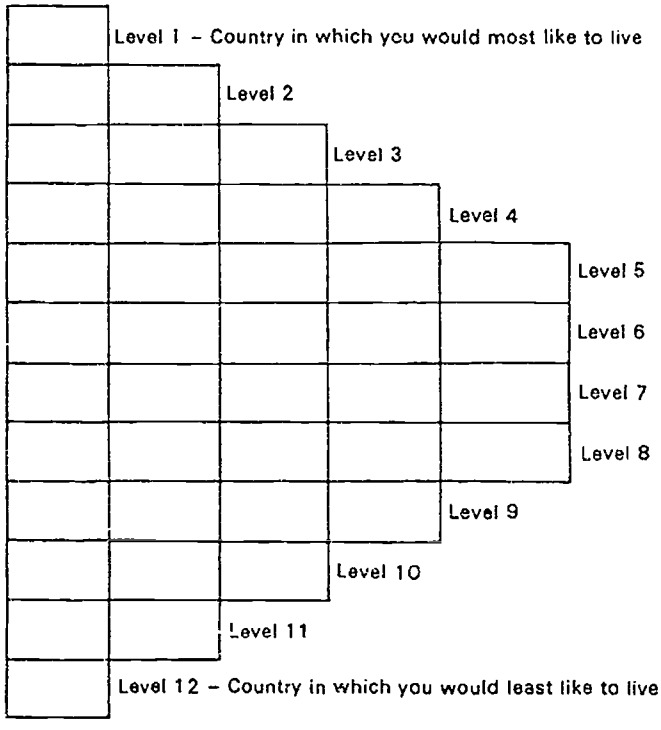
Classroom activity

WHERE ON EARTH WOULD YOU LIVE?

This mental mapping exercise is designed to elicit perceptions and preferences around the globe and first probes the students' environmental knowledge of their world. This builds up a data base to be understood and explained in the first instance in relation to factors influencing such knowledge. This is followed by tasks requiring classification, analysis and interpretation .

Within the preferen' diagram shown in Figure 3.8, and with reference to a world map on which the forty countries have been named, ask a class to rank the countries 1-12 in answer to the question: 'Given a completely free choice, where would you choose to live?' It is helpful in some classes to have the countries named individually on cards so that they can be shuffled about and initial choices sorted through on a second round of reflection before being written into the diagram. Students need to appreciate that they are being forced to make one choice at the top and bottom but that there is room for more equal and/or neutral feelings in the middle.

Figure 3.8 **Where on earth would you live? A preference sorting diagram**



Sort the forty countries named below into the 12 levels in the diagram:

Algeria	Finland	Italy	Saudi Arabia
Argentina	France	Japan	Singapore
Australia	Germany	Malaysia	South Africa
Brazil	Greece	The Netherlands	Spain
Bulgaria	Hong Kong	New Zealand	Sweden
Canada	Hungary	Nigeria	Switzerland
China	India	Peru	Tanzania
Cook Islands	Indonesia	Philippines	Turkey
Cuba	Iran	Poland	UK
Egypt	Israel	Russia	USA

SOURCE: Slater, F.A. and Spicer, B.J.

After ranking is completed, the students should be given a chance to write a few sentences or a paragraph on the reasons for their first and last choices. The activity may then proceed so that a choropleth map of around-the-world preferences is built up, either at an individual, group or class level. I have chosen individual mapping which is then to be discussed at group and class levels. After maps have been shaded ask students to discuss the following points in groups.

1. Make a list of the reasons for your choices. (Reasons which have been given by students include (1) cultural similarities and differences, (2) climatic and scenic attractions, (3) standard of living and way of life as well as how well they *feel* they know the countries from personal or vicarious experience based on books, the news media and so on.)

2. Classify the reasons put down on your list and decide what reasons you have for most strongly and least strongly preferred countries. Do they derive from direct or indirect sources of information? Which do you think is most helpful?

3. *Where* are the countries which you have chosen as most and least preferred? Does distance appear to have any effect? Are your most/least preferred countries closest/furthest from your country? What most influences your knowledge of countries? Bring up any other ideas to explain your choices which you think the group has overlooked. Explain why you think they are important.

Finally, in order to compare preference surfaces, discussion at a class level should be promoted and the data and discussion used to apply the general ideas perhaps most usefully in the context of predicting migration. Where do most English migrants go? Why? What kinds of things are they looking for? If you were a country desperately needing English migrants what kind of an advertisement would you write for their embassy information service?

Classroom activity

WHAT IS YOUR NEIGHBORHOOD?

Environmental knowing and meaning at the personal level can again be explored through an enquiry sequence directed at the neighborhood scale. The activities outlined here are closely modelled on one put forward by Blachford *et al*, 1976. The enquiry sequence focuses attention on personal experience and understanding. The questions guiding the activity are as follows:

What is your neighborhood?
What are the important things in your neighborhood?
What is the size of your neighborhood?
How do people's ideas of their neighborhood vary?
Why do people's ideas of their neighborhood vary?
What kinds of buildings fit in to your neighborhood?

Neighborhood sketch maps

The term 'neighborhood' may require some discussion. Students could be asked to write down some ideas and then to draw a sketch map to show the likely neighborhood of:

1. a baby who is not crawling;
2. a baby who is crawling but not walking;
3. a two-year-old child who is walking but not allowed on the street alone;
4. a child at elementary school.

In drawing the sketch maps, the students will have to think about what kinds of places a baby or a child probably knows very well. A very young baby's neighborhood may be only the crib and things in it like a rattle, a teddy bear, and faces which peep into the crib. The general definition of neighborhood being built up will go something like this: A neighborhood is an area containing familiar things, people, and places.

The next activity requires students to draw a sketch of their neighborhood and to compare the things

that are the same and different about the maps. The size of the area and the landmarks, buildings, and streets selected can be examined and discussion focused on why the size varies and why some things are important and not others. It may be useful for the teacher to have Lynch's categories of nodes, edges, districts, landmarks, and paths in mind to help guide the discussion (Lynch, 1977) . A generally agreed upon class neighborhood should be delineated. The similarities and differences in the sizes and contents of a neighborhood will be related to interests and activity patterns and if interest in the exploration of neighborhoods is high, then a number of group centered activities might be organized. The possibilities are numerous. Students could be asked to get the neighborhood sketch maps of:

1. older or younger students in the school;
2. their parents;
3. elderly people;
4. a range of people in another neighborhood;
5. people living in apartments.

From such data, generalizations will be reached about people's neighborhoods and how and why they vary in size and detail.

Towards generalizations

It is not possible to predict or set out with the same degree of precision the nature of the generalizations as in the size and spacing of settlements activity. We have moved away from geography as science and the analysis of 'objective' data to the collection of subjective data. However, generalizations will emerge at a level of the relative frequency, for example, with which (1) particular landmarks appear on sketch maps or (2) a particular street or feature seems to mark the edge of a neighborhood.

It is the comparison of students' sketch maps with those of other people which will enable more all encompassing generalizations to be formed. For example, it may be concluded that the neighborhoods of people who have lived in the area for ten years or more is larger and more detailed than people who have lived there for five years or less, or people living in apartment buildings have smaller neighborhoods than people living in single units.

Moving in neighborhoods

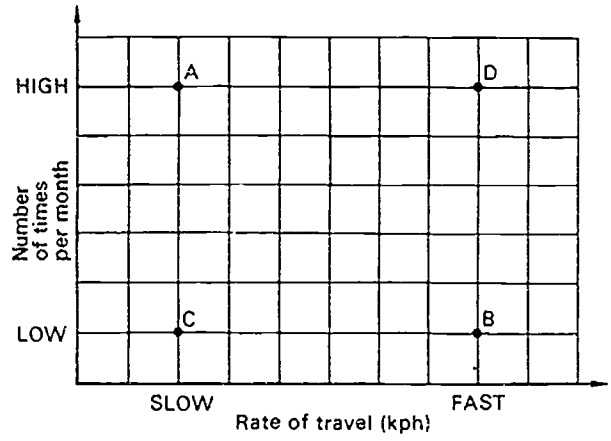
Movement patterns and knowledge of an area will almost certainly have been linked in students' minds in the previous activity. Perhaps the first definition of neighborhood as an area containing familiar objects, people and places can be expanded to include 'and an area about which I walk, or ride often.' Answering questions such as:

How do you move around your neighborhood?
What mode of travelling is likely to enable you to get to know your neighborhood?
What would be the effects if you travelled everywhere by car?

help to bring out the point again.

Generally, how well a neighborhood is known depends on the number of times a person travels along the streets and the speed of travel. The graph, Figure 3.9, illustrates the range of possibilities. A number of streets which fit each category can be chosen (refer back to known and unknown streets in the students' original maps) and the generalizations tested.

Figure 3.9 **Travel through neighborhood streets**



SOURCE: Blachford, K. *et al (1976) Way Out*, Rigby.

The neighborhood in personal meaning

The humanistic geographer is more likely to tackle, 'What is your neighborhood?' not as a sketch map exercise, but as an exercise in realizing individual meaning or in attempting to elucidate the personal meaning of neighborhood to students individually. Geography as personal response would want to get beyond the environment as perceived into the environment as felt experience. Activities on neighborhoods and action space come closest to this when the liked/disliked dimension is introduced. The 'what is your neighborhood?' activity could be extended by asking students to write statements or comments along the following lines. The exercise as set out is addressed to students. (See Farbstein and Kantrowitz, 1978.)

a) In my neighborhood, my favorite places are . . . In my neighborhood, I don't like . . . In my neighborhood I enjoy being in a place like . . . I feel unhappy in my neighborhood when I'm in . . . The most beautiful places in my neighborhood are . . . The ugly places in my neighborhood are . . . List as many characteristics as you can of places you like. List as many characteristics as you can of places you dislike. What parts of or things in your neighborhood are likely to change in the next ten years?
b) Choose one of the places you enjoy and one you dislike.
c) Spend at least 30 minutes in each place. Concentrate on being in that place, forget about other things. Tune into your feelings and make a list of them. Make sure that you list your emotional reactions. Do not simply describe what is there. Then make another list of the characteristics of the place. This list can describe its physical features.
d) Try to explain why you feel as you do about each place. Is there a connection between your feelings and the physical characteristics you listed? If this is not so, what are you reacting to?
e) Compare the physical characteristics of the two places. Are they totally different or are there any similarities? Are there any conclusions you can come to about how the physical

characteristics of places make you feel?

f) If you did this project with other people compare reactions. (You may keep your results to yourself, if you wish.) What kinds of places were chosen as enjoyable? As disliked? Are there characteristics which are common to the places which most people enjoyed or disliked?

g) Can you think of any changes you could make to either of the places which would be likely to change your feelings?

Within as yet more mainstream geographical writing, the semantic differential technique is also useful for evaluating places. It provides a workable means of getting to grips with how places are experienced and responded to. Developed as part of a research study of meaning it is an attitude measurement scale, not free from academic argument and reservation, but nevertheless an expeditious technique for evaluating people's attitudes to places. For example, a town square or market place, stores, a shopping plaza or neighborhood can be rated by using a semantic differential.

In surveys of Georgetown, an expensive, historic neighborhood in Washington D.C., and Tyson's Corner Mall, the largest and first enclosed shopping mall in the metropolitan area, Martha B. Sharma used the bipolar adjectives listed in figure 3.10 (a) to have girls in 9th and 10th grades (14-15 years) evaluate the two places in 1992. The girls are generally from wealthy, upper class families of Washington D.C.

Figure 3.10 (a) **A semantic differential: possible adjectives for evaluating a place**

THE QUESTIONNAIRE

Georgetown, Washington, DC is:

	NEUTRAL	
Depressing	— — : — — : — — : — — : — — : — — : — —	Cheerful
Big	— — : — — : — — : — — : — — : — — : — —	Small
Open	— — : — — : — — : — — : — — : — — : — —	Enclosed
Spacious	— — : — — : — — : — — : — — : — — : — —	Cramped
Quiet	— — : — — : — — : — — : — — : — — : — —	Noisy
Ugly	— — : — — : — — : — — : — — : — — : — —	Beautiful
Uninteresting	— — : — — : — — : — — : — — : — — : — —	Interesting
Easy to reach	— — : — — : — — : — — : — — : — — : — —	Not easy to reach
Well designed	— — : — — : — — : — — : — — : — — : — —	Poorly designed
Fashionable	— — : — — : — — : — — : — — : — — : — —	Unfashionable
Dirty	— — : — — : — — : — — : — — : — — : — —	Clean
Good for children	— — : — — : — — : — — : — — : — — : — —	Bad for children
Healthy	— — : — — : — — : — — : — — : — — : — —	Unhealthy
Commonplace	— — : — — : — — : — — : — — : — — : — —	Unusual
Should be changed	— — : — — : — — : — — : — — : — — : — —	Should not be changed
High class	— — : — — : — — : — — : — — : — — : — —	Low class
	1 2 3 4 5 6 7	
	— — : — — : — — : — — : — — : — — : — —	

Would you prefer . . .?

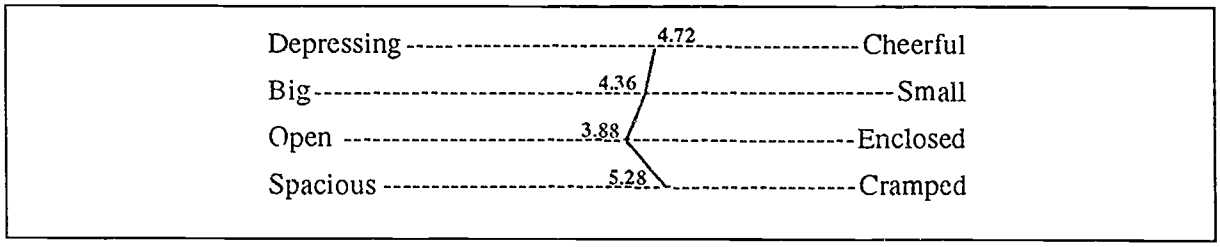
Escalators	— — : — — : — — : — — : — — : — — : — —	Ramps
Cars	— — : — — : — — : — — : — — : — — : — —	Subway
Amusement arcades	— — : — — : — — : — — : — — : — — : — —	No amusement arcades
Movie theaters	— — : — — : — — : — — : — — : — — : — —	No movie theaters
	NEUTRAL	

although there are also girls (on financial assistance) from middle class as well as inner city families.

The adjectives, separated by a seven point scale, are usually arranged so that positive and negative descriptions vary from left to right hand position. A seven point scale separates the adjectives and, in interpreting the semantic differential, a value of one to seven is assigned to each space. The space having a value of four is the neutral point as is indicated in Figure 3.10 (b).

A class profile

A score of the average value assigned to each bi-polar pair of adjectives is calculated by dividing the total score by the number of students responding. In the case of Georgetown (Figure 3.10 (c)) on the first set of bi-polars the evaluation is just above average with Tyson's Corner Mall (Figure 3.10 (d)) almost a point ahead for cheerfulness. For an array of adjectives, a profile can be drawn by plotting the mean of each pair



on a clean sheet and joining these together thus:

It may be that a composite overall view is not wanted and preference is given to having the students discuss their judgements. The differing views held and conflicting judgements made is a lesson in selective perception and individual preference.

As a follow-through for an exercise like this, students could be given the task of re-designing. The problems of re-designing to suit everyone's tastes will become obvious. Different groups in the class may be assigned roles of a planner, working to a specification laid down by a city council interested in only one aspect of the place (e.g. decreasing traffic congestion); a person working in the area; a person living there; a regular shopper (pedestrian); a regular shopper (by car); a store owner; a tourist.

Figure 3.10 (b) **Calculating a semantic differential**

Depressing	— — : Very	— — : Quite	— — : Slightly	— — : Neutral	— — : Slightly	— — : Quite	— — : Very	Cheerful
Score	1	2	3	4	5	6	7	
Results for 20 students:	1	2	3	2	4	5	3	
Mean	1 x 1	2 x 2	3 x 3	2 x 4	4 x 5	5 x 6	$3x7 = \frac{93}{20} = 4.06$	

Figure 3.10 (c) **Georgetown: a semantic differential evaluation**

Evaluate the location named by selecting the point in the range between the two adjectives which best represents your reaction to the location being considered.

Georgetown is:

NEUTRAL

	1	2	3	4	5	6	7			
Depressing	0x1	0x2	4x3	9x4	4x5	6x6	2x7	Cheerful	118/25	4.72
Big	0x1	5x2	2x3	6x4	5x5	5x6	2x7	Small	109/25	4.36
Open	2x1	7x2	1x3	3x4	7x5	4x6	1x7	Enclosed	97/25	3.88
Spacious	1x2	1x2	1x3	2x4	7x5	9x6	4x7	Cramped	132/25	5.28
Quiet	0x1	0x2	0x3	2x4	2x5	11x6	10x7	Noisy	154/25	6.16
Ugly	0x1	0x2	3x3	12x4	6x5	4x6	0x7	Beautiful	111/25	4.44
Uninteresting	13x1	5x2	2x3	3x4	2x5	0x6	1x7	Interesting	58/25	2.32
Easy to reach	13x1	3x2	3x3	4x4	1x5	0x6	1x7	Not easy to reach	56/24	2.24
Well designed	2x1	5x2	6x3	6x4	3x5	2x6	0x7	Poorly designed	81/25	3.24
Fashionable	8x1	9x2	3x3	3x4	1x5	1x6	0x7	Unfashionable	58/25	2.32
Dirty	0x1	8x23	10x3	5x4	1x5	1x6	0x7	Clean	77/25	3.08
Good for children	1x1	1x2	3x9	6x4	3x5	9x6	2x7	Bad for children	119/25	4.76
Healthy	0x1	1x2	4x3	12x4	8x5	0x6	0x7	Unhealthy	102/25	4.08
Commonplace	2x1	3x2	2x3	1x4	9x5	5x6	3x7	Unusual	114/25	4.56
Should be changed	0x1	3x2	2x3	7x4	3x5	4x6	6x7	Should not be changed	121/25	4.84
High class	0x1	3x2	6x3	8x4	6x5	2x6	0x7	Low class	98/25	3.92
Safe	0x1	3x2	0x3	4x4	9x5	6x6	3x7	unsafe	124/25	4.96
Would you prefer . . .?										
Cars	2x1	3x2	2x3	4x4	5x5	3x6	6x7	No cars	115/25	4.60
Parks/gardens	14x1	6x2	1x3	2x4	0x5	1x6	1x7	No parks/gardens	50/25	2.00
Movie theaters	9x1	5x2	4x3	4x4	2x5	1x6	0x7	No movie theaters	63/25	2.52
	1	2	3	4	5	6	7			

Figure 3.10 (d) **Tyson's Corner Mall: a semantic differential evaluation**

Tyson's Corner Mall is:

NEUTRAL

	1	2	3	4	5	6	7			
Depressing	0x1	1x2	1x3	6x4	2x5	6x6	9x7	Cheerful	138/25	5.53
Big	16x1	7x2	2x3	0x4	0x5	0x6	0x7	Small	36/25	1.44
Open	8x1	3x2	2x3	2x4	3x5	3x6	4x7	Enclosed	89/25	3.56
Spacious	9x1	7x2	4x3	0x4	1x5	4x6	0x1	Cramped	64/25	2.56
Quiet	0x1	1x2	2x3	5x4	8x5	5x6	4x7	Noisy	126/25	5.04
Ugly	2x1	1x2	1x3	7x4	6x5	4x6	4x7	Beautiful	117/25	4.68
Uninteresting	7x1	4x2	7x3	1x4	3x5	2x6	1x7	Interesting	74/25	2.96
Easy to reach	2x1	3x2	2x3	2x4	5x5	5x6	6x7	Not easy to reach	119/24	4.76
Well designed	8x1	8x2	2x3	4x4	3x5	0x6	0x7	Poorly designed	61/25	2.44
Fashionable	8x1	5x2	2x3	6x4	3x5	0x6	1x7	Unfashionable	70/25	2.80
Dirty	0x1	0x2	1x3	3x4	7x5	6x6	8x7	Clean	142/25	5.68
Good for children	5x1	7x2	3x3	5x4	3x5	2x6	0x7	Bad for children	75/25	3.00
Healthy	6x1	4x2	5x3	9x4	1x5	0x6	0x7	Unhealthy	70/25	2.80
Commonplace	10x1	5x2	2x3	6x4	1x5	1x6	0x7	Unusual	61/25	2.44
Should be changed	2x1	0x2	0x3	7x4	2x5	7x6	7x7	Should not be changed	131/25	5.24
High class	6x1	5x2	2x3	10x4	1x5	0x6	1x7	Low class	74/25	2.96
Would you prefer . . .?										
Escalators	20x1	2x2	0x3	2x4	0x5	0x6	1x7	Ramps	39/25	1.56
Cars	8x1	2x2	1x3	6x4	0x5	1x6	7x7	No cars	94/25	3.76
Amusement arcade	8x1	1x2	2x3	4x4	0x5	2x6	8x7	No amusement arcade	100/25	4.00
Movie theaters	18x1	3x2	1x3	2x4	0x5	1x6	0x7	No movie theaters	38/25	1.52
	1	2	3	4	5	6	7			

Data from other people's experience

Images and feelings, preferences and opinions about places are both shared and personal: by examining what places mean to different people, our understanding of places grows and our environmental experiences, attitudes, and values are raised toward a new level of consciousness. Ten opinions of the quality of city life set out in Figure 3.11, provide data from other people's experiences which might be matched to similar paragraphs written by students. The data can be analyzed for the desirable and undesirable qualities of city life mentioned and the lists added to:

Extract	*Desirable Qualities*	*Undesirable Qualities*
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Alternatively, a number of words and phrases describing city life can be picked out and the frequency of occurrence noted.

Figure 3.11 **Quality of life in Washington D.C. Responses from ten students at National Cathedral School**

The quality of life in Washington, D.C. is something that cannot be labelled good or bad. As I think of the life I lead and the school I am in I realize the quality of life is great. The capital and the beautiful monuments, the government, the food supply, population density, and the standard of living is good. I think the most part of Washington, D.C. is very good. On the other hand there is the part of Washington D.C., which is very polluted, poor, lack of food, massive amounts of drugs and murderers. The homeless crowd streets at nights in some parts of the city. The view of the place makes Washington D.C., have a low quality of life. In comparison to other countries and regions, cities in the world, Washington, D.C., has a very high quality of life.

Washington D.C. has a poor quality of life. This is so because there are many homeless and unemployed people in the city. There is also the problem of drugs and violence. Washington is considered the murder capital of the world, which does not give the city a good feeling. But the quality of life in D.C. can be good if you are fairly wealthy. With this, you can buy a nice house, and live in a virtually crime free neighborhood, but this is also changing, with crime moving out of the city and into the suburbs. Most of the people in the city living in fear, that when they walk down the street, there is a possibility of their being shot. I therefore don't think that the quality of life in Washington D.C. is high.

The impression of the quality of life of each person would vary greatly. One factor which would influence this greatly is the neighborhood in which one lives. Everyday (almost) I hear about a murder the previous night or something crime-related. Many days I hear the police sirens and shootings around my neighborhood. But, I have never been in an incident which has included these types of things. I would say the quality of life isn't so good. We all know the D.C. Metropolitan area has the highest murder and crime rate, this affects my feeling and confidence as I walk down the street at night alone. I think we should feel more secure in our own city. I also think the city could be cleaner.

Figure 3.11 **Quality of life in Washington D.C. Responses from ten students at National Cathedral School *(continued)***

Having lived overseas in three developing countries, I know that the quality of life in Washington, D.C. is very high in general. The majority of people have food, shelter and access to jobs and education, this does not hold true for countries in the third world. One cannot ignore homelessness, unemployment, and poor public school systems, but when one considers the services, and sewage and transport systems of D.C. it is obvious residents have it pretty good.

Washington, D.C. is a very diverse place — in many ways. There are ethnic diversities, cultural diversities, and of course, attitude diversities. Since Washington is the capital of the U.S., it is where many people come in search of new opportunities. This makes it a big melting pot, thus, the wide range of differences. I don't believe one could talk about "the quality of life in D.C." It needs to be "the qualities of life." Washington is divided in quarters: NW, NE, SW, SE. Each one of these areas is almost a whole different city from the next, and so, their qualities of life are different. To describe fully each one would take a lot more space than I have left, but in summary; Washington, D.C. is so diverse a city that there are many drastically different qualities of life.

I've lived in Washington for all of my life and have found it a wonderful place to grow up. However, as I get older I realize that this capital city can be kind of boring and is very conservative. When I visit friends living other places such as Florida, South Carolina or New York City there is so much to do there. In Florida and Charleston you're right on the ocean, therefore ample opportunity for water sports and the beach. In New York there's constant activity and so much to do I envy friends living in these places. On the other hand this is a very important city politically so therefore there are plenty of neat monuments and museums to go see. If you're lucky you can see some famous people too. I do enjoy living in Washington and I think the quality of life is very good.

The "quality of life in Washington, D.C." is a phrase which could mean different things to different people. Washington is an area of very diverse people; wealthy, poor, homeless, diplomats, workers, students, etc. All of these people lead different lives, and their views of the quality of their life probably differs from one person to the next. Without any doubts, however, D.C. is a city of great opportunity and diversity, and though there are many people who hope to improve the quality of their life, there are those who are content with the quality of their lives.

The "quality of life in Washington, D.C." does not pertain to me specifically, but in general it is fairly good, for most people. There is enough food to go around, the education is good, there are good connections with other countries, and their are a lot of job opportunities. Although, lately there has been a lot of jobs being cut off, and there are many people homeless. In general, compared to the world, the "quality of life is good".

I think quality of life in Washington, D.C. varies throughout the area. There are some people who are homeless but still have a high quality life. Maybe because they appreciate things more, or just are optimistic. There are others in Washington, D.C. who may have everything they want but they can still have a low quality of life. Because money does not buy "quality of life". Quality of life is how well or how much you appreciate things, not materialistic things like cars and houses, its what you feel and make of what you have.

The "quality of life in Washington, D.C." varies greatly. Materialistically people have a lot, a little, or nothing. D.C. is full of the very rich, the middle (upper) class, the middle (lower) class, the poor, and the homeless. It's difficult to realize that because 90% of the girls at NCS are very rich or (upper) middle class. Spirit or how people react to D.C. is also varied. The phrase, "quality of life in Wash, D.C." also means to me how it is to actually live and almost feel the city. Personally part of me loves Washington, D.C., while the other half is angry and hates D.C. it seems to me, no matter how well off you are materialistically, people are not very happy with (their) life (ves) in Wash., D.C.

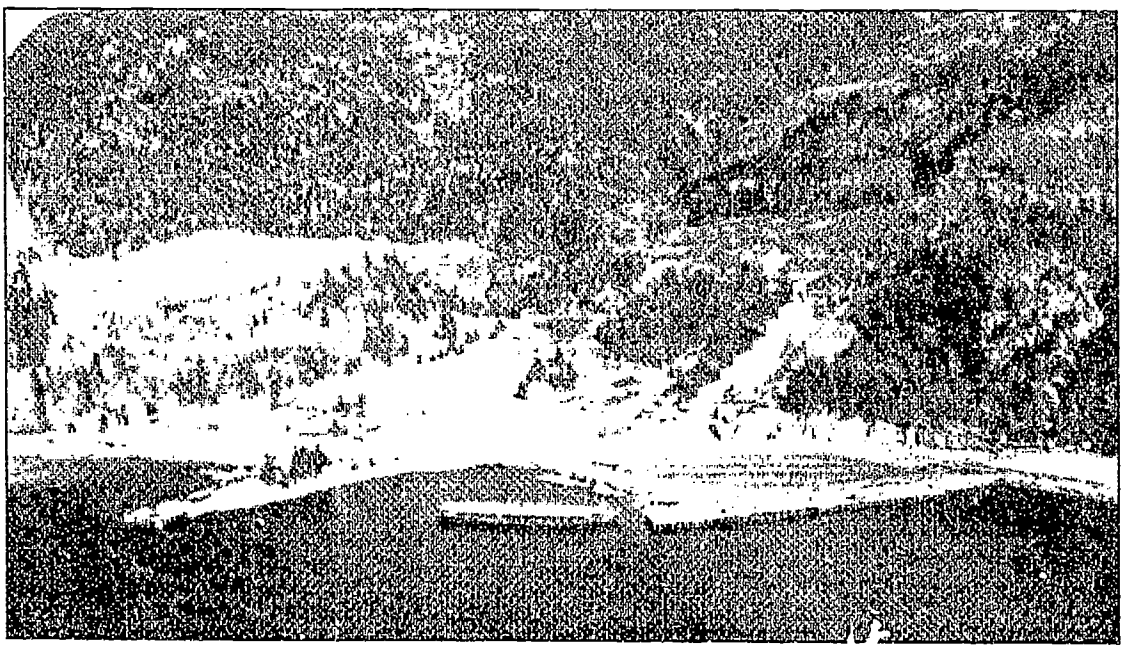
Classroom activities

THE USE OF PHOTOGRAPHS IN SCIENTIFIC GEOGRAPHY

Slides, photographs, and sketches for long had their place as data sources in geography as science as well as in geography in its more arts based phases. In the settlement siting activity elaborated in Chapter 1, sketch maps formed the data base for focusing questions and developing concepts and understanding. A linking activity may be organized around photographs used as data to answer a general question on the variety of settlement functions both within and between settlements. Photographs or landscape paintings are not used to elicit preferences and responses. Rather they are to be analyzed for any evidence which hints at answers to questions such as: What are the occupations of people living here likely to be? What makes this settlement tick? What keeps it alive? On what evidence are you basing your answers? Evidence of industries and resources are part of an objective reality—sawmills, power stations, mines, and wharves are part of the 'real' world which may be examined through secondary data sources like photographs.

Figures 3.12 and 3.13 are but two photographs in a possible series which could be collected to demonstrate the variety of single-function and multi-function settlements arising from the earth's variable resource base and people's changing needs and appraisals.

Figure 3.12 **Aerial view of Britannia Beach, BC, with population and employment statistics**



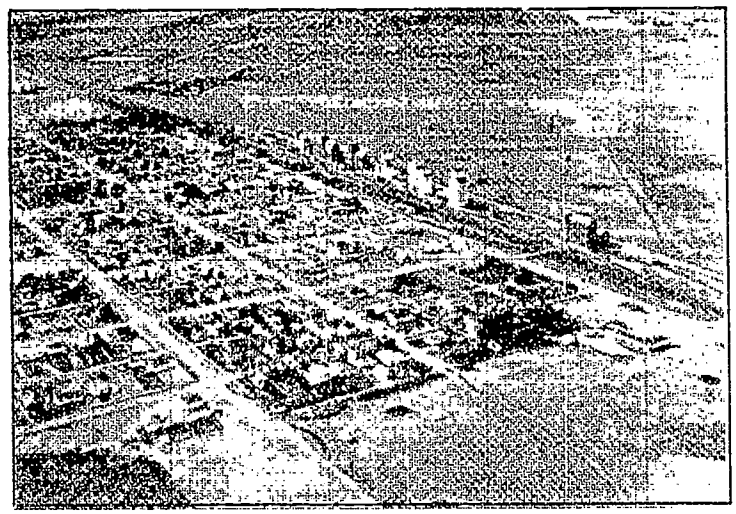
SOURCE: Tourism B.C. Film Promotion.

Population and Employment in Britannia Beach, BC, 1969

Population.	709
Employment	Anaconda Mine and Mill, 280 mine workers, 90 office workers
	1 general store
	1 cafe
	1 gas station
	1 post office
	1 elementary school
	1 customs office

SOURCE: Wolforth, J. and Leigh. R. (1971) *Urban Prospects*, McClelland and Stewart.

Figure 3.13 **Aerial view of Davidson, Sask. and population and business statistics**



SOURCE: National Film Board of Canada

Population and Business in Davidson, Sask., 1980

Population of Davidson in 1980 1100
Population within a 25 mile radius 7000
Business and Professional Services

Agriculture	No.
Nurseries	1
Construction	
General building contractors	1
Plumbing and heating	2
Painting and decorating	1
Electrical	3
Plastering and drywall	1
Others	1
Manufacturing	
Printing, publishing	1
Motor Freight Transportation	
Local trucking firms	1
Motor freight transportation	4

Retail trade	No.
Bulk oil	3
Lumberyards	2
Hardware stores	2
Farm equipment	5
General merchandise	1
Grocery stores	1
Bakeries	1
Motor vehicle dealers	3
Auto supply stores	2
Service stations	5
Family clothing	2
Furniture stores	1
Eating places	6
Drug stores	1
Services—personal	
Coin laundries	1
Photo studios	1
Beauty shops	3
Barber shops	1
Funeral parlors	1

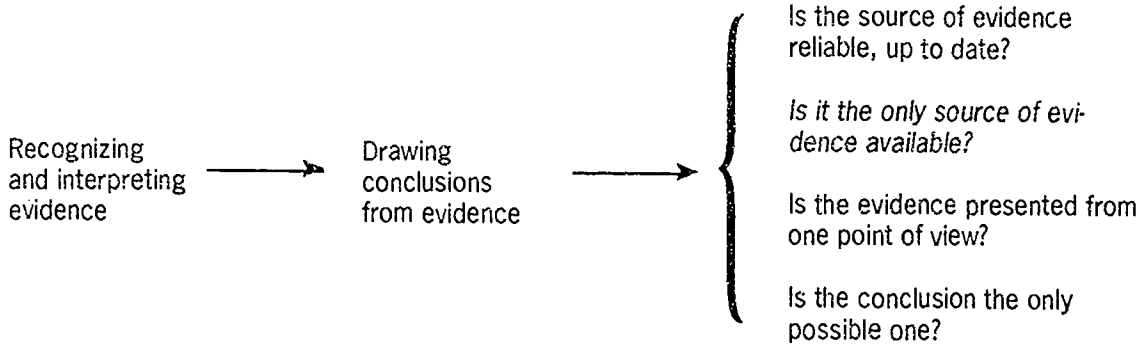
Auto services	No.
Auto body repair shops	2
Auto repair	3
Car washes	1
Repair shops	1
Entertainment and recreation	
Movie theatres	1
Bowling alleys	1
Public golf courses	1
Services—financial	
Credit union	1
Bank	1
Real estate	4
Services—profession	
Dentist	1
Doctor	1
Accommodation	
Hotel	1
Motel	1

SOURCE: Saskatchewan Industry Department.

A mining settlement

Figure 3.12 is an aerial view of Britannia Beach, in British Columbia, Canada, taken before it was closed down in the 1970s. Students are likely to suggest a number of hypotheses for the main function of the settlement including perhaps saw-milling, mining of some kind, or hydro-power production. Other jobs besides those associated with the main activity doubtless exist and suggestions will cover retailing and service functions as well as educational and government services.

The photograph does not provide certain evidence on any of these points but opens up a discussion of possibilities. What other evidence is needed? Statistics on the population and employment structure of Britannia Beach, here accompanying the photograph, put an end to speculation. The factual evidence afforded by the photograph highlights a significant constraint which must be recognized in the use of both maps and photographs. Statistical and other documentary evidence is usually essential. Photographs often raise more questions than they answer but nevertheless they are interest-arousing data sources for geography lessons and it is important for students to be made aware of the dangers of relying unduly on one piece of evidence. I would adapt the Liverpool Project's table on evidence to read thus:



SOURCE: Based on Blyth W.A.L *et al (1976) Curriculum Planning in History, Geography and Social Science*, Schools Council/Collins.

An agricultural center

Hunches on the function of the town in Figure 3.13 may not be so diverse, though that is really dependent on students' backgrounds. Davidson is a service center in an agricultural region and detail on the population and business activities of the town is provided. Reaching tentative conclusions through examining one piece of data is a useful exercise when other data can be supplemented to further clarify suggestions and ideas. More evidence is being brought in, not to challenge already formed generalizations, but to assist in the process.

The use of statistics

The exploration of settlement functions through photographs and statistics in particular, can be taken a little further and related back to the size and spacing of settlements in the Shepparton district (refer back to Chapter 2). Figure 3.14 sets out the retail functions to be found in each of the forty-one settlements. These data can be used to establish a number of generalizations about centrality and the urban hierarchy. An appropriate question sequence is:

Is there a hierarchy of urban places?

Is there a hierarchy of functions?

What functions characterize small settlements?

Which functions can be identified as low order/ high order?

What is the threshold population associated with particular functions?

Which functions are least centralized/most centralized?

Population and functions

Inspection of Figure 3.14 makes clear a number of well-known relationships such as that between population and retail functions. A graph would serve as a means of further processing the data and presenting them in visual form. The varying numbers of different retail activities plotted successively against population would reveal the functional hierarchy and identify high and low order functions across the forty-one settlements. A class would need to be organized so that each person or pair did one function and results were then pooled. Once visually displayed the question of threshold populations becomes more obvious. A little show of numeracy, rather than words and literacy, establishes the threshold values and may be taken as an example of arithmetic in the service of geography and in the processing of data.

Settlement functions

If a town with 1,000 people has one supermarket, another with 2,000 people, two and another with 3,000, three, then we can conclude that 1,000 people are needed to support one supermarket. In the Shepparton district, assuming that this is a unified and self-contained retail area, the smallest settlement, Nalinga (40 people) supports a gas station and car dealer business while the next town with any functions, Youanmite (100 people) supports a gas station and car dealer business and a food supplier. Gas station/car dealer businesses would seem to be the lowest order service, followed by food stores. Sometimes the threshold population is calculated in a slightly more sophisticated way than by merely inspecting a table and matching population with the first occurrence of a service.

Calculating threshold values

To do this, add the population of all settlements — from the smallest settlement where the function appears up to the settlement which is one above the largest *without* that function. Add together only the population figures of the settlements possessing the function and divide the total by the number of times the function is present. The threshold values calculated in this way for each of the functions performed by settlements in the Shepparton district have been incorporated into Figure 3.14. The threshold values of the functions can then be ranked and low and high order goods or services differentiated .

A new industry

A planning problem would be appropriate as a follow up. For example, a group of farmers in the Nalinga area have been persuaded to grow quantities of a variety of sugar beet suited to the district and to be used as a new source of energy. A factory employing 200 people, including chemists and research workers, is to be built in Earlston. Each employee can be presumed to bring a partner and two children to the town. Since the project is a high prestige one likely to attract international visitors, the government has decided to take the trouble to plan a shopping area. You are one of two local representatives on the planning board and the only one with any geographical training. The board is discussing the problem of what stores (and how many) are needed. Set out your choices and your justifications in a neat, one-page report which you have had the chairperson circulate to all board members.

Calculating a centrality index

The idea of centrality, like threshold can be given more precision through some numerical work; calculating a centrality index is another example of the usefulness of simple numerical methods in data processing. The identification of centrality by means other than size of population and number of functions can be reached through the calculation of a centrality index. The centrality index provides a measure of the relative significance of a town's functions and its standing in a group of settlements in an area. Centrality is measured by the extent to which each function is dispersed throughout a group of settlements. Satisfaction of demand is considered to be spread more widely the more dispersed the function. Large coefficients indicate more centralized functions. The measure of centrality, a location coefficient, is calculated by the formula:

$$c = \frac{t}{T} 100$$

where C = the location coefficient of function t, t = one outlet of the function t, and T = total number of outlets of function t throughout the area being studied .

The *coefficient* for accountancy firms in the Shepparton area is $^1/_{10}$ x 100 = 10 and the *centrality value* for this function in Shepparton is 4 x 10 = 40 or the total number of accountants in Shepparton *(4)* multiplied by the coefficient for accountants (10). Figure 3.14 also shows, for the sake of interest, the centrality values for the range of functions found in Shepparton. Totalled, these values give a centrality index of 848 to Shepparton. Can we expect it to have the highest centrality index? Are the centrality values what would be expected? Rank the services according to their centrality indices.

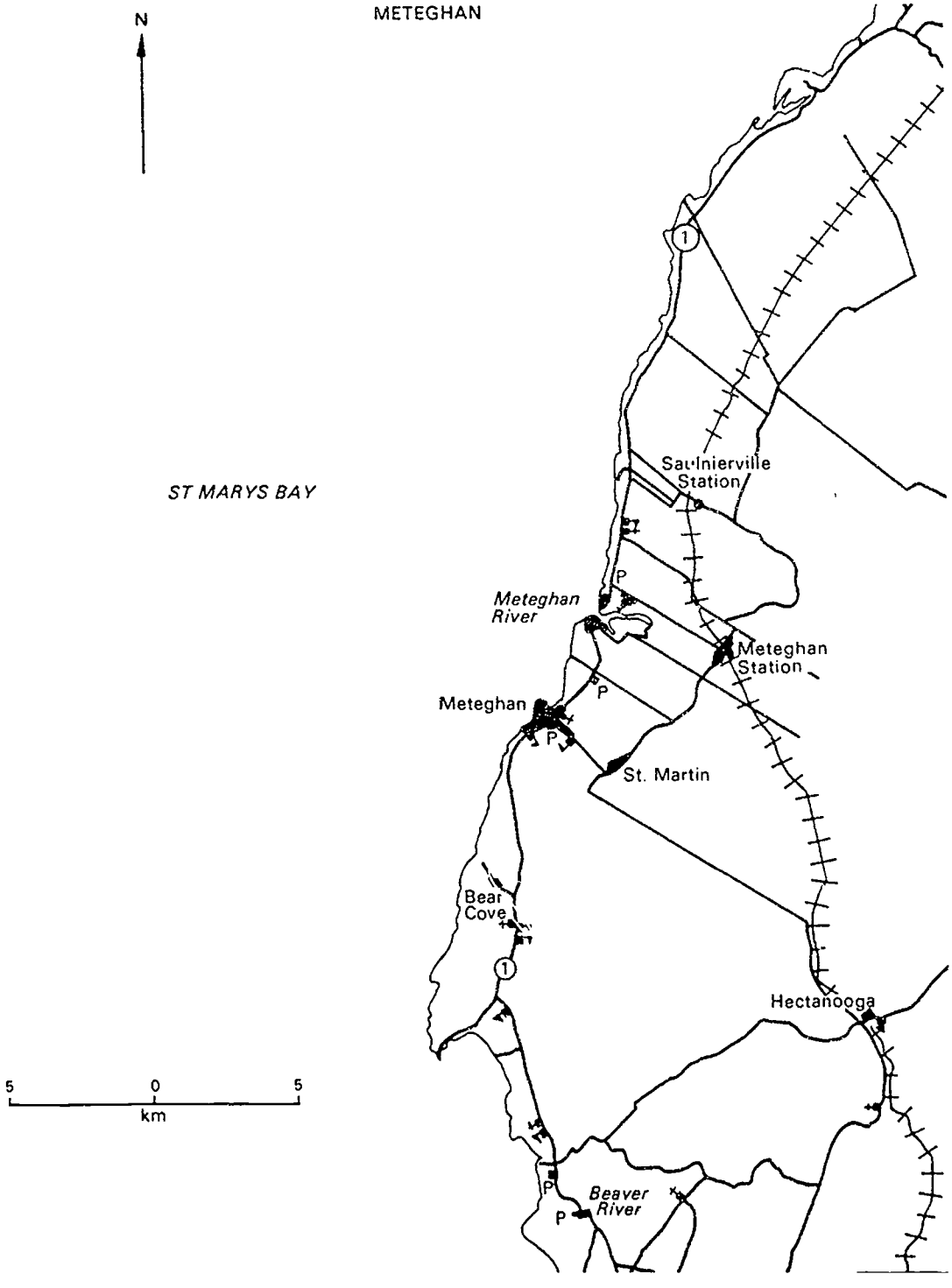
This is a rather elementary example of statistical data processing given the importance attached to quantification in our society. However, numerous references are available on quantitative measures and obviously, the general purpose of this book on activity planning is to offer examples of a variety of forms of data and data processing techniques.

Figure 3.14 **Retail functions in forty-one settlements**

Functions and no. per settlement / Population figures per settlement	Shepparton 19,409	Kyabram 5,806	Mooroopna 3,532	Cobram 3,195	Numurkah 2,581	Tatura 2,510	Nathalia 1,2781	Rushworth 1.071	Tongala 899	Invergorden 800	Yarroweyah 780	Katunga 760	Ardmona 640	Toolamba 570	Stanhope 564	Murchison 522	Merrigum 496	Strathmerton 382	Undera 340	Tallygaroopna 315
Accountants	4	1	2	2	1															
Agricultural machinery shops	11	10	1	10	5	4	6		2			1			2	2				
Attorneys	6	2			2	1	1	1												
Banks	13	10	4	6	10	8	5	3	4						3	3	4	3		2
Beauty salons	20	6	3	7	7	5	2	3	2						2					
Builders	21	10	4	9	8	7	4	3				1			1	3	2			
Carriers	26	9	3	7	3	11	4	1	1	4		1	2	2	2	2	3	3		2
Clothing stores	29	17	3	10	6	6	4	2	3						2	2				
Courthouses	1			1																
Dentists	5	1			1															
Doctors	9	4	1	2	3	1	1	1	1							2				
Dry cleaners	5	3	1	1	2	1	1	1												
Electrical stores	11	3	1	5	3		1	2	1						2	3				
Food stores	54	27	11	13	17	17	8	8	10	1	2	3	1	1	9	4	6	6	2	2
Furniture stores	10	2	2	2	4	1	3	1							2					
Gas stations and car dealers	30	10	4	9	9	7	7	3	2	1	1	1	1		3	3	2	2	1	1
Gift stores, jewelers	6	4		5	5	2	3		1						1	2	1			
Hardware stores	8	5	1	6	2	2	5	2	4						3	1				
Hotels	6	3	3	3	3	3	3	3	1					1	1	3		1	1	1
Livestock agents and stations	10	7	2	6	3										1	1				
Music stores	3				1															
Newsagents	5	1	1	1	2	1	1	1	1			1		1	1				1	
Pharmacists	9	3	1	2	2	5	1	1	1							1			1	
Post offices	3	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
Sporting goods stores	11		1		5	3	3		1						1					
Total functions per settlement	316	139	48	108	106	87	64	37	36	7	4	9	4	6	37	33	19	16	7	9
Centrality index																				

310 Waara	308 Giragerre	300 Katamatite	300 Dhurringile	280 Lancaster	280 Lemnos	260 Koyuga	260 Wyuna	240 Barmah	200 Picola	200 Pine Lodge	190 Toclamba West	160 Wunghnu	130 Byrneside	100 Youanmite	80 Caniambo	70 Kanyapella	60 Baileston	60 Hendersyde	40 Nalinga	40 Earlston	Centrality Value Shepparton	Centrality Coefficient	Totals of each function for the area	Threshold values
																					40	10	10	2348
	1																				20	1.82	55	333
																					50	8.3	12	2029
1	2	2		1					3												15	1.15	87	163
																					34	1.72	58	391
																					29	1.37	73	341
2			1					4	1		2										27	1.04	96	199
1	1																				34	1.16	86	288
																					50	50	2	11302
																					71	14.3	7	4193
																					36	4.0	25	473
																					33	6.6	15	1071
		1																			33	3.0	33	555
2	3	5		1	1		1	1	3			3	1	1							24	.45	224	114
																					37	3.7	27	545
1		1		1		1		1				1		1					1		28	95	105	243
																					21	3.45	29	692
																					20	2.56	39	248
1		1				1		1	1												14	2.4	41	350
																2					21	3.13	32	490
																					75	25	4	5497
1	1			1								1									23	4.56	22	465
																					33	3.7	27	587
1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7	2.4	41	269
																					52	3.85	26	1216
8	10	12	1	6	1	3	2	4	12	2	1	8	2	3	1	3	1	1	2	1	31			
																					848			

Figure 3.15 **Meteghan**



SOURCE: Day, D. and Millward, H. (197.) 'Analysis of village siting and rural isolation from topographic maps', *Geoscope*, Vol. 10, No. 2.

Maps as data

While centrality has been examined by the calculation of coefficients, a closely related idea, isolation, can now be examined via a map and some tabulation.

Unless teachers have taken photographs for a precise purpose to illustrate particular points, maps probably provide a richer base for developing ideas and drawing conclusions. The clarity and legibility of maps often gives them some advantages.

Rural isolation.

A group of Nova Scotian educators (Day and Millward, 1977) involved in curriculum renewal devised an interesting exercise to examine the concept of rural isolation and to develop a general measure of isolation. The exercise is another example of data processing to elucidate concepts and general ideas and it balances nicely with the work on centrality. What is rural isolation? How can we measure isolation? What criteria do we select? How do changes affect rural isolation? What are the effects of isolation?

The exercise is based on the 1:50,000 topographic map of the Meteghan area (21 B/1 Second Edition) located along the shores of St Mary's Bay in Digby County, Nova Scotia. The area, originally settled by the French, is marked today by two lines of settlement: one adjacent to the coast, the other further inland (Figure 3.15). Eight settlements are selected for study: Bear Cove; Beaver River; Hectanooga; Meteghan; Meteghan River; Metaghan Station; Saulnierville Station, and St Martins. In making measurements from the topographic map, it is assumed that the town centers equate with the grid references given for each settlement in Figure 3.16. Relative isolation is defined by: (1) road distance in kilometers from the center of each of the settlements to the nearest post office, (2) the shortest road distance from the center of each settlement to Highway 1, (3) the shortest road distance from the center of each settlement to the nearest railway station, (4) the shortest road distance to the nearest elementary school, and (5) the shortest road distance to a high school. There is only one high school within the map area (grid reference 291008). It is assumed that the other schools shown cater for the full range of elementary schooling up to high school. Which facets of isolation can be measured, which cannot?

Figure 3.16 **Shortest road distance (in km.) to settlements**

Settlement	*Post office*	*Highway 1*	*Railway station*	*Elementary school*	*High school*
Bear Cove (252907)	4.8	0.7	15.5		
Beaver River (284796)	0.0	0.0	14.5		
Hectanooga (378863)	12.6	12.5	0.0		
Meteghan (268965)	0.2	0.2	8.5		
Meteghan River (283002)	0.0	0.0	5.5		
Meteghan Station (325989)	5.0	4.0	0 0		
Saulnierville Station (315030)	7.5	2.0	0.0		
St Martin (291948)	3.2	3.0	5.5		

SOURCE: Day, D. and Millward, H. (1977) 'Analysis of village siting and rural isolation from topographic maps', *Geoscope*, Vol. 10, No. 2.

An index of isolation

However, given the above criteria and a completed Figure 3.17, an index of isolation can be calculated for each settlement. Each measure of isolation is taken to be of equal value and points given to each settlement based on distance from each amenity as set out in Figure 3.17. The lower the total score, the greater is the isolation. The most and least isolated settlements can now be identified, likewise the factors contributing most to relative isolation. The equal weighting given to the measures of isolation may not be acceptable and a class discussion may conclude that accessibility to one or two of the measures is twice as important as accessibility to others. If this is the case, then the scores can be suitably re-weighted and a second total calculated. What significant differences occur between the weighted and unweighted indices? A further variable, perhaps accessibility to a church, could be built into the index or a class may wish to suggest another factor. Figure 3.17 gives the necessary information on distances.

Decreasing isolation

An alternative to building in further criteria is to posit, for example, the building of a new high school at Salmon River. What impact would this have on the relative isolation of the settlements? Or perhaps several elementary schools are to be closed because of falling enrolment. How does this affect the relative isolation of the settlements? Given this scenario, what are the effects of isolation? What other dimensions of isolation are there?

Figure 3.17 Settlement scores on selected measures of isolation

Settlement	*Points awarded for nearness to*					*Unweighted index of isolation (total points)*	*Weighted index of isolation (A)*	*Distance to church (in km)*	*Points for nearness to church*	*Weighted index of isolation (B)*
	Post office	*Highway 1*	*Railway station*	*Elementary school*	*High school*					
Bear Cove								2.5		
Beaver River								4.0		
Hectanooga								0.2		
Meteghan								0.2		
Meteghan River								2.5		
Meteghan Station								6.5		
Saulnierville Station								4.8		
St Martin								4.0		

SOURCE: Day, D. and Millward, H. (1977) 'Analysis of village siting and rural isolation from topographic maps', *Geoscope*, Vol. 10, No. 2.

Maps in model making

The significance of maps as data bases and their role in developing concepts and generalizations is already plain from the map based activities described. One further example, using maps, illustrates educational aims and methods of data processing well within the scientific tradition in geography as map information is analyzed to build a model of a British National Park. Many map exercises have been devised to test agricultural models and urban land-use models (model-making activities are less plentiful but perhaps more valuable). After all, if models have a number of simplifying assumptions built into them, then it is not surprising to find that reality departs from the model; to criticize the model on those grounds is not to appreciate its internal validity. To begin the exercise by building a model helps to dispel that confusion perhaps.

A National Park model

Goring (1977) felt that the National Park exercise he devised included the following skills and techniques which are part of the requirements set out by the Scottish Certificate of Education Examination Alternative Higher Syllabus:

1. The use of techniques of analysis to aid the understanding of properties and distribution of geographical phenomena;
2. The construction of matrices to store selected information;
3. The realization that models are a simplification of complex reality and that at the end of the activity students would have more than a superficial knowledge of 'their spatial distribution, their characteristics and their function.'

Five maps form the basic evidence for the exercise:

1: 63360 North York Moors Ordnance Survey Tourist Sheet;
1: 63360 Peak District Ordnance Survey Tourist Sheet;
1: 63360 Lake District Ordnance Survey Tourist Sheet;
1: 63360 Dartmoor Ordnance Survey Tourist Sheet;
1: 250,000 Wales and The Marches Ordnance Survey Tourist Sheet (including Pembroke Coast National Park) .

Preparing sketch maps

Students are directed to prepare sketch maps of each Park to show relief, drainage, communication patterns, settlement, and any features related to leisure and recreational activities. The information was then organized into a matrix. Figure 3.18 illustrates the general matrix as well as the sketch and matrix for the North York Moors.

A composite matrix

The five maps and matrices were then used to construct a composite matrix on which the frequency of occurrence of items in the Parks was recorded. A representative matrix was derived from this and a National Park model sketched out. These steps are illustrated in Figure 3.19. The model making has been achieved and while Goring suggests testing it against other National Parks, I would feel that as an insight into model building the exercise need not be taken further. Considerable discussion time could be spent enunciating the rules for the model's construction and suggesting how initial observations and rules could be seen as assumptions. Here is a chance to contribute to students' understanding of what is involved in the process of model making and not merely to learn or test the content of the model.

Figure 3.18 (a) **General and specific matrices for building a National Park model**

NAME OF NATIONAL PARK	Yes	No	Just outside National Park	On periphery of National Park	In centar of National Park
1. PHYSICAL FACTORS:					
a Is the National Park an upland area compared to the surrounding country?					
b Is the National Park a compact unit?					
c Are water - sites available?					
2. HUMAN FACTORS:					
a1 Is the National Park served by motorway?					
a2 Is the National Park served by "A" class roads?					
a3 Is the National Park internally connected by "B" class roads?					
b1 Is there hotel/inn accommodation?					
b2 Are there camping/caravanning sites?					
b3 Are there Youth Hostels?					
c1 Are there Mountain Rescue Stations?					
c2 Are there any viewpoints?					
c3 Are there any Information Centers?					

Figure 3.18 (b)

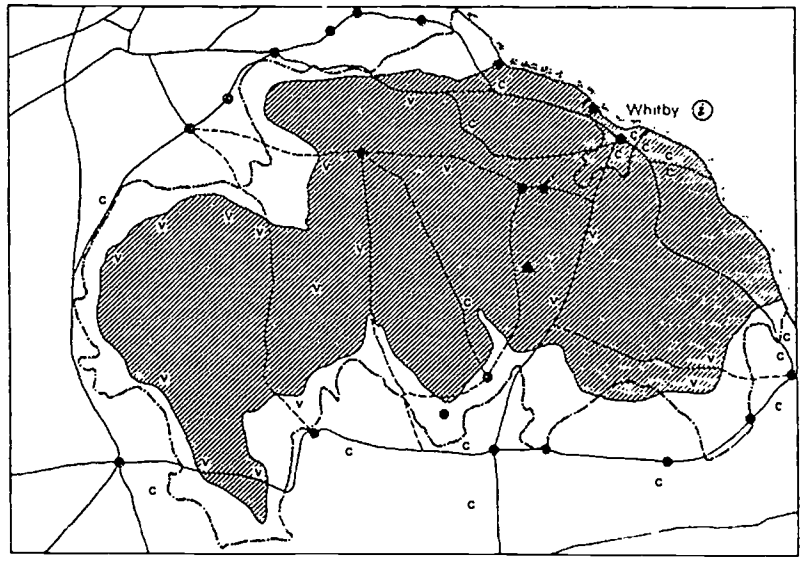


Figure 3.18 (c)

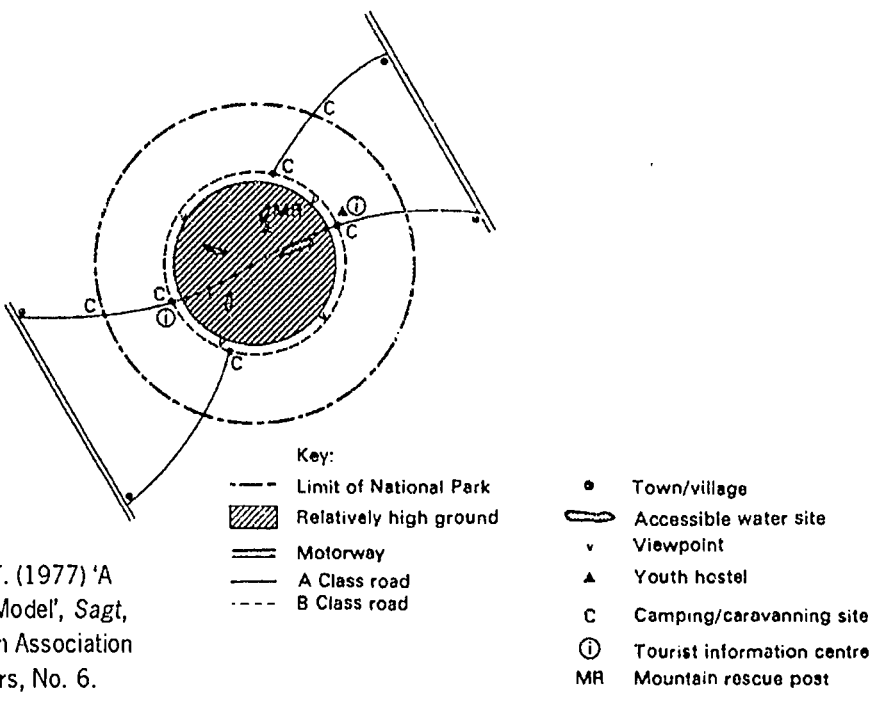
EXAMPLE: NORTH YORK MOORS NATIONAL PARK

(* indicates the presence of this feature on the o.s. map)

1.	Yes	No	Just outside National Park	On periphery of National Park	In centre of National Park
a	*				*
b	*				
c	*			*	
2. a1		*			
a2	*		*	*	
a3	*			*	*
b1	*		*	*	
b2	*		*	*	
b3	*				*
c1	-	*			
c2	*			*	*
c3	*			*	

SOURCE: Goring, R. T. (1977) 'A British National Park Model', *Sagt*, Journal of the Scottish Association of Geography Teachers, No. 6.

Figure 3.19(a) **A British National Park model**



SOURCE: Goring, R. T. (1977) 'A British National Park Model', *Sagt*, Journal of the Scottish Association of Geography Teachers, No. 6.

Figure 3.19(b) **A measure of how well the model fits reality**

RECORDED FEATURES / NATIONAL PARK	Upland 1 a	Compactness b	Water-sites c	Motorways 2 a1	A class roads a2	B class roads a3	Hotels/inns b1	Camping/caravanning b2	Youth Hostels b3	Mountain rescue c1	Viewpoints c2	Tourist information c3
NORTH YORK MOORS	•	•	•c		•	•	•	•	•		•	•
DARTMOOR	•	•	•	•	•	•	•	•	•		•	•
EXMOOR	•	•	•c	•		•	•	•				•
SNOWDONIA +	•	•	•		•		•	na	•	•	•	•
LAKE DISTRICT	•	•	•	•	•	•	•	•	•	•	•	•
PEAK DISTRICT	•	•	•	•	•	•	•	•	•	•	•	•
PEMBROKE COAST + +			•c		•	•	•	na	•		na	na
BRECON BEACONS + +	•	•	•	•	•	•	•	na	•		na	na

Key: c = Coastal water sites
+ = From 1:126,720 map
+ + = From 1:250,000 map
na = Not available because of map scale

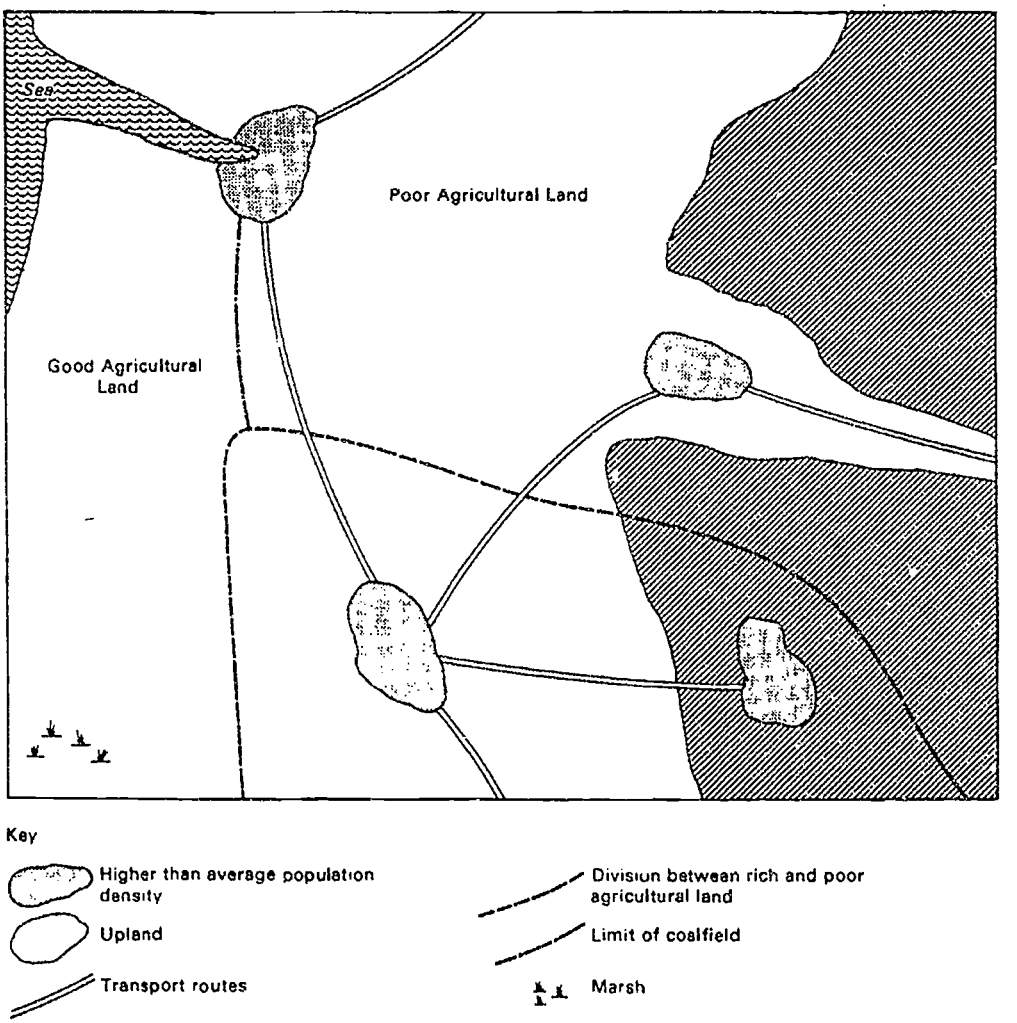
SOURCE: Goring, R. T. (1977) 'A British National Park Model', *Sagt*, Journal of the Scottish Association of Geography Teachers, No. 6.

Models for experimentation

Scientific geography uses many types of models, hardware models, analogue models and mathematical models to mention but three common categories. The use of models yields many opportunities for data processing and interpretation. The effects of a mix of variables in a model over a period of time gives opportunities for observing patterns and reaching generalizations. The map in Figure 3.20 is an area of generally scattered population with four clusters of above average density. To simulate the growth of the settlement pattern, Walker (1979) specifies a number of conditions under which the simulation is to take place. The first of these are:

1. Areas with or near higher population densities are likely to attract settlement;
2. Settlement is more likely to take place on flat land;
3. Settlement is more likely to occur on good agricultural land rather than poor agricultural land;
4. Land near transportation routes is likely to be used for settlement;
5. Land near a coal field is likely to be used for settlement;
6. Marshy land is likely to be unattractive for settlement;
7. Coastal land with its aesthetic appeal is more likely to attract settlement.

Figure 3.20 **Original area before settlement pattern emerged**

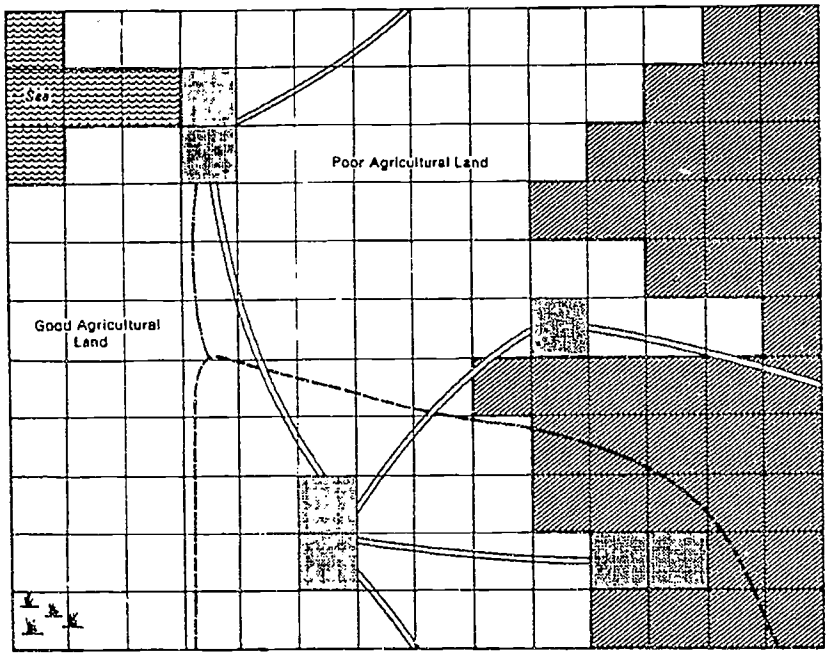


SOURCE: A. H. Walker (1979) 'Monte Carlo Simulation as a teaching technique', *Geoscope, Vol. 13, No. 1.*

These generalizations determine the weightings assigned to grid squares on the converted base map (Figure 3.21) thus:

1. Areas with higher than average population density, 6; adjacent cells. 4;
2. Flat land, 3; upland areas, 1;
3. Good agricultural land, 2; poor agricultural land. 0;
4. Grid square with transport route, 3;
5. Coal field squares, 4;
6. Cells with marsh, -3;
7. Cells adjacent to coast, 1 .

Figure 3.21 **Base map converted to grid cells**



SOURCE: A.H. Walker (1979) 'Monte Carlo Simulation as a teaching technique', *Geoscope*, Vol. 13, No. 1.

In this model, the base map and grid squares now become a matrix of weightings based on the above specifications. The weightings on each variable for each cell are recorded and the weightings summed up as illustrated in Figure 3.22. The element of experimentation is now built into the model by making the patterns generated dependent on the drawing of random numbers. Cells are allotted a sequence of numbers proportional to their weightings and a simulation matrix set out as in Figure 3.23.

Figure 3.22 **Cell weightings**

	13 4	143 8	43 7	43 7	33 6	33 6	3 3	3 3	3 3	3 3	3 3	1 1	1 1
			633 12	433 10	33 6	3 3	3 3	3 3	3 3	3 3	1 1	1 1	1 1
	123 6	243 9	633 12	43 7	3 3	3 3	3 3	3 3	3 3	1 1	1 1	1 1	1 1
123 6	23 5	234 9	433 10	34 7	3 3	3 3	3 3	3 3	1 1	1 1	1 1	1 1	1 1
23 5	23 5	23 5	33 6	33 6	3 3	3 3	3 3	43 7	43 7	43 7	1 1	1 1	1 1
23 5	23 6	23 5	3 3	33 6	3 3	3 3	3 3	433 10	633 12	433 10	33 6	33 6	1 1
23 5	23 5	23 5	43 7	334 10	43 7	3 3	33 6	43 8	41 5	41 5	1 1	1 1	13 4
23 5	23 5	23 5	43 7	443 11	4433 14	4433 14	334 10	43 7	41 5	1 1	1 1	1 1	1 1
23 5	23 5	23 5	43 7	443 11	6343 16	4433 14	43 7	43 7	441 9	441 9	441 9	41 5	1 1
23 5	23 5	23 5	43 7	443 11	6343 16	4433 14	433 10	433 10	4433 14	6431 14	6431 14	44 8	1 1
3 3 0	23 6	23 5	43 7	443 11	433 11	4433 14	43 7	43 7	443 11	441 9	441 9	441 9	1 1

SOURCE: A.H. Walker (1979) 'Monte Carlo Simulation as a teaching technique', *Geoscope*, Vol. 13, No. 1.

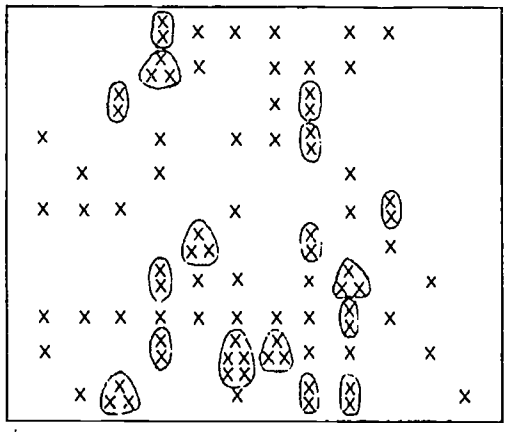
Figure 3.23 **Simulation matrix**

	4	5–12	13–19	20–26	27–32	33–38	39–41	42–44	45–48	49–51	52–54	55	56
			57–68	69–78	79–84	85–87	88–90	91–93	94–96	97–100	101	102	103
	104–109	110–118	119–130	131–137	138–140	141 143	144 146	147–149	150–152	153	154	155	156
157–162	163–167	168–176	177–186	187–193	194–196	197–200	201–204	205–207	208	209	210	211	212
213–217	218–222	223 227	228–233	234–239	240–243	244–246	247–249	250–256	257–263	264–270	271	272	273
274–278	279–283	284–288	289–291	292–297	298–300	301–303	304–306	307–316	317–328	329–338	339–342	343–348	349
350–354	355–359	360–364	365–371	372–381	382–386	387–389	390–395	396–403	404–408	409–413	414	415	416–419
420–424	425–429	430–434	435–441	442–452	453–466	467–470	471–480	481 487	488–492	493	494	495	496
497–501	502–506	507–511	512–518	519 529	530–545	546–559	560–566	567–573	574–582	583–591	592–600	601–605	606
607–611	612–616	617–621	622–628	629–639	640–655	656–669	670–679	680–689	690–703	704–717	718–731	732–739	740
	741–745	746–750	751–754	755–768	769–779	780–793	794–800	801–807	808–818	819–827	828–836	837–845	846

SOURCE: A.H. Walker (1979) 'Monte Carlo Simulation as a teaching technique', *Geoscope*, Vol. 13, No. 1.

The settlement pattern is simulated by drawing random numbers. Figure 3.24 shows the growth based on 85 drawings. Walker's suggestion to compare this with Christaller's model is perhaps unfair, given the differences in assumptions between the models. However, the concepts associated with central place theory provide plenty of material for discussion and predicted outcomes based on the rules can be compared with actual outcomes. A simulation like this provides learning opportunities similar to those achieved in observing deltas being built up in a stream table. Like the size of the grains and force of the water in a stream table, rules and circumstances can be changed to test hypotheses and ideas. Just as significantly for learning, students are engaging in determining and operating rules in a multi-variate world. The experiment, in more than one sense, certainly places students in the role of data processors and interpreters.

Figure 3.24 **Simulated settlement pattern**



Key

X Village (cell with one random number)

Town (cell with two random numbers)

Large Town (cell with three random numbers)

City (cell with four or more random numbers)

SOURCE: A.H. Walker (1979) 'Monte Carlo Simulation as a teaching technique', *Geoscope*, Vol. 13, No. 1.

Evaluating landscape features further

In this chapter, I have emphasized using data obtained from students or other people's knowledge and experience to reach generalizations and understanding. An imaginative exercise which puts in a challenging way a question mark around the classification of data as subjective or objective is one devised by Marianne Kenney and Joan Besly who retain copyright. Students are being asked to get alongside and make something of the reasoning and interpretation of experts. The exercise as a strategy may also be compared with the DAIS (Different and Incomplete Statements) of the previous chapter. The manner in which data are presented encourages students to think further about curious relics in the landscape in an analytical, rational way; we are taken firmly into geography as science and thinking as analysis and interpretation.

Classroom Activity

SEEKING TO EXPLAIN MYSTERIOUS LANDSCAPES AND ASSOCIATED FEATURES

DESCRIPTION:

Using different perspectives such as that of a historian, geographer, philosopher, scientist, and archaeologist students will analyze and interpret enigmas of the past. Our investigation will be of the Earth Mounds of North America and of the *Nazca of Peru*. (Materials presented here relate only to the Nazca).

OBJECTIVES:

1. To stimulate student interest in unexplained places on the earth
2. To use cooperative learning and the "five themes"
3. To show that people's impact on the earth's landscape has left us questioning even with 20th century technology

TIME:

One and a half class periods for each landscape

MATERIALS:

Color coded packets of information:
Nazca (presented here)
Earth Mounds
Ayers Rock
Geomancy

METHOD:

Jigsaw-learning as a member of a cooperative group

PROCEDURES:

1. Tell the class the objective — to investigate ancient cultures and to broaden their critical thinking skills.
2. Tell the class the overall procedures of the lesson:
    a. To become an expert in a specific field of information
    b. After the group's members have become experts on their topics, they will meet to combine the pieces of information
    c. The group must come up with theories to the "basic questions"
3. Distribute the sets of color coded materials
4. All members of one color must meet together, synthesize the information and determine their discipline's perspective on the basic questions. As they read through the material, they should underline the important points, write questions or ideas in the margin, and add their own thoughts and suggestions. When they are finished, they should write down the major ideas and a couple of supporting details or examples. They will have 8 minutes to complete the task.
5. The teacher will tell the class when time has elapsed and the experts should find four other experts from different disciplines through the color coded sheets.
6. In their new group each expert will take one minute to present the essential information from their field and then spend the remaining time answering the "basic questions" considering all fields.
7. Each group should elect a spokesperson and write their theory (on the overhead provided).
8. Each group's spokesperson will present their theory to the entire class.

DEBRIEFING:

1. Compare their theories with that of the experts.
2. Discuss with the class that there is no known "right" answer but tell them this activity will sharpen critical thinking skills and dispel some "ethnocentrism" in showing the advancement of many ancient cultures.
3. Take a poll by a show of hands as to which theories they would support and discuss why they would support it.

PROCEDURES.

- You will be divided into 5 groups of "experts"
    - — Each group represents a different discipline and you will receive a colored sheet of paper
    - — Read through your material and be able to explain it to others
    - — Synthesize the information and determine your discipline's perspective on the "basic questions"
    - — You have 8 minutes

- Form a group consisting of experts on your landscape. To find this group find five different colors
    - — Each expert presents to the group a one minute synopsis of "essentials"
    - — Elect a spokesperson to present theories
    - — Elect a recorder to write answers on an overhead
    - — You have fifteen minutes to work together
    - — The spokesperson has one minute to present the one to three theories of your group

SEEKING TO EXPLAIN MYSTERIOUS LANDSCAPE FEATURES

NAZCA OF PERU

GEOGRAPHER

BASIC QUESTION:

Why did the Nazcan artist some two thousand years ago, draw huge designs that could be seen only from high above?

PLACE:

Desert designs on the surface of the pampa near Nazca, Peru

LOCATION:

Nazca- Longitude 15º South — Latitude 75º West

REGION:

Nazca drawings form a spectacular collection of geoglithics (earth drawings) on the desert of Southern Peru. These drawings are found between the Pacific Ocean and the Andes Mountains, covering an area of about 200 square miles with hundreds of immaculately straight lines, gigantic patterns, and huge animal drawings. (Considered the greatest scratch pad in the world)

- Area is roughly a triangle with river valleys Nazca and Ingenio on two sides and mountains on the other.
- Bare grassless mesa— devoid of vegetation
- Temperatures reach 90°
- Rainfall virtually absent — less than 1/10" of rain each year, the reason markings have survived so long
- Last 100,000 years very little rain has fallen, if anyone walked upon this yellow soil their footprints would remain for many years
- Overhanging the desert's base of yellow sand and clay is a thin layer of volcanic rocks and pebbles. Lines were made by scraping away a few inches of rock to expose the paler soil. (Color contrast make the lines stand out)
- Ancient Nazcans exploited the color contrast to produce their images. The top surface is a brown black layer that geologists call "desert varnish" (bottom lighter red-brown tone of natural rock and yellow soil)
- Wind erosion is minimal
- Pampa afternoon winds of 25 knots common and unpredictable gusts of wind would cause problems for hot air balloons
- Geological activity has reduced the area of land cultivated by 40% since the Nazcans cultivated the area
- La Cumbre Canal (50 miles long) is the most audacious hydraulic engineering project undertaken in the ancient world. The technical expertise involved in constructing this canal was unknown until the 1980's. For example, the near critical flow rate was accomplished by varying the texture of the wall and incorporated hydraulic jumps. The refinements of the La Cumbre channel reveal an understanding of surveying and hydraulics, survey lengths of channel within 1/10 degree of accuracy. La Cumbre Canal illustrates the fact that ancient Peruvians devoted sophisticated skills to developing and carrying out a unified conceived plan that defied instability of their natural surroundings. The design of the canal was on a monumental scale (embankments 10 stories high) but with simple materials (soil and cobblestones)

SEEKING TO EXPLAIN MYSTERIOUS LANDSCAPE FEATURES

NAZCA OF PERU

HISTORIAN

BASIC QUESTION:

Why did the Nazcan artist some two thousand years ago, draw huge designs that could be seen only from high above?

PLACE:

Desert designs on the surface of the pampa near Nazca, Peru

LOCATION:

Nazca - Longitude 15º South — Latitude 75º West

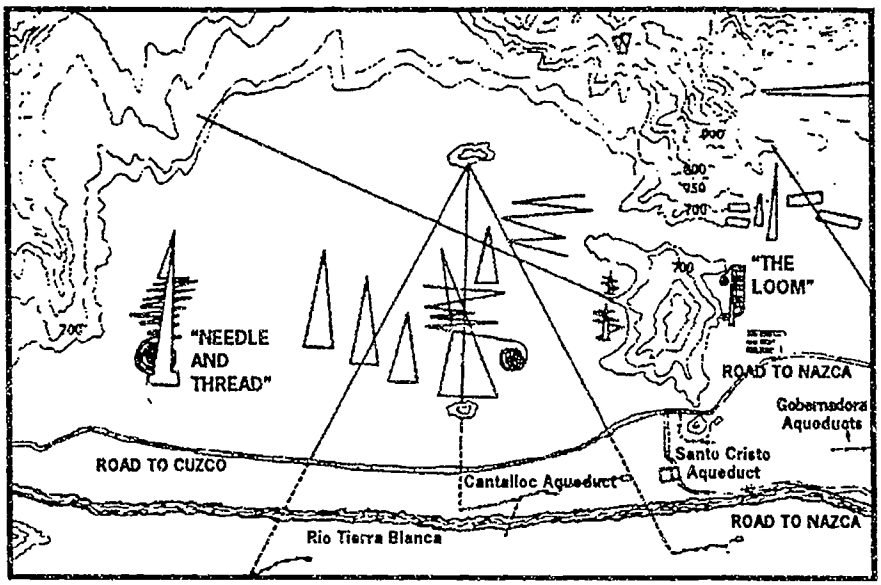
REGION:

Nazca drawings form a spectacular collection of geoglithics (earth drawings) on the desert of Southern Peru. These drawings are found between the Pacific Ocean and the Andes Mountains, covering an area of about 200 square miles with hundreds of immaculately straight lines, gigantic patterns, and huge animal drawings. (Considered the greatest scratch pad in the world)

MOVEMENT:

- The desert was inscribed with animals and lines in two stages. Most certainly they were made by Nazcan Indians during the thousand year history between 500 B.C.E. and 500 A.D. Nazcans preceded the Incas and lived in the south coastal region of Peru. They were simple agricultural people dedicated to nature and all living things
- Dr. Paul Kosoh felt the designs represented the largest astronomy book in the world
- Bill Spohrer felt Nazcans may have flown, so he assembled a balloon only using materials and technology of Nazcans (reed gondola). Nazcan tombs revealed fabric that had a weave finer than present-day parachute material. The flight lasted two minutes, so its seems possible that Nazcan surveyors and engineers could have organized the drawing up of the lines and figures from the air
- Aymara Indians have lived high in the Andes near Lake Titicaca and since the 16th century B.C.E. have used straight lines, within living memory, in rituals of ancestor worship. They believe the spirits of their ancestors dwell at its summit. Ancient desert dwellers used stars to calculate when the rivers would flow again, replenishing the aquifer and enabling them to plant their crops
- Nazcans lived by farming, but had sophisticated brilliant pottery and textiles. Thousands of shards of colorful ceramics approximately 300 B.C.E. to 540 A.D. litter the Nazcan plateau
- Incas, successors to the Nazcans, had several legends about the characters who could fly. There are written accounts of a Brazilian priest Bartolemeir de Gusmao who in 1709 supposedly flew a model hot-air balloon before the Portuguese court in Lisbon. Gusmao was born and raised in Brazil and could have been inspired by accounts of Indian balloons
- Line building was not a single isolated burst of activity. Similar lines are found in Chile and all the way up to Ecuador
- There is a traditional use of hallucinogens still today among folk healers in Peru's northern coast

Plan of the Cantalloc area of the Nazca Valley by local archaeologist Josue Lancho suggests a connection between some of the ground figures and the underground canals. Length of the "Needle and Thread" at the left is almost one kilometer.



LINES TO THE MOUNTAIN GODS

SEEKING TO EXPLAIN MYSTERIOUS LANDSCAPE FEATURES

NAZCA OF PERU

PHILOSOPHER

BASIC QUESTION:

Why did the Nazcan artist some two thousand years ago, draw huge designs that could be seen only from high above?

PLACE:

Desert designs on the surface of the pampa near Nazca, Peru

LOCATION:

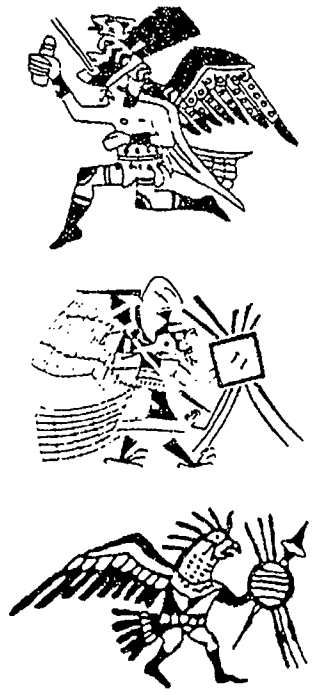
Nazca-Longitude 15º South — Latitude 75º West

REGION:

Nazca drawings form a spectacular collection of geoglithics (earth drawings) on the desert of Southern Peru. These drawings are found between the Pacific Ocean and the Andes Mountains, covering an area of about 200 square miles with hundreds of immaculately straight lines, gigantic patterns, and huge animal drawings. (Considered the greatest scratch pad in the world)

RELATIONSHIP WITHIN PLACE:

- Nazcans had a complex belief system of severed, mummified human heads as sources of spiritual powers and a religious tradition of taking powerful plant hallucinogens to bring participants into contact with supernatural power. Figures on the surface of pampa show supernatural animals as helpers
- There are many myths, rites, and skylore
- Inca roads (straight lines across the pampa) are routes for ceremonial activities or pilgrimages
- Trapezoids may have been used as special ceremonial enclosures or "temples"
- Low heaps of stone strewn with pottery at one or both ends of clearings suggest the idea that there were "altars" with offerings. Straight lines were often aimed across pampa directly toward these stone heaps
- At the center of the Great Double Spiral is an upright stone about 16" high engraved with a design of a serpent and a severed head (spirals associated with serpents)
- Animal designs might represent badges or totems of a particular ancient community
- An accurate sky calendar was essential for farmers in the harsh Nazcan environment. It also served social ends in timing fiestas and ceremonies
- The animal figures could have acted as religious icons — where the whole population gathered to worship or give thanks on days sacred to all Nazcans
- Aymara Indians believe the spirits of their ancestors dwell at the summit of a hill. Each straight line path ascending the hill leads to an east-facing shrine. Today, Aymara celebrate the path to shrines, often stopping on the way to make small animal offerings
- Lines and figures may be linked to a form of mountain worship. Nazcas associate the Andes with rain and fertility. A number of drawings at Nazca including a cormorant, a frog, a duck, and a killer whale are some of the water animals and are associated with rain or fertility in Andean culture today
- Mejia Xesspe believes ancient line were roads of a religious ceremonial nature called "seqe", a traditional term for the invisible sacred pathways



Supernatural warriors copied from Moche pottery designs

SEEKING TO EXPLAIN MYSTERIOUS LANDSCAPE FEATURES

NAZCA OF PERU

ARCHAEOLOGIST

BASIC QUESTION:

Why did the Nazcan artist some two thousand years ago, draw huge designs that could be seen only from high above?

PLACE:

Desert designs on the surface of the pampa near Nazca, Peru

LOCATION:

Nazca- Longitude 15º South — Latitude 75º West

REGION:

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RELATIONSHIP WITHIN PLACE:

- Nazca lines made in two different stages: first animal designs, then straight lines — probably by hand
- Countless lines of varying width and lengths (5 miles long and 40 miles wide) fan out in all directions and often cross over one another in a seemingly random fashion, also various types of animal and geometric designs are found
- Throughout the whole area are thousands of Nazca pottery fragments and deliberately placed piles of stones. Beside some of these piles are remains of wooden posts — while on others there is trace evidence of animal sacrifice
- Beside the Nazca Valley are a collection of statues and rock carvings, one an 82 ft. high double rock shaped like a human head is covered with drawings. Many of the carvings in the rock wall can only be seen when sunlight illuminates them at a certain time of day or during a particular period of year.
- Information about Nazca come from their graves. They buried their dead in a crouched-up position (fetus in womb) with pottery and other artifacts. Nazcans wove textiles - huge burial shrouds discovered from earliest stages of Nazca culture. These shrouds have geometric animal designs (birds, serpents, crabs, fish) and also fantastic creatures made up of parts from different animals. Peruvians endow animals with mythological qualities.

- Nazcans possessed astronomical knowledge or a calendar system found in intricate folklore
- Several mummified heads dug up from sites on the south coast
- No one has ever encountered extraterrestrial hardware of any kind along these lines
- Paintings on the abundant pottery found in the area reveal images of what may have been balloons, soaring birdlike men, and kites. Wide circular 'burn-pits' containing blackened rocks have been found at the end of many lines
- Nazcan tombs revealed fabric that had a weave finer than present-day parachute material and tighter than that used in the manufacture of hot-air balloons
- The lines were precisely etched onto the desert by the painstaking removal of tons of angular rock.

Moche potters crafted superb "portrait jars" of both human and supernatural beings.

The most common type of "monster being" has partly human features, disguised by feline whisker masks and forehead ornaments. The designs often incorporate severed heads and sprouting plants

SEEKING TO EXPLAIN MYSTERIOUS LANDSCAPE FEATURES

NAZCA OF PERU

SCIENTIST

BASIC QUESTION:

Why did the Nazcan artist some two thousand years ago, draw huge designs that could be seen only from high above?

PLACE:

Desert designs on the surface of the pampa near Nazca, Peru

LOCATION:

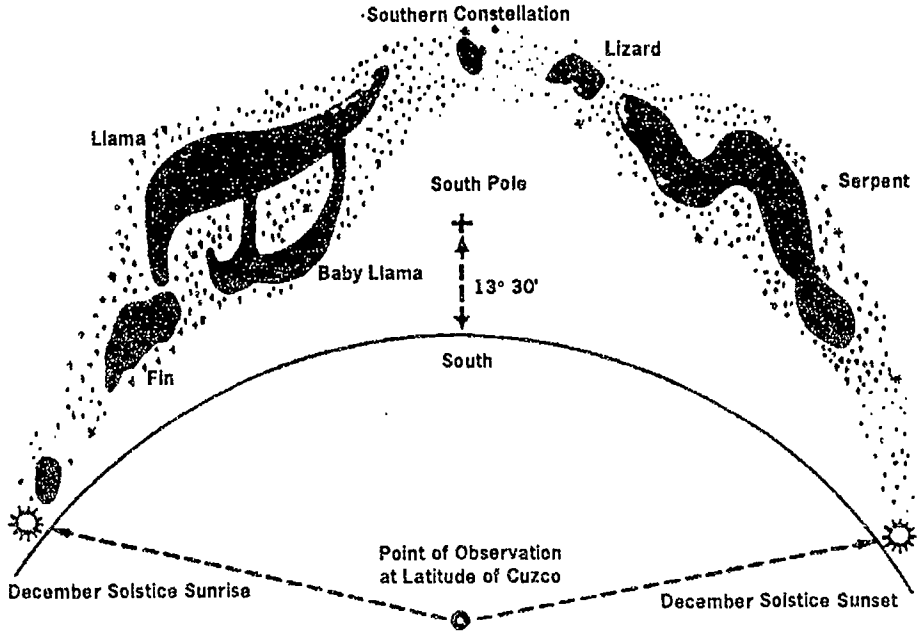
Nazca-Longitude 15º South — Latitude 75º West

REGION:

Nazca drawings form a spectacular collection of geoglithics (earth drawings) on the desert of Southern Peru. These drawings are found between the Pacific Ocean and the Andes Mountains, covering an area of about 200 square miles with hundreds of immaculately straight lines, gigantic patterns, and huge animal drawings. (Considered the greatest scratch pad in the world)

PLACE:

- Colossal triangles and rectangle stretch for hundreds of meters, also run for miles after mile with startling precision
- Naturalist figures (ex. birds, spider, monkey) are surprisingly well proportioned and symmetrical
- Immense size of Nazca designs make it difficult to recognize their identity without plotting outlines on paper
- Some lines predict the position of celestial bodies: sun, moon, planets, and stars were used to determine the correct time of year for planting seeds and harvesting crops
- Nazca lines may be astronomically related — two of the lines point exactly to the setting sun during the summer and winter soltice (the shortest and longest day of the year)
- Animal figures (ex. llama, monkey, toad, Great Bear, spider) might represent images of specific constellations
- Gerald Hawkins analyzed straight lines with a computer to determine the relationship with various stars, constellations, etc. Hawkins found no significant overall match between the lines and the sky — no better match than would be expected by chance point to a distant hill or target
- The atmosphere of Nazca makes it the least favorable place on earth for an astronomer because the wind carries fine dust particles to form a curtain haze
- Some kind of geometry undoubtedly is necessary to set out many of the animal and spiral outlines. The figures are drawn on a huge scale and yet have harmonious, perfect proportions. None of these animal figures is located anywhere near hills that could have given a vantage point to an ancient designer
- The designs are extremely accurate because the unit of measure varies no more than two centimeters, which is remarkable considering some animals are over 500 feet long



LINES TO THE MOUNTAIN GODS

- The great size of the figures, perfect proportions, plus incredible straightness of lines led to speculation as to how Nazcans retained accuracy over large distances
- The shorter lines could have been drawn by using three wooden poles aligned by eye, but longer lines deviate less than 6.5 feet in @ .6 mile
- Smaller plots about 6 feet square have been found beside several larger figures, so maybe once Nazcans established the proper relationship among arcs, center points, and radi on small preliminary drawing, they could then plot on a larger scale
- Nazca designers used several units of measure — drawings can be divided evenly into Nazca "feet" = about 10 feet; "yards" = about ½ feet; another measurement just under 6 feet (5.95 feet)

NAZCA Theories:

1. Astronomical Calendar
2. Developed hot-air balloons
3. Linked Andean traditions and spiritual beliefs — different perspective on material world
4. Built for extraterrestrial visitors landing strips
5. Race tracks for Peruvian Olympics
6. Made by Peruvian "chain gangs" serving a sentence of hard labor
7. Remnants of cultivated fields

Multi-media activities

The logical capstone to this chapter is to provide a description of an activity which uses a combination of data forms and data processing methods. This would help to reinforce the point that geography teachers have a rich and varied range of resources to use in planning learning activities. The number of packs and kits of material now available, makes the selection of any one an invidious task. The revised edition of the American HSGP units (1979) uses a full range of resources — readings, photographs, maps, recordings, models — learning activities and teaching strategies in a well integrated fashion. The English Geography 16-19 Project integrates a variety of media forms — slides, letters, maps — and activities — field reconnaissance, role playing, and public meetings — to explore a problem and reach a decision. The teacher as a manager of resource-based learning, is realized in resource-rich, carefully prepared activities.

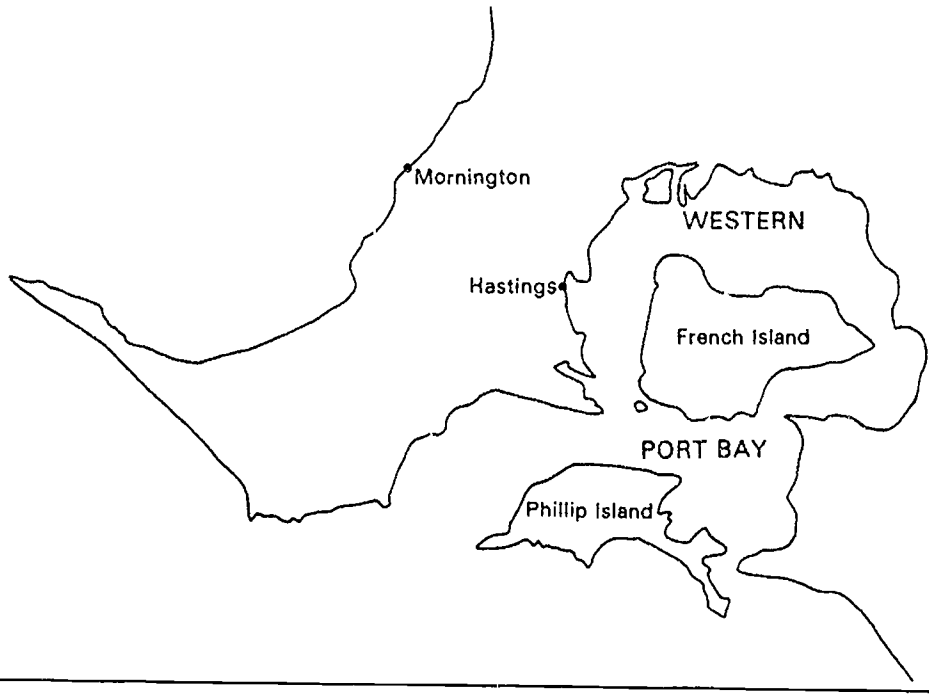
Classroom activity

PLANNING FOR WESTERN PORT

I have chosen to outline in a little more detail, the *Planning for Western Port* activity originally developed by Spicer. It is a very adequate example of a multi-media activity directed towards reaching general understandings and decisions through data processing and interpretation and it introduces readers deliberately to the value laden nature of geographical education explored at length in the next chapter.

Information is presented in various forms, and students individually and in groups attempt to produce a plan on large outline maps provided for the future development of the Western Port region adjacent to Melbourne. The activity opens with a news broadcast which clearly and concisely sets up the

Figure 3.25 **Western Port Bay, Victoria, Australia**



dimensions of the planning problem as well as posing the question of how the region might be developed into the wider economic context of society's prevailing economic and environmental concerns, priorities, and values. How can Western Port's competing attractions for industrialists and holiday makers, farmers and fishermen, conservationists, and store keepers be reconciled in a planned development? What constitutes wise decision making for the Western Port region? A series of twenty slides orients viewers to Western Port landscapes and a booklet provides background information on all aspects of the region.

Opinions on Western Port's development

Ms. Margaret Ross, a member of the Save our Wild Life Association, states that

> *our concern for materialistic things must be reduced. Why should having a great industrial region be regarded more highly than having areas close to the city with an abundance of wild life, natural vegetation, open space, and fresh air? We need to get our priorities straight.*

An industrial executive, Mr Bill Speel, argues differently. He emphasizes enormous benefits and additional jobs and clearly sees Western Port as an ideal site for industrialization. It has a deep water harbor, transportation links, proximity to the Melbourne market, labor supply, and so on. Residents of the Western Port region believe that it is vital to inform government planners of their views. A series of meetings is planned to produce a set of principles on the future form of development. Role cards are distributed and students assigned to 'interest groups', A-H. These represent the following groups:

A Agricultural industries
B Manufacturing industries
C Conservationists
D Business and professional people
E Phillip Island Action Committee
F Hastings's Council Development Subcommittee
G Recreational interests
H Land Development Group

Interest groups meet

The interest groups then hold independent meetings. They endeavor to reach a consensus among themselves concerning their hopes and ideas for the future of the area. Each participant must put his or her own viewpoint. Each interest group then appoints a leader to state the views of the group at the first public meeting. It is suggested that minutes should be kept of each meeting.

The first public meeting

The first public meeting has been called by the Hastings's Council Development Sub-Committee with the intention of setting up 'planning bodies'. Each interest group seeks membership of the planning bodies. At the first public meeting it is suggested that minutes should be kept by the teacher and circulated to all participants. At this meeting each interest group, through its leader, airs its views publicly and this is followed by a period of general comment, debate, and questioning. The meeting ends with the formation of several planning bodies made up of a mix of interest groups.

A planning body has a composition resembling the following: a farmer, a steel industry representative, a resident of Phillip Island, a bank manager, a local school teacher members of the Phillip Island

Action Committee and the Hastings's Council Subcommittee, a walking club representative, and a member of the Land Development Group.

The interest groups then meet again and decide what their views will be as working members of the planning bodies. A period for individual study of activities, slides, the map, and further information available from newspapers, letters or articles, is suggested at this point.

Planning bodies meet for up to 6-10 hours to produce a set of guiding principles and a plan for the development of the region. The principles and plan should, it is suggested, refer to all aspects of development including residential, industrial, commercial, educational, recreational, transport, conservation, and pollution matters. Each plan should include a land-use zoning map.

The second public meeting

At the second public meeting, with the teacher again keeping minutes, the planning body leaders present the group plans. He or she will describe the plan and answer questions from the floor. After general discussion a vote is taken to select the plan which is to be submitted to the government. Participants are not bound to vote for the plan of their own planning body. The plan selected is then subjected to modifications based on suggestions made by participants. The suggestions are to be put forward as motions and voted on. Finally, a fair copy of the plan is prepared and perhaps displayed within the school.

Brian Spicer suggests that likely outcomes of this activity include:

1. increased factual knowledge of the Western Port region;
2. increased skill in comprehending and analyzing data presented in a variety of forms;
3. increased understanding of those factors which make an area attractive for industry, residential development, and have increased commercial development;
4. greater understanding of the views of conservationists, recreational users, and others who see the development of a great urban complex as a threat to the resources, attractions, and existing community in the area;
5. increased skill in analyzing, synthesizing, and evaluating evidence from a variety of sources and an increased ability to reach judgements and decisions on the basis of evidence and personal considerations;
6. greater willingness to listen to the views of others, greater skill in seeking compromises, and
7. greater understanding of the complexities of regional planning and of policy formation.

There seems little doubt that these outcomes are realistic assessments of the intellectual, social, and practical learning which can be achieved through involving students in geographical problem solving and decision making of the kind offered by Western Port.

Geography is rich

As I have stressed through numerous examples in this chapter, we have a tremendously solid investment in data banks. From our data banks we borrow resources to develop our students' intellectual, social, and practical talents. To ignore our resources and their potential contribution to student learning is to deprive geographical studies of their greatest strength — their close and essential connection with the world, real or imagined, public or personal.

CHAPTER 4:

INTERPRETING AND ANALYZING ATTITUDES AND VALUES

Attitudes mesh with thinking skills

The way value laden issues are handled in classrooms may depend on the relative weighting and emphasis a teacher gives to (1) the knowledge and skills, and (2) the attitudes and values component of learning the concepts and real world dimensions of a discipline. In the last chapter, in *Planning for Western Port*, value dimensions were ever present and quite explicitly built into the whole activity. It was treated as a value laden issue. The aim of this chapter is to draw attention to values and attitudes in a geographical education while at the same time appreciating that value laden issues are data, as it were, which we try to understand and interpret. In making this distinction between knowledge and skills and attitudes and values, I am not wishing to imply I go along with knowledge, (cognitive understanding) divided off from other ways of understanding and feeling (e.g. aesthetic, moral or religious). I adopt the distinction in actual fact, as a way of emphasizing the importance of the subjective, of drawing attention to values.

Broad aims

Acquiring knowledge and skills through geography has been almost certainly the predominant, overt, and most explicit of our activities. The explicit teaching of values or teaching for values analysis, clarification, and development has received less emphasis, though a concern for certain values and attitudes has traditionally been part of the vision of the concerned geography teacher. The belief that the study of things geographical contributes to developing good citizens, and that geography by its very nature leads to international understanding may be cited as examples of geography's concern for fostering certain attitudes and values. Indeed, such claims and concerns may be seen as part of the ongoing development of a justification and rationale for geography in education grounded in what at any one time is considered to be educationally worthwhile and socially desirable. Today, geography as it illuminates environmental problems and concerns is highly valued and this aspect of geography is used as a justification for, or in other words, a way of indicating the value of the subject.

Classroom activity

NEIGHBORHOOD PREFERENCES

Let us now look again at the neighborhood preference exercise as a way of thinking about attitudes, values, and priorities in the classroom with younger children.

The exercises based on the question, 'What things do you prefer in your neighborhood?' (Figure 4.1) might be viewed and handled primarily as an assessment of the impact of a variety of land-uses in a predominantly residential area. Each of the changes — changes in appearance, traffic, people — mentioned in the checklist could be weighed up and a decision based on such a composite measuring stick reached. For example, each of the six potential changes may be considered to have an equal weighting

Figure 4.1 Which things do you like best in your neighborhood?

Would you change your neighborhood?

Read carefully the whole list below before marking anything. Think about each item in the list as if it were something that was going to be built in the four places at the top of the columns. The aim is to sort out your likes and dislikes for such things. After you have thought about each thing, copy out the list and give a 1, 2, 3, 4 or 5 to each. A score of 1 is highly desirable, 2 is desirable, 3 is indifferent (you don't mind one way or the other), 4 is undesirable, 5 is highly undesirable.

Remember that any change affects many things. It may cause:

- changes in appearance and views
- changes in the way people travel, shop, meet each other
- changes in traffic
- changes to air, water . . .
- changes in the amount of noise
- changes in the kinds of people in the neighborhood

	In your street	*In a neighboring street*	*Within another part of your neighborhood*	*Within a nearby neighborhood*
1. Hospital				
2. Convenience store				
3. Bar				
4. Laundromat				
5. String of stores				
6. Gas station				
7. Supermarket				
8. Public dump				
9. Taxi headquarters				
10. Fast-food restaurant				
11. Sidewalk venders				
12. Homeless shelter				

- Underline those things you have marked 4 or 5 and write down or discuss how you would actually behave if a proposal for building it were put forward. Decide from the clues given in A, B, C, D, E and F. A — you would move elsewhere; B — you would protest or organize a protest group; C — you would join an already existing protest group; D — you would complain but not take any action; E — you would do nothing; F — other (explain).
- Circle the things you marked 1 or 2 in the first column and work out what they have in common.
- Choose one of the things least desired for your neighborhood by the class as a whole. Decide how the bad effects of the change could be reduced or where it might be placed outside your neighborhood. Consider whether anyone would think you were being selfish by refusing to have it in your neighborhood.

SOURCE: Adapted from: F. Slater and M. Weller (1981) *Skills in Geography, Level 3*, Cassell.

which added together make up a composite score. Such a procedure gives an air of clinical objectivity and detachment to the enquiry. In fact it involves feelings, preferences, attitudes, values.

Degrees of involvement

A feeling of detachment would be stronger if the locational alternatives were even more antiseptic and uninvolving, and were replaced by giving students a more remote adjudicating role. For instance, as town planners, they might be asked to place gas stations, hospitals or laundromats in a Burgess concentric ring type of town and undertake what amounts to a compatibility of land-use exercise removed from any engagement of their personal feelings in the matter.

The fact that students do have to consider the potential types of land-use change as if they were to be placed in their street and then in progressively remoter areas does probably bring about an interplay of their own attitudes and values a little more directly. Their feelings about living down the street from a hospital will interact with their more objective appraisal of such a land-use. This ever present interaction between cognitive and affective domains tends to repudiate suggestions that values and attitudes can be kept out of the classroom.

Stay, move, protest

The strength of student feelings and how their behavior might be affected is linked in the activity to the options of moving elsewhere, organizing a protest group, and so on. Ideas on political action may be said to have been introduced—a nod towards political literacy.

But there is no suggestion of an *overt* examination of the preferences, the attitudes, and values underlying the choices. Would we, in fact, wish to probe further beneath the preference pattern? Do we see any need to confront students with a 'why?' question and ask them to consider: 'Why? What makes you say that? Do you think that your statement holds true in other situations? What values lie beneath your choice? Are you proud of your choice? Would you stand up in public and advocate your views?' Such questions encourage students to realize and explore their opinions or attitudes so that they become more aware of the values underlying their choices. It is questions like these which would need to be asked to transform the neighborhood land-use change exercise into a values exercise.

A moral question

Notice that a moral question (Is it right? Is it wrong? Is it good? Is it bad?) related to sharing is raised, almost as an afterthought at the very end of the "would you change your neighborhood?" activity. I am now inclined to think that this question on selfishness might not be the best kind of question to help students towards a realization of what values underlie their decisions since it is a question loaded towards one particular moral value. Probably more neutral, strictly analytical questions should be asked, at least in the first stages of values analysis and clarification. The private or public realization that choices may reflect selfish, altruistic, generous or bigoted attitudes and vested interests, is appropriately reached as the culmination of such exercises. In the context of land-use change the question about selfishness needs at least to be preceded by 'Why do you think . . .?' questions. Acting selfishly or unselfishly and its related attitudes would come up in response to a 'why?' question. If the question were asked as part of a sequence of questions, would a teacher have to be prepared to discuss how we arrive at decisions which represent a reasonable and wise balancing of our needs against those of others? Has Western Port been wisely developed? The procedure set out for the Shelter for Battered Women exercise is a strategy for probing the question. Today on a world wide scale we are all neighbors to each other and some of the most pressing controversies in the category of "not in my backyard" (NIMBY) are those of waste disposal, including nuclear waste disposal.

Values education

Students need to be made more aware of *their own* and *other* people's attitudes and values although the implications arising from values education seem at first difficult, quite apart from immediate worries about indoctrination.

Schools have for many years assumed responsibility for the knowledge and skills areas of the curriculum but do we take greater risks and overreach ourselves in encouraging students to examine attitudes and values? Certainly, value-laden topics and issues are more openly approached than in the quite recent past and fortunately the social studies tradition in North America has a strong concern for the affective and values domain.

Nevertheless, some question if indeed it is possible or justifiable to 'teach' values or to seek to influence students' attitudes and values. Can or should the teacher compete in a values forming environment in which home background, friends, TV, and advertising already play such an influential role. Are not values a matter of opinion in a pluralistic society? Thoughtful answers to these questions can refute the concerns that (1) values education is indoctrinary, or (2) geography teachers can deal with their subject in a value free way or (3) the idea that values can be equated with opinions. One can argue that an explicit knowledge of strategies for exploring and assessing values is a defence against indoctrination, that geography is not a value free subject, and that there are some ultimate values and moral principles that cannot be reduced to being relatively right or wrong, good or bad, desirable or undesirable, however problematic their implementation may be.

Teaching style

However, at a pragmatic level, if geography teachers see themselves as transmission-reception teachers with a responsibility to give clear-cut answers, and people on whom students rely for absolute guidance, then they will avoid any explicit attempts to probe beneath the surface of the affective domain. If, conversely, they see themselves in the role of mediators, working within an interactionist model, then their responsibility becomes one of leading and facilitating discussion, developing rational argument and fostering a non-threatening and supportive environment in which students can explore attitudes and values. Geography teachers do not have to provide ultimate answers. They have to be able to challenge people to think further and encourage them to accept their conclusions as tentative and susceptible of further development and appraisal. They must acknowledge that this is going to be difficult if, in fact, they cannot hold their own views open-mindedly.

Taking up the challenge to raise questions of value, presupposes students accept education as an activity in which they and their teachers are constructively engaged and one for which they have developed certain necessary social skills and forms of behavior. I make the point because I think it is an even more crucial assumption in values education if such activities involving heated discussion and controversy are to be deemed possible.

Neutralists in values education

To leave the discussion there seems to admit to being one of the new neutralists — those who advocate analyzing and clarifying values but not going so far as to take part in developing and forming values and acknowledging some values as absolute. There is no doubt, as already mentioned, that some teachers hold the belief that values should be kept out of schools and education and that values education is an infringement of the human rights and freedom of students and parents. Another group of people believe that education in the affective domain is important and necessary. Many of these people would avoid teaching specific or ultimate values and emphasize the process of clarifying values. Raths *et al* (1966), and Simon, Howe and Kirschenbaum (1972) exemplify this position. Their strategies for probing values

and attitudes do not encourage or permit the teaching of values. Other writers like Metcalf (1971), who are also neutralists, emphasize rather more the role of values analysis for improving value judgements and helping students to make more rational value judgements, while Kohlberg (1975) advocates the development of moral reasoning. His view and approach is not considered neutral because the moral decisions students are asked to make involve concepts of right and wrong. It also needs to be noted here, as later, that Carol Gilligan's (1982) research suggests Kohlberg's work may be gender biased and she challenges us to interpret people's responses to moral dilemmas from perspectives of caring on the part of women and justice on the part of men. The dilemma exercise itself remains a useful teaching strategy and it is probable that discussion of moral issues is likely to be more beneficial than detrimental if, in fact, we are willing to engage in such an enterprise. Willing or unwilling, we need to be clear about our reasons in either case and to have a broad view of our aims in relation to values education and geography. It is perhaps unfair to make a clear cut division into those who are either willing or unwilling for there are probably degrees of willingness and unwillingness to attend to values and attitudes in school. Some have given the teacher the role of neutral chairperson (Stenhouse, 1970). The four teaching approaches to controversial issues (Figure 4.2) sets out the strengths and weaknesses of stances a teacher can take. Probably, in practice, we intermix the approaches.

Some time ago now, Wilson, Williams, and Sugarman (1968) identified a hierarchy of levels of endeavor in moral education. Such a hierarchy is useful as a guide to sorting out just what we are likely to be achieving and at what depth we are engaging in the interpretation and analysis of values- and attitudes-laden issues. Guided by the Wilson, Williams and Sugarman hierarchy, though not adopting it completely, I suggest that we have to consider the likely effect for values education of teaching at the following levels:

1. Factual knowledge
2. Empathy
3. Classification of values and ethical principles
4. Encouraging the exercise of decision making and moral judgement.

Factual knowledge

Students cannot be expected to reach sound value judgements without an understanding of the facts, ideas, and generalizations that relate to the topic under discussion. A knowledge of factors influencing the location of agricultural enterprises, industries, high-class high-income residential areas, or shopping centers is necessary in order to reach judgements pertaining to such enterprises and entities. Where the attitudes and values of key decision makers and pressure groups is incorporated into the data students are working with, then the exposure to the values of others enhances the quality of the factual learning about values people hold. Role-play games like *Planning for Western Port* which provide information on the issue, together with people's probable attitudes, and then set up decision-making activities are likely to be effective in demonstrating the interaction of fact and value. However, the aim of such work is sometimes directed at providing insights into decision making *rather than the valuing process as such.* Nevertheless, there are very real spin-offs in the realm of attitudes and values education and insights into vested interests. We learn that the most powerful interest groups most often win. Do we need to go further into political education to bring about an understanding of these outcomes? Do we need to go further than developing a knowledge and understanding of who holds what attitudes and what self-interests are apparent? To what extent should we teach for empathy and bring about an understanding of values and attitudes through empathizing?

Figure 4.2 **Four teaching approaches to controversial issues** (after Stradling et al, 1984)

Potential strengths		*Potential weaknesses*
Minimizes undue influence of teacher's own bias. Gives everyone a chance to take part in free discussion. Scope for open-ended discussion, i.e.. the class may move on to consider issues and questions which the teacher hasn't thought of Presents a good opportunity for students to exercise communication skills. Works well if you have a lot of background material	***Procedural Neutrality*** ***In which the teacher adopts the role of an impartial chairperson of a discussion group.***	Students find it artificial. Can damage the rapport between teacher and class if it doesn't work. Depends on students being familiar with the method elsewhere In the school or it will take a long time to acclimatize them. May only reinforce students' existing attitudes and prejudices. Very difficult with the less able. *Neutral chair* doesn't suit my personality.
Students will try to guess what the teacher thinks anyway. Stating your own position makes everything above board. If students know where the teacher stands on the issue they can discount his or her prejudices and biases. It's better to state your preferences after discussion rather than before. It should only be used if students' dissenting opinions are treated with respect. It can be an excellent way of maintaining credibility with students since they do not expect us to be neutral.	***Stated Commitment*** ***In which the teacher always makes known his/her views during discussion.***	It can stifle classroom discussion, inhibiting students from arguing a line against that of the teacher's. It may encourage some students to argue strongly for something they don't believe in simply because it's different from the teacher. Students often find It difficult to distinguish facts from values It's even more difficult if the purveyor of facts and values is the same person, i.e. the teacher.
Essential: I think one of the main functions of a humanities or social studies teacher is to show that issues are hardly ever black and white. Necessary when the class is polarized on an issue. Most useful when dealing with issues about which there is a great deal of conflicting information.	***A Balanced Approach*** ***In which the teacher presents pupils with a wide range of alternative views.***	Is there such a thing as a balanced range of opinions? As a strategy it has limited use. It avoids the main point by conveying the impression that 'truth' is a grey area that exists between two alternative sets of opinions. Balance means very different things to different people. The media's view of balance is not mine. Teaching is rarely value-free. This approach can lead to very teacher-directed lessons. Like media interviews you are always interrupting to maintain the so-called balance.
Frequently used by me. Great fun, and can be very effective in stimulating the pupils to contribute to discussion. Essential when faced by a group who all seem to share the same opinion. Most classes which I have taught seem to have a majority line. Then I use this strategy and parody, exaggeration, and role reversal. I often use this as a device to liven things up when the discussion is beginning to dry up.	***The Devil's Advocate Strategy*** ***In which the teacher consciously takes up the opposite position to the one expressed by pupils or in teaching materials.***	I have run into all sorts of problems with this approach. Kids identifying me with the *views* I was putting forward as devil's advocate; parents worried about my alleged views, etc. It may reinforce students' prejudices. Only to be used when discussion dries up and there are still 25 minutes left.

Empathy

Empathy is promoted by providing concerned insights into the situation, feelings, anxieties, and intentions of other people. It involves the not inconsiderable abili y to place oneself in another's shoes or life circumstances and expectations, in order to view problems, dilemmas or situations from their perspec-tive. Can the conservationist feel him/herself into the position of the industrial entrepreneur? Can the industrialist feel him/herself in the position of the trees to be cut down? If so, an insight into motives and actions is achieved.

Exercising empathy requires that one can be objective enough to understand another's viewpoint without necessarily agreeing with it or accepting it as the only possible viewpoint. Games and simulations are widely used to encourage and develop empathy. The British Schools Council Liverpool team considered that simulations promoting empathy require children

(a) to assess as accurately as possible how another person or group sees a situation, and

(b) to select the elements in an often complicated situation that are related to the way another person or group *appears to* be seeing that situation.

These requirements of empathetic understanding are well worth pursuing in order to understand one's own and another's attitudes and values. The second of the two points probably does not receive enough attention. Teaching for empathy under point (b) becomes a tool for examining personal values and exposing cont. asts in values between individuals and groups. Teacher questioning is vital, however, and needs to play an important part in the debriefing session at the end of empathy-raising games. What attitudes and values did the different people hold? Who would most closely represent your viewpoint? What is your view? What influenced the people to hold the views they did? Why do you think the person holds those views? What arguments would you put forward to support one of the views which is contrary to your own? Would that person hold those views in all circumstances? What might cause a change of viewpoint? These questions move from closed to more open questions which might stimulate a critical awareness of attitude formation and change.

Few writers seem to disagree that learning through geography should promote empathy, especially in working towards positive attitudes to other nationalities. Even so the problem of bias remains.

For some years now when taking a session on evaluation — of courses, texts, videos and so on — I use the case studies presented in Figure 4.3 as a starter. In groups the beginning teachers are asked to choose the description they would use with a class and give reasons. After a whole group discussion I then give each student Roger Robinson's preliminary commentary as set out in Figure 4.4.

As a result of the activity, I anticipate that students will be more keenly aware of bias and that they will be encouraged to take this up with their classes. Porter (1986) groups teaching strategies into activities that "correct", "detect" and "create" bias. Subsequently Fry (1987) developed exercises for geography students under these three categories and one of them for detecting bias is reproduced in Figure 4.5 as a model.

Roger Robinson's descriptions of Bisena-halli, it may be noticed, were an exercise in creating bias. Robinson's (1988) subsequent work on sympathy and paternalism, empathy and realism is very significant in relation to bias too. His conversations with students alert us to biased leanings in their thought often embedded in well meaning attitudes. One can believe oneself to be sympathetic and yet perhaps unhelpfully adopting a paternalistic attitude, a less than equal attitude. As well as provoking thought, Figures 4.3 to 4.5 provide resources for activities with students.

In addition, Figure 4.6 challenges the bias which arises from stereotyping. It is the beginning of a chapter on Latin American migrants. The authors of the chapter go on to present tables of data and information in the main body of the chapter which describes more accurately, because it is based on evidence, Latin American migrants.

Figure 4.3 **Descriptions of a small Indian village**

Description A

Bisena-halli is a small village on the Deccan Plateau in South India. The farming relies on the monsoon rains and on irrigation from water saved in the tanks. These are often dry from January to May. We are about three hours' journey from Mulbagal, the local market town and administrative centre.

There are about 60 houses and 300 people here and I know them all very well. I was born here, and my wife came from a nearby village when we married 15 years ago. We bought our house for the equivalent of about a year's wages (which we borrowed from the landlord), and since then I have replaced the thatched roof with granite slabs and strengthened the walls with granite pillars. It is a very sound house. We have added a separate kitchen and have no trouble with smoke in the main room.

The village pump provides water. We have no bathroom, but we all know where to go in the fields. Scavenging animals, especially pigs, clean up a lot, and the hot sun quickly sterilizes any dung left. Personal cleanliness is most important and we are glad of the good water supply.

The house and patio are kept washed and swept. We sit cross-legged on the floor to relax, and sleep on reed mats outside most of the year. We are comfortable living in this manner, so we don't need furniture. We spend a lot of time outside — after work we eat and chat in front of the house enjoying the warm evening air.

We farm a share of my family's land, but it only provides about half our needs. In the dry season there is no farm work and we must look for coolie work. This year there is work digging a well at a neighboring village, and I, my wife and my eldest daughter (14-year-old) work there most days for 5 rupees (25c) each. This work is hard, but it means we can buy ragi millet grain and some fruit. We are lucky to have a few animals that my 10-year-old son looks after, and so we have a cup of milk each day.

I would like my children to be educated, but we need the money, and my 8-year-old daughter has to stay home to look after the youngest.

Some people in the village are worse off than me. Troubles really come with unemployment or illness. We cannot afford doctors and medicines or operations, but we get some help from the nurses who visit the village. I wouldn't go to live in the city. If I got ill there, or lost my job, no one would help me. But here I know someone

Description B

Bisena-halli is a small village on the Deccan Plateau in South India. Its people rely on farming which in turn relies on the rain brought by the SW Monsoon between June and October. Coats and jerseys are unnecessary in Bisena-halli at any time, and the really hot weather comes in May.

The close-knit community consists of 300 people in about 60 households. Many of these, particularly the Harijan families, live in small single-roomed houses built entirely and very cheaply from local materials. They have sandbrick walls carefully smoothed with mud or cow dung plaster, and are roofed with thick thatch. The floor and patio are usually made of smoothed cow-dung that gives a hard clean surface without smell. These floors are often decorated with white chalked intricate traditional patterns. The inside of the house is tidy and well-swept, dark and cool. Animals are assigned special areas in sheds that form part of the house, but are not allowed in the living rooms.

An electric cable passes near to Bisena-halli, but no one can afford to have a line to their home, or to pay for current. There is no sanitation and villages have to use the fields. The drinking water supply is safe and reliable from a central village pump, and villagers spend hours carrying water home for cooking and personal washing. Clothes are washed at the pump, sometimes on the person when they are too poor to have more than one set. In spite of the poverty the women are beautiful in colorful saris as they glide along the streets carrying water-pots or baskets on their heads.

A few of the narrow streets between the granite houses of the richer families are paved with slabs, but elsewhere the streets and tracks are orange-red earth. In the hot dry season the centre of the village is given welcome shade by wide-spreading banyan trees.

Most of the adults had no chance of formal education, but now there is a village school and about 30 per cent of the children attend. Unfortunately, there is so much poverty in the village that many families find it necessary to keep children away from school to work in the fields, look after animals, or look after younger siblings so that their mother can go to work.

Only a few villagers have sufficient land to support themselves. Most families rely on wages earned by farming or laboring. The wages are very low, and there is no security of employment and no unemployment benefits. Often no work is available, and families have to buy the cheapest basic foods available. Their diet is therefore unbalanced and inadequate.

Survival from day to day becomes the overriding aim in life, especially in the dry season. Day to day employment is vital. Luckily farming and construction work is still labor intensive.

Description C

Bisena-halli is a small village on the Deccan Plateau in south India. Its climate is typical of the drier Tropical Monsoon, with some rain brought by the SW Monsoon between June and October. The temperature is always high, and the hottest month is May.

There are about 300 people living here in 60 houses. The buildings are all single-storied, many are roughly thatched with reeds, and most are built from sun-baked mud bricks. Some better, larger houses are of stone — granite is quarried locally. The houses have few windows, and the rooms are usually low and dark. The floors are made of cow-dung, and walls are often plastered with mud or cow-dung. There is no furniture. The animals (cows, bullocks, goats, sheep) sleep in, or close to, the houses.

Electricity has not reached Bisena-halli, and there is no piped water or sanitation. Human excrement is found in the fields near the village, and the use of water in the home is limited because it has to be carried from the central village pump that the government installed.

The streets are narrow and mostly unpaved, and roads leading to the village are dirt tracks. Animals wander everywhere. The village is dusty and hot in the long dry season, and muddy during the monsoon.

The villagers use only primitive technologies and are uneducated. Very few adults are literate and only a small per cent of the children attend school — although the government has provided a building and a teacher for the village. The villagers have poorly balanced diets and little understanding of nutrition or medicine. Many suffer ill health and rely on old traditional village remedies.

There are one or two well-off farming families but most villagers are only laborers and have no permanent employment. Many people have only one set of clothes which becomes dirtier and more ragged until it is renewed at the end of the year. No one has footwear. Transport is by foot or bullock cart, and even the richest villager aspires only to a bicycle.

Men, women and children live and work in conditions similar to those in medieval England. They labor all day with implements that have not changed for hundreds of years. There are no tractors or power driven machines — ploughs are bullock drawn, hoeing, weeding, planting and harvesting is by hand: water is pumped or lifted by hand — so the economy is inefficient and production per person very low. In Bisen-halli there is little sign of improvement.

Source: Roger Robinson, *Times Educational Supplement*, 3.12.82.

Figure 4.4 **What is Truth?**

Teachers and textbook writers are in the front line of education's skirmishes with prejudice and racism. Free discussion of values and attitudes is essential maintains Roger Robinson.

"Never mind all this about value-systems and prejudice — lets get on and just teach the facts", may be a cry from the heart, but it betokens an ostrich-like attitude. The very nature of the syllabus for many school subjects predetermines that teachers and pupils are involved in lessons where values and attitudes play a vital role.

It is not necessary to search in the "hidden" curriculum or in the jungle of interpersonal classroom relationships to find these instances. In subjects like history, geography, social studies and religious education, the choice of what is taught and how much time is given to each topic indicates what is accepted as important and valuable. The choices may have been based on "educational" values, but when the content of lessons is concerned with everyday life the decisions have much wider implications.

The classroom teacher is often one step (or more!) removed from such decisions, but has many more subtle influences with which to deal. Even if very important questions arising from the effects of the teacher's own values and attitudes are left aside, there are still significant difficulties in trying to teach honestly from any secondary sources. These become clear if a specific example is considered.

Suppose that as part of a course a teacher is providing a case study of a village in the Third World, and has to hand in a text book or topic kit, information about a village in South India. The study includes a few photos, a map, some statistics, and a brief description.

Photos, maps, statistics are likely enough to present value-laden images of the village, but the possibilities for the description are even more interesting. The teacher may find something like any one of the three descriptions presented here as A, B, and C. (refer back to Figure 4.3)

Each description creates a different impression of Bisena-halli and the people who live there. Yet there is nothing in any of the descriptions that could be described in a court of law as "untrue". If you read all three your final impression of the village may well depend on which description reinforces your own preconceptions, or even on which description you read first. All three can equally claim to be "fact".

Of course, it is also a fact that in this example one author wrote all three descriptions after a recent week's stay in Bisena-halli. An example from actual texts written by three different people might provide a stronger argument, but would involve analysis too lengthy and complex for a short, article.

The extracts certainly would be about different places and peoples, be written for different ages and abilities of reader, and be accompanied by different additional resources. The use of a fictional example made it possible to deal with the same aspects of life in the same village in each description (housing, village landscape, quality of life, employment), and concentrate on the effect of different attitudes and values even when substantially the same elements are selected for description.

Descriptions written from each of these viewpoints can be found in school texts and materials in use today. Description A embodies a rather sociological approach (the *New Internationalist*?). B attempts to show understanding and empathy from a Western viewpoint (the *Observer*?), and C another Western view valuing science, industry and high energy technology (a 1960s school text?).

Some degree of generalization and stereotyping is inevitable during brief 10-minutes excursions into different cultures and far away places. It can be argued that often school lesson content is kept in a special compartment of the mind and does not anyway impinge to a significant degree on the learner's understanding and interpretation of his/her real world. This would be an unhappy state of affairs if it applied generally, and if reality and honesty are to be characteristics of classroom activity the free discussion of the role of values and attitudes is essential.

Value-free classroom materials are as impossible as value-free teachers, and the content of the school subjects that can be loosely labelled "Humanities" puts teachers and text-book writers in the front line of formal education's skirmishes with prejudice, racism and ethnocentricity.

Source: Roger Robinson, *Times Educational Supplement*, 3.12.82.

Figure 4.5 An exercise in bias

Acid rain is one of the most currently controversial issues. Perhaps one you've been exposed to once too often. Bear with me once more for a second exercise in bias as it relates to acid rain.

A geography teacher, Peter Fry, recently did some research into bias and acid rain. He believes that to be politically aware and politically educated we need to come to understand bias. He gave the following exercise to his class. It's an exercise based on two extracts about the causes of acid rain and fits into the category of having evidence of a sort of scientific kind on which to base our point of view.

?

1. Read extracts A and B one at a time and answer the questions on each one.

2 After completing the exercise and holding a debriefing discussion (Peter Fry's own account of the lesson is given after the two extracts), consider how you would create two exercises for yourself which set out not to detect bias as in this one but
a to create bias, and
b to correct bias.

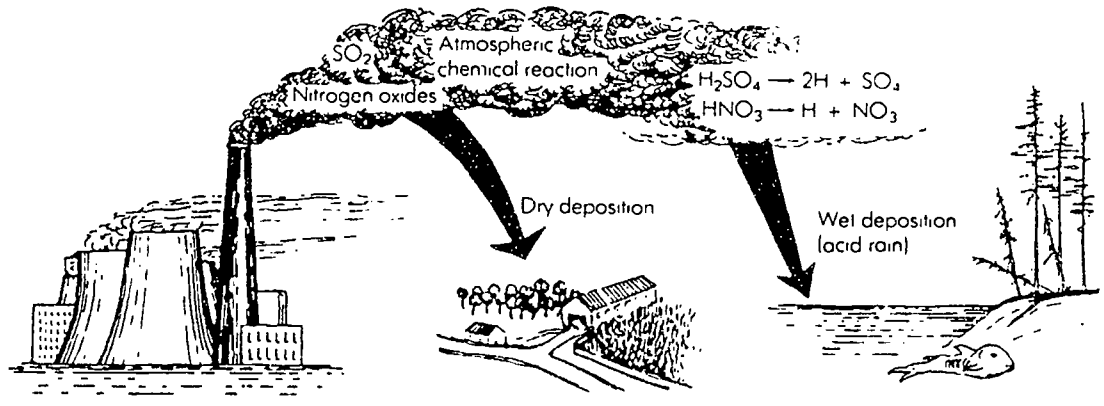
How does rain become acidified?

Extract A

Acid rain is a menacing form of air pollution. Two of the most important groups of air pollutants are the oxides of sulphur and nitrogen. Sulphur dioxide is released when fossil fuels like coal and oil are burnt, while nitrogen oxides are a by-product of almost all combustion. Though the introduction of smokeless zones and other measures have dramatically reduced some forms of air pollution in countries like Britain, sulphur and nitrogen oxide levels have not fallen the same way. Today ***the biggest culprit of air pollution is the coal-fired power station.***

Some of the gases or ***particles belched from industrial and domestic chimneys*** fall back to earth close to their sources. This is known as 'dry deposition'. However, much is carried up into the atmosphere where, by combining with water vapor, sulfuric and nitric acid are formed. Clouds of acid vapor can then be carried hundreds of miles by the wind before reaching the ground as 'wet deposition' — mist, snow or acid rain.

Until recently, sulphur dioxide was thought to be the cause of most air pollution in Europe and North America. However, in the last few years, it is nitrogen oxide levels which have risen sharply — mainly due to exhaust emissions from the increasing numbers and use of motor vehicles.



Source: International Center for Conservation Education, 1983

Figure 4.5 An exercise in bias (continued)

?

1. Is acid rain caused by natural or human processes? Or both of these?

2. Who or what exactly causes acid rain? (Study the diagram, it will help you.)

3 a) How many times is the world 'pollution' used in the passage?
b) What effect does the use or non-use of the word 'pollution' have on the character of the passage?

4. What do you understand by the following phrases? What view of acid rain do these statements support?

'Acid rain is a menacing form of air pollution'.
'the biggest culprit of air pollution is the coal-fired power station'.
'particles belched from industrial and domestic chimneys'.

5. What are the interests of this author?

Extract B

The acidity of 'acid rain' is brought about both naturally and artificially. Some of it is from such unavoidable causes as the respiration of plants and animals, organic decay on land or under water, volcanic eruptions and lightning strikes. ***Man's contribution*** comes mainly from the burning of fuels and the smelting of ores.

The gases principally responsible for acidification are carbon dioxide, sulphur dioxide and nitrogen oxides. In the southern hemisphere ***the natural emissions of sulphur dioxide overshadow the man-made ones in their effect on rain*** and other deposition. In the northern hemisphere, on the other hand, man's emissions of sulphur dioxide are similar to those from natural sources. In both hemispheres the rain is acid, even in places far from industry.

Emissions from the burning of fuel, in power stations as elsewhere can make rain more acid than it would have been otherwise. Emissions are also linked with some of the substances brought down by rain. These substances can in some cases harm the environment.

Natural processes have converted ancient organisms into the 'fossil' fuels oil, natural gas and coal. These contain the hydrogen, carbon, sulphur, nitrogen and other elements that life depends on. They were vital parts of the original living organisms.

When fuel is burned the oxygen in the air joins the other elements to form their oxides. Emissions from chimneys and exhaust pipes therefore include these oxides. One of them ***is water (which is hydrogen oxide)***. The others — oxides of carbon, sulphur and nitrogen are gases that can travel dry and can partly dissolve in water to form weakly acidic rain. ***The processes in the atmosphere are partly responsible for the higher acidity that is actually found in rain.***

Source: Central Electricity Generating Board of England and Wales, 1983.

?

1. Is acid rain caused by natural or human-made processes? Or both of these?

2. Who or what exactly causes acid rain? (Study the diagram, it will help you.)

3 a) How many times is the word pollution used in the passage?
b) What effect does the use or non-use of the word 'pollution' have on the character of the passage?

4 What do you understand by the following phrases? What view of acid rain do these statements support?

'Man's contribution . . .' 'the natural emissions of sulphur dioxide overshadow the man-made ones in the effect on rain.' 'water is hydrogen oxide'. 'Processes in the atmosphere are partly responsible for the higher acidity that is actually found in rain.'

5. What are the interests of this author?

1 Atmosphere receives oxides of carbon, sulphur and nitrogen hydrocarbons etc. from natural and man-made sources on the ground. Some of the emissions come down and are deposited dry. ➤ **2** Sunlight stimulates formation of photooxidants. These produce sulfuric and nitric ➤ **3** Sulphur and nitrogen oxides photo-oxidants and other gases including ammonia, dissolve in cloud droplets. The products are acids, sulfates and nitrates. ➤ **4** Acid rain containing dissolved sulfates and nitrates. ➤

Figure 4.5 An exercise in bias (continued)

Peter Fry's account of the lesson on detecting bias

Having discovered how acid Acid Rain is, it was seen as the logical step to find out its cause. The extracts and question papers were issued to the class. The purpose of the lesson, detecting bias, was not overtly expressed at the beginning but it was hoped that pupils would perceive bias for themselves while doing the exercises. During the explanation of the questions the pupils became aware of the difference between 'natural' and 'human-made' processes, what 'pollution' is, and what we might mean by the 'character' of the passage for example does the word 'pollution' make the passage distinctive in any way? For part of the exercise the author has selected value-laden phrases from the text (the pupils do this task for themselves later in the curriculum unit) and the pupils write down the meaning or what they understand by the phrases which are underlined. The term 'interests' was elaborated upon by asking why is it in the pupil's interests to come to school? It involves personal gain.

It was hoped that the pupils would perceive bias, or, rather opinions from fact, when they read the second extract. At this point many intense conversations began. The most common reaction to the extracts was, 'which one is true?' Other interesting comments were, 'surely you write down the facts', and 'the truth must be somewhere'. The atmosphere in the classroom during the exercise was mixed. Some pupils, not necessarily the most able, were confidently doing the work. Two pupils perceived bias before studying the second extract; they asked 'do I answer from the text or from what I know is right?' They were encouraged to be open to the possibility of changing their own attitudes. Other members of the class were unsure and confused by the work - an indication that studying conflicting views had not been tackled elsewhere in their schooling, and that the pupils were more confident when dealing with unconflicting reports.

At the end of the written exercises the questions were discussed by the whole class. Without exception the pupils found that the CEGB saw Acid Rain as being caused by human and natural processes, while the ICCE lay the blame with human activities only. This question was comprehension, although critical thinking was involved in the comparison between the two answers. The class saw how by omitting one cause and emphasizing others a different picture of the issue might emerge. It was unclear for many pupils where the CEGB lay the blame for Acid Rain, a common answer was similar to:

'Acid Rain is caused by the respiration of plants and animals, organic decay on land or under water, volcanic eruptions and lightning strikes. It is also caused by burning fuels and smelting ores.'

The ICCE according to the pupils sees the CEGB as the main producer of Acid Rain or 'the culprit is plainly the other author.' It was agreed that the ICCE used the word 'pollution' five times while the CEGB does not mention the word, but it was cleverly added that the CEGB 'talks about pollution without mentioning it'.

During the discussion the idea of a passage having a 'character', was explained further. However, most pupils realized the effect on the passage if the same word, in this case 'pollution' was repeated frequently. The value-laden statements supported the view of Acid Rain held by the two authors, and the class were able to recognize the linking of human-made pollution and Acid Rain by the ICCE and the emphasis on natural emissions by the CEGB. While the pupils generally understood the meanings of the statements, only a few pupils analyzed particular words. 'People's contribution' for example, gave the impression to some pupils that 'others contribute more'. After discussing the terminology used, one pupil said 'if you think every word is biased you won't believe anything.' Finally the class discussed why the two groups held their views; answers varied from 'money' to 'power' and 'their view of life and the world'.

As a conclusion the class were asked to say what the general differences between the two extracts were. The question was aimed at distinguishing different types of bias. The simple discrepancies in 'facts' between the two extracts were noted. It was pointed out that each group only used the facts best suited to their cause and refused to accept other important facts. Finally, certain terms, especially adjectives, for example 'menacing' or 'belching', were seen to change the emphasis of a particular phrase.

Although it was nearly the end of the lesson a sequence of slides was shown — the class having to decide which view, the CEGB or ICCE, the slides best supported. The slide set included, without text, pictures of a working power station, erupting volcano, and car exhausts, so it formed an interesting visual summary to the lesson.

By studying two opposing views of what causes Acid Rain, the pupils gained some understanding of the dispute and, at varying degrees, learned to adopt a critical stance towards the information given. By the use of similar questions, the class was able to dissect the views and become more aware of how a convincing argument is constructed. The pupils not only dealt with political bias, but distinguished between differing types of bias. Comparing two extracts eased the pupils into ways of dealing with political bias; it was, however, biased in itself as it limited the pupil's opportunities to deal with alternative points of view. Did the pupils have enough knowledge of the issue to know if contradictory or other relevant information was omitted? How do we know if the assertions made by the CEGB and ICCE are facts or opinions? Relevant statistical information was used to tackle these points in the following lesson.

Source Peter Fry, 'Dealing with political bias through geographical education,' unpublished MA dissertation, University of London, Institute of Education, 1987.

Figure 4.6 The Migrant

? Write your own hypothetical account of a migrant moving to a Latin American city. Fill out the portrait as fully as possible. Who are the 'typical' migrants? Where do they come from, how do they travel? On arrival where do they live; what sort of work might they get; what are their housing conditions like? Read and discuss some of the portraits in class. Consider carefully what sources of information have informed your ideas.

Her name was Maria. A woman waiting in the long line at the water tap. She was short. and dressed in old clothing which failed to protect her from the damp winter air. She was obviously quite young, but her face, with its deep set eyes and lined cheeks, told of experience of ages. How had she come to be here, in the appalling conditions of this Sao Paulo favela (shanty town). She did not want to talk of the past, only of new hopes for the future; but after some time her story came out, in staccato sentences as though each word was painful to utter:

It was all right in Pernambuco last year. The rains came in time, and the crops grew. There was even some cotton to sell and we could buy a pair of shoes for Romero — his first. The stores of maize and rice lasted just long enough until the first crop was due this year.

But the rains failed again. It happens so often in the northeast, and it seems as though everything was against us. This was the third, or maybe the fourth, very bad drought I remember. And it was just like the ones before.

Just like before, someone said, 'There's food at the big farm,' and the men marched off in their bedraggled squad to try to force the rich man to give up some of the stores. It didn't work, it never does. If you're rich you can afford guards and dogs to punish the hungry ones who beat at your doors.

Sometimes the men came back with enough scraps to last for a few days. Then we would be back at the beginning, and no hope left. It was a hard time, last summer, especially for the children. My new baby, Leila, she got sick because I couldn't feed her. There was nothing we could do. Last time we went to the feeding centre in the city. But it's a long way, and the food is not enough — too many people go there.

There wasn't much to pack. Our clothes fitted into two bundles, the cooking things made a third, and the old stool my father gave me made it up.

And so we left our home. It wasn't easy. That board shack was not much, but better than we have now. And the land was good to work — it was a clean land. We didn't have much, but we danced and sang with joy on the Saints' Days. Maybe soon we'll go back.

It took many days, our travelling. I don't know how many. I only know that the road is long and hard. The dust of the trucks stings your eyes until the tears run, and the load on your head becomes heavier as your stomach becomes emptier.

We were stopped once and asked for our papers. But we had none, so they said we would have to turn back. My husband said, 'OK', but as soon as their backs were turned we ran and hid for a day and a night. There were so many on the road that the officials were soon busy with others.

On we went. At one town we were taken to a church and given food and a bed. They said we could stay a little, and they would help us to settle down. But my Manuel is proud. He did not want their help then. Sometimes now he says we should have stayed, but then he said that we were going to Sao Paulo where he would find a good job. The kind man at the church shook his head wonderingly, but he didn't stop us .

We tramped on through the hills. One day, on the road, we passed a family we knew from home. They had a very sick child, and were resting.

And then, at last, we reached the big city. Oh, it was so beautiful that our hearts sang! Everyone had lovely clothes, there was much food in the shops, piles of rice and bread. All wonderful things.

Manuel, he said, 'I'll get a job, and soon you'll be able to buy good clothes and eat proper food.' So he went up to the factories one by one. And they all asked for his papers. He had none. Asked him to read. He couldn't. Asked him what he was trained to do. Only grow rice. And they all said — those clean men who drive cars, splashing mud on to the bare feet of the poor — that there were no jobs.

We were directed to this place by others who live here. It costs very little, they told us. So Manuel found some planks, some tin and some card and we built our shack in the favela. It's only for a while, but until then life is hard.

For a few weeks I worked as a cleaner for one of the rich ladies. She was kind. But the child became sick, and I had to leave. Manuel sometimes works. Once he earned some money shovelling the dirt from a new building area. But I am afraid. He has begun to drink much more than before. In the north he was a proud man. He could work, and we could usually eat. Now he has to humble himself very low to find work, and often there is no food in the house. Our clothes are very poor now, and Romero's shoes fell apart long ago . . .

? What elements does this description have in common with your account of a migrant? Are there any differences? How sure do you feel about the evidence on which your description is based and this story of Maria and Manuel? What picture does this give us of the kind of people that migrants in developing cities are?

STEREOTYPES AND REALITY

The quotation was taken from a Christian Aid brochure about Brazil published in 1971. The intention reasonably enough, was to evoke our sympathy for the poor of that country; it was an invitation to put our hands into our pocket to help. At this level the quotation works well. But does the description fit the reality of migration in Brazil or in other Latin American countries? The author of the booklet has no doubt that it does: 'Maria is fictitious, but her story is true'. We have our doubts. In fact, we believe that few people who move to the Latin American city are like Maria and Manuel; such people are among the poorest minority of migrants. Our major reservation about the description, however, is that it accentuates our prejudices about poor people in Latin America. People in the so-called 'developed world' do not have a flattering picture of those who live in the 'developing world'. Latin Americans are often thought uneducated, irrational and prodigal; what else can be expected of a people living in poor nations containing too few schools and producing too many children? Lack of education and too many children evokes an image of people who cannot bring order to their lives. They lack the ability to choose the sensible course of action.

Our experience is that poor people in Latin America are neither prodigal nor irrational; they are as capable as us of making the right decision about how to order their lives. When they decide to migrate, they are just as likely to have made the correct decision as someone living in, say Europe. They are certainly faced by a hostile environment, both in their home region and in their urban destinations. But despite the difficulties they face, and the lack of education, they make sensible decisions. The basic flaw in the description is that Maria and Manuel are made to appear both helpless and irrational — little children who do not understand the world.

The basic aim of this chapter is to show how and why that picture is wrong. We will present data on migrants and shanty dwellers from three Latin American cities, Bogota in Colombia, Mexico City and Valencia in Venezuela (see introductory map). We have chosen these three cities because they are where we carried out a large survey of 13 shanty towns in 1978 and 1979. It may be that migration in Brazil is different from that in Colombia, Mexico and Venezuela but we doubt that there are important differences. Our migrants are likely to be very similar to Brazilians moving to Sao Paulo. We will show, however, that the individuals and families we met differ markedly from Manuel and Maria. We will discuss how they adapted to the city, where they live and the jobs they do. We will show that most of these people have made sensible decisions about their jobs houses and life chances. They have chosen rationally from the limited range of options open to the Latin American poor.

Source: "Latin American Migrants: a tale of three cities" by Alan Gilbert and Peter Ward in Slater, F.A. (ed.), *People and Environments, issues and enquiries*, Collins Educational 1986.

Clarification or formulation of values and ethical principles

The clarification or formulation of values and ethical principles involves articulating and understanding the basic values that underlie and inform one's attitudes towards people, places, objects or issues. In Fenton's (1966) terminology, basic values are substantive values, matters of substance while Rokeach (1977) refers to them as terminal values. In clarifying or formulating their own and others' basic values, students would be consciously recognizing the beliefs and ideas underpinning attitudes as these are felt or expressed in a variety of circumstances.

The bringing to consciousness and the enunciation of basic values and principles is significant for two reasons. First, it helps students to realize what values underlie preferences and judgements. Second, the implications and consequences of holding a value or set of values can be explored in the context of a variety of problems. Perhaps also students need to be given opportunities to sort out their own positions on an issue and to ponder on these rather than always being asked to adopt a role. For this reason and in order to begin untangling the terminology, I want to draw the reader's attention to Figure 4.6 where I have set out an exercise explaining the meaning of values, attitudes and beliefs, preferences, and opinions in relation to four ideologies constructed in relation to the environment. In a chapter on attitudes and values it is necessary to have a good grasp of the concept ideology, as fairly tightly woven bundles of compatible values, attitudes, opinions, preferences which go to make up a stance or position or framework.

When incidentally, at the outset in Chapter 1, I referred to geography as science and geography as personal response I was straightaway into and defining certain ideological positions, certain positions, certain beliefs, attitudes, and values that geographers hold about the aims and purposes of the discipline. These are ideological positions. We are also familiar with political and social ideological stances whether these be conservative, liberal, socialist Marxist or whatever and the preeminence of a social justice thread within some of these is also present in geography as social concern and the geography of inequality and development. Ideologies, bundles of values and attitudes are with us and form value laden frameworks or umbrellas through which or under which we see and interpret the world.

The exercises in figure 4.7 were designed for 17 and 18 year olds and they are intended to help people begin to think about terms and come to appreciate the role ideology, values, and attitudes play in our thinking about the world. After working through the remainder of Figure 4.7, go on to Figure 4.8, read the newspaper article through once or twice, and complete the tasks in order to become acquainted with a range of opinions and values.

Figure 4.7 Choices and ideologies: four views

Some people believe that the human race can always find a way out of its difficulties, whether these are political, scientific or technical. If we create changes in ecosystems and their checks and balances, such people believe human genius and cleverness is great enough to overcome the difficulties created.

Other people believe that the human race has lost touch with nature and is doomed to destroy itself and its environment unless we follow nature's laws and restrict economic development. Such people say they would like to return to a much simpler way of life that fits into a natural ecosystem.

Yet other people believe that economic growth can continue on a large scale and that we should not worry unduly about using up natural resources. They do feel, however, that the process and direction of economic growth should be managed and directed and to some extent controlled by government. They believe in some regulation to protect resources and the environment.

A fourth group of people argue that large-scale economic growth should be replaced by small-scale activity using intermediate technology, for example. They distrust development which involves large companies and organizations and strong centralized government control. They favor local community developments that involve everyone in decision making. They dislike the way that people today are obsessed with what they own or think they need to have.

Continued . . .

Figure 4.7 Choices and ideologies: four views (continued)

?

1. You have to decide to join one of these groups of people. Which one would you choose? Why?
2. Match the description of the four groups to those in the figure, the pattern of environmental ideologies

   We have here, in fact, four ideological positions in relation to our environment and how we may treat it. Ideologies are bundles of beliefs, opinions, attitudes, values, preferences which we hold together. They help explain a good deal about how we act and behave. These five words or concepts — beliefs, opinions, attitudes, values, and preferences — all have slightly different meanings and you need to look them up in a dictionary and begin to sort out the differences.
3. Write out a definition for each word and give examples of it:

   a Beliefs **b** Opinions
   c Attitudes **d** Values
   e Preferences.
4. This question will also help to make some of the differences in meaning clearer. (This may be an individual or group activity.)

   Look at Table 1:

   Newspapers are full of reports on things like this,. Write down on a piece of paper your initial, gut reaction, your more-or-less spontaneous reaction to the situation. Don't ponder too long. Just think in terms of whether it is a desirable or undesirable situation. Is it generally good or bad?

Table 1: Reactions and Reasons

Situation	*Reaction*	*Reason*
A polluted river		
An oil spill		
A plant species becoming extinct		
Closing off a hiking trail		

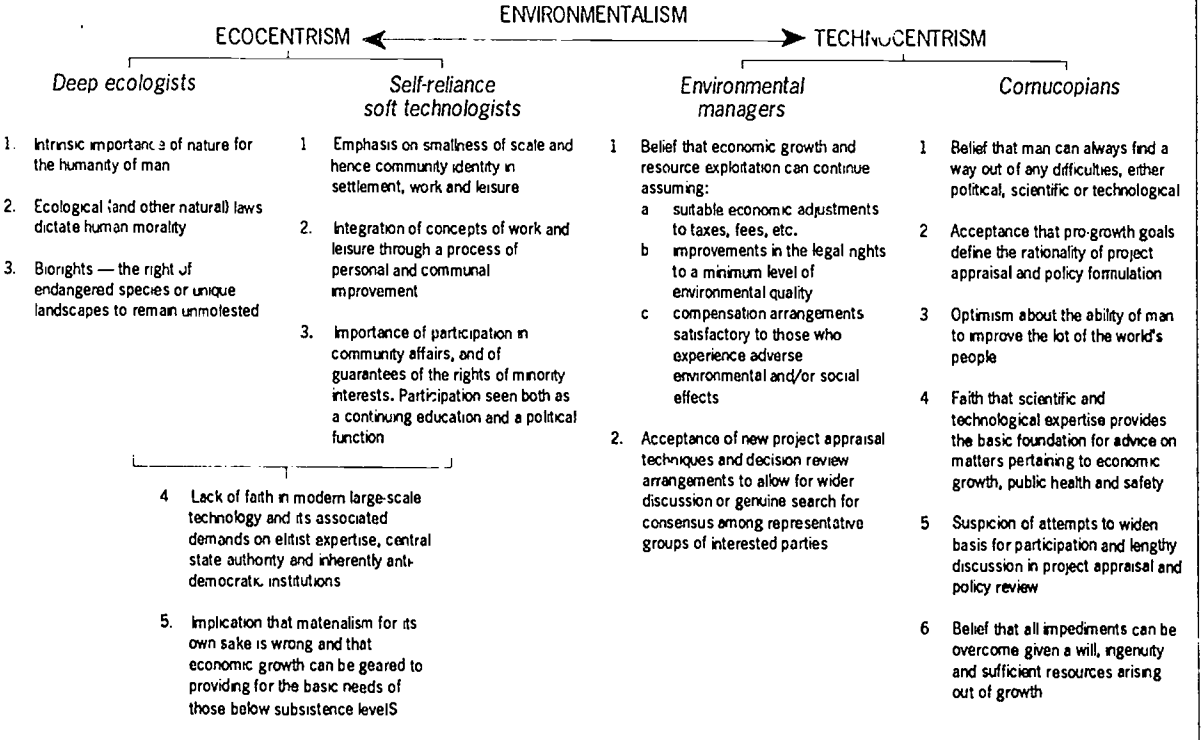


Figure 1 the pattern of environmental ideologies, T.O'Riordan, 1981.

Figure 4.7 Choices and ideologies: four views (continued)

?

5. Next, in the third column of the Table, write down the reasons for your initial reaction. Why did you have such a reaction? What general ideas do you hold to about people and their environments and the way societies of people should relate to their natural and built environments?

Sorting out your reasons is not such an easy task as giving your initial reaction. The reasons probably come closest to expressing your values, ideas which you hold firmly, deeply and consistently. For example, most people in response to seeing a child being severely beaten and wounded by an adult would be angry and disgusted, dismayed and incredulous. Why? Because most of us hold to a notion that values the protection of the weak, values kindness over cruelty, values talk and persuasion over violence, and so on. We are into quite advanced ideas here and so you will have to think hard and discuss with others to decide on your value-laden reasons in question 3. Keep discussing and thinking, and dig deep.

Why? It is important that we become aware of our values because they explain a lot of what we do and believe. It is just as important to think about what forms our values too. How long a list could you make?

- Your experiences
- Your parents/guardians
- Your friends
- Your teachers
- School
- TV, radio, newspapers . . .
- Pop stars
- Religion

The society you live in helps form your values and beliefs. As individuals we live in groups and societies. We treat and mistreat our various natural and human-built environments.

Source: Slater (ed.) (1991), *Societies, Choices and Environments*, Collins Educational

Figure 4.8 Rocky Values

Read the newspaper article and place a check in one of the four boxes each time you judge a statement or reaction to belong there.

Deep ecologists / ***Self reliance Soft technologists*** / ***Environmental managers*** / ***Cornucopians***

What beliefs and values does the above analysis suggest the majority hold? Make a list then divide the list into those beliefs and values which are compatible and those which are not.

FACES OF COLORADO

Fort Collins: Ideal town ponders meaning of growth

Jim Carrier, The Denver Post's Rocky Mountain Ranger, will be travelling throughout the state this summer to capture the color, diversity, and character of Colorado's cities and towns.

FORT COLLINS — From the sunlit tasting room atop the new beer plant, brewmaster Doug Muhleman can see all that Fort Collins was, and what it will become.

Looking toward the Rockies, past elevators full of barley, green fields of spring are being worked by tractors. Fertilizer trucks raise dust on the section lines. The snow on the peaks is melting, filling reservoirs that water this land.

Anheuser-Busch owns some of that water and uses it for its brew. The company also owns the land below and to the west, a 1,100-acre rectangle of prime cropland. Someday it will be covered with industrial plants, shopping centers and homes, connected by a web of shrub-lined streets and bike paths. A planned community will be the ultimate crop.

This view of the future is widely held and embraced in Fort Collins, a city that has quadrupled in size in three decades. Now at 90,000 people, it is projected to double that in the next 25 years — with the blessing of most everyone in town.

In Fort Collins, growth is not a dirty word.

"Standing still creates stagnation," said Gene Markley, a longtime Buick-Pontiac dealer on the College Avenue strip, a road gradually spreading Fort Collins south toward Loveland, away from its historic downtown. "We talk about the quality of life," Markley said. "But the No.1 item is having a job."

At least three different groups in Fort Collins are hustling industry — an effort that has been going on since the 1950s. While places like Boulder and Aspen put a cap on growth, people in Fort Collins have twice voted for their city to grow.

In 1979, an attempt to limit housing starts was defeated 2-to-1. In 1984, voters approved the Anheuser-Busch plant after a fierce debate that a brewery, paying union wages of $17 an hour and using enough water to support 20,000 people, was too radical a departure from the city's high-tech manufacturing base.

The result is that, despite a slump in electronics and 7 percent unemployment, Fort Collins has grown by at least 2 percent to 3 percent while other cities in Colorado remained stagnant or were in retreat. Anheuser-Busch employs 500 people. Another 200 jobs were created outside the plant because of it.

Mixtures of styles

The reason for this pro-growth attitude, most likely, is that the city's spread has been handled so well. Fort Collins, home to Colorado State University, is a mix of college-town sophistication and conservative rural values, a weave of industrial development and small-town neighborhoods.

Regulations require parks in every square mile and neighborhood shopping centers every mile and a half.

One of the newest developments, Bob Everitt's Oak Ridge, is shaping up to be a planner's dream: homes, schools, a golf course, another Hewlett-Packard plant, stores, a mini-community within Fort Collins. It is that kind of "feel" that locals cite most when they appraise their town.

"I could always walk to the store for my mom to get milk. Now my kids can do the same thing," said Linda Hopkins, the city's economic development administrator and one of the first women to join the Rotary club. "My hope is that we can grow and still maintain the character of a community proud of itself."

Garrett Ray, a journalism professor at CSU, observed of the town: "It feels like the place where we grew up. If they didn't grow up here, it was the place we wanted to grow up in."

Fort Collins was named for a cavalry leader who sent troops in

Figure 4.8 Rocky Values (continued)

1862 to build a fort and protect the Overland Trail from Indians. There never was much fighting, and 10 years later the town was platted, the land grant college founded and the area opened to homesteading. When the railroad arrived, a future for agriculture was assured.

"Agriculture has always been the backbone of Fort Collins," said Wayne Sundberg, a local historian. "Today, the thing that really moves this town is developers."

Like its brick Old Town, once the heart of Fort Collins, the "A" for Aggie on the hill is a bit of nostalgia. CSU's ag enrollment has been surpassed by the business school, the school's bull farm has been sold for a housing development and another chunk of its farmland is being developed by Everitt into a center for advanced technology.

The university provides stability to Fort Collins, while 19,000 students provide the freshness of youth and change. The city has had its share of social-conscious politicking: anti-smoking ordinances, votes against a nuclear test ban and apartheid.

"Due to the smallness of the town, the intellectual climate has a greater impact," said Will Schwartz, the symphony director who came to CSU from New York's Julliard School of Music in 1949.

But jobs scarce

CSU provides a surplus of well-educated and cheap labor, great for prospective employers but detrimental, often to the individual.

"It is extremely difficult for educated people to get jobs, especially for women and minorities," said Barbara Rutstein a member of the League of Women Voters. "Single parents have a difficult time. Wages are not high."

Growth also has brought its share of big-city problems.

A couple of murders have shocked people. The Hispanic barrio remains isolated on the north end. And annexation has stretched the city, both physically and financially.

"It will be 99 years" before Anheuser-Busch pays back in taxes the cost to the city of annexing the land around its plant, said Dale Maxey, a retired marketing executive who needles city officials about the cost of development.

Mayor Ed Stoner, a real estate salesman and asthma sufferer, said, "My main concern is air pollution." His parents brought him to Fort Collins from Iowa 38 years ago so he could breathe. Now, at times, the air is so polluted by automobile exhaust that it exceeds federal standards.

There also is a fear spoken by a few, that in paving over its fields, Fort Collins could be on the verge of losing its core values — the sensible, small town. "My hope is that the character of the community does not change," said Phil Austin, president of CSU.

It is a sense of loss that goes beyond nostalgia.

"I don't want to see it get too big," said Jack Carmichael, the Anheuser-Busch plant manager who moved to Fort Collins from Los Angeles. "Coming here was sort of like going back home."

Source: *The Denver Post*, May 15, 1988.

Encouraging the exercise of moral judgement

Exercising judgement requires students to use their ethical principles to help them to understand issues and to make decisions. Dilemmas are a useful strategy and an example is given later in the chapter when Kohlberg's ideas are discussed more thoroughly. If I were a conservationist in the Western Port context and yet the chances of my daughter or son obtaining a job in the area depended on expansion, what would be my stance at the public meetings?

Classroom activity

VALUES ANALYSIS

Let us now return to the exercise described in Figure 4.1, 'What things do you prefer in your neighborhood?' and expand on it a little to create a values analysis activity. Let us suppose that one of the options is a shelter for battered women. After asking an initial question, 'How would you feel if a shelter for battered women and their children were set up in a house in your street?' as a trigger to thinking, the newspaper article set out in Figure 4.9 should be given to students to read.

A teacher-initiated discussion could clarify any points unclear to the class and help to make sure that the different viewpoints expressed have been comprehended.

The scenario now becomes a public meeting which all students as residents of the South Hill attend. A resolution is before the meeting: 'That in the interest of community standards and property values, this meeting instructs its Chairperson to oppose strongly the use of a residence for battered women and their children at a meeting with the mayor.'

The following procedure is suggested as appropriate to a values analysis.

1. Individually students vote 'for' or 'against' the resolution and write down three reasons for their decision.
2. Those who voted alike are grouped in pairs and each pair decides on the best four reasons they have written out for their choice.

Figure 4.9 A shelter for battered women

The Geraldine Mail

Shelter For Battered Women

by our Staff Reporter

The Geraldine Welfare Society's plan to set up a shelter for battered women and their children in Test Street on the South Hill area of Geraldine is causing some local concern and unease.

Major Smith, the society's representative said that no final decision had been reached and that they were awaiting the report of a task force set up to investigate the feasibility and desirability of such a venture. Present indications were that such a shelter was badly needed. He said that his organization had received a sympathetic hearing from the city council whose planning sub-committee would have to agree to such a use and to the external plans.

The Secretary of the Residents' Association for the South Hill, Mr. Richard Rothwell, is calling a meeting of members to sound out 'public opinion' on the plan. Mr. Rothwell claimed 'I have no strong views myself but I do think it is important for people living in the area to discuss and debate the proposal.' He invited all interested members of the public to a meeting in Columbia Hall, on Tuesday 11 November at 7.30 p.m. A member of the council's planning sub-committee had promised to attend.

The *Mail* has conducted its own survey of local opinion and discovered that citizens have mixed feelings about the plan. 'While I sympathize with women in such a plight,' said Alicia Bottle, 'I am worried about the type of people we will be bringing into the area. We cannot be sure that some violence will not occur and our local school may have to deal with unfortunate but maladjusted children. Violence begets violence doesn't it? What sort of people will we be allowing in our area?'

Another facet of the proposal which concerned Mr. Colin Dawson-Jones, a well known businessman, is the effect on property values. 'I have lived here for many years and it is a quiet, respectable neighborhood. I am concerned that the setting up of an institution could be the beginning of a change in the nature of the whole area. I think the place for institutions is in the country where peace and quiet must have a beneficial effect on troubled people.'

Reactions were mixed among mothers of a local play group. There was some apprehension about the capacity of the group to absorb many more children, especially those from unfortunate backgrounds. 'But we do have a duty to cater for everyone's needs,' said the Reverend Mr. Davies' wife.

The Residents' Association is hoping for a large attendance at its meeting so that the concerns people feel about the proposal can be aired.

3. Pairs 'for' and 'against' join together where numbers permit and argue out and select the best reasons on each side and list the values underlying each reason.
4. The values, further clarified by class discussion, can be listed on the blackboard.
5. A second vote is now taken and students give their reasons once again in a discussion of any changes they make to their voting and/or reasons.

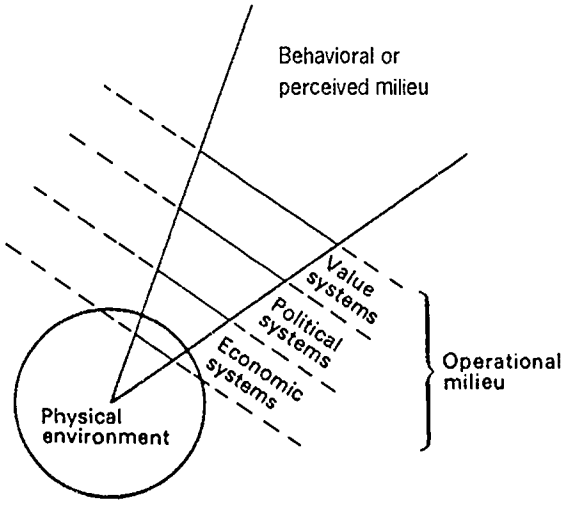
The same strategy could be applied to an issue raised in the Fort Collins article. The resolution might be phrased thus: "that the Anheuser-Busch plant be opposed".

Values in geography

A lesson about the location of a shelter for battered women or a plant in Fort Collins seems to me to be fundamentally part of geography's concerns. It can be firmly rooted in locational analysis and scientific geography.

In the first round of the new geography, there was a focus on the processes underlying locational patterns. At first, economic processes were emphasized. Investigating process soon led to an interest in decision making and the identification of the variables influencing decision making. Figure 4.10 purports to be a representation of the milieu in which economic activities occur. In its emphasis on economic

Figure 4.10 The milieu in which economic activities occur



SOURCE: based on M. Eliot Hurst *(1968) A systems analytic approach to geography*, Commission on College Geography, General Series, No. *8*, Association of American Geographers.

activities it is very much of its time, though it also specifies in its overlapping systems and environments a hint of concerns to come. There is a values system operating to constrain and inform people in their decision taking activities.

The values system in our models, in fact, at first incorporated little apart from economic values and these created idealized people living in simplified, though conceptually useful, environments who were profit maximizers and minimum risk takers. The supremacy of economic goals and profit maximization was so strong as to be a basic assumption in the models popularized in the 1960s. I do not denigrate such assumptions since they were necessary intellectually if some understanding of location processes were to be gained through operating simplified models of reality.

Economic people in school geography— Acme Metal

Interesting examples of this kind of thinking as it manifested itself in geographical education are to be found in many of the role plays and simulations published in the High School Geography Project resources. In the Acme Metal Company flood game structured around cost benefit ideas and calculations, most of the people are given economic goals and profit maximizing/cost minimization briefs. The following quotations support my assertion:

> *The Manager of Acme Metal.* His interest is to get the maximum benefit for his company at the least cost. . . .
> *The Mayor of Allentown.* He would like to get the best protection possible for the least cost to the local government. . . .
> *An Owner of Flood Plain Properly.* He would like to sell or lease his flood plain land for a factory site. He hopes to be able to assure prospective buyers that there is little danger, so he is eager that the federal government, or any government, does all it can to minimize damage. . . .
> *A Typical Flood Plain Homeowner.* He wants full protection for his home and his job and does not care who pays for it so long as the taxes he pays are not affected appreciably. . . .

The game of farming

The widely diffused American HSGP farming game is described in the Teachers Guide as an agricultural investment activity. The game is again interesting for the assumptions implied about maximizing economic returns. No information or suggestions are built into the game to reduce the desire to make profits and such a desire might well be a realistic aim of pioneering farmers. However, even if it is not easily reflected within the game as set up, it is noteworthy that the role cards omit any reference to other values which may have affected a farmer's decision making.

A typical role card reads:

> 1880
> ROLE CARD
> Since the Civil War you have been living in the Shenandoah Valley of Virginia. You have been farming in partnership with your brother, but both families are now so large that the farm will not support you both. Your brother has given you one-half of the farm implements and horses and $1,500 cash as your share of the farm. After reading about homesteading in Settler County, Kansas, in a railroad brochure you have decided to move to Kansas.
>
> You have had experience growing wheat, barley, rye, oats, and corn. You have also had experience raising both cattle and hogs.

The farmer's previous experience is the only variable selected to suggest influences on initial farming behavior. I should note that knowledge which is actually gained through playing the game of farming is made more explicit, e.g. attitudes to risks if debriefing is carefully undertaken.

In inservice work HSGP put forward a number of evaluation techniques and one in particular is significant to values education. A semantic differential to measure student changes in attitudes to farmers, as a result of playing the farming game, is set out. I see this as an example of an operational advance in the role of values and attitudes in geographical education. Where geography for that vague term 'citizenship' was once lauded, in this exercise recognizing/ changing / improving attitudes to some citizens, for example farmers, is made more possible through the use of a semantic differential.

Beyond economic values

People could not live by bread alone, even in models, for more than a decade. Empirical investigations demonstrated that people may choose other than to optimize economic returns. They may decide as satisficers to limit their earning power and spend more time with their family or take longer holidays, for example. People's perceptual response to and knowledge of opportunities and limitations in the environment varies. To understand decision making and human actions attention has to be given to how individuals perceive their world and how they choose to act within and upon it.

Another questioning of the assumptions and methodology of theoretical geography, first apparent in David Harvey's *Social Justice and the City* (1973), examined models of urban structures and found them deficient not because they do not explain the city as perceived, but because the models are reflections of the dominant system of values in our society. The consequences of our values are undeniably manifest somewhat statically in landscapes (hedgerow enthusiasts may not agree) and more dynamically in complex human-built environment systems which are usually studied topically or thematically, for example as urban, transportation, rural or regional systems.

A value free geography?

This brief sketch of the changing emphasis within explanation in geography has, I hope, reinforced that the content and procedure of geography has never been, and cannot be, value free. There are values present in what is being studied and how it is being studied.

Through scientific or more humanistic methodologies, certain values are expressed. The scientific approach places a high value on the development of numeracy and analytical thinking skills, along with the use of field work for data collection and the computer for data processing. The skills and understandings promoted in humanistic geography will be different in emphasis and foster the development of feelings and conscious introspection about people and places which requires the exercise of oracy and literacy rather more than numeracy.

Behavioral and humanistic work in geography reflects a child-centered approach though the pursuit of scientific geography is by no means devoid in opportunities for placing the student at center stage as data gatherer and interpreter. To raise the concept of child-centered approaches and recall its polar opposite — rote approaches to teaching — is merely to illustrate another area in which values are implicit and explicit in the exercise of geography teaching and education generally.

In relation to values in geography teaching it should be noted in this brief discussion that R.J. Gilbert's (1984) analysis of a range of British geography texts (all pre 1980) throws up a provocative line of thought concerning ideologies and values. Gilbert is critical of the image of environment and society written into texts. He claims the dominant image is of people using resources to fulfil their needs, people as "plastic" individuals linked into environmental and economic determinism. He argues that the forces of nature and economic laws are portrayed powerfully and as offering an accommodating society a path to progress, a path along which technology is a benign force. The texts also show a strong belief in planning. Technological achievement and rational planning encourage a certain view of society and the way it works, while avoiding controversial issues. The exercise of power and vested interests are disguised.

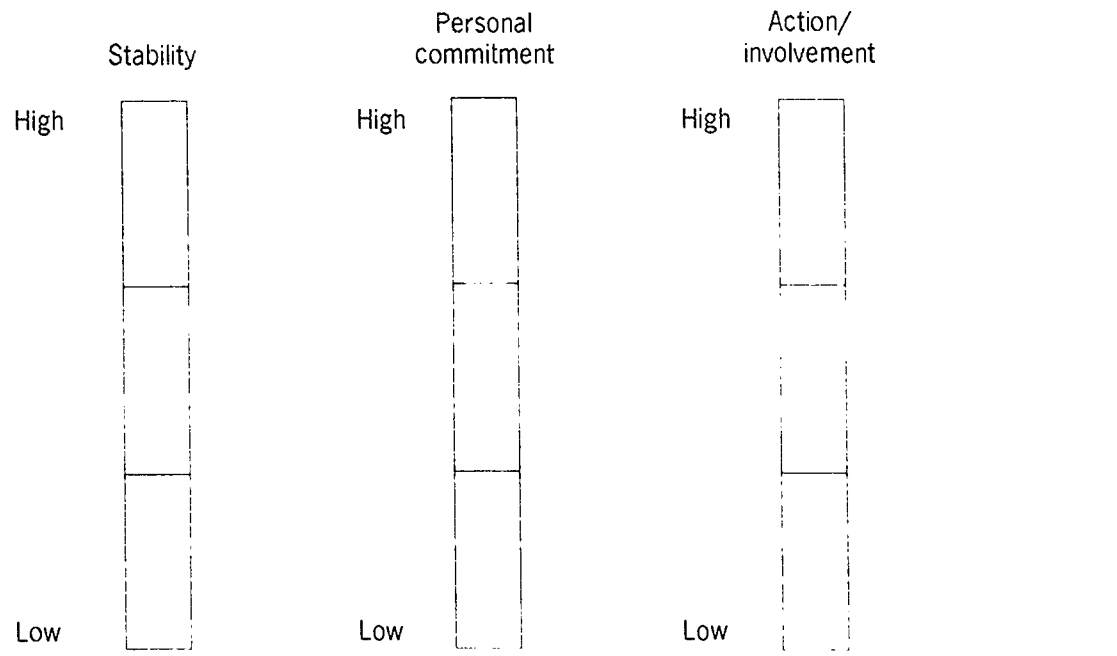
While Gilbert's views deserve careful consideration, by the mid to late 1980s geography's subject matter was I think on occasions being presented controversially.

The development of a concern for values

Developments in university geography created a greater awareness of value positions throughout the 1970s, and 1980s and rethinking in geographical education has shown a concern for relevance; namely, the need to educate for political awareness, to recognize the influence of political decisions on spatial patterns; and to teach values through geography, in order both to increase student self-awareness of individual values and value positions, and to consider differences in attitudes and values held by groups and individuals involved in political conflict.

The development of a feminist geography has also raised our consciousness in the area of attitudes, values and ideologies. Geography is gendered we now say. Women have been largely invisible in texts and until recently in research findings. Is it also true that women see things differently from men? Do they operate on different sets of values and priorities. Carol Gilligan's work (1982) is crucial here. In her book, *In a Different Voice* taking up Kohlberg's work on moral dilemmas, she listened to and analyzed the responses of people to a situation of moral conflict and choice. In so listening she began to be aware of the differences between the women's responses (white U.S. women) and other studies in the psychology literature. She argues overall that she heard two voices, two ways of responding to moral problems, two ways of describing the relationship between other and self. She suggests that a women's sense of integrity appears to be entwined with an ethic of care whereas men are more motivated by a competitive, less person-oriented mode. (Gilligan's work has been criticized because it does not consider diversity among women, and issues. Her subjects/topics were restricted, but valuable in alerting us to multiple patterns of value hierarchies). Teachers need to be aware of this possibility in listening to students' discussions of value laden controversial issues and interpreting meanings very carefully and cautiously particularly in relation to Kohlberg's levels of moral reasoning which by implication suggest levels of attainment.

Figure 4.11 **Value/attitude/indices**



Source: based on an idea by J. Fien.

Defining values and attitudes

But we need to turn again to the question, "what do we mean by such concepts as values, beliefs, attitudes, opinions, and preferences". Along with feelings and emotions, such concepts are part of the emotional make-up of one's identity, and it seems that all are learned predispositions. We are not born with a set of values and attitudes, they are socially acquired. What then distinguishes values and attitudes?

Consider that you have been asked to rank the concepts on scales marked from high to low as in Figure 4.11. The scales measure the level of stability, personal commitment, and predisposition to action or involvement associated with each concept. It is likely that on each scale values would be ranked higher than attitudes.

Values are the more stable and enduring of the two concepts, most probably because they are initially taught and learned in isolation from other values and in an absolute all or nothing manner. Honesty, for example, is usually held to be desirable in all circumstances, it is not just sometimes desirable. Our attitudes towards something can change more readily than our fundamental values.

The degree of personal commitment with which we hold to values and attitudes varies and there is a relative quality present. Situations will arise in which several values may be in competition. One value will have to be weighted against another and the hierarchy into which we organize our values may be rearranged from time to time.

Some values are at the very center of what we consider to be important in human existence, others lie more peripherally and receive less personal commitment. At the level of action and involvement it seems logically likely that there is a strong relationship between taking action and the most stable of our values. Perhaps we want to act when our most strongly held values are brought into play by a situation or circumstance but understandably the relationship is not that simple or direct. The behavioral or action component worries us most as teachers. We step back from possibly affecting people's behavior outside the classroom though we take responsibility for moulding social and cognitive behaviors within the classroom. Fenton's category of procedural values is a useful concept in this context (Fenton, 1966). We are prepared to encourage, for example, co-operation through group work. This is a procedural value.

The two concepts have, then, a number of things in common. How do they differ? First in number. We have few values, but many attitudes. Rokeach (1973) defines a value as an enduring belief that a specific mode of conduct or end state of existence is personally or socially preferable to an opposite mode of conduct or end state of existence. Instrumental and terminal are the technical terms he uses to refer to modes of conduct on the one hand and end states of existence on the other. We may ultimately value a comfortable prosperous life and work with ambition and diligence to achieve it. We have a conception of and a preference for the 'desirable'.

What then are attitudes? Attitudes are defined as packages of beliefs which influence us in decisions. Attitudes are those beliefs which, when focused on a specific object or situation, predispose one to act in a preferential manner. It is the idea of revealed preferences in relation to an *object* or *situation* which distinguishes attitudes from values. The first are more specific, the second more general in applicability. Attitudes are value expressive. Alternatively, we might say that values are strongly held attitudes.

Classroom activity

PEOPLE OR PLANTS?

The following script written by R. G. Richmond as part of a unit on the effects of erosion by trampling on Hampstead Heath, a large public park in London, England, demonstrates, like role plays are meant to, the activation and exposure of attitudes. Underneath attitudes lie less clearly discernible values. This unit would follow (1) work on erosion generally, (2) observation and measurement of erosion on the

Heath (data being subject to a chi-square test) and (3) interviews with park personnel and people using the Heath. It is intended to make students aware of the attitudes and values of others, to cause them to consider their own, and to set out a reasoned argument for their proposed management strategy. Richmond's scenario goes like this:

You are the Park Manager in charge of Hampstead Heath, and at the Policy Planning Committee Meeting following the publication of research findings, you are the Chairperson. You will be required to reach a decision on future policy towards erosion caused by trampling based on points made by different interest groups at the meeting.

Around the table are:

(a) representatives of local residents' committees variously concerned with
(i) conservation on the Upper Heath, and
(ii) recreation amenities.

(b) a statistician (purely an expert on data interpretation; no knowledge of the area or issues involved).

(c) a representative of 'big business' (has no concern with the interests of the Heath but would like use of a prime site adjacent to Hampstead Village and actually on the Heath to build a new discount store).

(d) YOU, THE PARK MANAGER (you are required to sum up the views expressed in the meeting. NB. The Heath is expressly for the use of the people of *London*, i.e. *not just the* local area).

In addition members of the public *attend* the meeting. *Speakers* from the floor include:

(a) Ms. Jane Smith, who lives with his wife *and baby* in a privately rented basement efficiency apartment in the vicinity of the Heath (speaks for unrepresented working classes).

(b) Extreme recreationalist: feels more recreation facilities should be available on the Heath (discount store boss may offer financial assistance).

Excerpts from their representations

1. Ms Ann Kohn — Highgate Society, on conservation of Upper Heath . . . I think it is essential to maintain the rich natural environment of the Upper Heath with its fine balance of wild grassland, woodland, gorse, and heather. Certain users of the Heath are currently wrecking the vegetation and laying the ground bare to the elements. I propose that large areas of the Upper Heath be closed to the general public in rotation to allow regeneration of plant species; the public should be kept to proper footpaths or kept from an area altogether. However, access should be available to ecologists and other special groups, perhaps monitored by a pass system . . .
2. *Harold Knox* — Heath and Old Hampstead Society — on recreation . . . I totally disagree with Miss Chumley. The Heath is an amenity for the people of the area, and no section should be closed to the public at any time. Suggestions on use might be made, e.g. signposted routes for joggers, cyclists etc. or marked-out football and rugby pitches, but no parts should be inaccessible to any user. The Heath is here to be used and enjoyed, not be protected from all human activity. So no tarmac, no fences, and certainly no no-go zones.
3. *Pat Hill* (Statistician) . . . The results of the statistical analysis show quite clearly a relationship between trampling of one kind or another and erosion. Of course, one doesn't wish to imply causality, and further statistical testing may be required, but it does seem that if we're to stop the erosion we must stop the trampling, and the only way to stop trampling is to stop people using those areas where erosion has been shown to occur.

4. *Elizabeth Brown* (Director, and developments specialist) . . . Well, we at Soansbury's are very sympathetic to the needs of the Heath, both in terms of amenities and conservation — but we're also aware that the costs of employing sufficient human and technical resources to achieve the ideal balance are too great for the Greater London Council to be the sole provider. My company would be prepared to offer $1.5m of immediate assistance and a further $300,000/year towards achieving the goal in exchange for about 20 acres of the Heath immediately adjacent to Hampstead village. The plan is to develop a new discount store here; it would *of course* be in harmony with the existing environment, with landscaping etc.
5. *Jane Smith* (local resident) . . . I think you're all out of touch. You talk of jogging versus conservation as if no other conflict arises, whilst people like my family live in a damp basement in an overcrowded house just down the road. What this area clearly needs is more houses; they've got to come before parks and things. But the people who make decisions or influence them are the middle classes, already comfortably housed, so the real conflicts are brushed under the carpet.
6. *Christos Christodoulos* (local resident) . . . George has got a point, but you can't just have houses. People must have somewhere else to go. I think there really aren't enough amenities round here and they should use the Heath to develop more; proper running tracks, a large swimming pool, indoor sports hall, etc. The businessman's money should be put towards that. Give people something to do and they probably won't trample all over the rest of the Heath.

On the basis of *these* representations, the statistics presented at the meeting (plus your reservations) and your role as the manager of an area of parkland expressly for the use and amenity of the people of London, write a reasoned argument summarizing and criticizing the main points presented above, and leading to a decision regarding treatment or otherwise of those areas exposed to erosion by trampling on the Upper Heath.

Promoting value awareness

This activity is an exercise in values education. It seeks to make students become more aware of their own values through the presentation of attitudes likely to be held by others.

After a decision has been reached in a values attitude conflict exercise, the scheme outlined in Figure 4.12 could be used as a means of a values/attitudes analysis. We need to be careful to develop questioning

Figure 4.12 A scheme for values/attitudes analysis

1. *Analysis of the situation.* What problem faces the person or group? What values are implied?
2. *Analysis of value options.* What alternatives are perceived? What alternatives are possible? Are there possible alternatives not perceived?
3. *Rationale for the decision.* Why was that alternative chosen?
4. *Consequences of the decision.* What are the consequences of the decision? Can it be verified that the consequences result from that decision/value?
5. *Evaluation of the decision.* Which alternative would you have chosen? Why? If your choice matches the decision made, are your reasons the same? If your choice is different, explain why.
6. *Justification of the values.* What justification can you give for the criteria used? Do you use this value as a criterion consistently? Does it fit in with your other values? How?

which does more than elicit attitudes (to objects or situations) and digs deeper into values. It would seem that a number of exercises used at present are weighted heavily towards the attitude end of the scale and demand pragmatic decisions based on compromise which could lead to values confusion rather than values clarification and development.

I should also like to note that I have also used the Hampstead Heath role play in a different way from that suggested above. In order to help students appreciate the difference between attitude and value I have asked them to undertake a reaction/reason exercise similar to the one in figure 4.7 with the various roles listed down the left hand side. It seems to work well in getting people to begin to articulate and find words to describe values, not an easy task.

Figure 4.13 **Pressures on national parks**

DAILY CAMERA

Pressures on national parks

The Wilderness Society believes that motels, restaurants, and other concessions have no place in National Parks.

The superintendent of Rocky Mountain National Park says that the greatest threat is development on adjacent private land, including a condominium complex only three feet from the park's boundary line.

And former National Park Service Director George B. Hartzog Jr. thinks the fewer visitors the parks have, the better.

It is not surprising that these concerns are in the news just as millions of Americans are planning summer visits to the 49 National Parks. Nor should it be surprising that many of those visitors may disagree with these expressed views.

Colorado's Rocky Mountain Park was among the "10 most threatened" cited by the Wilderness Society in a report issued last week. The society reiterated a long-standing conservationist opinion that the purpose of the parks is to preserve wildlife, scenery, and pristine land, not to provide conveniences for tourists.

That "tear up the parking lots" position is shared by Hartzog, who was in Boulder promoting his book on the national parks. In addition to tourist pressures, he said a serious conflict exists between the single-use philosophy of the parks, which is preservation, and the multiple-use mandate of the U.S. Forest Service.

The cattle grazing, logging, and oil drilling that go on in national forests are damaging to the parks they often adjoin.

Internal and external threats to the parks are on the agenda for a meeting that begins today in Wyoming's Grand Tetons. Participating are the superintendents of the parks and the 292 national seashore and recreation areas.

It has been 12 years since a conference has brought together the people who have day-to-day knowledge of the problems in these areas. As the superintendents know, keeping people out is not the sole answer for the beleaguered parks.

The proposed Park Service budget for the coming year is $779 million. The General Accounting Office estimated an unmet need of $1.9 billion for park maintenance and improvements in the 1987 fiscal year. Providing that kind of money is a political decision that can only be made with public support.

Hiking and backpacking in the wilderness is a wonderful thing for the hale and hearty, but so is the recently developed access to these natural wonders for people with physical limitations.

Careful management that allows enjoyment by the greatest number with the least damage to the environment is the key to ensuring the future of our national parks.

Source: Daily Camera, June 1, 1988

Land use conflicts are significant issues in the teaching and learning of geography and it is not difficult to find resources like the article presented in Figure 4.13. To use this resource I suggest students be asked on this occasion to write roles rather than being given them. A recent article on Yosemite Valley and the conflicts there between different kinds of preservation and access for people would add to the information available in Figure 4.13 (see Dilsaver, L. (1992)).

Strategies in values education

Quite definite schools of thought and procedure, briefly referred to earlier in this chapter, have been developed by various educators as a means of making values education a practical undertaking. Thus far I have presented exercises involving an examination of values and attitudes. I shall now explain the different schools of thought and highlight their procedures through examples. The values clarification approach developed by Raths and colleagues is fully set out in *Values and Teaching (1966)*. The clarification school holds that values must be subjected to three processes set out in Figure 4.14. Seven criteria define the processes. To use this strategy in relation to the siting of a shelter for battered women the following questions matched to each criterion could be used. Obviously in the classroom there is an element of role play in the prizing and acting levels for clearly students may or may not be prepared to hold such values outside the classroom or affirm or act upon them in a real life situation.

Figure 4.14 Valuing processes

PRIZING one's beliefs and behaviors
1. prizing and cherishing
2. publicly affirming, when appropriate

CHOOSING one's beliefs and behaviors
3. choosing from alternatives
4. choosing after consideration of consequences
5. choosing freely

ACTING on one's beliefs
6. acting
7. acting with a pattern, consistency and repetition

SOURCE: based on Raths, *L. et al (1966) Values and Teaching*, Merrill.

Classroom activity

1. If you were the mayor of Geraldine Borough Council, what would you do to resolve the question of the setting up of the shelter?
2. What do you think will happen if the plan you put forward is put into action?
3. What are the advantages and disadvantages of the position you have taken?
4. Why did you reject alternative ways of handling the issue?
5. You have to present your solution to the issue to a meeting of the Council. Write out a short statement of exactly what you are going to say.
6. Pretend you are a relative of a battered woman. What would you do to get the Council to accept your suggestion?
7. The problem of allowing a shelter for battered women may occur again in the City. What policy or plan do you think the Council should set up to handle it in the future?

Preparation time

Raths *et al* (1966) in their classroom procedures of values clarification suggest that students need time to think about their feelings and attitudes before a discussion. They suggest that students be provided with a list of questions to provoke thought and reaction prior to a class discussion and that written answers should be handed in. The significance of the written answer lies in the fact that it gives students the chance to think out their ideas thoroughly before discussion, and class dialogue may then be more purposeful and thorough. There are other numerous procedures which fall into the category of values clarification. These are outlined in Simon *et al* (1973), but most require considerable modification for use in discussing things geographical.

Values analysis

Another method for probing values and attitudes, the values analysis approach, was first fully described in the 1971 *Yearbook of the National Council for Social Studies* edited by Lawrence Metcalf. Exercises are designed to have students arrive at value judgements. The way in which the earlier exercise on the shelter for battered women is structured represents a values analysis strategy.

Classroom activity

THE COIN STREET CONTROVERSY

Issues like the Coin Street controversy on London's South Bank could be subjected to a slightly different form of values analysis where the essential exercise of making a value judgement centers on the land-use conflicts in the inner city. The extract from the *Town and Country Planning Association Journal*,Figure 4.15, gives the flavor of the planning conflict in the area. A number of pressure groups including the Coin Street Action Group, the Lambeth Council, the Greater London Council, private developers, the Town and Country Planning Association, are all involved in the issue of whether 16 acres of inner city London, located within a few minutes of the Waterloo tube, should be used for homes or offices. Students could be told to assume the role of the Secretary of State for the Environment. He has to decide whether planning permission is to be given to Commercial Property Ltd and the Heron Corporation, or whether the Waterloo District Plan of 1978 is to be upheld. A list of *statements for* planning permission and *statements against* planning permission should then be drawn up by the students in their capacity as Secretary of State to resemble the following list:

Statements listed by the Secretary of State for the Environment

Statements for

1. Proximity to Waterloo Station gives easy access to the potential office workers.
2. Commercial development may encourage other business to cluster around.
3. What is now housing does not have to remain so.
4. Property development means private investment and a saving on public funds.
5. Property taxes realized on commercial properties provide greater revenues for Local Council.
6. Office blocks could be in harmony aesthetically with the Royal Festival Hall and National Theatre complexes.

Statements against

1. There are already too many office blocks in the city.
2. There is a shortage of housing in the Waterloo area.
3. Parts of the inner city need to be retained for residential use. The Waterloo District Plan was agreed as a result of public participation and a thorough hearing — and should not be overturned.
5. Housing proposals retain more open space in the area.
6. Office development will increase congestion in the area.

After individual lists of statements have been prepared a discussion to clarify their meaning and assess their relative importance needs to take place. Judgements should then be made and the exercise concluded by the class drawing up a common list of observations and recommendations on the basis that the planning applications have been granted. Possible observations a. recommendations may read:

Possible observations

1. It will be difficult to uphold the present development plan system.
2. Keeping a balance between commercial and residential interests in inner cities is very difficult when decisions affect small parts of the city in isolation from any reference to overall trends and development.
3. Decisions are often made on the basis of political pressures.
4. It is extremely difficult to settle issues like this in a way that satisfies minority and majority rights.

***Figure 4. 15* Waterloo belongs to . . . ?**

Fun and Survival in the Inner City

There is an undiscovered law of economics which can be expressed as follows: Finance is available for developments in the inner city in an inverse proportion to their usefulness to the people who live there. Just as any Experimental Prototype Community of Tomorrow that can attract half-a-billion dollars is likely to involve Mickey Mouse and roller-coasters rather than the more mundane problems of people living in groups, so the dreams of property developers usually have more to do with medieval banquets and what can be got out of the inner city, than with ways of putting resources into inner areas and helping people who are suffering from the effects of economic change. Though both go under the name of investment, the two are not the same.

That is not to say that the functions of a part of a city should not change. It may well be appropriate that a particular area that once supported housing or industry should come to fulfil city centre functions, or vice versa. But who decides what is appropriate? That question is often complicated by the present system of land valuation (which effectively limits the uses to which particular inner city sites can be put) and by the political power of potential private investment. When the Waterloo District Plan was adopted in 1978, the residents of the area around Coin Street on London's South Bank saw it as confirmation that it was they who had been given the chance to decide. The plan had been produced by Lambeth Council after five years of consultation and participation, and the residents felt that it reflected their preferences. Since then, events have shaken their confidence in the planning system as they understood it. Commercial Property Ltd and the Heron Corporation have submitted planning applications for developing the Coin Street site; but whereas the district plan earmarked the site mainly for family low-rise houses and public open space rather than offices, the developers' proposals

Continued

Figure 4. 15 **Waterloo belongs to . . . ? (continued)**

are largely for offices, showrooms and business suites. As this would be a major departure from the statutory plan, the Secretary of State for the Environment has the opportunity to decide for himself whether planning permission should be granted; and after a public inquiry which starts in May, that is what Peter Shore will be doing. He will not find the decision easy. On one hand, the development proposal offers the prospect of private investment in a part of London where the government is most anxious to attract it. On the other hand, this is an important test for the new development plan system. The Waterloo District Plan was one of the very first to be adopted under the new system, and if the Secretary of State does not uphold it, the system itself will lose credibility. It is this that has persuaded the TCPA to make representations to the public inquiry, in support of those who will argue that planning permission for the commercial development proposals should be refused.

After five years of hard work trying to get their vision for the Waterloo area reflected in the district plan, the residents now have to fight their case in a very different arena. The public inquiry will be considering development proposals submitted by local residents, and others by Lambeth Council, as well as those of the developers. Margaret Mellor, Secretary of the Waterloo Community Development Group, highlights a major problem, "Commercial Property Ltd, the Heron Corporation and Lambeth Council have each appointed QCs and supporting teams to prepare and present their cases at the public inquiry. The Greater London Council has put its planning, valuation and legal staff at the disposal of the private developers. In contrast, the local community groups rely solely on volunteers. Hiring counsel on a similar basis to the other three planning applicants would cost in the region of £25,000. It seems clear that the public inquiry system is weighted very heavily in favor of commercial developers and against the general public." The TCPA agrees, and has recently called on the government to provide funds for objectors at certain public inquiries as an experiment. This would be a first step in looking for ways of removing a major flaw in the public inquiry system.

Like many other residents of inner cities, the people of the Waterloo area are having to fight hard for the survival of their community in the face of the powerful forces of economic change. They look to the planning system to provide a framework for resolving the inevitable conflicts in this process, and have often been disappointed. In 1977 they heard the government's promise of a "long-term commitment" to the inner cities, and the call in the report of the three inner area studies for a "total approach"; two years later, they find few signs of either. As the TCPA says in its policy statement on The Inner Cities, there are certain matters in which the government's present policies seem to offer little prospect of improvement; namely "the need for a planning framework, public participation, new institutions to tackle problems of an unaccustomed type and magnitude, the valuation and disposal of land, employment policy, resources, infrastructure and communications". Apart from that, Mr. Shore, everything is fine.

SOURCE: Cowan, *R. (1979) Town and Country Planning*, Journal of the Town and Country Planning Association, Vol. 48, No. 1.

Possible recommendations

1. An independent commission, headed by a prominent urban geographer, needs to be set up to review inner city redevelopment policies.
2. Limits should be set on the amount of money which can be spent by interested parties in such hearings.
3. Political studies should be included in a core curriculum.

Any number of public issues of a controversial nature are suited to values, among them airport construction, inner city redevelopment, expressway routings, the siting of oil refineries and nuclear power stations, as well as the kinds of conflicts present in National Parks. Similar land-use conflicts occur in many contexts throughout the world.

Figure 4.16 **A moral dilemma**

SUMIKO SEKO'S DECISION

By the late twentieth century, the Japanese government determined that to maintain its contacts with other areas of the world a large new international airport was needed. Japan's successful growth, the government reasoned, depended on its ability to do business with companies located in other nations. Japan's foreign business dealings were essential to maintain strong economic growth in Japan.

The government wanted to build the new airport between Nagoya and Osaka. It established a three member committee to make the final decision about the site selection. One of the three members of the committee was Sumiko Seko.

The hearings lasted one week. During that time, farmers from the area pleaded with the committee not to build the airport. The land had been owned by these families for centuries. They and their ancestors long before them had lived there and worked the land. To pave it over with runways would be to pave out their past. They felt Japan's progress had been proven. Should the country's traditional values, they asked, be destroyed?

Businesspeople also testified to the committee. They said that Japan's very existence in the world today depended on its ability to send Japanese businessmen to other countries, and to receive businessmen from these places. The country's current airports could no longer sustain the load placed on them. Any delay by the committee in deciding on this new site could cause damage to the economy. Japan was in the twentieth century now, they said. Its people, including its farmers, would be best served by this new airport.

After the hearings the committee met in private to make its decision. One member voted for the site and another voted against it. Sumiko Seko could not decide as easily. She knew that if she voted not to approve this site for the airport, the farmers' land would be preserved, and the grounds of their ancestors would not be disturbed. To approve this site for the new airport would allow the country to continue its contacts with the rest of the world—something both the businesspeople and the government felt was essential. For Sumiko Seko, both the land and the international contacts were important.

Should Sumiko Seko vote to approve this site? Why? Why not?

SOURCE: Backler, A. and Lazarus, S. (1980) *World Geography*, Science Research Associates.

Moral reasoning

The moral reasoning strategy is based on the premise that individuals move through a number of stages (now questioned) of differing sophistication in moral reasoning, and practice in moral reasoning will lift people to higher levels though we now must be more aware of the assumptions, perhaps different, which people of different cultural backgrounds bring to the task. Kohlberg's interpretation of his research led him to designate six stages of moral reasoning as follows:

Stage 1 The punishment and obedience orientation. The physical consequences of an action determine whether it is good or bad.

Stage 2 The instrumental-relativist orientation. Right action consists of that which instrumentally satisfies one's own needs and occasionally the needs of others.

Stage 3 Good boy — nice girl orientation. Good behavior is that which pleases or helps others and is approved by them.

Stage 4 Law and order orientation. There is orientation toward authority, fixed rules and the maintenance of the social order.

Stage 5 The social contract, legalistic orientation. Right action tends to be defined in terms of general individual rights and standards. There is a clear awareness of the relativism of personal values and opinions and a corresponding emphasis on procedural rules for reaching consensus.

Stage 6 The universal-ethical-principle orientation. Right is defined by the decision of conscience in accord with self-chosen ethical principles.

Kohlberg developed the moral dilemma, a story in which there is built in conflict over what is right or wrong. The story described in Figure 4.16 is an example of a moral dilemma set in Japanese late twentieth century society. After students have taken a position, class discussion should be directed towards keeping the discussion to the point and asking questions to introduce arguments appropriate to encourage students to examine their reasoning and the assumptions behind it. It should be noted that it is the type of argument and not the content or position that indicates the stage of moral reasoning.

I find that beginning teachers readily use the dilemma form in lessons and I offer two more examples to illustrate how the substance of geography lessons can be reinforced and reflected upon by writing up the issues as dilemmas. For example, as illustrated in Figure 4.17, the future of agriculture in a state in Nigeria was written up as a conversational debate and a dilemma posed at the end. Similarly, a resource on women and agriculture in Britain, Figure 4.18, can be explored more fully through a dilemma.

***Figure 4.17* A farming debate**

One might imagine the following arguments at a meeting to decide on the future of agriculture in a state in Nigeria.

Minister of Agriculture:
Oil has made us rich in Nigeria, and the population of our towns is growing very fast. These people need to be fed. The policy of my government is to increase agricultural production and my Ministry intends to do this by the most efficient means possible. The peasant farmers are backward and unprogressive. In time they will adopt new methods and become efficient farmers, but at the moment money spent on them will not increase the amount of food available very much at all. We are therefore concentrating on the modern agricultural sector, and are making *loans* available to the largest and most progressive farmers for machinery, seeds, and fertilizers. Their production will feed the people in the cities, and their example will inspire the traditional farmers to greater achievement in the long run.

Large modern farmer and businessperson, Alhaji Musa:
I am a businessperson. I am investing my money for the benefit of the nation, and growing food by modern methods. I bought my 500 hectare farm from local people, and paid a reasonable price for it. Since then I have spent 50 000 naira on machinery for it, and have a full-time manager. I employ a lot of laborers locally, and without the wages I pay, a number of villagers would be very poor. Mine is the largest rain-fed farm in the district, and I have plans to introduce irrigation in the future. I was at school with the Minister of Agriculture, and he is a great friend. He brings visitors to my farm, and loans from the Ministry have helped me to develop my land and buy machinery. I am convinced this is the right way for Nigeria to advance.

Traditional farmer:
When I look out from the village at my old farm all the land I see now belongs to Alhaji Musa. He says he paid me for my land, but I only sold it to him because I owed money after the great drought. The money he paid seems nothing now that I have no land to farm. I still have a few fields left, and share others with my brother, but I can't grow enough food now so I have to work as a laborer on Alhaji Musa's farm. I work for five naira a day on my old land, but he uses tractors now and doesn't need much labor. Anyway he makes most of his money

Continued

Figure 4.17 **A farming debate (continued)**

on business deals, and his manager doesn't know how to farm well. The land is not looked after. His children won't have any farm left.

Of course, my neighbor's son has learned to drive a tractor and he gets good wages. His family is rich now, and the second son is at school. I suppose he will get a job with the government, and one day he will come back like Alhaji Musa and buy land and grow even more rich. My family will not be rich. My sons have gone away to the city to try to find work because I have no land to give them. A man pays them to sell combs and sweets to the rich people in the cars, but they have no training and no money — they don't even know how to farm. They think I am a fool to have sold the farm, but a greater fool for staying here and trying to live in the village. They have no respect. They are angry and say their problems are all the government's fault, but I know it is because I sold the farm.

Critic:
The government says it is concerned with welfare in the rural areas, but really they don't care. They are not so much concerned with growing more food as making sure all their friends and political supporters make money out of farming. By encouraging big agricultural businesses and large landowners they are contributing to the very problem they are trying to solve — the small farmers get pushed more and more towards the poverty line and eventually they give up and go to the cities to look for work. So that makes even more mouths to feed, even more angry and unemployed people demanding cheap food and jobs.

What the government ought to do is to help the small farmer, not the big operator. Even if each farmer only has a small increase in production, the overall effect would be enormous, and above all it would make the country areas centres of prosperity and not derelict backwaters which the young people flee away from as fast as they can. The government should forget tractors and mechanization and big farms, and concentrate on giving guaranteed credit to small farmers, and inputs like fertilizers and new seeds that they can really use.

Minister of Agriculture:
All right, I hear you. The small farmers are losing out at the present time, it is true. But look at it from my point of view — the problem is too big to be tackled slowly. Our population is growing at two to three per cent per year. We need big increases in food production and we need them now — that is why I must support the bigger and more efficient farmers like Alhaji Musa. However, I have listened to your complaints, and in the future our policies will also include more help for the small farmer. Let us all progress together, rich and poor, to greater prosperity for Nigeria.

?

You are a rich man. Originally you came from a village where your father was a small farmer. Your brother now farms his land. You see your rich friends investing in land, and you know it is a good investment. You have heard from your brother that several farmers are badly in debt and would probably be willing to sell their land. You could buy it and you do want a secure investment for your capital but you know it would mean even poorer lives for those who sell to you. Your brother urges you on as he wants to be the farm manager, but how can you make other people landless? What do you decide to do? Why?

Source: Slater, F (ed.) 1991, Societies, Choices and Environments, Collins Educational

Figure 4.18 **It's the crops that are seasonal**

'It's the crops that are seasonal'

Semantics, it is claimed, is being used by farmers to get round the 1976 Sex Discrimination Act which obliges them to pay men and women doing similar work the same wages.

Ann's day is spent planting lettuces in the featureless landscape of East Kent. Sitting with a team of women at the back of a tractor, in a wind that's bitingly cold, she's bent double picking seedlings from a tray and transferring them to the planter. When the lettuces are finished, it'll be time for another crop, and so it goes on, week in week out, throughout the year, with only a break at Christmas.

Ann is one of 40,000 women in Britain employed as seasonal or casual labor in agriculture. But she says: 'It's the crops that are seasonal, not the women, but that's how they class us'. For the past seven years she's worked a 30-hour week for the same employer — part of a guaranteed workforce that he relies on. She therefore finds it hard to accept that he does not regard her as a regular part-timer entitled to holiday pay and with a degree of security, but as a seasonal worker with no entitlements at all. During the Christmas break, when she's laid off, she receives no standby payment and has no guarantee that she will get her job back next year. If she were recognized as a regular part-timer her employer would be required to increase her pay: the minimum statutory wage which can be paid to a regular part-time worker is nearly 20% higher than Ann's minimum as a seasonal worker.

Margaret Holmes, an official of the Agricultural and Allied Workers' Union (a branch of the TGWU) who represents horticultural workers in Kent, believes farmers use the label 'seasonal' to get round the 1976 Sex Discrimination Act which affords men and women workers equal pay. She claims that women get a particularly raw deal out of agriculture. They work in conditions that would shock the average factory worker: out all day in fields where there are no toilet or washing facilities, in an industry that, after construction work, is the second most hazardous in Britain. They are treated, she claims, as second-class citizens doing the job just for pin-money; yet many of them are single women or divorced women with children to support, who rely entirely on what they can earn.

In the Fens of Lincolnshire, where 80 per cent of the land is farmed, agricultural work is about all that is available locally for the school leaver. Here a system of working persists that seems more appropriate to the 1880's than the 1980s. A body of men called gangmasters range the countryside in vans, gathering workforces, mainly women, for the farmers who need them. It is the gangmasters who agree the rate for a job and pay the workers; and they're not always fussy about statutory wage minimums.

Although there are some reputable gangmasters, there are others, according to Conservative MP Sir Richard Body (Holland with Boston), who abuse their workers' trust by not paying their tax and national insurance contributions. It's disgraceful, he says, that people with enough self-respect to want to work rather than live on the dole should be cheated in this way. Sir Richard has long campaigned for a register of gangmasters and stricter controls.

Mavis Carpenter had worked 21 years for the same bulb-packing firm in Spalding. Then one day last year the all-female workforce was laid off — no notice, no redundancy pay. Although Mavis had originally been a full-time worker, in 1982 her employer cut her hours and handed over her P.45. He clearly now regarded her as another disposable seasonal worker.

Less than one per cent of agricultural seasonal workers are union members, so it was hardly surprising that the union's demands for a substantial wage rise made little impact on the body which sets the minimum hourly pay, the Agricultural Wages Board. Seasonal workers' wages, like the brussels sprouts they picked, were frozen. The National Farmers' Union, pleading another bad harvest, claimed it couldn't afford a bigger wage bill, and it's true that some small-scale farmers have a struggle to make ends meet. But only 22 per cent of landowners employ Britain's agricultural workforce and, as one union official put it, somewhat wryly, this year and next they'll still be riding round in their Range Rovers and Mercedes, because they always do.

SOURCE: Jenny Cuffe, *The Listener*, 19 June 1986

Figure 4.18 **It's the crops that are seasonal (continued)**

Some years after reading the above article in a geography lesson, you wake up to find that you have inherited your cousin's market gardening (truck farming) property in East Anglia. After visiting the property and getting to know it better you find that conditions do not seem to have changed much. You bring together a group of half a dozen local market gardeners to discuss conditions informally. You find that half are willing to consider improvements to working conditions and wages, the other three are emphatically not. You sit at home one evening summarizing on a sheet of paper the advantages, disadvantages and consequences of doing something or nothing. What do you decide to do and why?

Source: Slater, F (ed.) 1991, Societies, Choices and Environments, Collins Educational

Types of questions

Allen (n.d.) makes a useful distinction among likely responses to dilemmas and the kinds of value-laden statements teachers are likely to hear. He suggests four levels of value statements each requiring different clarifying responses and questions from the teacher.

Level I Expressive-evocative statements are immediate responses to the issue at the level of a 'gut reaction'. They will generally be nonreflective expressions of feelings and attitudes. To make feelings conscious and elicit reasons is the task.

Level II Evaluative-prescriptive statements include judgements based on criteria of goodness/badness, desirability/undesirability. Students should be asked to justify their statements.

Level III Ethical statements give reasons for evaluative or prescriptive judgements and the reasoning can be clarified and expanded. 'Life goal statements' may be forthcoming. 'I believe in equality . . . freedom . . . peace.' Such statements should again be questioned and students encouraged to explain their reasons..[2]

Teaching public issues

Another notable example of a teaching strategy, which the authors claim assists in the development of moral judgement, deliberately seeks to create cognitive dissonance or mismatch. Simon and Wright (1974) in the context of teaching public issues in the American high school have developed a useful outline for an enquiry process which is another version of values analysis. Their approach focuses on questions of desirability and feasibility — 'Is it right?' and 'Is it practical?' Students are asked to decide on their position *before* collecting, classifying, analyzing and evaluating data. By this means, it is likely that the solution the students come to will be different from their original judgement and create cognitive conflict.

Classroom activity

A FOURTH TERMINAL AT HEATHROW AIRPORT?

A. M. Welsh (1978) has used a Simon and Wright procedure to examine the proposed building of a fourth terminal at Heathrow Airport. Resources are referred to but not all are included here. The suggested procedure is:

1. Identify the problem, phrasing it in the form of a policy ('should') question. 'Should the fourth airport terminal be built?' Study the airport map and the British Airport pamphlet on the need for a new terminal.

2. Formulate an hypothesis on the desirability and feasibility of the policy contained in the question, 'Is it desirable (i.e. right) to build the terminal? Is it feasible (i.e. a practical proposition)?' Students record their opinion/hypothesis before making a systematic study of the evidence. They begin in this way to feel what the issue is about and to define their own attitudes towards it e.g. Will it improve human welfare? Will it be environmentally harmful?
3. Collect a representative sample of data and classify the evidence into:

   (a) The desirability of the new terminal (in the national interest, to protect employment, for passenger comfort, to retain tourist traffic etc.).

   (b) The undesirability of the new terminal (e.g. pollution, pressure on the green belt, pressure on public services and housing).

   (c) The feasibility of the new terminal (land is available within the airport boundary, the A30 has been improved, a new motorway which will take extra traffic is being built).

   (d) The unfeasibility of building the new terminal (only a temporary solution, not part of a long term airport plan, attitudes of different groups, alternative site at Perryoaks).

4. Evaluation of the data and hypothesis.

5. Preparation of a course of action towards the problem after examining the desirability and feasibility of taking overt group action on the problem. The majority of teachers are not likely to wish to proceed to this point. Instead students could examine the course of action already undertaken by the Secretary of State for the Environment.

6 Acting on the problem, evaluating the action. Again the decision to hold an enquiry and decisions reached by the enquiry could be evaluated. What are society's dominant values?

I suggest that this model of desirability feasibility analyses could be applied to the article "New Airport supporters surge ahead"

Figure 4.19 **A new airport?**

THE NEW AIRPORT: WILL IT FLY?

New airport supporters surge ahead

By Carl Miller
Denver Post Political Editor

Supporters of the proposed Denver airport in Adams County again have surged ahead of the opponents, The Denver Post-News Center 4 Poll shows.

Forty-eight percent of Adams County voters likely to cast ballots in Tuesday's election now favor the airport annexation, while 42 percent oppose it, according to the latest daily tracking poll.

Ten percent of those surveyed were undecided about the ballot question that will decide the fate of the $3 billion airport project to be located 10 miles northeast of Stapleton in Adams County.

There are strong indications that voter turnout Tuesday will be good, said Paul Talmey, president of the Boulder-based public opinion firm that conducts the poll for The Post and Channel 4. "Interest in the election has been increasing steadily during the past week, and who will say whether Denver should be allowed to annex 45 square miles in Adams County: whether the airport will help local and national air traffic congestion and whether it will bring much needed economic aid to their backyard.

Supporters of the new airport, who have spent $825,000 on their campaign, have focused on the jobs and other economic impacts the huge project is expected to generate.

They have cited consultant estimates showing an airport of the size Denver is planning eventually would generate 20,000 new jobs and immediately would create 2,500 construction jobs. It will take five years to build the first phase.

The new airport also would attract new business to Denver, much like airports in Atlanta and Dallas have, proponents argue.

The pro-airport campaign is run by a group called the Adams County Partners in Progress for a New Airport.

Gov. Roy Romer has characterized the Adams County airport vote as a referendum on the future of Colorado. Many business leaders have echoed his statements.

"What's at stake here is not just Denver and Adams County,' Romer has said, "If we are not successful in this attempt at the airport, we may lose it forever.'

But not all Adams County residents and other individuals associated with the airport project are buying Romer's arguments.

Some, like members of the Committee For a Better Airport, say voters should reject this new airport proposal, then work to build the giant new airport between Watkins and Bennett — farther east than Denver is planning.

Others, like the owners of some hotels near Stapleton Airport and Adams County political activist Hal Shrooyer, don't think a new airport is needed at all.

In recent weeks, the debate also has focused on highly technical environmental, financial, and social issues involving the airport proposal.

Denver produced consultant estimates earlier this year showing that the new airport would remove unacceptably high levels of noise from all major developments in the metro area that now suffer from Stapleton jet noise.

Under an agreement between Denver and Adams County, new homes would not be permitted in high noise areas around the new airport. And if the new airport violates the new noise standards and the problem is not corrected, Denver could be fined $500,000.

Though the noise studies have been confirmed by opponents, noise issues still are a major concern of voters. When Romer, one of the state's most popular public officials, commented that homes would be unaffected by noise from the airport at a recent debate, he was greeted with boos.

Questions also have cropped up about other environmental aspects of the airport project.

When Denver released an environmental study on the project in late April, city officials said the new airport would eventually pump less carbon monoxide into the metro area's air than Stapleton would if it were allowed to continue operating.

A week later, they acknowledged consultants had made errors that dramatically underestimated the new airport's air pollution.

When the city released revised estimates a week ago, they now showed that the new airport would produce almost a third more carbon monoxide each day in the year 2020 than Stapleton would.

Denver still insists it will be an improvement because the new airport would be located farther away from the downtown Denver air pollution concentrations than Stapleton.

Supporters of the new airport have touted the project as a much-needed replacement for a badly congested Stapleton Airport.

Federal estimates show that if Stapleton is not improved, it will suffer the greatest delays per flight of any major U.S. airport by the year 1996. Stapleton now has the least delays per flight of any of the nation's 10 largest airports.

A federal study completed in 1986 concluded that if a new east-west runway were built at Stapleton, it

Continued

Figure 4.19 **A new airport?** ***(continued)***

could continue to grow until at least the year 2005.

"You must realize that the new airport is primarily about jobs and economic development and very little about air transportation," said Jerry Jensen, part owner of the Stouffer's Concourse Hotel near Stapleton. "As an air transportation hub, Denver does not need a new airport. Denver does need additional runways."

If the pro-airport campaign has its way, residents will cast their ballots based on one word: jobs.

"The issue isn't annexation. The issue is the economic future of Adams County," Frew has said. "I think the more they hear our message and the more that they hear just the facts, just the facts and nothing else, not any of the garbage that they're hearing from the opposition, that people will vote on this as an issue of the economic future of Adams County and nothing else."

ARGUMENTS FOR AND AGAINST

PRO

- WOULD EVENTUALLY create 20,000 more full-time jobs; 2,500 jobs in construction would be created immediately. It would create $5.1 billion in additional business revenue per year.
- WOULD DRAW domestic and international businesses to Colorado.
- WOULD MOVE a major source of air pollution farther from downtown Denver.
- WOULD ELIMINATE unacceptable noise at existing, major metro developments and building of homes in new high-noise areas. If new airport violates noise standards and violations went uncorrected, Denver could be forced to pay $500,000 fine.
- COULD HANDLE 1.2 million takeoffs and landings annually in 2020. Stapleton would be limited to handling 6[illegible],000 takeoffs and landings annually by then.
- WOULD HANDLE 72 million passengers annually by 2000 and become the nation's second busiest airport, the Federal Aviation Administration predicts. That compares with Stapleton, which, if left alone, would handle 52 million to 54 million passengers then, and rank sixth.
- WOULD HELP avert major delays. If a new airport is not built and Stapleton is not improved, Stapleton delays would jump from six minutes per flight now to 20 minutes per flight by 1996. That would make the Denver airport the nation's worst major facility for delays.
- WOULD REQUIRE new roads. But they would be paid for with airport revenues not tax dollars.
- WOULD NOT COST "one dime of Adams County taxes (for) building or maintaining the new airport," according to pro-airport campaign literature.
- WOULD, IF REJECTED by Adams County voters, cost the Denver area its chance to build a new airport, officials such as Gov. Roy Romer and Denver Aviation Director George Doughty say.

CON

- WOULD INCREASE travel distance and air traffic, creating almost a third more carbon monoxide than Stapleton in 2020, city consultant estimates show. By then, new airport could represent almost a fourth of total metro carbon monoxide pollution and could hamper region's efforts to correct air quality violations.
- WOULD UNDULY BURDEN airport users financially, United Airline contends, under the Denver-Adams County agreement.
- WOULD BE BETTER at a site between Watkins and Bennett rather than at location Denver chose, some opponents say; others say it should not be built at all.
- WOULD BE ONE OF nation's most distant airports. Stapleton, 7 to 8 miles driving distance from downtown, is one of closest-in major airports in nation. New airport would be 23 to 24 miles driving distance from downtown.
- WOULD INCREASE to at least $20.25 the average cab fare from downtown; that compares with current fare of $9.25 from downtown to Stapleton.
- WOULD NOT GUARANTEE that county residents would be immune from high noise. Provision for violations of noise standards is too loosely worded and could take at least three years from the time of a violation until Denver is forced to pay a fine, opponents say.
- WOULD EVENTUALLY FORCE Adams County residents to pay for secondary roads, social and public safety services for the new airport with tax dollars, opponents say.
- HAS COST ADAMS COUNTY residents tax dollars already. Adams County and its cities have spent $43 million for legal counsel on airport issue and plan to spend $850,000 more this year.
- WOULD NOT BE DENVER'S only chance. If Adams county voters reject this airport plan, Denver likely will develop another, say opponents and Robert Donohue of the FAA.

Source: Denver Post, May 15, 1988

The broad meaning of data

Question-asking activities in learning, together with reaching generalizations and decisions through data processing have again been dominant themes in this chapter. It is clear by now that data are given a very broad meaning to include not only statistics and evidence gleaned from reports, maps, photographs or newspapers in the scientific tradition, but also the reactions and feelings, ideas and thoughts of students confronted with humanistic dilemmas and problems of values and attitude analysis. Such a broad definition of data is necessary if the student's own knowledge and feelings are to be valued, developed, and transformed in an educationally worthwhile undertaking.

Figure 4.20 **Procedure for studying a controversial issue**

Becoming aware of and clarifying the issue
What is going on here?
What is the major issue, problem or question?

Analyzing and expressing one's feelings
Why did I choose this problem to work on?
Have I made any assumptions about it?
What are my attitudes? My bias?
How do other people react to the problem?

Inquiring, carrying out research and reaching the best possible factual judgement
What do I need to know? How do I find out about it?
What knowledge or methods are useful to me?
What have I found out about the problem?
What are the implications of these facts?

Clarifying values and reaching a value judgement
What values and beliefs do I hold that are relevant to the problem?
What are the consequences of these in relation to the problem?
When there is conflict between values, which values have priority?
Why?

Synthesizing fact and value judgement and making a decision
Do I have enough information to decide?
If not, what do I do?
What solution do I now propose?
What courses of action are open to people wishing to bring about the solution?
Should I become personally involved?
If so, how to what extent and why?
What are some of the possible consequences of my involvement or non-involvement? For society? For myself?

Doing and evaluating
What did I actually do?
What were the consequences of this?
Knowing what I know now, how would I act if the situation arose again? Why?

Source: McConnell, W. F. *et al* (eds) (1979) *Studying the Local Environment*, Allen & Unwin.

As a template of the teaching-learning process the question identification, data examination, development of understanding procedure, seems to have validity and mirror the reality of planning for teaching and learning. The examination of attitudes and values, no less than the development of understanding and skills, may be undertaken using the question identification, data examination, decision resolution plan.

Final suggestions

As a series of final suggestions in values and attitudes teaching in geography, I suggest the following as a checklist based on ideas from Watson (1977).

1. Select an issue with which students can identify. You want to engage their feelings.

2. Use a case study which is contentious and for which there is ample background information. Students must be able to identify from data the range of value/attitude positions manifested in the issue.

3. Classify the various value/attitude positions and help students to analyze the pros and cons and implications of the range of positions.

4. Evaluate the arguments by comparison and contrast. Encourage students to relate their personal values to the values identified in the particular case study.

5. Involve students in making a choice, perhaps by ranking the range of priorities operating and then having them decide what their position would be.

6. Give students the opportunity to provide thoughtful and convincing reasons for their choice or decision through written reports, debate, simulated interviews.

Where do you stand?

And if you wish to assess your likely position in relation to taking up values teaching strategies in geography, answer each of the following questions with a yes or no:

1. Do you want to help students *examine* their personal feelings and actions in order to increase their awareness of their own values?

2. Do you want to stimulate your students to develop higher forms of *reasoning* about values?

   Do you want to help your students use *logical thinking* and *scientific investigation to* analyze social value issues?

4. Are there certain *values* and *value positions* that you want your students to adopt?

5. Do you want to provide definite opportunities for your students *to act* individually and in groups according to their values?[3]

CHAPTER 5:

LEARNING THROUGH GEOGRAPHY

In the previous chapters I have modelled an inquiry approach to planning which consists of several steps:

1. Identify key questions
2. Think through the concepts and generalizations, central understandings to be worked toward
3. Consider available resources or materials (data)
4. Decide on appropriate student activities and teaching methods
5. Ask what aims and objectives are likely to be achieved
6. Evaluate the plan so far. Modify it, if necessary
7. Write out the plan you intend to follow
8. Once taught, think about it again. Modify in the light of experience after teaching.

Each chapter has been organized around one idea with examples illustrating that idea. In the first chapter emphasis has been placed on sorting out key questions as signposts which help us to organize and plan pathways to meaningful student learning.

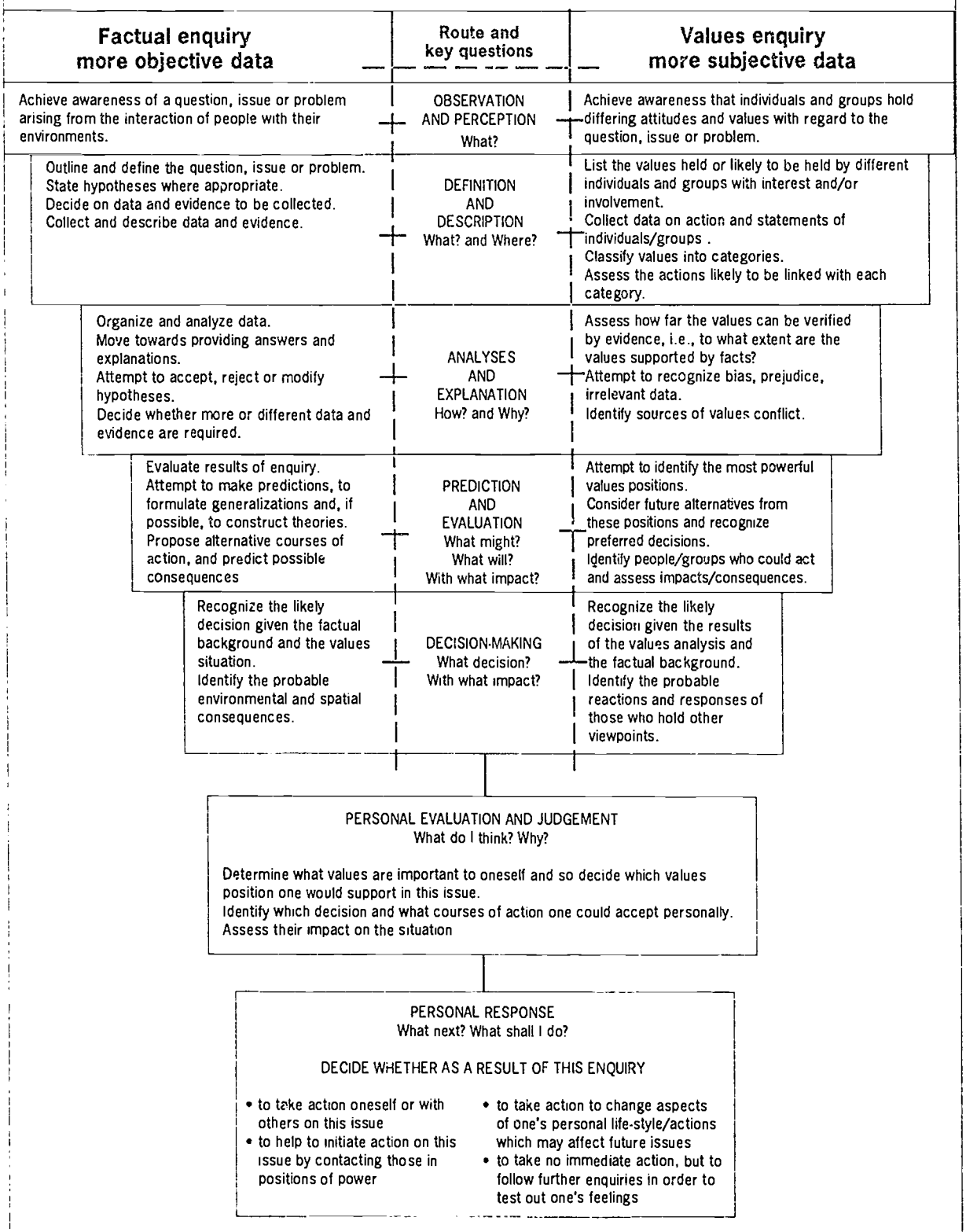
The second chapter emphasized the concepts and generalizations and the consequent intellectual thinking abilities which would engage the learner through from the more conventional lesson ideas to strategies like DIAS which promotes thinking to challenge thinking. Chapters 3 and 4 highlighted the range and variety of data which may be used to learn through geography. Considerable emphasis was placed on the value laden nature of much of that data and appropriate teaching strategies for high school students to become aware of that. As I see it, the general line adopted for planning is congruent with stimulating thinking in the students.

The examples and ideas for lessons and activities suggested then in previous chapters have involved students in a wide variety of data and methods presented in a variety of ways towards the end of promoting thinking. Sometimes students are being asked to make observations and connections in the real world, (Toronto's Towers), at other times they are data gathering and processing from photographic images, statistics, or text to understand and develop an idea, to problem solve or make judgements and decisions, reach general understandings. All along it has been my intention to encourage inquiry, to set out a method or model of planning which runs in parallel with developing thinking, decision making, judgement and understanding, to name but some of the processes involved in thinking.

It so happens that at the same time as I was writing and publishing the English edition of this book on planning lessons and activities, a curriculum development team at the Institute of Education in London was looking at means to promote inquiry in the geography curriculum for 16-19 year olds in particular (Naish, Rawling and Hart, 1987). They came to conceptualize inquiry around a series of very general key questions which they called a route for inquiry. It is possible and interesting that my suggestion that key questions might be understood metaphorically to be signposts helping us organize and plan pathways to learning turns up as a related metaphor, a route to inquiry. As mechanisms for selecting content within established geography, key questions and the metaphor of pathways or routes seems to speak to people searching for ways through and ways of engaging learners actively in learning.

In the Geography 16-19 route for inquiry we walk inductively from observing and perceiving what is about us to analyzing and explaining events and data, to decision-making and personal evaluation (based on an understanding of the facts and in the light of our values) and judgement of what we've

Figure 5.1 The route for geographical inquiry



Source: Naish, Rawling, Hart, *Geography 16-19 : The contribution of a curriculum project to 16-19 education*, Longman Group UK Limited 1987.

learned. Geography for 16-19 year olds was conceived as an inquiry into a people-environment issue since geography was characterized most broadly to be about people — environment, events, issues or problems.

Real world issues and problems were to be conceptualized and interrogated through a series of steps along the lines of "What is at issue here?" Figure 5.1 illustrates the steps to be negotiated taking into account both the more factual and the more value laden dimensions of the issue. It is important to note that an issue is stated in the form of a question: Is tourism good for development? What changes characterize West European cities? What is the impact of industrial change on the M4 corridor? On the New England states? Each of these questions is explored by further questions and exercises of definition and description, analysis, and explanation, prediction and evaluation and then decision making, and personal evaluation, judgement and response as I have already noted.

The route for inquiry is best understood, I think in illustrating its steps in relation to an inquiry I have undertaken with my students over a number of years.

Fieldwork Activity

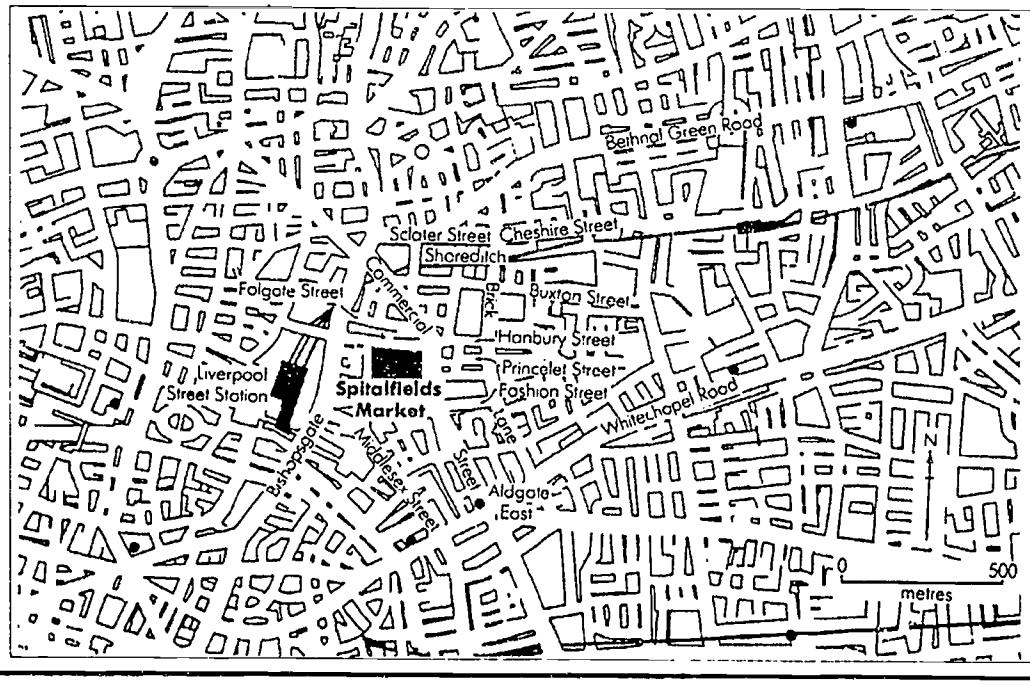
Each summer term, students training to be geography teachers at the Institute of Education, University of London prepare a Geography 16-19 fieldwork investigation. The investigation is planned and prepared for sixth formers in the London area who then join the students for a day's field work.

Recently, Spitalfields was chosen as the area to be investigated. In previous years, we had examined issues embedded in the redevelopment of Covent Garden, Coin Street, Docklands (various areas, including Canary Wharf, St Katherine's Dock, the Royal Docks, etc.) and King's Cross. It's not difficult in a large metropolis to find some area being redeveloped. Redevelopment actually only really means an area is changing or being changed, with one function being replaced by another.

Any change in the land use or function of an area — urban or rural — makes it ripe (to use the developers' language) for a 16-19 style inquiry.

The group of us working together had a hunch something was happening in Spitalfields and so we followed the 16-19 Route for Inquiry to find out more. What follows is intended to be a guided walk, along the route for inquiry. It may be of help to those who come to plan and undertake an investigation for themselves and their students.

Figure 5.2 Plan of the Spitalfields area



Stage 1

Observation and perception (what and where?)

We first had to achieve some understanding of the area by going down, looking around, talking to people informally, setting up more formal interviews, contacting people whom we thought might know more and interviewing different kinds of organizations in the area. We also started collecting any mentions of Spitalfields in the newspapers or on TV. At the end of our first morning's exploration we had a very pleasant Bengali meal in Brick Lane. So far, so good.

Spitalfields has an interesting location between the City of London and the redeveloping Docklands. Like Covent Garden it has outgrown its location as changes in transport, the coming of big trucks, brought traffic congestion. The attractive nature of the old market, as with Covent Garden, made it easy to see why property developers had decided on a chic future for the area.

Literature from the developers and our walk around left us in no doubt that the process of redevelopment was beginning. We were quickly into Stage 2.

Figure 5.3: The new East Enders

Some parts of the city are solid, some are grand, or elegant, or slick, talking and smelling of money. Others are animated, flimsy like a set, stages for the shifting, shabby-bright, talking and smelling of elsewhere.

Welcome to Brick Lane, London El. Home to Huguenots, Jews and now Bangladeshis. Where deals are done and machines still whirr in upstairs rooms and basements, where paint is but a memory and the head-lease a marvel and mystery. Where English has been the second language for several centuries, where British notions such as order and regulation and the book are nodded at with smiles, where sites gape from long-gone bombs and midnight torches, where nothing is neat, or simple, or straightforward. And where everybody seems always to be on the move.

And now, after the Huguenots, and the Jews, and the Bangladeshis, the City is coming. The search for space has seen it march and creep through great new developments and past Liverpool Street up to Commercial Street, where the Spitalfields Market waits to feed its maw. And the Bishopsgate site, and the brewery site in Brick Lane itself; about £1,000 million and 30 acres of ripe development, spanking shiny buildings, temperature-controlled homes for smooth-running systems ready to rise around and among all that mess and squalor and life. Can Brick Lane survive? Should it?

Abbas Uddin is the Labor councillor who has the sari shop on the corner of Brick Lane and Princelet Street. Abbas was a community worker before he opened the shop a year ago. He enjoys it: 'I had a bit of criticism. Some people thought it was capitalist. Is it capitalist to own a car? Is it capitalist to wear pinstripe suits? I'm employing people. If I hadn't taken it, they would have made it into an estate agents.' Bryan Gould would be proud.

Abbas is 39. His father has returned home to Bangladesh, disenchanted with Britain, but Abbas is an optimist. He thinks the Bangladeshi community settled and stable around Brick Lane. He wants to turn Brick Lane into 'Banglatown', like Chinatown, restaurants and shops, pedestrianisation, bilingual signs. He wants more money.

So does Mr. Kadir. Mr. Kadir runs the newsagent's and the sports shop further up Brick Lane and he wants more money spent on things like car parks. Mr. Kadir is the chairman of the Stepney and Bethnal Green Conservatives. He supports the Tories because they don't interfere with religion or promote homosexuality, and because, unlike Mr. Kinnock, they don't dance in the streets, something offensive to Moslems, to win votes.

Mr. Kadir used to be secretary to the Brick Lane mosque; he felt the attackers of Rushdie were helping to sell the book, and he had firm doubts about the Ayatollah's sanity.

Mr. Kadir paused to sell a father some trainers for his son. The father said he was a Pakistani film producer and paid with plastic bags filled with pound coins. He left. Mr. Kadir said that, really, he ran a gambling place round the corner. Mr. Kadir had been in the rag trade, in leather. Foreign imports were ruining it. That was why the workers in the sweat shops round Brick Lane were paid so badly: stop the imports and the wages would rise. It was one view of the market economy.

Money is going into the area. The local Task Force, set up by central government to fund innercity projects and improvements, has spent £1.8 million since autumn 1987 on start-ups for small businesses, on training in office skills, English as a second language, training in the clothing industry. Business in the Community (President: Prince Charles, 'visibly

Figure 5.3: **The new East Enders** *(continued)*

shaken' by conditions when he toured in 1987) has paid £1.5 million since July 1987 in pursuit of 'enlightened self-interest', job creation and small business development.

Since 1980, Tower Hamlets, the local authority, has invested over £2 million, matched by £5m from the private sector, in job creation and preservation. The Spitalfields Small Business Association (SSBA) says more is needed.

Ayub Ebrahim, known as Chey, rents one of the SSBA's workshops in Brick Lane. Chey International leather garment manufacturers, turnover around £1 million a year, turns out about 250 jackets in a week in peak season. Chey pays £100 a week rent; he used to pay £300 a week for worse accommodation around the corner in Bethnal Green Road.

Chey is confident there is a market for the Brick Lane leather businesses; but only if they lead demand rather than just follow West End and wholesaler wants. Chey is a Gujerati; he might stay in business here, or he might go to Mauritius, or Los Angeles. Right now, he has to go and get some more leather.

Tariq Qayyum, one of his machinists, is a Punjabi and, with Chey, part of the 20 per cent round here who are not Bangladeshi. He has worked for Chey for three years, in the leather trade for 12. A 50-hour week will bring him £250. The worst place he ever worked paid him £70 a week. He lives in Ilford. Does he like Brick Lane? 'The streets are dirty, the shops are dirty. It's just the money, otherwise I wouldn't bother coming.'

Go to Princelet Street to see the worst sweat shop, says Tariq. Down in a basement, Tunu Miah is overseeing about six other workers under strip lighting. 'I grew up here,' says Tunu. 'I like the area, but everything should be cleaned.' Tunu earns £80 to £100 a week for 40 hours: 'I'm not educated. What else am I going to do?'

Across and up, paintless and cramped, with windows covered against the light, Abdul Khalique is earning £100 for 60 hours. What did he like about Brick Lane? 'Nothing at all.'

Mr. Ghazi-ul Hasan Khan, formerly President of the All Pakistan Students' Union, formerly of Fleet Street, makes a point: 'The first generation of Bangladeshis didn't have any skills, any technical know-how. The vast majority went into catering as waiters or chefs, or into the rag trade. But now the new technologies are here, their sons and daughters should take advantage of them, avail themselves of the opportunities. They *must come up to the mark!*'

Mr. Khan has another SSBA workshop, where he produces his weekly Bengali newspaper with English supplement, and prints for other people to fund it. Mr. Khan wants to produce an English newspaper for all British Asians, a newspaper which would remain true to their traditions and culture, but would take in Kylie Minogue and Frank Bruno, too.

Meanwhile, press day is looming, and Mr. Khan has another dream, that one day his people will not only come up to the mark, that they will become 'a vital force in every walk of life, every walk of British life.'

Yes, said Akaddas Ali, with the happiest of beams, it was easy to make money in Britain. Mr. Ali came here in 1963, started working in steel, moved on to handbags, and then opened his own grocery shop in Fashion Street in 1970 with £250 stock. Restaurateurs began to come to him for his fish and vegetables, his rohi and kadu, and his spices, his tukmaria, haldi and masala mix.

Mr. Ali moved into property. Now he owns six shops in Fashion Street, 15 properties all told. Mr. Ali has five daughters and one son. No, the daughters would not be joining the company. 'It is our religion that they should not work,' said Mr. Ali.

Still beaming and wearing his white grocer's coat and brimless Bangladeshi cap, Mr. Ali gave a guided tour of his Fashion Street empire. Mr. Ali is converting it bit by bit, basement by cellar, according to a master plan he keeps in his head; one day, a few judicious blows will reveal an integrated, mighty emporium half the length of Fashion Street.

Now he lives in Forest Hill, and might move further, into the country. He is looking for more property. 'I will buy for £2 million'. Money is not a problem: 'I can get it. When you've got a good business, anybody will give you any amount.' Mr. Ali gave his broadest beam of all.

At the City end of Brick Lane, in Osborn Street, Mr. Ahmed the banker was sitting in the spanking, shiny new headquarters of the Sonali Bank, of Bangladesh, recently arrived from the Square Mile. It was his view that the Bangladeshi community, and the Asian community as a whole, had reached a turning point, of which the Rushdie affair was a symptom and example. They had to make vital decisions about their part in the community.

He thought that the Bangladeshis had patience, cohesion, energy, and a will to succeed. He thought their culture would enrich ours. Mr. Ahmed the banker spoke gently of the harmony that plants of different color and shape can achieve in a garden.

On Friday, more than 2,000 of the faithful filed out into Brick Lane, down the steps of the mosque, which was the synagogue, which was the protestant church before that, before they — and the President of Bangladesh — raised £350,000. Outside they were presented with a Ramadan fasting timetable, sponsored by New Taj stores, a message of support for the Ayatollah over Rushdie, and an invitation to the grand opening of the Docklands light railway.

Source Sunday Telegraph, 9 April 1989

Stage 2

Definition and description (what?)

We were into second stage of a 16-19 inquiry, i.e., the definition and description of the issue. We could define it as an issue and set out our initial thoughts addressed to 16-19 year olds as in Figure 5.3(a) and (b).

***Figure 5.3(a)*: What is the process of redevelopment in Spitalfields?**

Introduction

Spitalfields is a close-knit community in East London which is under pressure from major redevelopment. It is a traditional centre of the rag trade, based especially around Brick Lane, the Watney and Truman brewing sites, and also the Spitalfields fruit and flower market. The population is largely Bengali, with some Pakistanis too. The Jewish community are retiring, although they still own much of the property. Much of the property is in a bad state of repair, leases are expiring and not being renewed, and thus the area is becoming identified by various developers as a potential site for redevelopment.

The City of London faces major problems of congestion, partly due to the presence of some traditional markets and other retailing systems in the area which necessitate the entry of many large vehicles into the centre of London. The congestion, noise and other pollution associated with the infrastructure necessary for these outlets not only contradicts the ethos of elite office and shopping complexes, but also creates a real practical problem of access. Several such sites in London have been redeveloped recently — examples include Covent Garden and Docklands (notably Canary Wharf and St Katharine's Dock). For broadly the same reasons as the Covent Garden market was moved to Nine Elms, it has been decided to move the Spitalfields market to Hackney Marsh, and inevitably there is now much interest in developing the site and surrounding area. Spitalfields's location between the city and the new redevelopment in Docklands means that it is especially sought after.

To gain a fuller understanding of the process of redevelopment, we need to understand the positions of the various groups involved. After the introductory talk, we will split up into groups and consider in broad terms the positions of the following groups from various angles:

- The external developers (for example big insurance companies seeking to build a new office).
- The internal developers from within the community.
- The local small businesses.
- The local tenants.
- The local property owners and gentrifiers.

Each group will then concentrate on one of these groups in particular, and consider them under the broad headings of

- What problems they face?
- What do they need?
- What are their options in practice?
- What are the likely effects of the new proposed developments on this group?

With this introduction, we will then go out into the area and see at first hand the impact the various factors have had on land use and the area generally.

After lunch, we'll try to put what we've found in a broader context by trying to develop a model of the process of redevelopment. All the time we hope you will see that there is a *process* of redevelopment going on, an active interplay between the various groups and constraining factors involved, which we should try to understand and explain, as opposed to just describing a pattern.

So in summary, various key questions emerge which we will aim to answer

- Where and what is Spitalfields?
- What is going on there, and where?
- How and why is the process operating?
- What is the likely future for Spitalfields?
- What ought to happen if the process of redevelopment is to take place as fairly as possible?

Compiled by Duncan Heaster

Figure 5.3(b) **A brief account of the five groups involved in the development of Spitalfields**

Internal developers
Internal developers are people from the local Spitalfields community who are taking part in the medium to large-scale redevelopment of the area. Their close links with the community, for example via friends and family, as well as their intimate knowledge of the area, place them in a unique position among developers. Internal developers may use their links with the community to buy into the area, or they may own sites ripe for development already.

External developers
The Spitalfields Development Group represents those interested in developing areas as outsiders, having evaluated the land potential. Their power is strengthened by joining up with other developers to use their combined financial backing to reap the profits associated with large-scale redevelopment. The SDG are planning to develop the area currently occupied by Spitalfields market into shopping malls, offices, and luxury residential apartments, focusing essentially on restaurants and quality stores.

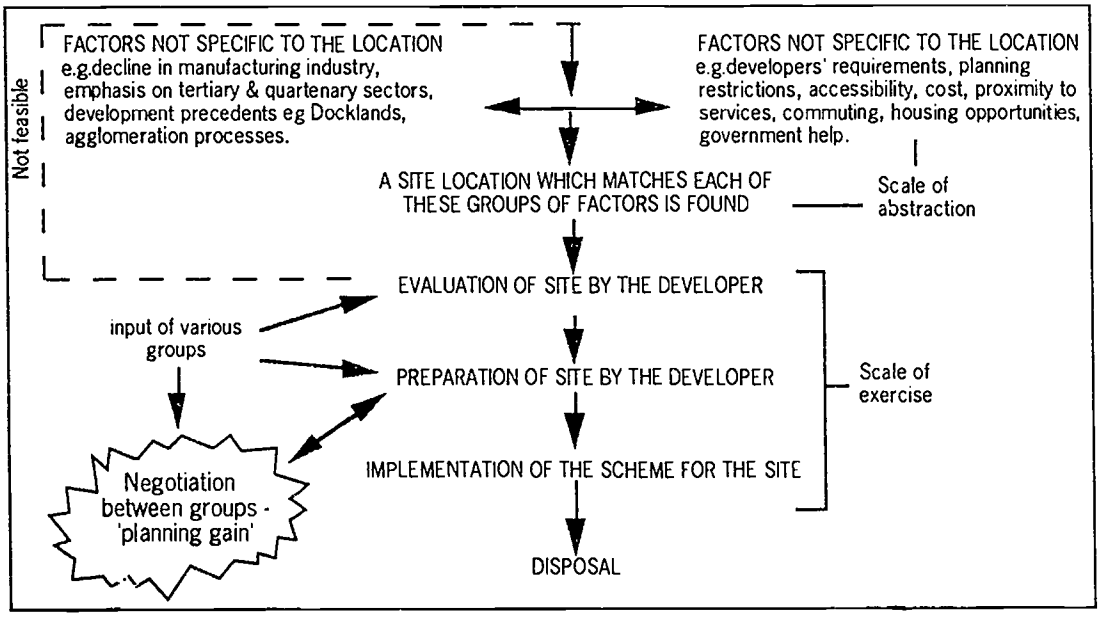
Renters
This group includes council tenants, housing association tenants, and those renting privately from landlords. Those renting privately from landlords may well be forced to leave the area if rents go up too high. The housing association aims to keep rents at 'fair prices', but fears this may become impossible. People in this group are relatively powerless and their future (whether or not they can continue to live and work in this area) will largely depend on decisions made by their landlords.

Landlords and gentrifiers
Some people, foreseeing that property prices would increase in Spitalfields, have bought property while prices were relatively low. These gentrifiers either live in their property themselves, or rent it out. Most of them are likely to sell it in a few years and make a good profit. Landlords will also do well — many are able to charge more rent; others will sell their properties for financial profit.

Small businesses
These are mostly comprised of one rag trade, with a largely Bengali workforce. They are poorly organized, and under pressure from foreign imports. However, with better marketing structures, increased specialization, and modernized workshops they could become more attractive to buyers, be competitive and also provide better working conditions for the workers. However, little help is being offered by the potential developers, whose job opportunities in services are mismatched to the local manufacturing workforce.

Compiled by Alison Gillett

Figure 5.4: **Proposal for a process model of physical redevelopment**



Source: Jane Herrington, 1989

Stage 3

Analysis and explanation (how and why?)

The third stage of developing the study concentrated on analysis and explanation by finding out more about the different groups involved in Spitalfields and setting up exercises for the sixth formers.

We found out much more than can be included here On the day with our sixth formers we split into groups corresponding to the local groups operating in Spitalfields and guided them through the area.

Each group of people in Spitalfields is experiencing redevelopment in a different way and to understand this is to begin to understand what redevelopment means. The relevant sheets and exercises for just one of the five identified Spitalfields groups are included here.

As we worked together to answer the key question 'What is the process of redevelopment in Spitalfields?' we realized a number of things. Spitalfields is made up of different groups of people making decisions in the area according to their perceptions and needs, their economic resources and aspirations, their power, knowledge and influence. This led us to analyze:

- What groups are operating?
- What decisions are they able to make?
- What impact does this have on land use in the area?

The exercise for one of the five groups follows:

***Figure 5.5(a):* Information sheet: Internal developers**

Who are they?

Inside developers are people from the local Spitalfields community who are taking part in the medium to large scale redevelopment of the area. Their close links with the community, for example via friends and family, as well as their intimate knowledge of the area, places them in a unique position amongst developers. Internal developers may use their links to buy into the area, or they may already own sites ripe for redevelopment.

What do they want?

It is worth remembering that the internal developers are not a homogeneous group. Different developers want different things. The list shows the sorts of things that internal developers might want

- to expand their businesses by buying and developing adjoining land or property;
- to refurbish their property in order to accommodate their businesses more suitably;
- to refurbish property in order to sell it off;
- to expand and to provide local employment;
- to convert a building to a different use or function;
- to improve the local environment;
- to make use of the derelict or empty properties;
- to create new workplace units to provide services to existing firms.

What help is there for the internal developers?

The local authority, Tower Hamlets, has designated certain parts of Spitalfields as 'industrial improvement areas'. These areas are particularly rundown and require improvement. The authority offers help to some developers with plans for developments within these areas. They particularly favor 'local initiatives'. This help can include

- improvements to the local roads by the local authority;
- grants towards the cost of converting or extending premises;
- grants towards rents;
- loans to carry out work on premises;
- loans to acquire property;
- grants for landscaping and improving the appearance of the local area;
- grants for clearing land, building access roads, etc.

The unique position of internal developers

Internal developers are in a unique position because of their links with and knowledge of the local community and area. For example, they might have

- an intimate knowledge of the local area, the condition of its buildings, local sites with potential for redevelopment;
- an intimate knowledge of who owns which properties;
- informal as well as formal links with members of the community;
- the support of elements of the local community;
- the support and backing of local authority initiatives such as the those found in the 'industrial improvement areas'.

Continued

Figure 5.5(a): **Information sheet: Internal developers (continued)**

Problems faced by the internal developers

The position of the internal developers has its disadvantages as well as its advantages. Possible disadvantages include

- the opposition of groups within the local community to certain developments;
- the internal developers might not have the financial clout of the large-scale external developers;
- their lack of financial backing may mean a lack of power opportunity and choice.

What options are there for internal developers

There may be a number of options open to internal developers, such as

- not improving properties, letting them decay and then selling them off to property developers;
- working in co-operation with other internal developers on local projects;
- developing property and selling it off to external developers or business interests.

The timetable

The processes of redevelopment are under way in Spitalfields. The planned redevelopment of the fruit and flower market is well under way, and will provide an important precedent for further developments in the area. Thus the redevelopment issue is an important and vital one. What will be the role of the internal developers within this process of redevelopment in Spitalfields?

Figure 5.5(b): **Activity sheet: Internal developers**

This sheet sets out the activities and questions we will be tackling on the field walk and in the report back. Key questions you will need to keep in mind all day include

- where are the sites for redevelopment?
- which sites are
  a) ripe for development?
  b) are being developed?
  c) have already been developed?
- what are the sites being developed into?
- what do you think are going to be the effects of the redevelopment processes in the area?
- who gains? who loses?

The activities will be divided in the following way

The field exercise

- For the first part of the exercise we will be looking at the overall process of redevelopment in Spitalfields. We will be asking
  a) what kinds of redevelopment are taking place?
  b) who is doing the redevelopment?
- For the second part of the exercise we will be looking at the contribution of the internal developers to the redevelopment process in Spitalfields. To do this you will need to
  a) complete the site and land use base map;
  b) fill in the site analysis table.

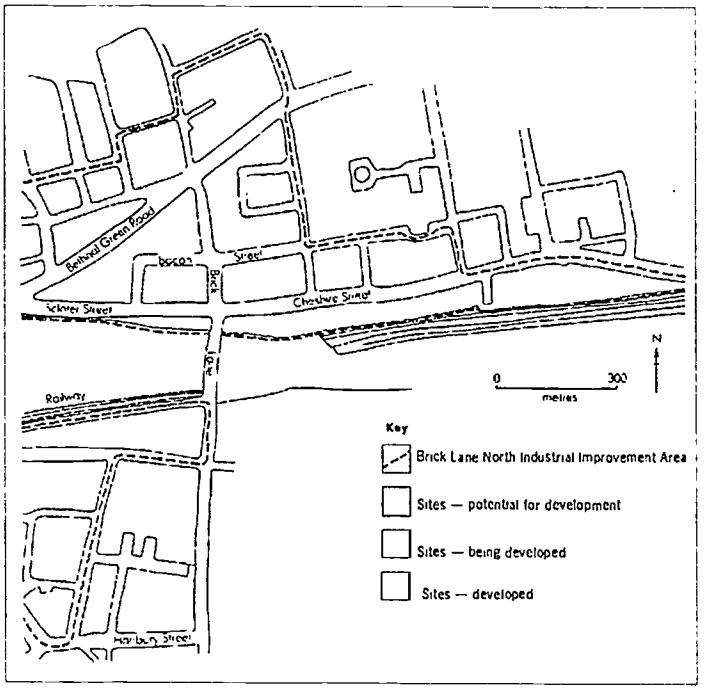
You will need the map and table for the report back exercise.

The report-back exercise

- In this exercise the aim is to identify the *processes* taking place in Spitalfields and involving the internal developers. To do this you will need to refer back to your data collected on the field exercise and the key questions. Using the data can you answer the key questions?
- Site X is a potential site for redevelopment. You are an internal developer and you are looking for a suitable site for relocating your garment factory. Can you come up with the processes you would go through in identifying and redeveloping a site?

Continued

Figure 5.5(c) Development sites



Redevelopment in Spitalfields. Part of the process: internal developers

Site number	Site name and description	Stage of development*	What kind of development is taking place?	Who by?	Possible disadvantages possible advantages

*Stages of development: undeveloped, developing, developed

Case study: An internal developer

Yes, said Akaddas Ali, with the happiest of beams, it *was* easy to make money in Britain. Mr. Ali came here in 1963, started working in steel, moved on to handbags, and then opened his own grocery shop in Fashion Street in 1970 with £250 stock. Restaurateurs began to come to him for his fish and vegetables, his rohi and kadu, and his spices, is tukmaria, haldi and masala mix.

Mr. Ali moved into property. Now he owns six shops in Fashion Street, 15 properties all told. Mr. Ali has five daughters and one son. No, the daughters would not be joining the company. 'It is our religion that they should not work,' said Mr. Ali.

Still beaming and wearing his white grocer's coat and brimless Bangladeshi cap, Mr. Ali gave a guided tour of his Fashion Street empire. Mr. Ali is converting it bit by bit, basement by cellar, according to a master plan he keeps in his head; one day, a few judicious blows will reveal an integrated, mighty emporium half the length of Fashion Street.

Now he lives in Forest Hill, and might move further, into the country. He is looking for more property. 'I will buy for £2 million.' Money is not a problem: 'I can get it. When you've got a good business, anybody will give you any amount.' Mr. Ali gave his broadest beam of all.

Source Sunday Telegraph, 9 April 1989

Stage 4

Prediction, evaluation, theory construction (what might?)

After taking the sixth formers into Spitalfields, dividing them into the five groups and having them go through the exercise designed for each group, we adjourned to a classroom and went through a model building or theory construction exercise based on the form below which allowed all groups an insight into each.

Figure 5.6 Redevelopment in Spitalfields

Title of group:
What is happening?
Where is it happening?
What are the reasons?
What are the gains for your group?
What are the losses for your group?
What power and resources has your group got?

In this way, each group of sixth formers came to have an understanding specific to their groups and an understanding of other groups and possibilities concerning redevelopment in the area.

Stage 5

Decision making (what decision?)

The final exercise of the day after the model building was a decision-making one, in true 16-19 fashion. A personal evaluation and judgement, on a hypothetical situation was brought into play using the letter printed in Figure 5.7 as the stimulus for student response.

We all knew, at the end of the day, a little bit more about power and influence and decisions affecting changes in a small part of London. We were all conscious too of the questions 'Who gains?' and 'who loses?' by such changes.

Figure 5.7 **Seeking planning permission**

Griffiths Property Developers
Sawyer House
City Road
LONDON N1 2JR

Mr. J. Clements
Tower Hamlets Industrial
Development Office
Bethnal Green Town Hall
LONDON

Dear Sir

My company has received information referring to the vacancy of Truman's Brewery site on Hanbury Street, Spitalfields. Being a business person with the interests of local people, as well as of the business world at heart, I believe if I were to be given planning permission to develop the site it would be advantageous to the area as a whole.

My plan for the site is made up of a mixture of offices and luxury apartments. There will be landscaped gardens – something this area desperately needs. The buildings will be modern and attractive, which should improve the general look of the area.

I have been informed that there are other possible plans for the site including new council housing, housing association flats and a small business centre. I think you will agree that my plan (full details are enclosed) will help the area become alive again. It would no doubt attract other businesses, thus providing jobs and contributing to the general development of Spitalfields.

I do hope you will consider my application for planning permission and I look forward to meeting you soon to discuss the matter.

Yours faithfully

C F Griffiths

Mr. C. F Griffiths

16-19 in Colorado

I set up a similar though shorter (1 day) Geography 16-19 style inquiry when in Colorado one summer working with a group of teachers. Our key question was framed around land use along the main road running into and through Carbondale. Something of a strip was developing and we set up an exercise around "The Corridor: a strip, to be or not to be?" We selected as key questions:

- What beautification needs to be carried out? How? Why? When?
- What circulation and access problems need to be addressed? How? Why? When?
- What land use should be permitted? How? Why? When?

Our first task was to receive a briefing, history, and documentation from the Town manager. We then went out to observe the strip development and relate it to information obtained. In groups, people developed a land use and development policy for certain parts of the strip we had identified as being particularly in need of attention. (We were assuming at that time that we all supported planning controls to some extent.) This part of the exercise included conversations with locals so that different viewpoints could be appreciated.

Having observed, mapped, and evaluated the strip, we then worked in groups on roles (representing different interest groups) to develop a group policy and plan for the strip. The policies and plans were presented at a mock town meeting which the town Manager and two assistants attended as active participants.

Later Mary Jo Costello took an issue in her local area, framed it as "How should Castle Rock be used?" and planned the work outlined in the following classroom activity. The key question/issue based approach to geography proved to be highly transferable from England to the U.S. at least.

Classroom Activity

HOW SHOULD CASTLE ROCK BE USED?

Using maps to investigate an issue (developed by Mary Jo Costello)

Purpose: This activity is designed to be an introduction to learning about local land use issues. The following mapping activity is intended to teach students how maps can be used to begin investigating an issue.

Objectives: The student will:
- compare a topographic map and a street map for kinds of information provided
- compare two maps to examine distribution over time
- identify major features of a mapped area
- select the correct map for a specific purpose
- relate personal knowledge to a mapped area

Materials: U.S.G.S. Topographical maps of Castle Rock
- Castle Rock South Quadrangle, 7.5 Minute Series
- Castle Rock North Quadrangle, 7.5 Minute Series
- Street Map of Northern Douglas County. Pierson Graphics Corporation, 1987
- mapping worksheets for each group
- worksheets related to the maps for each group
- chalkboard
- overhead and pens

Procedure: 1 ***Define*** the issue. The question is: How should the rock, known as Castle Rock, and the surrounding area be used? There are three main opinions:
- The land around Castle Rock is available for the development of housing and commerce.
- Leave the rock as it now exists for an open space area.
- Reclaim the areas of erosion and maintain the rock as closely as possible to its natural state.

2. *Small Group Activity*
   Distribute topographic maps, street maps, and related worksheets to each group. Following discussion, observations should be recorded and saved for a report to the whole group.

   Report back to the large group. One member of each group summarizes observations in a brainstorming exercise.

3. *Extended Learning Activity*
   Distribute an enlarged topographic map of the area immediately surrounding the rock. Students should draw or shade and label recommendations concerning their proposals for the use of the land.

   As before, one representative presents the group's proposal to the large group. Each proposal will be saved and reviewed following field work completed during the next day.

Evaluation: Conclude the discussion by asking the group at large: what kinds of information did you get from the maps?
- Did you learn something that may have surprised you about Castle Rock from the maps?
- What kinds of information were not on the map when you looked for it?

GIGI

An extension of the issues based approach to geography has been taking place in the Center for Geographic Education in the Department of Geography at the University of Colorado at Boulder. The project, Geographic Inquiry into Global Issues (GIGI) is producing materials for publication in 1994. These are designed around a global issue which is developed as an inquiry to stimulate thought processes and valuing processes using up to date resources which will narrow the gap between the frontiers of geographic knowledge and the status of geographic learning in U.S. secondary schools (Hill, 1992). Figure 5.8 gives a flavor of the planned modules.

Of course, some may say this is not a new view of learning and teaching geography. A.A. Clegg in the heady days of 1960s curriculum development set up a model of inquiry which admirably illustrates parallels between the planning, the organization of the work, and cognitive processes. Let me describe Clegg's work further.

Using Taba's cognitive process model Clegg set out within a field work activity, a combination of the process of learning and the content of geography. In a field study of the land use of Amherst, Massachusetts, the Central Business District (CBD) and some outlying neighborhoods were mapped. The generalizations being worked towards, were stated as follows:

1. As a result of making actual field observations in a selected town and organizing the data on a series of transparent overlay maps, students will be able to prepare a brief report:

   (a) identifying land uses;
   (b) analyzing land uses to determine what patterns of distribution exist;
   (c) developing a theory about the function of a town based on its patterns of land use;
   (d) predicting changes likely to occur by 1975 given the projected growth rate of the town and its major components during 1968-75.

Figure 5.8: Planned GIGI Modules

SOUTH ASIA	**Population and Resources** *How Does Population Growth Affect Resource Availability?* What are the consequences of overpopulation on resources in Bangladesh?	**Religious Conflict** *Where Do Religious Differences Contribute to Conflict?* How does religious conflict stand in the way of national unity in India and Pakistan?
SOUTH EAST ASIA	**Sustainable Agriculture** *How Can The World Achieve Sustainable Agriculture?* Is Malaysia's commercial agriculture sustainable?	**Human Rights** *How Is Freedom of Movement a Basic Human Right?* How has the right to freedom of movement been violated in Cambodia?
JAPAN	**Growth and Resources Exploitation** *Is Environmental Degradation a Mandate of The Global Economy?* Where does Japan get resources and what are the environmental effects of these interactions'?	**Natural Hazards** *Why Do The Consequences of Natural Hazards Vary from Place to Place?* How does Japan prepare for and respond to natural hazards?
FORMER SOVIET UNION	**Diversity and Nationalism** *How Do Nations Cope with Cultural Diversity?* Can the commonwealth plan in the former Soviet Union address ethnic diversity?	**Environmental Degradation** *What Are The Effects of Environmental Degradation?* What are the effects of the Aral Sea environmental disaster?
EAST ASIA	**Population Change** *How Is Population Growth Be Managed?* Why and how is China trying to manage population growth?	**Political Change** *How Does Political Change Affect Regions?* How will the political change of 1997 affect Hong Kong?
AUSTRALIA/ NEW ZEALAND/ PACIFIC	**Global Environmental Change** *What Happens When The Rate of Environmental Change Increases?* How might global warming affect Australia and New Zealand?	**Global Interdependence** *What Are The Causes and Effects of Global Interdependence?* How is global interdependence affecting Australia and New Zealand?
NORTH AFRICA/ SOUTH WEST ASIA	**Energy Resources** *How Have Nations Been Changed by Becoming Energy Explorers?* What benefits and problems does Saudi Arabia have because of its oil?	**Refugees** *Why and Where Do People Seek Refuge?* Do the Palestinians have a home?
AFRICA SOUTH OF THE SAHARA	**Food Supply** *Why Are People Short of Food?* Why do famines occur in the Sahel?	**Building New Nation-States** *How Are Nation-States Built?* Why is Nigeria having such difficulty building a nation-state?	**Infant and Child Mortality** *Why Do So Many Children Suffer from Poor Health?* Why is infant and child mortality so high in Central Africa?
CENTRAL & SOUTH AMERICA & CARIBBEAN	**Urbanization and Urban Growth** *What Are The Causes and Effects of Rapid Urbanization and Urban Growth?* Where are Mexicans moving and why?	**Development Effects/** *How Does Development Affect Peoples and Places?* What are the effects of development on the Amazon Indians?	**Illegal Trade** *How Does Illegal Trade Link and Change Places?* Why and how is the drug trade changing Colombia?
EUROPE	**Regional Integration** *What Are the Advantages of and Barriers to Regional Integration?* Can there be "United States" of Europe?	**Waste Management** *Why Is Waste Management Both a Local and Global Concern?* Where do Europeans throw their garbage?	

LEGEND

Issue

Module Question

Leading question for primary case study

Content and concept

In order to show how content and concept development was combined, the product and process steps are outlined in parallel columns, reproduced here in Figure 5.9. The collection of information on land use parallels the development and identification of concepts. As the data require classification, so students label and group items—a classic step in concept development. In the summary and analysis of data within a data retrieval chart (Figure 5.10) concepts of clothing and hardware stores are categorized into the more generalized concepts of consumer products or services, for example. Then references and conclusions are drawn from the table, e.g. Clegg reports such generalizations as:

1. Auto services are clustered in the central business district;
2. Gas stations provide special services to small residential areas for the convenience of people living there;
3. Auto services are dispersed on the fringe areas, which are connected with the CBD by the main entry and exit arterials.

Comparisons made by reading across the data retrieval chart were also encouraged and relationships realized.

Finally, in order to *apply* the principles or generalizations stated, attempts to predict future patterns were attempted. As data were gathered and processed, concepts and new relationships or generalizations formed. The development of the study paralleled the development of thinking.

Inquiry structured learning has, at its heart, a belief that such a structure best assists thinking and intellectual development. Posing questions to develop relationships and understandings among variables is one view of learning how to learn, of how best to assist learning take place.

Language and Learning

I believe that running alongside an inquiry structured view of learning an appreciation of the role of language in learning can be very useful in helping students learn.

Language functions chiefly in classrooms and elsewhere to communicate what has been learned and is known, and yet it is also part of the *activity* of learning. Both functions need to be recognized and the latter given some more attention (DES, 1979). The former undoubtedly receives most attention at present and while few would decry an ultimate need for the correct and expert use of language in communication, we need to give more opportunities for the penultimate need provided by the process of 'talking to learn'. 'Talking to learn' assists in understanding technical terms and ideas, for example.

A more learner-centered view of learning and the role of language has been put forward by the Schools Council's *Writing Across the Curriculum Project* and others. Their message, though not without its critics, needs to be considered when planning learning activities. It is not sufficient to follow through procedures for learning, to select and devise learning activities for students—learners need, as well, opportunities to make meaning through talking and writing, to use language as a way of cultivating learning. The role of language needs further description and explanation.

Figure 5.9: **Linking cognitive processes and learning geography**

THE PROCESS AND PRODUCT OF LEARNING GEOGRAPHY	COGNITIVE PROCESS AND TEACHING STRATEGY
I Micro-study of a Town	***I Concept Formation***
A. Make field observations of different kinds of stores, public buildings, unused land, etc. Record each item separately.	A. Observation and gathering data. Enumeration and listing. *Teacher asks:* 'What did you see? Note?'
B. Sift through the recorded items. Make tentative groupings according to common characteristics. Shift some items as new groupings become evident.	B. Grouping by identifying common properties; abstracting. *Teacher asks.* 'What belongs together? On what basis?'
C. Decide upon an appropriate name or label for the groups that best reflects the basis on which the grouping was made. Arrange groups and subgroups into hierarchies of functions within the broad groups or categories developed.	C. Naming, labelling, and categorizing. Determining hierarchical order of items. *Teacher asks.* 'What would you call these groups? What belongs under what?' *Note:* The name of the category or abstract term that is useful for categorizing phenomena or events. The concept usually takes the form of a single word or short phrase.
11 Summary and Analysis of Data	***11 Interpreting Data, Making Inferences, and Developing Generalizations***
A. Develop a data retrieval chart (Figure 5.10) for summarizing data and for recording answers to analytical questions to be asked about the data. 1. How are the land uses *grouped* or *clustered?* 2. How are they dispersed? 3. What is the *shape* or *pattern* of distribution of land uses?	A. Identifying and differentiating data according to the conceptual categories developed above. *Teacher asks questions such as those in the lefthand column.*
B. Develop summarizing statements for each grouping by reading down the columns of the data retrieval chart. Make comparisons and contrasts between groupings by reading across the rows of the chart. Show relationships among items. Develop explanations. Point out limitations. Draw conclusions.	B. Explaining items; relating points to one another; seeking possible cause and effect relationships; and recognizing limits of data. *Teacher asks.* 'How can we summarize all this information? How can we explain it? Why did these groupings occur? What other explanations are possible?'
C. Recognizing that the data are confined to only one sample, make tentative inferences about the meaning of the data. Develop statements or generalizations that go beyond the actual data and suggest conclusions of wide applicability. Develop charts, maps, or graphs to summarize or illustrate these conclusions.	C. Making inferences: going beyond what is given. Finding implications, extrapolating. Drawing conclusions, forming generalizations. *Teacher asks:* 'What does this mean? What would you conclude? How would you say it so that it would apply to many similar situations, not just this one?'
111 Application to Current or Future Problems	***111 Application of Principles***
A. Obtain population projections for 1968-1975 from the town planning office or university planning offices. Estimate the number of new services that will be necessary to meet increased populations. Predict new locations or distribution patterns for such services. Predict new services that are likely to develop. Predict whether the present patterns are likely to remain constant by 1975.	A. Predicting probable consequences of events or courses of action. *Teacher asks:* 'What would happen if . . . ?'
B. Adduce logical arguments to support the predictions. Cite evidence of trends in Amherst, or in other towns that would lend support to the prediction.	B. Explaining, supporting, and verifying the predictions. *Teacher asks. 'Why do you think this would* happen? What would it take for the prediction to be true?'

SOURCE: Clegg, A. A. (1969) 'Geography-ing or doing *Geography*', *Journal of Geography, Vol.* 68, No. 5, Nationa Council for Geographic Education.

Figure 5.10: **Categories of land usage**

LAND USAGE						
Analytical Questions	*Personal services*	*Consumer products or services*	*Food services*	*Profes-sional services*	*Public services*	*Auto services*
Where located?						
How clustered?						
How dispersed?						
Pattern discernible?						

SOURCE: Clegg, A. A. (1969) 'Geography-ing or doing Geography', Journal of *Geography, Vol.* 68, No. 5, National Council for Geographic Education.

Talking to learn

In response to the question, 'What is a river?', A. J. Lunnon (1979), in a thesis designed to ascertain the understanding of selected concepts often used in geography at the elementary school level, lists the following responses from students in the 8-13 age range:

It is water
It is blue
It is a sort of stream
It is like a lake

A second question, 'Why do you say "like a lake"?', designed to probe the last response, elicited the answer, 'Well, it's not got so much water in it'. Other responses included:

It is water which moves
It is a kind of big stream which leads into the sea
Like a pond but running
It is a lot of rain water which leads into the sea
Flowing water in a long thin ditch
A big stream which wanders in and out of the hills

These replies constitute an example of what the *Language Across the Curriculum Project* team, working at the University of London Institute of Education in the first half of the last decade, would classify as 'learning in transition'. An integrated concept of the many variables which characterize rivers has not been attained in any of the above definitions *but*, to a greater or lesser degree, each represents an *attempt* to organize ideas about rivers.

Presumably, as a result of being questioned, each child realized something of what he or she could and could not put into words about rivers.

From Lunnon's work, we have no further evidence of the concept 'river'. (This was not the purpose

of his research.) Yet, it would probably be safe to assume that every child had used the word *river* many times in verbal and written communication. Lunnon's evidence of concept attainment suggests that children need many opportunities to explore the meaning of words and to grapple with the task of catching hold of several ideas and moulding them into a concept.

From information to understanding

The Project, in the course of its work, was able to produce examples of the learning which can take place when children are presented with the opportunity to talk through concepts and ideas. The examples illustrate very convincingly how, through talk, children clarify their ideas, come to realize what they do not understand and yet work through what they do know to make new connections.

Talking through concepts and ideas is classified by the Project as expressive talking or writing, and they believe that such exploratory opportunities are vital to learning. The development of concepts would seem to be not solely dependent on maturation but also on the active use of language—talking and writing. The learning process is about clarifying and expanding concepts.

To be more aware of, and sensitive to, the role of language in learning is the challenge which the Language Project threw out to subject teachers. Should we consider when planning learning activities what opportunities are being made for expressive talking and writing? Can we be persuaded to see such episodes as learning activities, as another form of data processing, perhaps the most fundamental form of data processing?

In Piaget's terms, we need to consider that expressive writing assists in the effective assimilation and accommodation of new ideas into existing mental schemes; that new learning has to be linked up to previous learning and understanding; and developed from there to make meaning. The Project found that in geography lessons in England and Wales, talking and writing appears to be in the transactional mode 99 per cent of the time. Would this be true in other educational systems? What do *freer* writing opportunities reveal?

Examining language

It may be possible to select several pieces of written work produced in one of your geography classes and to examine the work in relation to the following questions:

1. To what extent is language being used to explore ideas or relationships? What do you think has caused the child to write in this way?
2. To what extent does the language demonstrate that the writing has been an exercise for learning? How much is likely to be the student's own thinking?
3. What evidence is there that a reshaping of ideas is taking place? What do you think is the main purpose of the written work?
4. What has the piece of writing done to move learning forward? To whom does the writing seem to be addressed?

Stages in the use of language

At this point, it is necessary to offer definitions of expressive, transactional and poetic writing to assist in an analysis of writing or talking in a geography lesson. The definitions are not meant to be taken as definitive. The three Project definitions are related to one another thus:

Transactional < - - - Expressive - - - > Poetic

Transactional writing, or the language for getting things done, is writing or talking to inform people, to advise, persuade, or instruct people. Transactional writing is used, for example, to record facts, exchange opinions, explain ideas, construct theories, transact business, conduct campaigns, change public opinion. Transactional writing is passing on accurate information in an ordered sequence.

Expressive writing is the kind of writing that may be called 'thinking aloud on paper'. Expressive language is language close to the self and it has the function of revealing the speaker, verbalizing his or her consciousness and understanding. In expressive speech or writing the person feels free to jump from fact to speculation, from personal anecdote to emotional outburst, none of which will be taken down and used in evidence against him or her. It is the way in which new ideas are tentatively explored, thoughts half-uttered and half-expressed. The rest is to be picked up by a listener or reader who is willing to take the unexpressed on trust. Expressive writing is a presentation of an experience as recalled--'warts and all'—or of ideas in the process of clarification.

Poetic writing is a shaping of words into a form for their own sake. The function of a piece of poetic writing is to produce an object that pleases or satisfies the writer and the reader's response is to share that satisfaction.

Talking and writing in geography lessons

It is very likely that transactional writing and talking dominate most geography lessons and that teacher talk to student talk is in the ratio of at least 3:1. Furthermore, the teacher will be using well-formulated transactional language, the concepts and ideas being presented in a highly articulate polished fashion. Little opportunity may be given for students to explore meaning for themselves. This is scarcely surprising since little emphasis is given to the role of language in understanding beyond primary school.

The point which the Language Project came to consider as their central argument is that a chance to use expressive writing and talking is essential if understanding is to be reached. The demand for impersonal, inexpressive writing can actively inhibit learning because it isolates that which is to be learned from the vital learning process—that of making links between what is already known and the new information. It is through the tentative, inarticulate, hesitant, backward- and forward-moving, expressive mode that connections and links between old and new knowledge come to be made. Then a student may be ready to set the understanding down in a formal transactional mode. Expressive writing is considered to be the seed bed from which more specialized kinds of writing grow. The writing may move towards the greater explicitness and clarity of the transactional or the conscious shaping of the poetic. One other essential point: in expressive speech or writing we put ourselves in a trusting relationship, that is, the teacher or fellow student is not seen as marker or critic but as guide, helper, or just as sympathetic listener.

Encouraging the expressive mode

The team suggested a two-fold policy for encouraging the expressive use of language, the use of language where people speak aloud or jot down thoughts in attempts to make connections and forge new understandings of concepts and ideas. They advocated (1) providing a variety of audiences for the spoken and written work of students so that there is a decrease in the number of times the teacher is seen as an examiner evaluating whatever is written, and (2) giving students a range of writing purposes so that they are allowed the chance to express their thoughts in a variety of ways.

Audiences which would provide a range of purposes and make more room for expressive language as an essential stage on the road to understanding include:

1. Student to self, as in a diary of my journey to/ the visit to . . .
2. Student to trusted adult, for example, 'What I learned from the film/the field work at; What I see on this map/in this photograph . . .'
3. Student to student as partners in a dialogue, for example, discussing a particular concept, participating in a game. Games seem to offer wide opportunities for using language informally and at the expressive level. The debriefing discussion with the teacher can also be at the expressive level and apart from setting up buzz groups to discuss concepts such as resource or habitat, debriefing after a decision making activity is the only time when I can recall giving my geography classes in New Zealand the chance to talk informally for any length of time. Once I began to learn of the Language Project I realized just how few chances they had had to explore ideas for themselves. (I think that the pattern I followed in English lessons was very different where discussing a play, a poem, and so on demanded 'warts and all' dialogues.)
4. Student to teacher in rough drafts of field reports or essays where comments are made to assist, diagnose strengths and weaknesses, suggest improvements before a final draft is marked for examination or test purposes. From rough to final draft represents a move from expressive to transactional which is also true of 5 below.
5. Student to student writing when position papers or speeches are being prepared. Alternatives 3 and 4 also provide opportunities for collaborative writing.
6. Writer to readers (relatively unknown audiences), including the design of advertisements, preparation of letters to newspapers or town planners. In such tasks language is likely to move from the expressive to the transactional.

The contrast in written work produced for different audiences/different purposes and supporting the general message of the Language across the Curriculum Project Team is illustrated in the example given below (Slater, 1989). It is part of the outcome of a small undertaking with a beginning teacher, Andy Buck, who was willing to take hold of the concept of audience and try it with his classes.

The first passage results from a student being asked to write a radio program based on a farming game (which had incorporated a radio farming report) and the second passage is the outcome of being asked to write notes on the class experience (the game) for homework. In both cases the understanding displayed is at a developing level and needs working on. The liveliness of the writing and engagement with the ideas however, are very different.

Passage 1

Homework, 17th November 1936
7.50 'A farmers choice' BBC2

'Action'

Bill Passfield *(Presenter).* 'Hello this is another edition of "A farmers choice". With us tonight is Adam Mortimer.'

Adam. 'Hello, I'm a farmer. My farm is an arable farm.'

Bill. 'Just in case you don't know an arable farm is a farm with only crops on it. Why did you choose to make your farm just crops?'

Adam. 'Well Bill, my farm has rich soil which is good for sugar beet, corn and wheat also my land is flat which makes it easier for the machines to plough the land.'

Bill. Does the weather affect the growth of your seeds?

Adam. 'Oh yes, in spring and summer we need both sun and rain. We plant the seeds in December so they grow a little before the frosts in January, February and March. If we don't plant the seeds in December they will not stand up to the cold winds. They will just blow away.'

Bill. 'Thank you Adam ... Here is another farmer his name is John Barron.'
John. 'Hello, I'm the owner of a pastoral farm, a pastoral farm has just animals on it.'
Bill. 'Where is your farm?'
John. 'It is in Worcestershire on the Cotswold hills.'
Bill. 'Why don't you grow crops?'
John. 'My soil is very poor and we also have the steep hill and the tractors have difficulty in climbing it.'
Bill. 'What other activities do you have on the farm?'
John. 'We have hay-making, an orchard, vegetables, looking after the animals and a little crop growing, not for the market but for the animals to eat.'
Bill. 'Um yes. What products do you get from your farm?'
John. *'I* get beef, milk, cheese, eggs and bacon.'
Bill. 'Thank you John ... Good night everybody, see you next week.

'and CUT, Good Good one more time'

Passage 2

Upland country farming 20th November
The farm is in North Wales in Gwyned. A man called Mr. Roberts owns it. As you get higher up the hills the weather gets worse. It is 3 times higher than sea level. The way things have changed are the men used to walk into market, get up at 2.00 every morning. The soil gets very water logged and the grass doesn't grow properly. He uses the land for sheep grazing. He uses it for that because the soil is poor so he couldn't grow crops. 3/4 of the profit comes from Sheep's lamb.

A significant number of a small group of geography educators saw the first passage, the interview, as an enjoyable and stimulating activity for children, and of a kind which beginning teachers' students should be encouraged to use with students. The passage was judged to have a high interest level and to be successful in getting points over clearly. A sense of audience was considered to have influenced the work. Other responses, also of significant number, commented on the traditional paradigm of geography, even the deterministic flavor in which the interview was written, and the rudimentary concepts of soil and lists of products given. A weakness of the piece, one tutor wrote, was the apparently insufficient knowledge of farmers' everyday lives. Such knowledge -through a farm visit, for example - might have helped to bring the dialogue more alive. Another tutor felt that it was writing 'dressed up in a progressive format', while another's constructive suggestion was that small groups using tape recorders prior to the written task might have helped to increase the number of concepts and the depth at which they were explored in a written dialogue. There was a tendency in the responses to focus either on the style and 'openness' of the writing or on the limitations of the geography. A very small number did, however, comment positively on the written aspects and less positively on the geography. The responses to the second piece of writing were short and sparse, for whatever reason, and time may have been one. One very balanced response went thus:

> Equally well written in terms of 'style', etc., but obviously a more formal description.
> Who is it communicating to?
> Does the writer know what is required of her/him?

Other responses also thought there was a lesser sense of purpose and audience than in the first passage and that it was not as interesting to read. Passage 2 was described as conventional and not well structured, even muddled, with possible misconceptions. In a sense neither passage scored admirably from the point

of view of geographical knowledge but the first was praised for its liveliness and sense of audience — for its writing style, in other words.

As a final point, it should be emphasized that the message of the curriculum project outlined here should not be dismissed as 'nothing more than saying that every teacher is a teacher of English'. Rather, every teacher is a teacher of understanding and language in its exploratory, hesitant, experimental, pause-peppered 'er-um' phase is an essential building block as 'learning in transition' moves to learning as understanding. In my opinion, the more humanistic kinds of exercises such as, 'What do you like/dislike about a place?' give opportunities for 'freer' talking and writing. It takes more thought and nerve to introduce planned opportunities into geography as science undertakings.

An example of another activity which provides a purpose and audience for discussion and writing which goes outside the teacher as examiner and the classroom as the only world is given in Figute 5.11. It was originally written as an exercise for 16-19 year olds in England and Wales. It was designed to help also the process of going through a text to make notes, a concern which I elaborate on later in this chapter.

***Figure 5.11:* Food for home or abroad?**

The following extract is from a recent book, *Agribusiness in the Americas* by Roger Burbach and Patricia Flynn. It examines how North American agribusinesses operate in Mexico and other parts of Latin America.

?

Read the extract through and then, working in pairs, pretend that one of you is in Mexico making a film strip for the Del Monte Corporation. What slides would you take (limit yourself to 10 or 12) and what commentary would you provide? The other person has been commissioned by the Third World Trust to make a short documentary of Del Monte's operation in Mexico. What slides and commentary would you provide?

Set out the work by drawing a space for each slide, describing what it would show and writing the commentary underneath.

Canned Imperialism: Del Monte in Mexico

Around the world, agribusiness corporations like Del Monte are moving into regions that are struggling with the problems of malnutrition, poverty, and land distribution. The corporations usually pose as saviours, claiming that their fertilizers, tractors, hybrid seeds, and food processing plants will help solve the world's problems by expanding food production and providing employment opportunities. However, these corporations exert enormous control over the economic life of countries where they operate, and often control their most important sources of foreign exchange. They dominate vast tracts of land which are used to produce export crops, instead of being used to produce staple foods or to provide a source of income for the local population. Further, because their profits depend on control of vast landholdings and the exploitation of cheap labor, plantation operators like Del Monte must oppose progressive changes in the Third World, and consistently align themselves with the most conservative forces. A case study of the Bajio Valley in Mexico shows how Del Monte's operations merely accentuate the extremes of wealth and poverty, turn out highly processed foods that are priced beyond the reach of most of the country's population, and force peasants off their lands.

The Bajio Valley is one of Mexico's richest agricultural regions. Located 200 miles north of Mexico City in the state of Guanajuato, the valley is endowed with fertile soils and a mild climate suitable for a wide variety of crops. The valley itself is sizeable— about 100 miles in length and from 20 to 50 miles wide. Bustling cities and towns dot the Bajio, linking the region to greater Mexico and the rest of the world.

The cradle of Mexican independence, the Bajio today finds itself invaded by foreign agribusiness interests. For over a decade and half, US corporations have been at work altering the region's agriculture and integrating the valley into the network of international capitalism. Three multinational food processing corporations—Del Monte, Campbell's and General Foods— operate canning and packing plants in the valley. Ford and John Deere tractors till the land, insecticides from Bayer are used to control plant diseases, and cattle are fed special formula feeds milled by Ralston Purina and Anderson Clayton. As one Del Monte vice-president noted, 'When you go to the Bajio today, it's almost like being in one of California's valleys.'

Del Monte has had a more profound impact upon the people and agriculture in the valley than any other corporation. Its factory in Irapuato at the west end of the valley employs more people than any other food processing company in the region, and the plant turns out the largest variety of fruits and vegetables of any Del Monte facility in the world. The tillers of the land as well as the factory workers have felt Del Monte's presence:

Continued

Figure 5.11: **Food for home or abroad? (continued)**

agricultural techniques have been altered and crops that were never seen before in the valley are now cultivated on large tracts of land for Del Monte

Contract Farming

When Del Monte first sent its technicians to look at the Bajio in 1959, they found a region ill-suited to the needs of the world's largest canner of fruits and vegetables. Grain production predominated, with corn and beans serving as the mainstays of the local diet. In Del Monte's own words, 'vegetable production was small and limited to a few crops grown exclusively for the local fresh market.'

The Bajio's land tenure system was also incompatible with Del Monte's needs. Due to the valley's population density and the breakup of the large landed estates under Mexico's agrarian reform laws, the average landholding was small, ranging from ten to 20 acres. Some of the land was held in *ejidos*, large, communally owned farms that are subdivided into many small plots and worked by peasants, or *ejidatarios*. Mexican law prohibited the sale of these lands, and it also placed restrictions on land ownership by foreign corporations. For a Company used to owning plantations and working with US growers who own hundreds or even thousands of acres, the conditions in the Bajio did not appear auspicious.

But Del Monte found the perfect tool for changing the valley's agriculture — contract farming. Under the contract system, the farmer or grower agrees to plant a set number of acres of a particular crop, and the company in return provides financial assistance which usually includes seeds and special machinery, as well as cash outlays for purchasing fertilizers and hiring farm labor. All these costs are discounted from the farmer's or grower's income when the crop is delivered to the cannery.

In Mexico, where agricultural credit is limited or non-existent, contract farming was an attractive offer. As such, it was influential in changing the structure of agriculture in the Bajio. Del Monte revealed just how influential its crop financing was when it noted that in the early 1960s, Productos Del Monte was practically the only source that many of its growers could turn to for short-term crop loans. By skillfully using its financial leverage, Del Monte affected the valley in several ways: it introduced crops that had never been grown there, favored the development of the larger growers at the expense of the smaller, more marginal producers, and gained operating control over large tracts of land.

From the start of each growing season, Del Monte exerts tight control over its contract growers. It specifies seed varieties and fertilizers and often supplies special planting equipment. After the land is sown, frequent visits are made by Del Monte technicians who insist that the company's irrigation and cultivation specifications be strictly followed. If these specifications are not carried out, the contract gives Del Monte the right to take over direct control of the crop. Harvest time also finds Del Monte in the field: the company maintains the largest pool of machinery in the valley, much of which is sent to harvest its crops.

Viewed from a productivity perspective, this paternalistic system of agricultural production has some positive effects. As Del Monte boasts, 'from 1962-1972 yields per acre among Productos Del Monte contract growers rose steadily,' while gross income per acre sometimes rose by 50 per cent. But these results must be placed in the larger context of agricultural changes in the valley. Although the Bajio's landowners are small by US standards, those with more land tend to be favored by the changes in agricultural production, while the smaller producers or *ejidatarios* are increasingly marginalized.

From the start, Del Monte worked with the larger growers in the valley. In 1964 the company had contracts with 21 growers for 413 acres, or an average of 20 acres per grower. Since most of the growers contracted only a portion of their land to Del Monte, their landholdings were actually much larger than the average 10 to 20 acre farms that predominated in the valley. Since then, Del Monte has tended to work with even larger tracts of land. In 1974 the company had 110 growers with a total of 5000 acres, or an average holding of 45 acres.

Many of the reasons for working with larger growers are implicit in capitalist agriculture. For Del Monte it is easier to supervise a contract with one grower who owns 50-acres than with five growers who each own 10 acres. Ownership of capital assets also influences the company's choices. Although Del Monte provides much of the credit for each vegetable crop, anywhere from 10 to 60 per cent of the actual cash needs must come out of the grower's pocket. Del Monte also insists that the grower put up some agricultural equipment or machinery as collateral. For the small producers who rent most of their machinery, this stipulation automatically prevents them from becoming Del Monte's contract growers. As one agricultural technician in the valley noted, 'the small land-owner doesn't have the economic resources to plant vegetables.'

Thus Del Monte's contract farming leads to an increasing concentration of wealth among the valley's larger growers. As the American Chamber of Commerce in Mexico noted in a recent study: 'In the Bajio, as elsewhere in the Republic, there is a sharp split between relatively prosperous commercial farming and the fragmented plots of *ejidal* land starved for investment and technology.' The growers who already have capital or land can enter into new areas of production which will further augment their wealth, while the *ejidatarios* or small producers are increasingly marginalized and often forced out of production. Agricultural experts at several government agencies in the valley noted that a large number of small landowners are already renting or selling their lands to the larger growers. The dispossessed either serve as paid farmworkers for the new owner, or search for other ways to eke out a living in a valley that is already noted for its high rate of unemployment.

Although the growers who work with Del Monte are relatively prosperous, their relationship to the company is a difficult one. Crops delivered to the factory have to be of prime quality or be subjected to price discounts. Sometimes the poor condition of the produce is Del Monte's fault: one grower lost his entire pea crop because the company failed to send out its pea harvester on time. As one grower commented, 'The company does what it wants with the contract.' Throughout the valley Del Monte has a reputation as a tightfisted and manipulative company that drives a hard bargain and takes advantage of the growers whenever it can.

The growers who survive the pressures of capitalist agriculture are driven to produce for the national and international markets instead of raising staples for local consumption. The three largest crops that Del Monte contracts for are sweet corn (1000 acres), peas (1500 acres), and asparagus (2250

Continued

Figure 5.11: **Food for home or abroad? (continued)**

acres). None of these crops figures prominently in the diet of the Mexican people. Canned peas and sweet corn are marketed as delicacies and purchased exclusively by the middle and upper classes, while over 90 per cent of asparagus is shipped abroad to markets in the industrialized countries. In 1974 alone, over $US 4 million worth of canned goods from the Irapuato plant were shipped to 20 different countries.

Del Monte's Workforce

Del Monte's employment policies at the Irapuato plant contribute to the economic and social instability of the Bajio. During the course of a year the company employs approximately 1750 workers. But only 120 are permanent workers. The remainder are seasonal employees, 90 per cent of whom work no more than four to six months of the year. Wages for these workers are the minimum required by Mexican law— 61 pesos per day in 1977, or approximately $4.90. Even people who have worked at the cannery for six years receive no more than the minimum wage.

To keep its wages low, Del Monte draws on the valley's large pool of unemployed laborers, using those who most desperately need work. The majority, around 75 per cent, are women. Some are young women, still in their teens, who come to Del Monte looking for their first job, while others are older women who need any kind of work to sustain their families. As one woman said, 'I don't work at Del Monte because I like it — I have to feed my children.' Many of the men and women who work at the plant are the sons and daughters of *ejidatarios* or small landowners who migrated to the valley's cities and towns looking for jobs that did not exist.

Because the workforce needed at the plant varies from day to day, Del Monte has a hiring hall where workers report to find out whether or not they are needed on a given day. There they often sit and wait for hours before being told if there is work. Some spend hours travelling from their homes in the countryside, only to find no work available at Del Monte. For some at the hiring hall the situation is desperate. As one woman said: 'If I don't get work today, how will I manage to eat?'

In theory the workers at Del Monte are represented by a union affiliated with the *Confederacion de Trabajadores Mexicanos*, or the CTM. But the CTM is an official government union that is known more for its efforts to quell labor militancy than for its defence of worker interests. During Del Monte's 14 year history in Irapuato, there has been only one strike, in 1969, which only lasted several hours. One woman said that 'a couple of years ago we wanted to strike for better wages, but the union leaders said no, that people would be brought in from the countryside to take our jobs.' The strike never occurred.

In addition to the 1750 cannery workers, Del Monte says it provides employment for another 3500 people in the Bajio. These are mainly the field hands who work for the company's contract growers. Some of these agricultural workers have been dispossessed of their lands, others maintain small plots that they and their families work to help sustain themselves, and still others form part of the migratory workforce that moves around the valley looking for employment. These workers, like the factory employees, can expect only seasonal employment since the asparagus harvest season lasts only about three months.

As elsewhere, advertising has been the key to Del Monte's marketing expansion in Mexico. McCann Erickson, Del Monte's US advertising agency, works closely with company executives out of its offices in Mexico City. When Del Monte entered Mexico in the early 1960s, it found that the Mexicans had little need or use for its products. The company admitted it confronted a difficult situation:

'Del Monte was an expensive brand in the minds of the consumers in the large population centers where our products could be found, and in the countryside Del Monte Brand awareness was virtually non-existent.'

But Del Monte and McCann Erickson moved aggressively to change this situation, using radio, television, billboards, magazines, and other media to create a public awareness of Del Monte products. McCann Erickson even developed a new symbol for the campaign — a talking parrot with the Del Monte emblem emblazoned across its chest. By 1968, Del Monte propaganda had made an imprint on the public mind: a survey found that 70 per cent of the Mexican people were aware of the Del Monte brand name.

Del Monte makes no secret of the fact that its primary market is not the working masses who make up the majority of Mexico's population, but the new urban middle class and the upper class. The company boasts:

'Canned goods are becoming more and more accepted, and are no longer found only in the homes of the wealthy. The middle class, developing as a result of the jobs created by companies like our own, is a fast growing consumer of our products.'

Del Monte did not point out that of the more than 5000 people who work for the company in the Bajio, only a small fraction receive wages adequate to fulfill their minimal dietary needs, let alone purchase Del Monte canned foods.

Del Monte is only one of the many multinationals that dominate the Mexican food industry. During the past two decades, foreign food processing companies such as Kraft, General Foods, Carnation, Anderson Clayton, and Nestle have established new plants and acquired locally owned companies. Del Monte itself has two snack food factories in Mexico, besides its plant at Irapuato. The far reaching impact of these companies in Mexico was summed up by Fernando Camora, a former director of the Economic Research Institute at the National Autonomous University of Mexico:

'The multinational food processing firms . . . act as monopolies, increasing the cost of food, . . . determining the zones of production and the types of crops, and deciding what is to be exported. They also determine what seeds, fertilizers, insecticides, and machinery should be used, and they fix the salaries of the field and factory workers . . . . In the broadest sense Mexican agriculture is victimized and controlled by the Foreign firms in the food industry.'

Source: "Government policy and the rural environment: Mexico," by Michael Redclift, in Slater, F.A. (ed.), *People and Environments, issues and enquiries*, Collins Educational, 1986.

Monitoring what is being learned

One of the anxieties and uncertainties that arises for the teacher when putting students into discussion groups or giving them opportunities for expressive talking and writing simply hinges on whether anything is being learned. We rarely have the time to take transcripts and make tapes and listen to them in order to obtain some reassurance or indeed some knowledge of where students start from and move to. Another skill which it takes time to develop is the ability to interpret other people's talk from the viewpoint of the meaning being constructed and knitted together. Douglas Barnes (1969, 1976), provides a number of transcripts of direct interest to a geography teacher and through these and his interpretations one can begin to get some feel for the role of language in learning.

Saxons and settlements

The transcript reproduced in Figure 5.12 with Douglas Barnes's commentary, is of a group discussing, 'What would a Saxon family first do when they approached English shores in order to settle?' The discussion took place as part of a history lesson and Barnes considers that the students were already well provided with background information. They had a paragraph and sketch in front of them. The task before them is to organize and relate old knowledge to the present task. The group seems to be doing this quite successfully as a number of significant items concerning settlement are identified. Barnes considers tentativeness to be particularly valuable in keeping discussion open and flowing. Questions are interpreted as tentative suggestions and words like 'say', 'probably', 'I suppose', function as encouragement to develop ideas further.

Barnes argues that the rearticulation of knowledge is enabling things like wooden houses, clearing timber, and shelter to be interrelated and given new meanings in relation to the question of siting a Saxon village. The settlement siting activity outlined in Chapter 1 could well be organized as a group activity like this. The rearticulation and reinterpretation of previous learning replaces what might otherwise be a period of teacher elaborated recapitulation. Barnes and others would see it as essential to give students the opportunity from time to time to talk themselves through such recapitulation of knowledge which in some senses they already possess.

Another section from the same group, but accompanied by a diagram to show the line of thought (see Figure 5.13) helps to convince that discussion can be connected and purposeful. It needs to be appreciated that, although conversation may appear to be jumping from one thing to another, it is not necessarily, in Barnes's word, 'shapeless'. The discussion focuses on what the Saxons would need—a place to build which was dry, safe and at a distance from previous Roman settlement—and what they would have to do—take care of their animals.

More complex ways of classifying conversations have been developed and it would seem that we should learn to see the logical process and the social skill components (Barnes and Todd, 1977) in group discussions with perhaps a view to identifying individual strengths and weaknesses. We could then begin to develop the *discussion skills* of students as well as allowing them some space in which to talk to learn. Talking or writing to learn should be seen, I think, as a data processing activity which leads towards general understandings which will be expressed eventually in transactional forms.

Figure 5.12: **Saxon settlements**

	Dialogue	Commentary
28.B	The Saxons used er timber didn't they to . . .	*Betty begins the sequence with what at first glance appears to be a statement. It functions however as a hypothesis inviting further exploration. (Implicitly: How should we take this into consideration in choosing a site for the village?)*
29.	Yes	
28. B	(cont.) . . . to build houses?	
30.T	They cleared a . . . Say they found a forest and you know they're probably all forests near the . . . (inaudible)	*Theresa takes up the implicit suggestion of the need for a site with a plentiful supply of timber. The 'Say' formula and the 'probably' invite the others to regard this contribution not as final but as open to qualification. Betty accepts the invitation and develops the idea further.*
31. B	Yes. They cleared it all away . . . and then built all the little huts and brought all their animals and . . .	
32. C	. . . All the family and that. They'd have to be pretty big huts.	*Carol has not been following this line of thought, and now interrupts Betty with a dogmatic assertion which could lead in another direction.*
33.T	Yes.	*This is politely acknowledged but taken no further.*
34.B	Why did they live in valleys?	*Betty rescues the group from the dead end by raising a new question (provoked by the textbook illustration).*
	[Long pause]	
35.	Aarh.	
36.T	I suppose so . . . so they . . . they'd be sheltered.	*The tentativeness with which Theresa eventually offers an answer is expressed both by her hesitations and by 'I suppose . . .'*
37. B	Yes, for shelter . . . and so er . . . so there was less risk . . . of being attacked I should think.	*Betty accepts Theresa's answer but puts an alternative one of her own beside it; her hesitant delivery and the phrase 'I should think' disclaim any pretension to firm knowledge and implicitly invite further additions or qualifications.*
38.T	Yes.	*Message received.*
39.C	Because they could only come from two directions.	*Carol accepts the invitation and extends Betty's suggestion a step further.*

SOURCE: Barnes, D. (1976) *From Communication to Curriculum*, Penguin Education.

Figure 5.13: **The structure of thought in a discussion**

4. C When the boat lands the first thing they'd have to do . . . be . . . to find . . . em place where they can build a house, and probably later on have . . . fields of their . . . crops and . . . places . . .

4. C [cont.] . . . to keep . . . em . . .

5. B They'd probably look round first.

4. C [cont.] . . . cattle and [inaudible] . . . pigs and things.

6.T But they'd have to be out of the way of swamps and things . . . so they wouldn't be in any danger.

7. B You could say that when they arrived there they wouldn't use the . . . em . . . Roman things . . . that had already been put there.

8. T They wouldn't go near them because they were scared of the old Roman villages.

9. C And th' . . . they would p-probably . . . keep away from the . . . Roman towns erm . . . the . . . temples and that w-were mysterious and frightening places to them . . .

10. C And . . . they were em . . .

11. T Yes.

10. C (cont.] . . . they didn't understand things like that

1 2. B Yes . . . probably they were . . . an . . .

1 3. C And they've got to take . . .

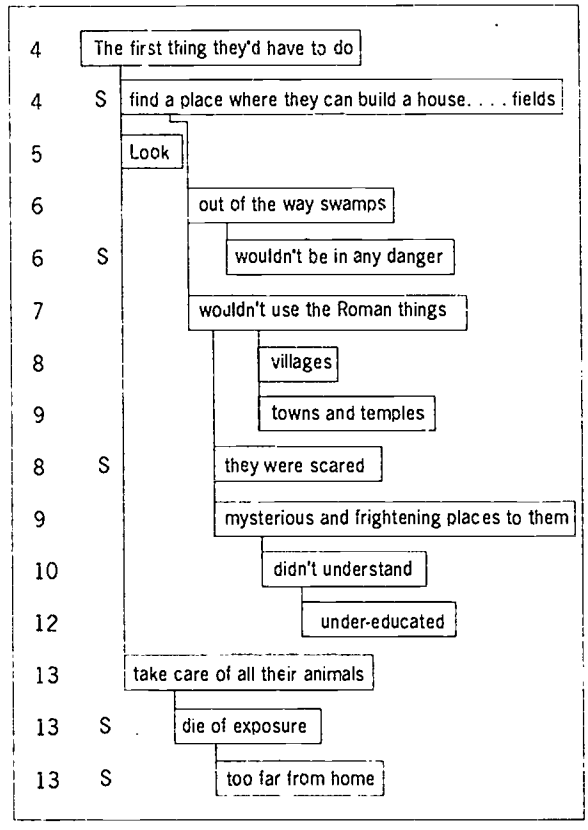
12. B [cont.] . . . under-educated. [Amused]

13. C [cont.] . . . and they've got to take care of all their animals and things because ... if they . . . went too far from home they could die of exposure.

14. B All that was in their old land, wasn't it?

15. C No.

16. Hmm . . . [Long pause]



SOURCE: Barnes, D. (1976) *From Communication to Curriculum*, Penguin Education.

Relating ideas

The varying data processing abilities of students are apparent in transcripts — some students set up hypotheses, others make assertions, some put forward reasons and ask questions. Collectively, the group seems to be moving towards relating several ideas in order to make judgements about what Saxons would do in the initial stage of settlement. While all are articulating ideas, we should note that there is no certainty, however, that each is combining a number of ideas. As well as relating ideas, the students are conceiving of possibilities beyond the limits of their immediate environment. These abilities — to relate ideas, to draw upon external reasons and ideas — are some of the features of the capacity to make a mature judgement in Peel's (1971) sense. It may help to gain some feeling of assurance that discussion is a productive activity, to recall that some students will be further on in the process of verbal reasoning than others. This fact merely *strengthens* the argument for recognizing the role of language in learning and planning for language activity.

Language and logical thought

Rhys's work (1966, 1972) is of direct help in that it allows one to make evaluations about the level of thinking and judgement and quality of thought. A brief description of one of Rhys's studies will suffice as a reminder of (1) the extent to which description or explanation characterises the thinking, (2) the content-dominated nature of some thought through to (3) the possibility-invoking nature of other explanatory thought. A descriptive level of thought is characterized by an account of the event or phenomenon without reference to other ideas or possibilities. Explanatory thinking moves beyond content and immediate circumstances to introduce ideas outside the problem and data to hand.

Making connections

An aerial photograph of a small Canadian prairie town built around the intersection of road and rail was shown to secondary students. The students were asked individually, 'Why has this small town grown up just here, where the new road and railway cross each other?' The answers were classified into (1) content dominated, and (2) possibility-invoking answers. An answer like this:

> 'So that the farmer can get his wheat harvest to the nearest town. The railway can carry much more than one truck and it's faster.'

clearly relies on the pictorial evidence and focuses on one aspect only. Another answer is very different:

> 'Because it is used as a central place with people bringing wheat to it to be stored and shipped off. It could be used as a central starting point and it provides a shopping centre. Also anything to be brought in for the farmer can be gathered here, and collected by the farmer later.'

This answer shows the ability to imagine possible factors outside the immediate evidence and these are co-ordinated to give an explanation of the function of the town. These characteristics of thinking should not be overlooked when the usefulness of talking through work is being questioned. Not all students will be displaying mature verbal reasoning abilities as they use language expressively — or in a transactional mode. This does not mean that having to talk about settlement requirements or functions is not helping the learning process.

Those who drew our attention to the role of language in learning led us to an appreciation, as I have already noted, that language functions to communicate and yet it is at the same time part of the activity of learning. The two functions can be separated. In separating them, the concepts of using the idea of audience and varying the audience as part of the activity of learning becomes important. It was not enough

to specify the same audience over and over, but it was important to give practice in talking or writing to a range of audiences. What received less attention was the audience to whom text books are addressed and the reading and comprehension needed to make sense of texts. We have to acknowledge that many text book writers are far removed from their classroom audiences and in fact are often more likely to be writing their version of an accurate geography concentrating on terms and explanations and not necessarily consciously trying to bring the reader into the text.

The interface between the student reader and the textbook is a dimension of language and learning which could receive more attention. How can we best help the student interrogate a text?

Carol Robson's (1983) work on textbooks, reading, and reading development includes a case study in geography and can, generally speaking, provide geography teachers and educators with an introduction to the area which is useful and helpful. The focus is one about which, I would guess, we are fairly ignorant.

Models of reading and comprehending

Robson grounds her work in models of reading and comprehending which she reviews for strengths, weaknesses, and appropriateness to her purpose. A skills view of reading and comprehension is generally found wanting, since reading to understand and answer questions is a test-dominated view of comprehension. All meaning is held to be in the text, elements of which 'produce a correct meaning for the good reader armed with questions', whereas 'the flexible reading behavior of experienced readers is a complex activity employed in pursuit of their own learning purposes'.

The data-processing model of comprehension is also found wanting, though to a lesser extent. Developed by cognitive psychologists, it rests on assumptions of a close relation between the structures of the text and the knowledge and memory structure of the reader. Comprehension is viewed in this model as an interactive process. There is a helpful focus on the knowledge and the expectations of readers as vital contributors to their understanding. The model, however, overlooks how the text might influence the mind of the reader, and Robson does not find the model helpful for the development of comprehension at the reader-text interface. She suggests it does not allow for a range of possible reader responses.

A psycholinguistic view of effective reading developed within the context of an holistic approach to learning is the third and favored model to be reviewed. Based on the work of Smith (1982), the Goodmans, Kelly, and Bruner, such a view envisages a reader coming to the text with intentions and expectations. Both Smith and the Goodmans describe readers as actively interpreting the text, bringing to it prior knowledge which helps them to predict the surface structures on the page. Reading is an exchange of meanings with an author. Smith assumes, for example, that comprehension takes place within the context of 'shared conventions', a writer choosing a register appropriate to an audience's expectations. This group of people may be said to have 'transactional' views of reading.

Robson's investigation

It is within this third model that Robson considers she has a framework for beginning to investigate and understand how readers cope with reading and where they focus in on a text. She formulates three main questions:

1. How appropriate are their expectations to the text they are reading?
2. How effectively does the text extend them, so that learning occurs?
3 How do their expectations and understandings of the text compare with those of their teachers?

Narrow concepts of readability to do with sentence length and word counts are not found adequate, though features of discourse which evidence *organizational* characteristics (frequent headings, placing of central ideas, advance organizers, etc.) and characteristics of *cohesion* (backward and forward reference, use of

conjunctions, etc.) are valued. Readability and comprehension need to be seen as a function of the reader-text interaction, according to Robson, and not of the text alone. Narrow views of readability lead to the need for a view of the reader-text relationship which will be more helpful and holistic as an approach to the research questions. Culler's theory of 'literacy competence', defined as an ability on the part of the reader to identify various levels of coherence and set them in relation to one another, and the implied reader concept which *focuses attention on the way texts direct themselves to the reader*, are judged to be helpful analytical concepts for finding answers to text-reader, text-teacher expectations and relationships.

In her investigation (I) Robson interviewed staff to ascertain what meaning they saw and expected students to find in texts; (2) the texts were examined for their implied reader or lack of it; (3) lower sixth-formers were interviewed to find out how they found the reading.

The following direct quotations from Robson's thesis give the flavor of her undertaking in the three areas and point towards the significance of teachers' more sensitively and fully coming to appreciate likely pupil-text relationships. The first is an account of an interview with a teacher and Robson's interpretation of this event. The second contains the interview with D., an average student, and should be read prior to and in conjunction with the third, Robson's interpretation of the interview.

1. The teacher, the text, and the essay: Robson's interpretation

The teacher's comments, Robson writes, 'show predictably that her expectations have meshed readily with the implied reader constructs of the text' ('Forest and forest products' in E.H. Cooper, *An Introduction to Economic Geography*, London: University Tutorial Press, 1986). The teacher, Mrs. G., states:

> It's about the Forest Industry and it's developed as a topic in clear sections. It describes the main timber resources of the different forest belts, their problems, and exploitation, and conservation, and the kinds of industrial development that result and their problems — many of which, like the competition from synthetic products, you get from using tables. The different forest zones relate to developed and developing countries and we've emphasized this division in dealing with Population and other topics recently. We've also done a lot of analyzing maps and interpreting statistics in the Population topic which will help them here.

'The opening sentence,' Robson continues:

> indicates that Mrs. G 'recognizes' a *systematic* textual structure and, together with the second, shows clearly that she *integrates* all the sections and components of the text, synthesizing them as a topic at an abstract level. Her own constructs lead to particular emphases and reclassifications of the chapter into 'forest industry', 'problems', and 'developed and developing countries' subject-specific concepts in her usage. The last two sentences demonstrate her assumption that previous teaching will have provided the students with appropriate knowledge and skills which can be brought to bear on the text. Not surprisingly, the essay title, given 'to ensure that the chapter has been read and carefully understood', reflects her whole approach, taking for granted that the pupils' reading will echo her own. It asks them to 'write an essay on the Forest Industry of the world, with particular reference to the distribution of both forests and industries and their characteristics and problems in (i) developed and (ii) developing countries.' (p.81)

The extent to which pupils complied with her expectations can be seen in the second and third quotations:

2. *Interview with D., an average student*

The approach to, and focus of, reading

T. Now . . . how did you get on with reading this?
D. *I read bits of it, then I wrote about them, then I read bits again and wrote about them. I didn't read it all through in one go.*
T. Did you want to read it?
D. Well . . . I read it because I had the essay to write, but I did think it was quite interesting — more so than some of the work, so I think I would have read it anyway once I started . . . I didn't find it boring, but I found I was losing track of it a bit as I went on.
T. Did you know anything about it as a topic?
D. I knew vaguely.
T. What do you think you got out of it? What was it about?
D. Well, I think the main thing that struck me was how the forests had been used up so quickly . . . and how most of the forests in the world had been used up . . .
T. Right . . . Anything else?
D. The time . . . The amount of time it took for a large tree to become mature so you can use it . . . so you don't actually live to see the result of your planning and so it's that much more difficult to plan a forest and work out what's going to be used when. I hadn't really thought of that.
T. Anything else that seemed to you to be important?
D. Well, for my essay I chose the different types of forest and whereabouts they were situated and then there are the different types of uses of wood. Pulp and paper. I knew that was important. We hadn't actually learned about it. but I'd seen a television program, but I was surprised the way it was made. I knew it was sort of mulched up, but not about the expense of it and that it was done chemically as well. They put in chemicals to get rid of the varnishes. It's much more expensive, but makes a much higher-grade paper . . . And rubber . . . I knew about rubber and latex and that — 'cause we did it for O level and in second year, but I couldn't have pinpointed specific places.
T. Right. Did anything else strike you?
D. Yes . . . Looking at the figures, some of them seem incredibly . . . large. You wouldn't expect nearly half as much to be used, and the amount in one year! . . . You wouldn't think so much timber could be produced in one year.
T. So — the sheer amount of it was very striking. Anything else?
D. Well, I expected to come across the forests in Siberia and Russia and that area, 'cause I've seen films of it, but it says in parts of Africa there's a lot that hasn't been used and it's not being developed and I found that surprising.

Awareness of sections and headings

T. Now, turning again to how you said you read this, you said you read 'a bit' and then wrote your essay. How far did a bit go?
D. Usually its, sort of, a heading. Like in 'The Location of Pulp and Paper Mills' it was about a page . . . just different headings . . . different blocks . . . Normally, with Geography, there's always headings inside the chapters and you know what's going to happen. There's different kinds of heading . . .
T. What different kinds of heading are you aware of?
D. *Well, there's the main heading, like . . . er . . . 'Distribution' — where they are* — and then it goes onto 'Conservation' and *then 'Industry' — the kinds there are.* They're the different main

blocks, and then there's little side headings, like 'Tropical Hardwood Forest' and so on, *and they're all separate bits.*

T. When you're reading, do the different kinds of heading help at all?

D. Er . . . *When I'm reading, I don't so much think of them as different kinds, I think of them as following on, one type of tree and where it is and then another — and I picture them,* like with *'Tropical Hardwood Forest'* I'd be thinking of low-lying ground, with monsoon-type climate. I suppose I see it as jungle more than anything else. It's usually very wet and very hot . . . It's not *so much a place — an* area — actually very dense [laughing]. *It's what it looks like in your mind,* with trees everywhere.

T. Did the 'Hardwood' form part of your picture?

D. No — I didn't think about that really, till later on they mentioned furniture wood, like mahogany and teak. It tells you — page 194, the second paragraph. Then I just thought of furniture [laughing].

T. Were any of the other headings significant to you?

D. Well, the *'Temperate Hardwood'*. I thought of more normal trees — ordinary — like oak, like you see in English woods and in places like Europe where it's not so hot and where the forests are used more. *Then 'Softwood Forests of the Northern Hemisphere'. I* thought of Russia, 'cause I knew they had softwood, so I immediately thought of Russia before I read the section. I didn't have a very good picture . . . but I've seen a few films of Siberia and I think of the pines . . . that's a main image.

T. Do you think of 'softwood' at all?

D. Not specially . . . though I suppose it's used in more delicate processes, — rather than just ordinary planks . . .I think of it more for furniture again. I know a lot of that's hardwood — but for more decorative, for more sort of intricate furniture.

T. Was there any heading that was particularly unhelpful?

D. Yes! 'Softwood Forests of the Southern Hemisphere' [reading it]. That just sounds long-winded.

T. Now, thinking of this first section, still, for the moment, are there any other kinds of headings that you notice in your reading?

D. Well, there are smaller ones — different areas Scandinavia, and then it goes on to Canada and the USA.

T. Was giving the countries and areas helpful?

D. *No, I don't think of the countries much . . . With Scandinavia and Norway I do, because of the Christmas tree in Trafalgar Square,* but I don't really think of the places.

T. So the countries don't seem important?

D. They are important, but I don't take much notice of them, 'cause they're not what I'm trying to get hold of. *I'm trying to get hold of what they look like and where they are generally and how many there are,* rather than the actual countries — I might p'r'aps remember as an example that there's some kind of forest in a particular country, but not much . . . You *can't take in all the sections, because they get to be too many to make sense of, so you decide what's most helpful for you.*

Reading of 'location factors in . . . paper industry' section, p.206

T. Were there any headings or sections anywhere else that were particularly helpful for you?

D. Some in 'Industry' were helpful, like . . . 'Location Factors in the Pulp and Paper Industry'. They don't usually say something like that that helps you see what it's really about. They'd more likely say 'Pulp and Paper Industry' and you'd have to work out that it was about location factors, and what they were, for yourself. There are four factors involved.

T. What does 'location factors' mean to you?

D. You think of why a certain industry is situated where it is — the natural resources and relief of the area, that kind of thing, and the amount of space that would be needed . . . The things that affect why it's there. These were mostly things I knew. Like, I knew about access to forests [laughing]. You couldn't have one in the middle of a town, you know! And I realized it would be a heavy consumer of electricity or whatever, and I knew that water was used and nearness to water was important but I didn't realize it used so much 100,000 gallons for only a ton of paper — and I thought that it would be a large employer of labor, but it isn't. I suppose it's because it's mostly mechanical.

T. What did the 'Industry' section mean to you — how did you think of it?

D. Well, I *was noticing what the industries were and then mainly how they do it and how much there is.*

T. Did the industries link to the kind of wood and distribution in the first section at all?

D. No — not really. I suppose, if you knew enough about it, you could link it back, but I tended to think of it as quite separate.

T. You mentioned rubber before. Did that link to any kind of forest for you?

D. No. I wasn't thinking of that . . . I thought more about how it was done. I know the wood's cut at an angle and . . . er . . . that's rubber tapping and there's a little basin thing that collects it. I didn't relate it to places. I was thinking of another TV programs mainly, with rows of trees, cut at an angle of 45°, and the little drip trays that they collect it in . . .I think maybe it was in India or Ceylon or somewhere like that.

Reading of 'methods . . . forest management' section, p.204

T. Now we've been talking about headings or sections that you'd particularly noticed or felt were helpful. Is there anything else that you were aware of as you read and that you'd like to tell me about before we move on?

D. Well — er . . . there was the bit about Conservation. There were little headings that picked out points. 'Forest Establishment', I was thinking of the renewing of the trees that had been used and making up the stock and er . . . then 'Selective Cutting' — cutting only parts of the forest at a time so you always save some. When I first read them I took them as all separate, but then after I'd read them they seemed to connect up to conservation and they were numbered too. I already knew about some of them and about the idea of conservation.

T. How did they connect up?

D. I realized that obviously 'Conservation' was the main heading — protecting the forest — and this was the different ways that people were trying to conserve the forests, so it linked to that heading.

Awareness of maps and tables

T. Right, now, did the maps and tables figure at all in your reading?

D. Well — I usually read a block, write about it, and then look at the maps and tables.

T. Were there any that you particularly noticed when you did come to look at them?

D. The one on p. 195 was more confusing than anything. There were so many different shadings and there was writing everywhere. I was too confused to take much notice of it, really.

T. Did it clarify anything at all?

D. *Well, it gave you some information, but a lot of it was too complicated and the useful bits you'd been told already.*

T. What about the tables, did any of those strike you as helpful?

D. Well, I thought the little one on p.199 was interesting . . . The numbers! I couldn't get over the

size of them! They seemed unbelievable, the amount in one year. I'd have thought it would have been about ten years.

T. Any other tables?

D. I thought table 46 on p.201 was useful, 'cause you could compare and you could see clearly which were *the most important* and the *least important countries* for timber.

T. Did you think of any reasons for countries being where they were on the list?

D. No, I didn't, actually.

T. How do you think of a table? Does it tell you things that aren't in the text, or things that are the same, or what?

D. *I think* of it *as a precis of the text more than anything else. You* don't get the actual figures in the text, but they put it another way. The table gives you an outline — I usually notice the top three or so countries or whatever that have most, and p'r'aps the bottom one, *so you get a general idea, but those things are in the text as well.* Some tables are very complicated, and they're just more detail than you need, so I don't bother with them.

T. Which ones didn't you bother with?

D. Well, the 'Imports' one — and the 'Production of Wood Pulp'. And I didn't think the 'Rubber' was very relevant either — with the smallholdings. It seemed haphazard, the way it was laid out and complicated.

T. And you looked at tables at the end of a section?

D. Yes. It means more. If it says 'Fig so-and-so' in brackets, I don't look then, I wait. I might look back to the point where it told you, when I look at the table, but usually I don't. It *doesn't really relate up all that well and it doesn't always tell you to look, anyway. I think you look if you want to.*

Final impressions of topic and text: criticisms

T. Right, now when you came to the end of it all, what seemed to be clear in your mind? How did it make sense as a topic? Did it make sense?

D. Well, I think I understood the blocks of it quite well . . . The distribution is obviously important and the different types of conserving was quite good, 'cause there's not just one way and, er, with the industries . . . there's what they are and how you do them.

T. Were you linking the industries back to types of forest, types of wood, at all?

D. No, I wasn't thinking of whether it was coniferous or so on that was there forest-wise. I was visualizing the different industries and how they were organized.

T. And do you feel you've got hold of the topic clearly?

D. Much more so than when I started, but it could be clearer. I'm a bit confused about some of it, really.

T. Why is that, do you think?

D. Well, I was surprised at all the different types of wood, but I thought that all the headings — 'specially in the first section — spread it out too much . . . *I thought it should have been in a closer block, 'cause every time you turned a page you saw another heading*, and it *seemed an awful lot of different bits.*

T. You mean it shouldn't have been subdivided, or what?

D. I was glad it was when I was reading it, at the beginning anyway, 'cause I thought it was going to make it clearer . . . but looking back it went on — and on — and on . . . *I think they went into the woods too complicatedly. They could have just said 'Softwoods' and 'Hardwoods' or whatever, and then told you what they were and where they grew* . . . I found it rather confusing *They didn't seem to stick to one kind of heading . . . They seemed to change their minds* and I'm not really sure how the different sorts go together.

T. So you found it hard to relate the different headings to each other, to . . . er . . . to form a section, is that it?
D. Yes, I did . . . They fitted together in bits, but not all of it.

Awareness of 'problems' and 'developed/developing' countries

T. Did, er, did the essay help you to relate the different sections at all?
D. No — not really . . . 'cause that was about the Distribution — that was the first part and then the Industries, that was part of it too. Problems . . . that was difficult. I think that was really the problem of conservation.
T. Were there any other problems that struck you?
D. Well, I looked through, but I thought that was a difficult part to answer. It didn't tell you about many problems. I think it was the demolition of forests more than anything else.
T. What about Developed and Developing Countries?
D. Well, I know some of the forests are . . . like temperate ones are in the developed and like the tropical ones are in developing, but I didn't really think about it much in that way . . . 'cause there were a lot of bits already to keep track of, like I said.
T. Right, that's fine. I think that will do, D., thank you.

3. The students' experience of reading

Unlike the teacher, Robson finds that:

> none of the girls had the competence of the implied reader, and in particular none brought to the chapter a sufficiently developed awareness of 'classifications' or the ability to interpret maps/tables and relate them to text to enable them to integrate the different sections and levels of the topic as the teacher expected, and each was conscious, at some stage of her reading, of being frustrated by the text. However, each focused on some of its contact features in ways appropriate to her own expectations and learning purposes, thereby developing localized understanding and formulating or confirming impressions about Geography texts.

D., an average student

Robson interprets D.'s responses in the interview thus: D.'s technique of reading a section at a time and then writing a portion of her essay suggests that the organizational structure of the text does not activate expectations of a hierarchically classified topic, with interrelated sections, but a *sequence* of separate 'bits' or 'blocks' loosely grouped at a fairly concrete level by the three main headings which organize them descriptively rather than as a true classification. As she moves from section to section, unable in most instances to supply the omitted bases of the classification, she dismisses some 'bits' as incomprehensible. Those on which she focuses make sense to her to the extent to which they confirm, elaborate or challenge a mental *'picture'* — a generalized description, or narrative fragment — often originating from a film, and it is at this level that she tries to extend her learning. She says — with reference to the forest types in 'Distribution' 'I'm trying to get hold of what they look like, where they are generally, and how many there are . . .' In the 'Industries' section she is concerned with 'how they do it and how much there is' in each case, and focuses on Pulp and Paper-making and Rubber, where she already has clear visual images. Since she is grasping the above 'bits' so concretely, the

text's alternative method of classifying by countries cannot be incorporated into her understanding except in rare instances (like Norway and the Christmas tree in Trafalgar Square) where they relate to a visual image. She therefore adopts a deliberate strategy of elimination and selection as she proceeds: 'You can't take in all the sections because they get too many for you, so you decide what's most helpful for you.'

The analysis by Robson proceeds:

> What is 'more helpful' continues to be basic facts, so that D. continually fails to establish different 'levels of coherence'. Her failure to integrate maps and tables is significant here. They are considered irrelevant to the extent of being referred to only after the text has been read and the essay written, and she expects them merely to repeat, or 'precis', what is in the text. Her level of competence only enables her to see tables as indicators of 'least important' and 'most important' items, and maps and tables only as repositories of basic facts. (It is the sheer *amount* of timber, etc., produced which constantly amazes her.) Therefore, given no guidance to develop further competence by the text's contact features, which, at best, seem to offer only an optional directive to look at maps/tables, she follows her own learning needs and either simplifies them to a few facts which usually duplicate the text, or rejects them totally as too complex. Sometimes she does both! In any case, with the text's assistance, she reinforces her view of their irrelevance.
>
> D. only successfully relates different levels of coherence in two brief instances ('Location Factors in the Pulp and Paper Industries', p.206, and the methods of managing forests, p.204) when the organizational features of the text exactly mesh with her expectations, enabling her to use headings to anticipate the way facts will relate and to organize these successfully as a category which 'explains' the heading. In both cases, though numbers are a helpful contact feature, D. is confirming or only marginally extending knowledge already organized at this level of abstraction.
>
> D.'s final understanding with which she is fairly satisfied is still largely at the basic level already described, with classifications of the three main sections unrelated and no reclassification in the teacher's terms. However, her moments of accord with the implied reader, and an increased sense of there being 'an awful lot of different bits', also make her dissatisfied with the degree of coherence she has established. She begins to identify features which would make the text more 'readable', thereby indicating both the beginnings of discourse competence and the textual characteristics which would enable her to improve it. She thinks that headings should be more explanatory and ways of classifying simpler and more consistent, leading to fewer sections. (pp.82-4).

The extracts fill out a sense of what an implied reader means and levels of coherence which are achieved by one reader in her interaction with a text as she tried to make meaning. Robson felt that the teacher's ignorance of the student's reading struggles made her, the teacher, critical of the student's failure to demonstrate a competence which she did not have and which the text did not help her achieve. The student herself gave evidence of *negative* learning about geographical discourse; she avoided using maps judged by her to be irrelevant and used tenuously related sections.

In conclusion, Robson makes the following points:

1. The investigation shows that a reader does not encounter a text that 'contains' meaning; she supplies subject, cultural, and textual knowledge as she reads. The experience of making sense of a text is modified or reinforced by the textual encounter and develops consistently.

2. A-level texts often confront students with unfamiliar discourse. They are very actively involved in the lower sixth in developing discourse competence. They consciously identify and distinguish discourse components and how they relate. Teachers are concerned with meaning; students with how to construct it. The development of competence at this stage involves a transition from narrative-dominated strategies to strategies for relating the more abstract levels of coherence found in the subject discourses.
3. Understanding of what is read is likely to be uneven. Some of the learning is negative, given the inappropriate texts.
4. The readability of a text would seem to be closely related to its capacity to encourage the development of discourse competence. To achieve this it needs to employ 'contact' features that are personal and include 'redundant' explanation and 'metalingual' guidance and to guide readers to identify and relate different components and levels of discourse, enabling them to progress from more concrete levels and familiar strategies (e.g. visualizing, following chronological sequence) towards more abstract ones (e.g. synthesizing 'classifications' and tracing argument).

As means towards such ends, Robson considers, if students

> compared their 'acts of construction' with other readers, and all [had] re-examined and discussed how they arrived at their own versions, in an atmosphere which encouraged them to see that the 'act of reading' was as important as the text ... they could possibly [have] come to realize the power of their expectations, [and their sometimes distorting effect], and [have] learned to distinguish further contact features and their mode of functioning.

Enquiry and note-making

If the role of language in learning and the problem of how a student may best interrogate a text, given the notion of an implied reader are important then a third area which a final chapter on learning through geography needs to address is the task of note taking, one of the most frequent activities any student of history or geography has to undertake. Passages like the one reproduced here on the Broads would frequently have to be read and notes taken. As a first step to giving students a guide and an insight into note making I prepared a commentary and notes of my own on a passage written for 17-18 year old students preparing for the A-level geography examination in England. This is the final examination to be taken prior to entering higher education. Readers may find opportunities to use the case study and my notes to help students in note-making.

Classroom activity

THE NORFOLK BROADS: THE DECLINE OF BROADLAND

A Case Study by David Brewster and Geoff Philips

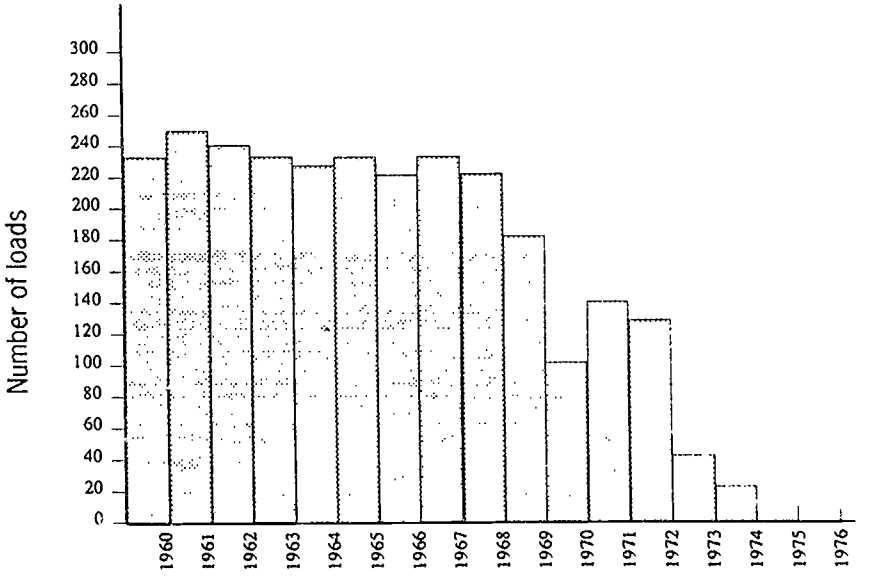
The Broads were formed from medieval peat diggings which were abandoned in the 13th-14th centuries due to flooding when sea levels rose. There is little documented history of Broadland until the early 19th century, and evidence gleaned from the writings of naturalists of that time shows that the shallow Broadland lakes were very different from those we see today. The lakes contained *clear water* with an abundant growth of water weeds and a wide variety of aquatic animal life. The growth of water weeds in places became so abundant that it impeded boat movement and had to be removed to maintain navigable channels.

Today the open water of most of the Broads contains no water weeds due to the lack of light penetrating through the *turbid water*. This change is not well documented but probably took place fairly rapidly sometime during the 1950s and early 1960s. Some data from Hickling Broad is available, and from the amount of weed removed (see Figure 5.14) to maintain navigation it is clear that the decline took place over a fairly short period.

The role of weeds in the ecosystem

In these shallow lakes water weeds played a critical role in increasing the habitat diversity of an otherwise rather uniform environment. They provided cover for a variety of the small planktonic crustacea, preventing their populations from being decimated by fish predation. They offered almost the only stable substratum for eggs to be laid, and they provided a source of food for a wide range of animals. Thus the loss of these plants, important in itself, has had considerable implications for the ecosystem of the Broads.

Figure 5.14: Number of loads (approximately 8 tonnes each) of 'Sponge Weed' removed from Hickling Broad by the Yare, Bure and Waveney Commissioners



CASE STUDY CONTINUED

The cause of the problem

A great deal of research has been undertaken to establish the cause of these changes and to attempt to reverse them. It is often suggested that the increase in boat numbers may have led to the loss of plants but, although this is clearly an additional pressure, it cannot explain the change, as many of the Broads affected are not subject to boat traffic. Although the exact mechanism involved is still not completely understood, it is clear that the lack of light penetration through the water, caused by the growth of algae (phytoplankton), is the main reason why submerged water weeds no longer grow.

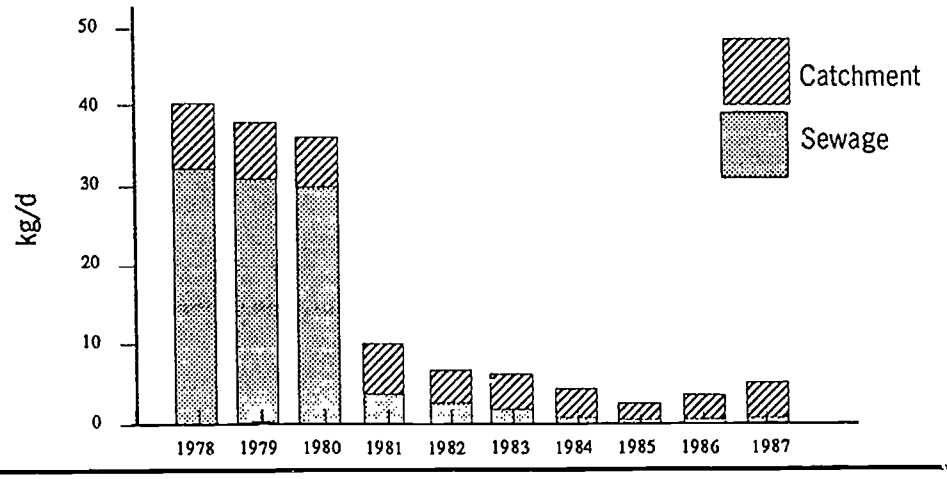
Work carried out in North America during the 1960s convincingly demonstrated that plant nutrients, nitrogen and phosphorus were responsible for this excess of growth of phytoplankton. The process is known as eutrophication and, if the input of either nitrogen or phosphorus from the *catchment* can be reduced, it seems likely that the changes to the Broadland ecosystem could be reversed. The nitrogen originates primarily from diffuse agricultural sources and is therefore difficult to control. Even if this could be achieved, many algae have the capability of *fixing* atmospheric nitrogen and could continue to cause problems. In contrast, phosphorus is derived from animal waste products, mainly sewage effluent, and can be controlled by chemical precipitation within a treatment plant. The reduction of the amount of phosphorus discharged to the Broads catchment should therefore result in a reversal of the changes described above.

The initial solution

A major experimental program to reduce the amount of phosphorus discharged to the River Ant and Barton Broad, the second largest of the Broads, was started in 1977 by Anglian Water. This involved the removal of phosphorus from sewage effluent by chemical precipitation with ferric sulfate. It resulted in a reduction of phosphorus discharged from the works of about 90%. Initially only effluent from Stalham Sewage Treatment Works, because of its proximity to Barton Broad, was treated. When it became clear that this was inadequate, effluent from North Walsham STW was diverted to a sea outfall and all other significant discharges had phosphorus removal facilities installed.

Look at Figure 5.15, which shows that by 1980 this action resulted in a 90% reduction in the amount of phosphorus discharged to the River Ant from sewage or industrial discharges. The amount of phosphorus moving along the river was carefully monitored. There was clearly a substantial reduction in the phosphorus load in the upper river at Honing Lock; however, further downstream the effect was considerably less

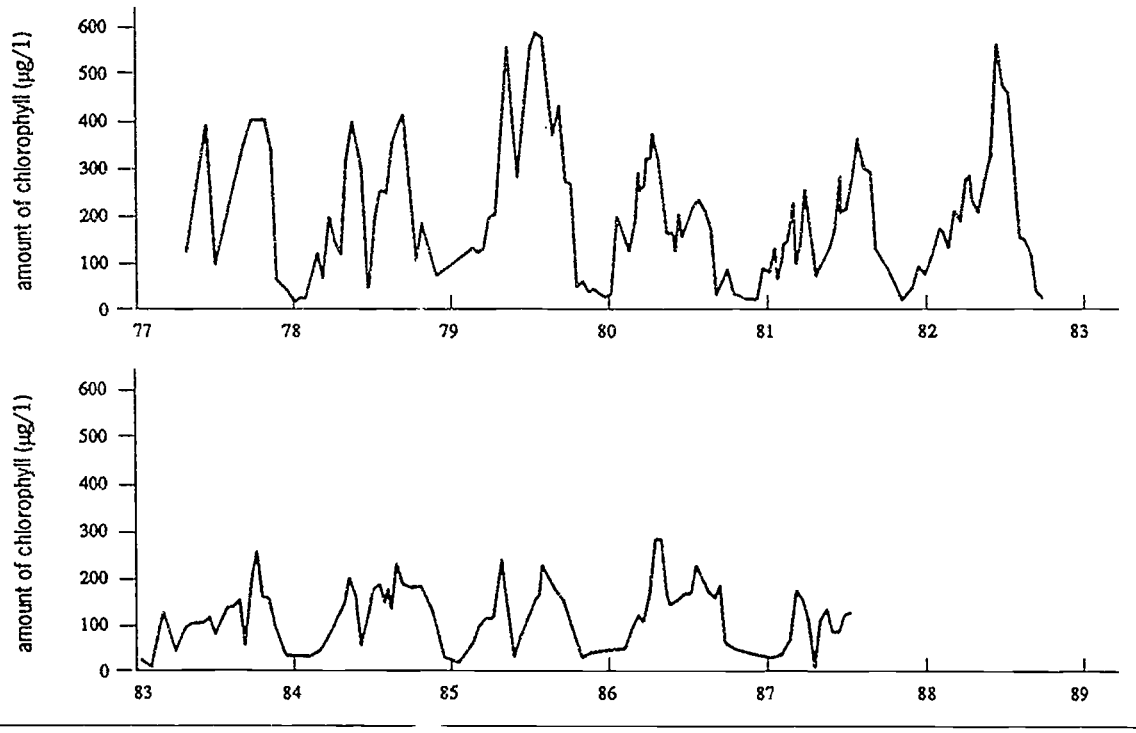
Figure 5.15: Phosphorus discharged to the River Ant: annual mean load



marked. At the inflow to Barton Broad the reduction in phosphorus load was less than 50%.

The hoped-for reduction in phytoplankton growth also failed to occur. Measurement of the chlorophyll content of the water provides a good measure of the amount of phytoplankton in the water, and data collected from the beginning of the experiment illustrated in Figure 5.16 shows that only a modest reduction in phytoplankton had occurred. Comparing the total phosphorus concentration of

Figure 5.16 Barton Broad: chlorophyll



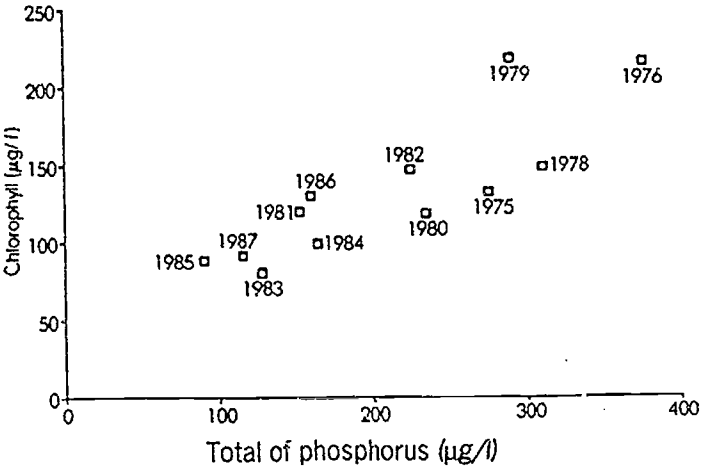
Barton Broad with the chlorophyll concentration (Figure 5.16) demonstrates that phosphorus still remains high in the Broad, despite the changes in the catchment.

Average phosphorus concentrations in Barton Broad were greater than those in the inflow, suggesting that a further source of phosphorus was present. It was subsequently found that the mud in the Broad contained a considerable amount of phosphorus which was being released into the overlying water.

Sediments and their stores of phosphorus

For many years the sediment of Barton Broad has absorbed phosphorus from the water. However, as its absorption capacity was exceeded, phosphorus in the mud became available. This residual load is now apparently preventing the Broad from recovering. The mechanism controlling this release of phosphorus is currently being investigated, and it may be possible to reduce or prevent the release of phosphorus by the addition of chemicals such as ferric sulfate to the lake sediments. However, the effectiveness of this is awaiting further research. At present the only way to overcome the problem is to remove the sediment.

Figure 5.17 Barton Broad: phytoplankton versus phosphorus



Sediment removal

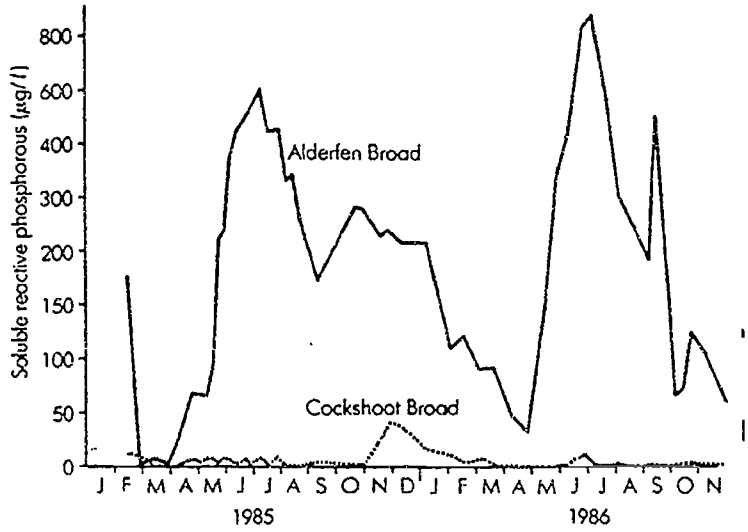
The effectiveness of sediment removal as a solution to the problem of the release of phosphorus was tested at Cockshoot Broad. This Broad was dammed off from the adjacent River Bure in 1982 and the top layers of sediment were pumped out by a suction dredger. The results of this experiment by the Broads Authority were compared with those from Alderfen Broad which was also isolated from an enriched source of water, but in this case phosphorus-laden mud was left undisturbed.

At Cockshoot Broad up to one meter of phosphorus-rich mud was removed, and the effect of this can be seen in Figure 5.18. This graph compares the levels of soluble phosphorus in the water of the two Broads for the years 1985 and 1986. Significantly higher levels can be seen in Alderfen Broad, reflecting release of phosphorus from the sediments. In Cockshoot Broad the levels were very low and, as a result, the growth of phytoplankton was considerably less. The recovery of water weeds, initially slower because the majority of viable seeds had been removed during the suction dredging, has, however, been sustained, and a more varied plant community has developed. The forecast for Cockshoot Broad is now good. The isolation of Alderfen Broad in 1979 was followed by a period of rapid development of one particular water weed, hornwort *(Ceratophyllum demersum)*, whilst phytoplankton declined. As the amount of plant material increased, the surface sediments became de-oxygenated as this material started to break down in mid-summer, and this triggered the release of phosphorus. The increasing concentration in the water itself triggered a resurgence in phytoplankton, which resulted in a decline in the growth of water weeds. The future for Alderfen Broad is now uncertain because the reservoir of phosphorus is fuelling the continued growth of algae and therefore inhibiting recovery.

Biomanipulation

Research has shown that although water weeds dominate under conditions of low nutrient status and algae normally dominate at the higher range, both can exist within the levels of phosphorus found in the Broads today. Both water weed and algae communities are also resistant to change, stabilized by a number of mechanisms which need to be disturbed if a switch from one to another is to take place.

Figure 5.18 **Comparison of soluble phosphorus in Alderfen and Cockshoot Broads 1985-86**



Although the phosphorus concentrations have been reduced to levels where water weeds can exist, Barton Broad is still dominated by phytoplankton. In contrast, experiments with small ponds have demonstrated that, despite phytoplankton adding considerable quantities of nutrients, ponds do not lose their water weeds. Add fish to these ponds and there is a loss of water weeds, and an increase in phytoplankton rapidly takes place. A central role in this mechanism is played by the water fleas (Daphnia species).

For a short period during June, water fleas form large populations. These animals filter the water to obtain their food. At the peak of their population they can filter the entire volume of Barton Broad three times a day. Under these conditions the little animals can rapidly remove phytoplankton and create clear water, which is the explanation of the commonly observed 'clearing' of small ponds. However, shortly after this period, small fish fry have grown large enough to eat these animals; their capacity to remove phytoplankton is lost and the water once again becomes dominated by phytoplankton.

In a lake dominated by underwater plants the feeding efficiency of fish fry is reduced and the water fleas survive, continuing to reduce the phytoplankton and creating conditions more suitable for the plants to grow. The plants also require phosphorus and will absorb significant quantities from the water, reducing the amount available to phytoplankton. In contrast, in a weedless lake, any phosphorus will support additional phytoplankton growth.

A lake containing a substantial growth of submerged plants may be able to maintain these plants due to the mechanisms described above. However, a lake already dominated by phytoplankton, such as the Broads, will not automatically change. If the effect of fish predation on the large water flea (Daphnia) species were reduced by artificially removing the fish, it might be possible for plants to re-establish in a period of much greater water clarity.

To test this an experiment was carried out in Barton Broad in 1987. Pens (1 m x 2 m) made of a very small mesh were placed in the Broad. A variety of plants were placed into the pens and into a similar area outside the pens. A check was made to ensure that no fish were present inside the pens, and regular observations of plant growth, water flea numbers and chlorophyll concentrations were made. Water flea

populations inside the pens reached much higher numbers than in the open water immediately outside, almost certainly a result of less fish predation. Inside the pens plant growth was found to be luxuriant, whereas outside the pens no growth could be observed.

The experiment demonstrated that in the shallower areas around the edge of the Broad it should be possible to provide conditions suitable for plant growth if zooplankton numbers can be increased. Clearly the permanent removal of fish from a large Broad would be both undesirable and impossible to achieve. However, the temporary removal of the breeding stock from smaller isolated Broads may provide a window of low phytoplankton growth and, combined with a large-scale planting exercise, may allow the desired change in community structure to take place. Alternatively, in larger sites, connected to the river where external phosphorus loads have been reduced, it might be possible to build much larger fish exclosures to enable plant colonization to occur.

In 1986 Anglian Water began to remove phosphorus from large sewage treatment plants discharging to the River Bure. This has reduced the phosphorus load in the upper reaches of the River Bure, and some of the Broads in this area are beginning to show marked changes in phytoplankton abundance.

This is the essential first step to the restoration of the Broads situated on this river. In many of these Broads it will also be necessary to control the release of phosphorus from the sediment by chemical methods or by sediment removal and to manipulate the grazing pressure exerted by the large zooplankton through fish abundance. One small lake, Belaugh Broad, has already received this combination of treatments and a much larger one will be treated in 1989 in order to restore a more diverse and interesting community of plants and animals.

Reading and enquiry

I have come to see a reading of such texts as enquiries related to the written text. We use the term enquiry to cover numerous activities comprising information and understanding from a variety of resources/data as we seek to motivate and interest students. It seems essential that we use key questions to guide students through the written word and into note making.

Key questions which might help students move through the text include the following and relate in chronological order to my commentary. My commentary will only make sense if the case study itself has been read carefully.

What are the Broads?
What is its ecosystem made up of?
What were its characteristics in times past?
What has changed? When? (Look at Figure 5.14)
What has been the role of weeds?
How did they function within the ecosystem?
Why did the Broads change? Why did the weeds disappear?
What is the process by which the change came about?
What major experiments have been undertaken?
Why was the first unsuccessful?
What was the second experiment? the third and fourth experiments?
What did each tell us?

My way of reading the Norfolk Broads case study

To David Brewster, who works for the East Anglian Water Authority, it is important as a wetland area, that is the way he comes to it. Then he tells us where it is - its location - and he hints at its ecosystem - wildlife and use by people.

A bit of history

In the first paragraph he gives a bit of history, flooded peat diggings - interesting - one of the effects of a change in sea level - so it really happens now and again. He's italicized *clear water* to give his readers a hint about its importance, because that is the big change. This clear water had lots of water weeds and other life and sometimes the water weeds got a bit too happy - so we cut them back, managed them for the good of the boaters. That's how I read the paragraph. That is the story so far.

His heading is handy - The Norfolk Broads: wetlands under threat - as it alerts us to the fact that it has changed and he is going to tell us how. OK, get brain ready for picking out changes and perhaps reasons for the changes.

Aha, today the water is turbid, not clear, murky. Figure 5.14 shows the time (early to mid-1970s) of the dramatic decrease - quite recent really, I think to myself. No, he doesn't give reasons, he goes back to tell us how important water weeds were for sheltering smaller things with big names. (I am not a biologist.)

On to causes

Now he comes on to causes - the heading gives us the help to see where he is going, and I put in my notes, 'Why did the weeds disappear?' That simply raises another question further down which I think he could have put in as a heading for the next paragraph. 'What causes lack of light and excess phytoplankton?' It is too much nitrogen and phosphorus - from agriculture - causing phytoplankton/algae to grow. What can be done? Can we control nitrogen, phosphorus? Phosphorus, yes, how? In a treatment plant, chemical reaction.

As a result of my early skimming of the study, I know that we are going to get the story of some experiments now. It is very interesting to see how the case study is an account of the scientific method. I mean the process by which we set up an hypothesis. Eutrophication, the growth of algae in murky water, might be due to too much phosphorus. That is the first hypothesis - so we experiment by changing the variable, phosphorus, and see what happens.

What was the experiment?

Right, so let's find out about the experiment and make more notes. What was the experiment? We get the detail of the stages. Essentially, the supply of phosphorus was cut to a minimum by diversion of effluent and chemical treatment of effluent. But the phytoplankton stays. Help! The hypothesis is not upheld. What else is going on, we have to ask ourselves? David Brewster tells of the next stage in the thinking and the experiment. The scientists measure the amount of phosphorus coming in (they know that has been reduced) and the amount in the Broad. There is still a lot of phosphorus and chlorophyll (phytoplankton) in the Broad. Why? Is there another source of phosphorus which has not been turned off? Exactly, yes, and it is stored in the mud. And when the mud cannot store any more, the phosphorus stays in the water.

Now we get detail on how it might be possible to control the release of phosphorus chemically, but this needs more research. In the meantime, remove the mud. Seems a good idea, a good hypothesis. So we get the details of that experiment. At Cockshoot Broad, mud is dredged and water weeds come back. More complicated story in Alderfen Broad where mud left undisturbed - ugh, lots of details and connections. How does it all fit together? Let's have a try.

In Alderfen Broad with its phosphorus-laden mud undisturbed, a water weed comes back and phytoplankton declines. But in mid-summer a chemical effect of plants on surface water (de-oxygenation) triggers release of phosphorus, more phytoplankton grows and water weed declines.

The story continues, however. Slight complication is that both algae (phytoplankton) and water weeds can exist in the phosphorus levels present now. And now there the phytoplankton tends to stay even in reduced phosphorus levels - a good example of inertia perhaps.

The scientists keep on experimenting and ask another question. It has been noticed that small ponds, *without* fish but with phosphorus added, do not lose their water weeds. Put in fish as well and water weeds do disappear. Aha! So what have fish to do with the interactions in the ecosystem? Well, it's more to do with fleas than fish. (It is getting awfully detailed!)

Water fleas filter water, keep it clear, and phytoplankton goes for a period, mid-June. The ponds 'clear'. When small fish grow bigger, they eat the water fleas and the phytoplankton returns. If a lake has underwater plants, the fish fry don't eat as many water fleas, and since the plants also absorb some phosphorus, water weeds grow. So where a lake still has underwater weeds, fish and fleas, water weeds may survive but in the Broads phytoplankton had taken over.

Small pens with plants were placed in Barton Broad in 1987. No fish in the pens. Lots of fleas counted inside the pens and lots of plant growth. We are nearing the end now, and David Brewster suggests that in shallower areas of the Broads it might be possible to remove fish breeding stock temporarily and/or build fish exclosures and let weeds get established.

The Anglian Authority is continuing its phosphorus removal program!

Quite a story there, and quite a large amount of concentration needed to pick out the plot and its main points (Figure 5.19). It is a story about cleaning algae out, and letting the water weeds back in. The main characters are phosphorus in water, phosphorus stored in mud, water fleas and fish. And it's taken me something like four hours to read, reread, and write this out. Understanding people/environment relationships is hard work!

Strategies for note-making

In the short quotations given from the research about student 'D's' reading of a text, we get the impression of headings being helpful and of the student searching for points to latch on to. It is also important to skim paragraphs for their main points and try to see how the different points are connected. Then you have to read each paragraph several times, concentrating hard. In the end it is practice doing this which makes for improvement. In other words, it is a reading and comprehension skill, and the more we do it, the faster and better we become. We have of course also to be interested in the subject matter. (And just because it is tough work, don't say it is boring. That word is a great camouflage for 'I don't want to make the effort'.)

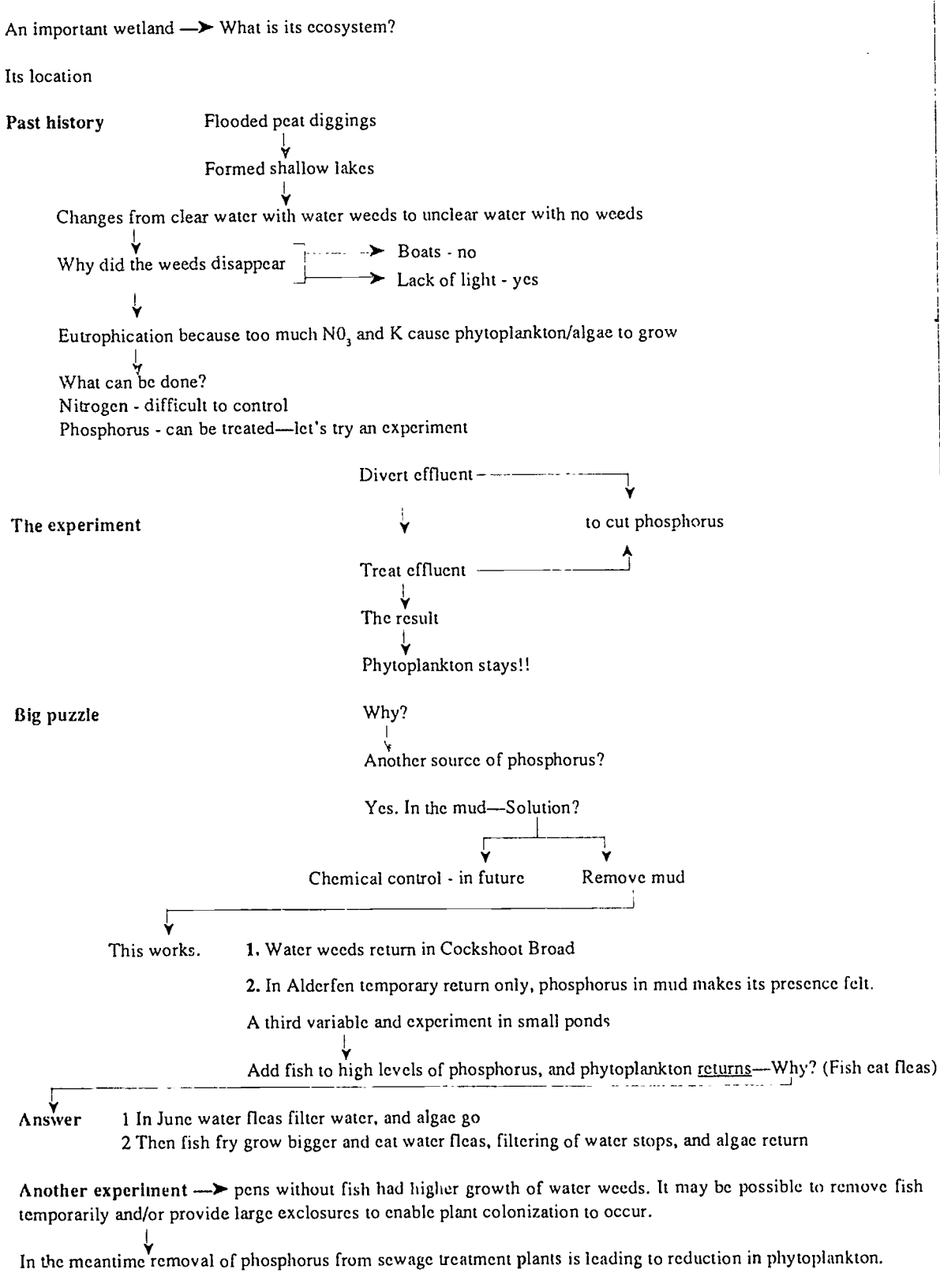
What makes the Broads story so interesting to me is that it adds to my general knowledge and impression of the Broads and their deterioration because of algae, onwards to an understanding of experiments (playing with one variable and then another). These give us an understanding of the process going on between amount of light, weed and algae growth, chemicals, fish, fleas. . . .

In order to make my notes, I latched on to one experiment and then another as likely to be significant, because years of education had given me a hunch that experiments are important and give us facts and further ideas. The experiments give us the overall structure of the unfolding story. They are the chapters of the story with a different character/variable featuring more prominently in each chapter.

I can't say much more to try to share my process of note-taking with you. We know it isn't easy. Good luck. First skim, then look for headings and points, re-read, concentrate, get the structure, get the detail in the structure! In time your style will develop. It won't be the same as mine, but there will be parallels.

Figure 5.19 answers the questions above in a diagram and is I think in its way a version of an enquiry based on enquiring into a text.

Figure 5.19: **Norfolk Broads — a diagram of water**



Evaluation of planning and learning

As one last aspect of teaching and learning geography, I turn to evaluation. Any models of curriculum planning whether dealing at the most general levels with the whole geography curriculum, or at more specific levels with instructional programs for a term or a year, or with learning activities to be undertaken over a week or two, all include an evaluation phase.

This phase encompasses two ideas depending on the purpose of the evaluation. Student learning can be evaluated or assessed to diagnose student strengths and weaknesses or the segment of work itself can be evaluated with a view to its reorganization and improvement.

I shall not deal here with assessment and related concepts. The fashions and thinking deserve a chapter and as I write agencies in the U.S. are undertaking major work on assessment which will be coming available. What I give is an example of the kind of data response/decision making examination questions which Geography 16-19 pioneered. The Project considered questions like the one reproduced in Appendix A congruent with their enquiry framework. In other words, the assessment fits the learning being encouraged. A variety of data pertinent to a real world issue is presented as an examination question and students have to comprehend, analyze, evaluate, and make judgements about the issue before them. It is a stimulating view of assessment designed to match an enquiry view of learning and such considerations as the role of language in learning.

Evaluation of curriculum projects, units, and learning sequences has generated a considerable body of literature and it is distinguished by a number of schools of thought. I shall confine discussion to (1) some very basic points central to the literature, (2) a questionnaire I found useful and practical for evaluation and (3) a description of one model of curriculum evaluation which has some particularly pertinent and penetrating concepts in relation to evaluation.

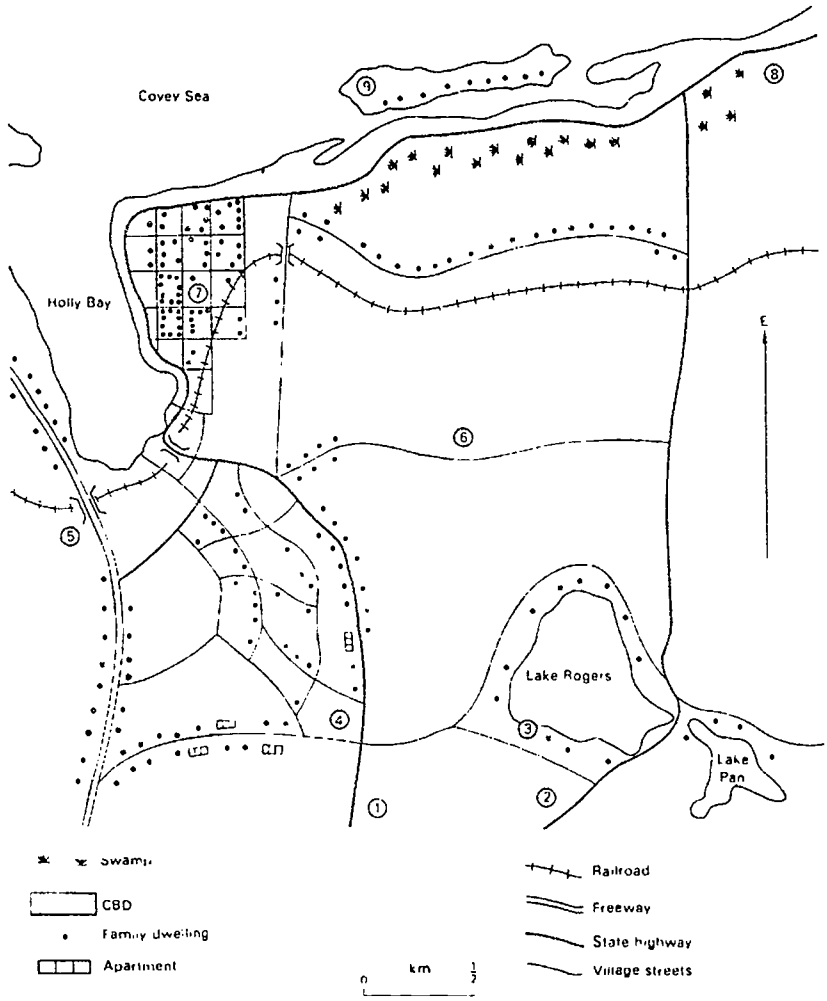
Early literature

An elaboration of the conscious practice of evaluating teaching and the beginnings of a geographical literature on evaluation date back to the High School Geography Project in the United States, a project which invested a considerable part of its resources in evaluation. The team's chief purpose in evaluating was to improve the geography courses then being designed by them. In effect, the evaluation was a formative one designed to improve the course while it was in the process of development rather than a summative evaluation designed to judge the effectiveness of the finished product. In day-to-day, year-to-year teaching, both formative and summative evaluation takes place as modifications are made to teaching materials as a course progresses and before it is taught again. There was less emphasis finally in this Project on student performance and achievement, though some attention was given to this dimension because of the direct link back from student achievement to course improvement.

Many tasks, of which Figure 5.20 is an example, were initially devised to measure student learning. Students were given pre- and post-tests to determine whether learning activities had increased understanding. The scores for the questions in Figure 5.20 were:

	Pre-test	*Post-test*
1.	51%	72%
2.	45%	66%
3.	51%	69%
4.	44%	47%
5.	35%	28%

Figure 5.20 : An HSGP student test item



1 In which area of this community is there most likely to be low income housing?
   A. 3
   B. 4
   C. 7
   D. 9

2. Which of the following is the most probable location for a shopping center designed to serve the mapped area for the next ten years?
   A. 1
   B. 3
   C. 4
   D. 7

3. In which of the following areas would you be most likely to find new factories and warehouses?
   A. 3
   B. 4
   C. 5
   D. 7

4. A suburban residential area developed during the 1970s would most likely be located near the crossing of
   A. a railroad and a river.
   B. a railroad and a major highway
   C. a river and a freeway
   D. two freeways.

5. Generally as the population of a city increases so does the
   A. per cent of people involved in retail trade occupations
   B. frequency people go shopping
   C. percentage of income spent on food.
   D. number of goods and services it offers.

SOURCE: High School Geography Project.

Complexities in evaluation

The evaluators (Kurfman, 1970, 1972) came to acknowledge that the theoretically neat relationships among identification of concepts to be learned, materials and activities presented, and test questions measuring learning could not so easily be established in practice. The complexity of ideas contained within the activities and materials made it difficult to unravel cause and consequence or identify what activity had contributed clarity or confusion, and therefore what precisely needed revision. Such tests came to be replaced by questionnaires.

This description somewhat brusquely highlights the difficulties inherent in using a scientific approach to try to evaluate such a complex process as teaching and learning and it is not surprising that new philosophies of evaluation have developed since the 1960s. One of the chief of these is illuminative evaluation.

Illuminative evaluation

Illuminative evaluation is concerned more with the overall process of innovation rather than just its outcomes. Illuminative evaluators are interested in noting and following up the effects of an innovation and making judgements on value and worthwhileness. The illuminative evaluator asks — 'What happens when the innovation is introduced?' The experimental pre-test, treatment, post-test evaluator asks — 'Does the innovation perform as intended?' The teacher is probably intuitively aware of both questions and modifies exercises and courses in relation to his/her answers to both. If interest is heightened by new material or new methods, it is likely to be used again. If an arranged sequence of work achieves an intended progression of ideas it will be thought satisfactory. There may, of course, be some effects and outcomes which escape notice and outside evaluators may pick these up. An eclectic approach to evaluation is possible and the systematically gathered questionnaire data on which HSGP came to place most reliance is still a useful technique on which to base improvements to learning through geography even though it falls more into the scientific mode of evaluation rather than the illuminative school.

The use of questionnaires

Both student and teacher questionnaires were used to revise HSGP materials. The student opinions were found to be of great significance in comparing and deciding on the relative effectiveness of activities. Understandably, teacher opinions were of major importance in helping the unit developers make specific revisions. In the questionnaire data which yielded opinions on the worth, interest, enjoyment and effectiveness of activities, the most reliable factor in ranking activities was student interest. Student ranking of activities in terms of educational worth corresponded closely with their rankings in terms of interest. Teacher ranking of activities on any basis most often paralleled student interest rankings. Given the links between interest, motivation and learning, interest as a criterion in measuring course effectiveness seems legitimate. A brief summary of the exercise may serve to recommend it and the questionnaire method of obtaining information on learning activities and curriculum units. (Renner and Slater, 1974.)

Evaluating HSGP—the Japan unit

The Japan unit (HSGP, 1974) consists of four major activities including a role play. The first, an introductory unit, involves showing students a filmstrip of scenes of Japan and North America to enable students to note economic and cultural similarities and differences and to develop an awareness of Japan as a modern, industrial nation. The second activity consists of an essay on life in traditional Japan, centered around the customs and social habits of the samurai. The feudal structure of society and major characteristics militating against, or conversely facilitating change are conveyed.

In activity three, 'students contrast modern with traditional Japan and explore the problem of how a nation makes such a transition'. An essay on modern family life describes Japan today. The second section of this activity introduces the class to the concept of modernization by using graphs and charts to illustrate some of the differences between developed and under-developed nations. The final section, which requires the largest amount of teaching time — up to six or seven periods — is an open-ended exercise. Students assume the role of experts in various aspects of economic development at a United Nations Conference set up to explore how under-developed countries might progress to development. The students must bring forward a set of recommendations. Committees study data to note the changes which occurred in agriculture, manufacturing, population, and so on.

The evaluation sheet, Figure 5.21, was completed by twenty-four, 15-year-old New Zealand girls about four months after it had been used and at the end of the year's course. At the suggestion of one of them, a category 'much the same' was added to the otherwise HSGP style questionnaire. Experts hold that this is not a useful category. The majority of the class evaluated the unit positively.

The student interest in the unit was high. Part 2 of the completed questionnaire indicates that 87 per cent of the class found the activities to be interesting as a whole and over 70 per cent found the readings, graphs, and Parts 2, 3, and 4 interesting. Fewer, 59.5 per cent, judged the graphs interesting and one student commented that the sheer number of graphs and other pictorial illustrations became 'monotonous'. Another comment stated, however, that 'the graphs helped [to learn] a lot'.

Showing the filmstrip was markedly the least successful activity with more than half the class not remembering it at all. The poor reproduction quality of the filmstrip may account for this. Of the majority of those who did remember it, none found it 'extremely interesting'. Comments in detail reveal: 'I thought ... the readings were very lengthy considering the small amount of important facts they contained'; 'the most boring part of the topic was the reading as it did not allow for variation on the theme'; '... enjoyable to write essays [as the readings] meant there is a lot to "ramble" about'; and 'extremely interesting, not in the form of *straight* facts [facts included in stories of a family man's daily work etc.]'. More positive individual comments were made about the United Nations Conference as an opportunity 'to break away from the readings and graphs' and 'the United Nations Conference helped me to understand how a country changes and all the things it must do before it can even begin to start'.

Awareness of objectives

In assessing student awareness of objectives, the United Nations Conference ranks as the activity about which pupils were most 'clearly aware' of objectives (64 per cent). The reading on Yokichi, to bring out features of traditional Japan, was more clearly appreciated than the reading about the Japanese family man. The filmstrip again shows up as having the least student impact. The objectives of the work with graphs were known to 82 per cent of the students. In this section, the problem of assessing objectives from a skills or content point of view became most apparent. For example, a number of girls stated the objective as being to learn to read graphs and these kinds of responses were judged to represent a clear awareness of objectives. Over three-quarters of the class were aware of the objectives of the topic as a whole. It should be noted that three students stated that the main objective for studying Japan was to provide a topic for the School Certificate examination! Eighty-six per cent of the students estimated that they had learned quite a lot or a great deal from the unit and the reading, graph, and conference activities were valuable learning experiences in the judgement of the majority of the class. The reading on traditional Japan is the leading section in the student estimate of their own learning (Part 4); the class was generally aware at the beginning of the exercise of Japan as an industrial nation. The filmstrip again shows up as a weak activity.

The kind of modification which would advisedly need to take place to materials and their presentation if taught a second time is reasonably clear. The benefits for student learning, planning activities, and teacher performance seem to be considerable. As a final stage in planning learning activities, relatively formal methods of evaluation as opposed to informal methods are justified. If one

Figure 5.21: Evaluating the Japan unit

1. *How did our study of Japan compare with our study of other topics in geography this year?*

☐ Much poorer ☐ Somewhat poorer ☐ Much the same ☐ Somewhat better ☐ Much better.

2 *How interesting did you find our study of Japan?*

	Work as Whole	Reading Parts	Graphical/ Illustrations	Part One Filmstrip	Part Two Traditional Japan	Part Three Japanese Family Man	Part Four Modern-ization
Don't remember							
Dull							
Uninteresting							
Generally interesting							
Extremely interesting							

3. *What do you consider was the main objective (reason) for studying*

(a) The topic as a whole? To .....
(b) The reading sections? To .....
(c) The graphs? To .....
(d) Part One? To .....
(e) Part Two? To .....
(f) Part Three? To .....
(g) Part Four? To .....

4. *How much do you think you learned from*

	Nothing	Little	Quite a Lot	A Great Deal
(a) The topic as a whole?				
(b) The readings?				
(c) Graphs?				
(d) Part One?				
(e) Part Two?				
(f) Part Three?				
(g) Part Four?				

5. *Make any general comments, favorable or unfavorable, on any part of the work, it you wish.*

SOURCE: High School Geography Project.

***Figure 5.21:* Evaluating the Japan unit** *(continued)*

1. *Student Comparison of Japan Unit With Other Work (Number Responding 22)*

	Number	Percentage
Much poorer	1	4
Somewhat poorer	4	18
Much the same	5	23
Somewhat better	8	36
Much better	4	18

2. *Student Assessment of Interest*

	Work as a Whole	Reading Parts	Graphical Illustrations	Part One Film-Strip	Part Two Traditional Japan	Part Three Family Man	Part Four Modernization U.N. Conference
Number Responding	22	22	22	22	22	22	22
	%	%	%	%	%	%	%
Don't remember	4.5	9.0	0.0	55.0	13.5	13.5	0.0
Dull	4.5	4.5	9.0	4.5	4.5	9.0	13.5
Uninteresting	4.5	9.0	31.5	4.5	9.0	4.5	13.5
Generally interesting	77.0	64.0	46.0	36.0	46.0	46.0	50.0
Extremely interesting	10.0	13.5	13.5	0.0	27.0	27.0	23.0

3. *Student Awareness of Objectives*

	Topic as a Whole	Reading Sections	Graphs	Part One	Part Two	Part Three	Part Four
Number Responding	21	21	22	19	21	18	22
	%	%	%	%	%	%	%
Not Aware	18.0	32.0	0.0	32.0	9.0	18.0	18.0
Vaguely Aware	13.5	36.0	18.0	55.0	13.5	18.0	4.5
Generally Aware	13.5	4.5	32.0	9.0	68.0	41.0	13.5
Clearly Aware	55.0	27.0	50.0	4.5	9.0	23.0	64.0

4. *Student Estimate of Own Learning*

	Topic as a Whole	Reading Sections	Graphs	Part One	Part Two	Part Three	Part Four
Number Responding	22	22	22	22	22	22	22
	%	%	%	%	%	%	%
Nothing	0.0	0.0	4.5	27.5	9.0	4.5	0.0
Little	13.5	23.0	23.0	32.0	9.0	27.0	27.0
Quite a lot	89.0	77.0	59.0	36.0	68.0	64.0	41.0
A great deal	27.0	0.0	14.0	4.5	13.5	4.5	32.0

were to ask the key questions characteristic of Simon and Wright's (1974) value strategy and sift through the evidence, then affirmative answers to 'Is it desirable?', and 'Is it feasible?' are most likely. The final step in planning activities has now been identified and discussed— namely assessment and evaluation.

Stake's model

There are, in addition, other perspectives from which to approach evaluation. Stake's (1967) model for curriculum evaluation can be applied conceptually to other planning levels and curriculum segments including relatively short lesson activities. One of Stake's major concerns is to try to achieve some description and judgement of what a teacher intends to do and what he or she does, i.e. a description of *intentions* and *outcomes* and the match between the two .

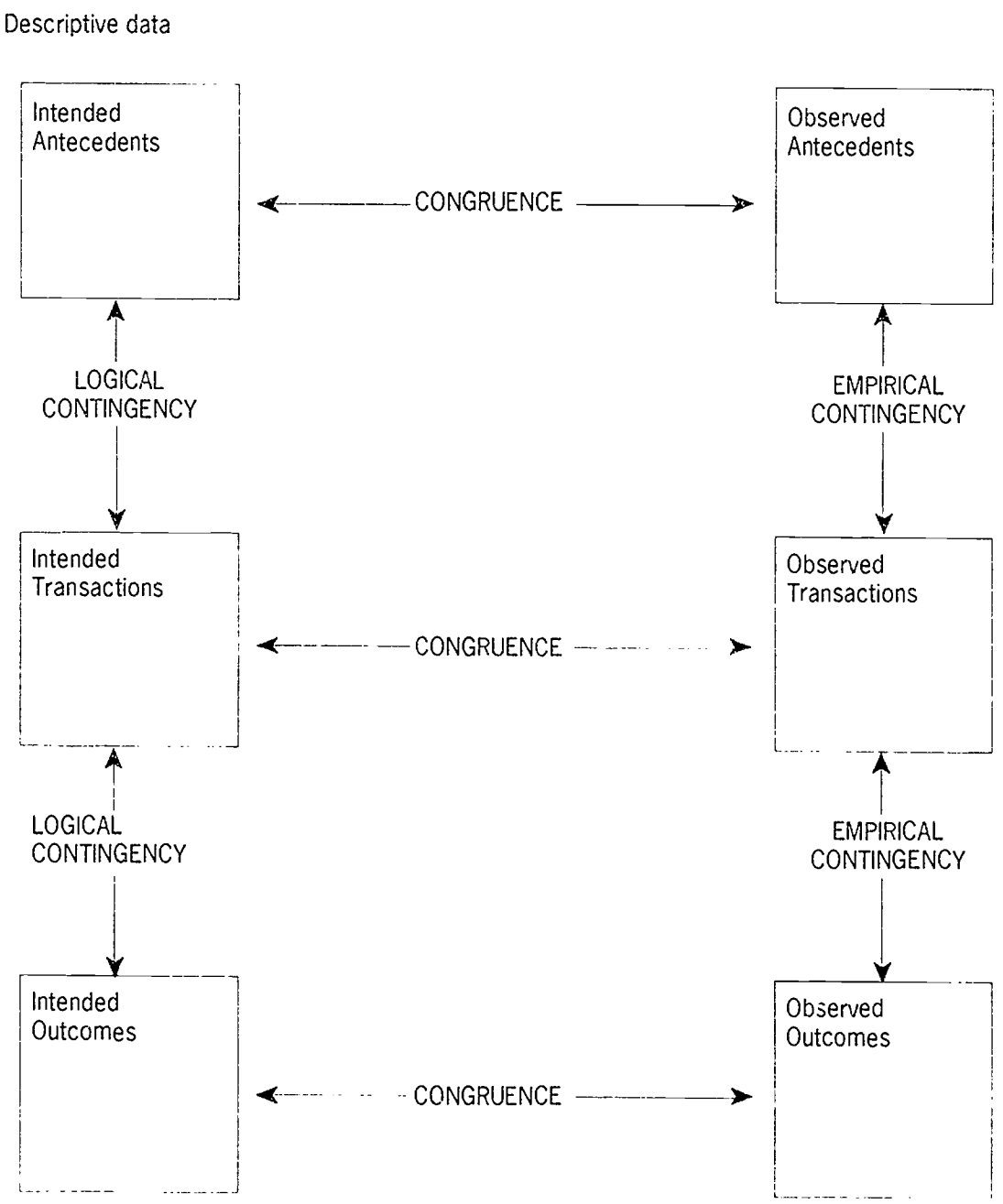
To accomplish such tasks a comprehensive plan is needed (Figure 5.22). Stake prescribes three areas in which data should be gathered which he labels antecedent, transaction, and outcome data. An *antecedent* is any condition existing prior to teaching and learning which may relate to outcomes. Familiar antecedent conditions include student aptitude, previous experience, willingness, and interest as well as resources available. *Transactions* include, for example, teacher to student, student to student, parent to student, parent to teacher, and author to reader interactions and any others affecting the process of education. Class discussion, doing homework, using a video, marking work, completing an exercise, answering a question, all fall into the transaction category. *Outcomes* include the achievements, attitudes, and aspirations of students and teachers, wear and tear on equipment, and impact on students, teachers, and administrators, for example. Simply to view what is happening in a classroom as an interaction of antecedents and transactions contributing to outcomes is helpful and directly relatable to planning activities. To expand the concepts further and examine the relationships between intended and observed antecedents, transactions and outcomes, is a valuable evaluation strategy.

In planning the settlement siting activity for example, most teachers will first ask, 'What prior learning has been achieved in this field?' 'How easy or difficult is it going to be to settle students down?' 'How do I need to introduce the exercise?' 'What level of interest are students likely to display?' 'Do I need to try to motivate students?' 'How?' 'With visuals or a short initiating exercise as suggested in Chapter 1 on the location of settlements?' 'Do I work from an overhead transparency of the settlement site sketches or give everyone a copy?' 'Do students work individually or in groups?' 'Is it a written or oral exercise or if a combination how is this organized?' 'How do I judge outcomes?' 'Do I construct a test? Give homework? Sum up the generalizations myself? Record the decisions and generalizations from class discussion on the board as notes? Ask the students to make notes?' All these are quite small yet crucial decisions which need to be made in relation to antecedents, transactions, and outcomes in planning a short learning activity. Wider questions obviously pertain to the concepts of antecedents, interactions, and outcomes in a larger curriculum context but we can always ask, 'Have I planned with these three concepts in mind?' 'Did my plans work out?'

Contingency and congruence

Two additional concepts are important in filling out Stake's scheme and tying the first three concepts together—contingency and congruence. Contingency refers to unraveling the relationships among antecedents, transactions and outcomes and congruence to the general fit between intentions and outcomes.

Figure 5.22: **The elements in Stake's model of evaluation**



SOURCE: Stake, R. (1967) 'The countenance of educational evaluation', in Taylor, P. and Cowley, D. (eds), *Readings in Curriculum Evaluation*, William Brown.

Conclusion

I began writing the English edition of *Learning Through Geography* in the late 1970s. A clear strand in geography education and teacher education at the time was the concern to articulate how lessons and activities might best be planned. How could the concept of a lesson, an activity or a segment of work be conceptualized and set out so as to help beginning teachers select and sort out not only the ***content*** of work but to choose resources and activities so as to engage students' thinking in active ways.

At the same time, and in the earliest stages of its development, ideas from curriculum theory were being integrated into geography education and teaching. Different conceptualizations (reviewed in Chapter 1) of how to select from the content of geography were being formed and used. The necessity of a device for selecting content has been evident in the suggestions put forward by GENIP and others as they have sought to foster the renaissance in geography education in the United States.

Out of the concern to develop interesting lessons or activities and to set planning within a general framework of curriculum concepts and ideas (areas, objectives, processes) the phrase curriculum unit came to be used. A curriculum unit is a series of lessons or activities or segments of work which are linked by a common topic, theme or issue, for example. The common topic, theme or issue may be further subdivided by key questions or key concepts which when subject to an enquiry develop an understanding of some significant aspect of geography.

The key questions or concepts suggest the objectives of the study in a more particular sense than conveying for example, that an aspect of people environment relationships is being studied. What is the ecosystem? How has it been changed? Can it be altered again? Give a sense of the particular understandings to be developed within a broad view of geography as about, in this example, people environment issues or relationships. Alongside the fairly specific key ideas or concepts are set teaching/learning activities which indicate what students will be doing and achieving in an enquiry framework to come to some understanding of, for example, a particular ecosystem or a re-development situation.

In a curriculum unit set out for examining London's Docklands, Louise Rutter in Figure 5.23 details the key questions, skills, teaching/learning activities, resources, and modes of assessment to give a clear sense of how lessons/activities/segments of work are linked together to achieve an overall understanding of London's Docklands. Looking back to Clegg's work we can see that the key questions and resources represent the way through to developing ***the product,*** the understanding of certain matters geographical. The teaching/learning activities and skills represent on the other hand the learning ***processes*** which need to be engaged if understanding is to be developed and enriched.

Each lesson/activity/segment of work will have the elements of product and process within it just as linked lessons/activities/segments of work making up curriculum units will develop from the episodes a larger more comprehensive story to fill out understanding of geography.

It is the link between learning geography and how to arrange that learning that led me to call this book *Learning Through Geography*. We want to teach and to have students learn geography, we also want them to learn how to learn. In these five chapters I have tried to suggest teaching/learning strategies appropriate to learning and to learning geography.

Figure 5.23: **London Docklands Scheme of Work: Lessons One to Three**

KEY QUESTIONS	SKILLS	TEACHING/LEARNING ACTIVITIES	RESOURCES	ATS/AVERY HILL CORE UNITS: III	ASSESSMENT
Where are the docks? What is their history, especially in employment? Why did decline occur? #1	Use of Atlas/ photo description/ table representation of map data/ explanation of pattern/ comprehension.	Locating Docklands in Atlas/use of wall maps/ brainstorming questions about Docklands/reading 'History of London Docks'/individual work on closure of Docks; worksheets (photos, map, table)	Atlases. Wallmaps. Docklands outline maps. Worksheets: 'Closure of Docks'. 'Why did docks close'. Information sheet 'History of Docklands'. Field trip consent slips. Gum stick. Blackboard and chalk.	AT1: 4e; AT2: 7a; AT4: 5c, 7b, 7c. CU1: 3.1, 4.1, 4.3, 5.2	HOMEWORK: Word fill: 'Why did the docks close?' Testing both knowledge and comprehension
What was the impact of decline in the London Docks? How could a derelict dock be redeveloped? What problems face the planners? Which conflicting interest groups might be involved? #2	Reconciling dock sketch with aerial plan/group work/creative design and mapping of a 'Redeveloped Dock' using key/decision-making and justification.	Question and answer recap/reading 'What was the impact of the declining Docks?'/ question and answer about 'Development of a Dock' worksheet/ reading 'planning strategy' worksheet/ discussion of OHP/ group work : designing/ drawing a redeveloped Dock.	Wallmaps. Information sheet 'What was the impact of the declining docks?' Worksheets: 'A dock development', 'Planning strategy'. Banda: Blank card. OHP: 'Alternative strategies for redeveloping a dock' and OHP projector. Coloring pencils. Gum stick. Fieldwork consent slips. Blackboard, chalk.	AT1: 2b, 6b AT4: 3d, 4e, 6b AT5: 4c CU2: 2.2	HOMEWORK: Task B, Questions 4 and 5. Description, justification, evaluation of success / problems, of their group plan.
What is the LDDC? What are its aims, method and achievement in redeveloping docklands? (LDDC: London Docklands Development Corporation) #3	Mapwork/ comprehension and assimilation of information from worksheets to summary table.	Group feedback on plans / identify key questions of lesson/pair mapwork : using A3 Docklands maps to fill in key on smaller outline map/ read through worksheet 'Inner City Redevelopment' together / Teacher brief outline of other 2 work sheets and pass round Canary Wharf photo / OHP of instructions: answering questions and making table from worksheet information. Class Activity.	Wallmaps. Docklands outline maps/ A3 maps. Worksheets 'Inner city redevelopment', 'Exciting new developments'. Photosheet 'e.g.s of development on Isle of Dogs', OHP: 'Redevelopment of docklands' and projector. Gum stick. Canary Wharf photo.	AT2: 4b, 4c, 6a, 7a, AT4: 4e, 5c, 6b, 7b. AT5: 3b	HOMEWORK: Enquiry spider diagram of questions you would ask the LDDC if you were a Local Councillor. Testing enquiry skills and understanding of issues causing conflicts of interest.

Continued

Figure 5.23: **London Docklands Scheme of Work: Lessons Four to Six/Fieldtrip**

KEY QUESTIONS	SKILLS	TEACHING/LEARNING ACTIVITIES	RESOURCES	ATS/AVERY HILL CORE UNITS: III	ASSESSMENT
Who are the winners and losers of the Docklands redevelopment? Why? #4	Listening/ relevant note taking/ balancing both sides of argument to make informed personal choice.	Individual thought about 'who benefits?' Column of last lesson's table/feed-back on homework enquiry diagram as lead into video/ Careful reading of Banda 'A Case Study of Redevelopment in the Inner City : Winners or Losers?' With check on understanding/ Video : World in Action: 'Winners and Losers', Teacher pausing to ask important questions, students note-taking.	TV and Video recorder. World in Action video, '89, 'Winners and Losers', Video notes. Banda: 'A case study of redevelopment in the inner city: 'Winners and Losers'. Wallmaps. Blackboard and chalk.	AT2: 2c, 4c, 6a AT4: 4c, 4e, 7b, 8b AT6: 3b, 6c CU1: 4.2, 5.2 CU2: 2.1, 2.2, 5.1, 6.2, 5.3, 6.2	HOMEWORK: Banda Task. Outlining arguments of 2 winners/2 losers as rapid script. Trying to complete 'who benefits' column of table. Testing comprehension/ perception/ literary skills.
Are recent developments in the Docklands largely for the benefit of wealthy outsiders, not local people? #5	Debating/ presentation/ extraction of relevant detail from various sources/role play/ability to formulate coherent argument /interpreting geographical relationships between variables	Brainstorm possible lines of argument/ 6 small groups prepare for debate on role : summarising key points, formulating questions for opposition — using resource sheets to help / Group presentations of their summaries / Class debate — teacher as chairperson / Voting out of role after summing up.	Wall maps. 'Debate Audition'. Wall display. Resource sheets a) PRO Development: 'Exciting New Developments', 'e.g.s of Development, leaflets, questions to think about b) Anti development: Housing', 'Local issues of concern', Blackboard and chalk.	AT1: 7c AT2: 2c, 4c, 6a, AT4: 4c, 4e, 8b. AT5: 3b, 6b CU1: 4.2, 4.5b, 5.2. CU2: 2.1, 2.2, 5.1, 5.2, 5.3, 6.1, 6.2 6.3	Overall gauge from debate of kids' learning so far about issues, facts of docklands redevelopment, and coherence of views. Also observation of these new skills.
FIELDTRIP. What do the Docklands look like? How has the LDDC promoted the regeneration? What kinds of redevelopment have occurred? What are your impressions of these? What do you think about the changes? Future of area? FOLLOW UP. What we learnt on fieldtrip? #6	Map work/ observation and judgment/data recording/ environmental assessment/ questionnaire usage/ tallying / individual and pair work Evaluation of findings into a précis of Docklands renewal.	Fieldwork techniques and exercises : see London docklands booklet (Appendix) for detail/visit to LDDC Visitors Centre. Informal feedback on trip / class discussion through questions based on fieldtrip knowledge and understanding objectives/ explanation of follow-up tasks on worksheet/silent reading through tasks and querying areas not understood / individual use of fieldwork booklets to answer worksheet tasks.	London Docklands field trip booklets. Clipboards. Spare pencil, Money for tickets. Camera. 2 other staff members. Wall maps. Completed Docklands booklets. Fieldwork plan. Worksheet: 'London Docklands Fieldtrip Follow-up.' Blackboard and chalk.	AT1: 36, 5c, 7e. AT2: 2c, 3d, 6a AT4: 3b, 4b, 4c, 6d, 8d AT5: 3b, 4c, 6c CU1: 3.1, 4.2 CU2: 2.1, 2.2, 5.1, 5.2, 6.3	Insight shown in completed fieldwork follow-up / finished for HOMEWORK, plus, detail. Pertinence of questions on fieldtrip!

Continued

Figure 5.23: **London Docklands Scheme of Work: Lessons Seven to Eight/Fieldtrip (continued)**

KEY QUESTIONS	SKILLS	TEACHING/LEARNING ACTIVITIES	RESOURCES	ATS/AVERY HILL CORE UNITS: III	ASSESSMENT
How have employment opportunities and structure changed in the Docklands? #7	Using, interpreting and analysing simple statistical data/ graphical and diagrammatic representation of stats./ collating range of information into logical account/pair work.	Recapping on traditional docklands employment / reading "Wastelands to Wealth' paragraph as reminder / Class read through "Employment in London Docklands" introduction to topic — copy into books/ Go through Section A of statistics sheet together as example — using OHP as blackboard, questions and answers / Check understanding of headings/ Pair work interpreting statistics / Individual application of statistics to answer Avery Hill syllabus question (Key Question of Lesson) and illustrate with 2 diagrams / pie charts etc. constructed from stats.	Worksheets 'Employment in London Docklands'. 'Statistics on London dockland employment' OHP, projector, pens: for use instead of blackboard. Graph paper. Calculators. 'Wastelands to wealth' worksheet, coloring pencils.	AT1: 7e AT2: 6a AT4: 4c, 7b CU1: 2.1, 3.1, 4.1, 4.2, 4.3, 5.2	HOMEWORK: Comprehension, accuracy and analysis shown in the completed answer to key question begun in class time.
How can the Docklands work be applied to Avery Hill Exam questions? #8	Extraction of relevant information from a mass of sources and application to a question/ Essay planning/ Comprehension of what question wants/ Group work	Brainstorming group for essay plan structure of last lesson's Avery Hill question/ Constructing good essay plan — with prompting as necessary — from brainstorm, for kids to note/ Group essay planning within time constraints of 2 more Avery Hill key questions about causes of environment change; and housing and services/ Group feedback into whole class essay plan to copy down from board.	Evaluation Sheets. Blackboard and Chalk	ATS Collation from whole unit CU1: 2.1, 3.1, 4.1, 4.2, 4.3, 5.2 CU2: 5.1, 5.2, 5.3, 6.3	HOMEWORK: Evaluation of docklands content and teaching; and of pupil strengths/ weaknesses.

Source: Louise Rutter, unpublished curriculum unit assignment in geography, Institute of Education, University of London, 1992.

N.B.
- One of the syllabuses and examinations available to teachers and students (at approx. 16 years of age) is commonly known as the Avery Hill syllabus administered by the Welsh Joint Examination Committee.
- ATs refers to attainment targets listed in the National Curriculum Document for Geography in England and Wales.
- CU stands for Core Unit.

APPENDIX 1

AN EXAMINATION ACTIVITY

Congruent with enquiry

Geog. (16-19 Project) 1
219

UNIVERSITY OF LONDON
SCHOOL EXAMINATIONS BOARD

General Certificate of Education Examination

JUNE 1991 ADVANCED LEVEL

Subject Title	**Geography (16-19 Project)**
Paper No./Title	**Paper I—Decision-Making Exercise**
Subject Code	**No. 219**

Two and a half hours

This paper consists of one decision-making question which carries 50 marks. You should take time to read the question and study the data carefully.

Before starting work, check that, as well as this question paper, you have the following documents:

(i) The Resource Booklet
(ii) Photographs (enclosure 9)

Reference may be made to the Examination Atlas.

You are reminded of the necessity for good English and orderly presentation in your answers. Credit will be given for the use of diagrams and sketch maps where they are appropriate.

The University of London School Examinations Board wishes to acknowledge the co-operation of the World Wide Fund for Nature Education Department in the preparation of this paper.

M 0560 GK 4M JG 4/4/5/10/11600

Turn over

ASSESSMENT OF THE KORUP PROJECT, REPUBLIC OF CAMEROON

For the purposes of this exercise, you are asked to assume the role of a participant in 'Operation Raleigh'. You will have ten weeks' experience, attached to the WWF (World Wide Fund for Nature) which administers the Korup Project. You will be working within Korup National Park, largely in the six villages which may need to be resettled, and in the Buffer Zone which has been created around the Park. It is in this zone that most of the development proposals are to be implemented. A letter of instruction gives you full details of the tasks. The data, maps, diagrams and graphs in the Resource Booklet and the photographs will provide you with the information you need to supplement your geographical knowledge and skills.

REPORT AND MARK ALLOCATION

1. Explain how the aims of Korup National Park may conflict with existing and future development within the Korup Project area. Suggest how these potential conflicts may be minimized. **(12 marks)**

2. (a) Evaluate the roles that the various development proposals (A - D on Enclosure 4(c)) might play in the Korup Project. State, using evidence, your views on how proposals A-D should be managed.

   (b) Assess the impacts that these proposals might have on the environment and the communities. **(24 marks)**

3. *EITHER:*

(a) Outline a programme of fieldwork which you consider is necessary to monitor the impacts you have identified in 2(b).

OR:

(b) Suggest further possible development proposals for the area when in 1995 the first phase, involving development proposals A - D, has been implemented. **(14 marks)**

(TOTAL: 50 marks)

UNIVERSITY OF LONDON

SCHOOL EXAMINATIONS BOARD

General Certificate of Education Examination

JUNE 1991 ADVANCED LEVEL

GEOGRAPHY (16-19 PROJECT)

Paper I

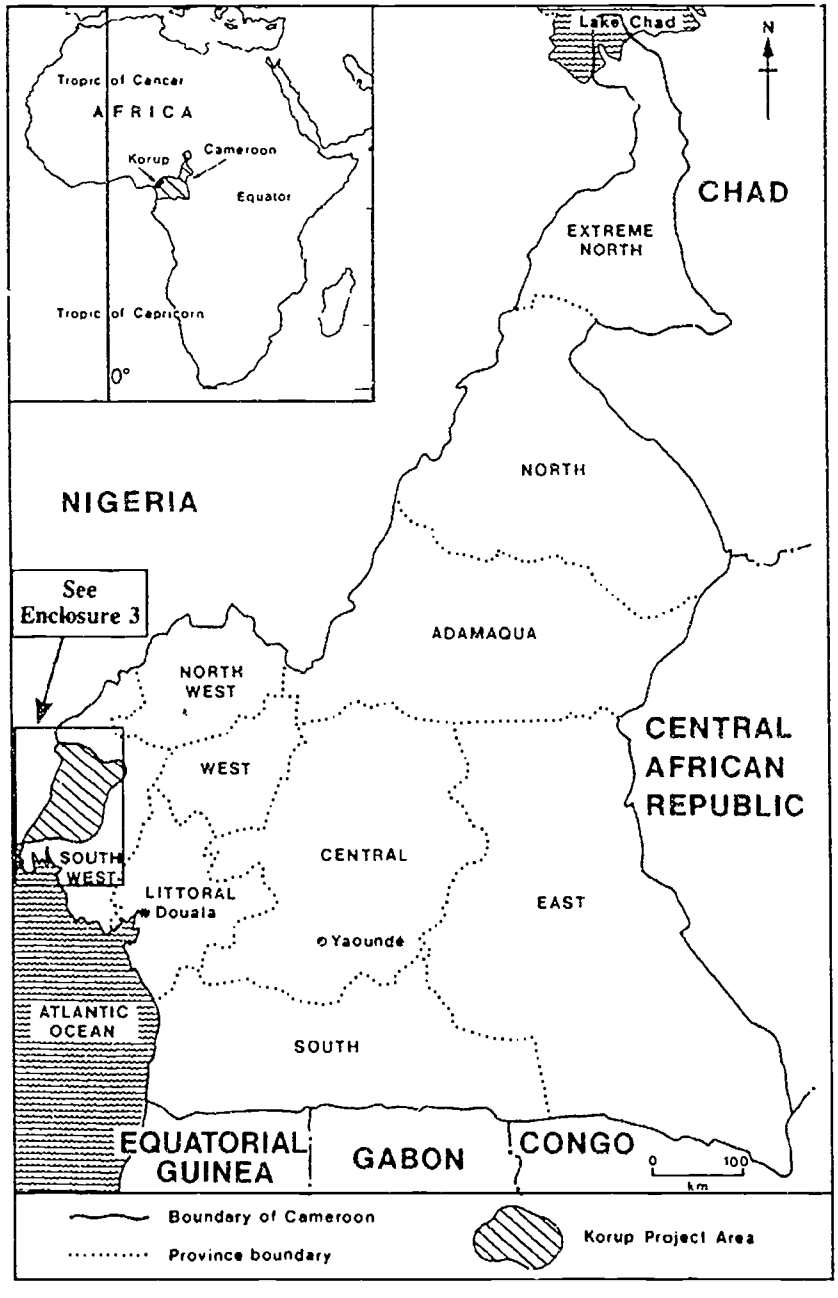
Resource Booklet

M 0560 GK4M JG 4/4/5/10/11600

Turn over

ENCLOSURE 1

WHERE IS THE KORUP PROJECT?



ENCLOSURE 2

A CONCISE GUIDE TO THE KORUP PR´ JECT

The Korup Project is located in the South West Province of the Republic of Cameroon (see Enclosure 1). It consists of Korup National Park, which was created in 1986 on State-owned land, and the Buffer Zone, an area of land surrounding it, in which economic development is encouraged, except in the three forest reserves (see Enclosure 3). In 1988, an agreement was signed with WWF UK for technical assistance in managing the Project.

Korup is part of a large vegetational association which once extended over most of Central Africa: tropical rainforest, the most species-rich ecological community on earth. Every minute, every day, somewhere in the world, the equivalent of 20 football pitches is cut down or badly destroyed. But in Korup, unlike elsewhere in Central Africa, most of the rainforest is still in virgin condition. This area also contains noteworthy fauna, such as forest elephants, buffalo and chimpanzees, as well as over 250 bird species.

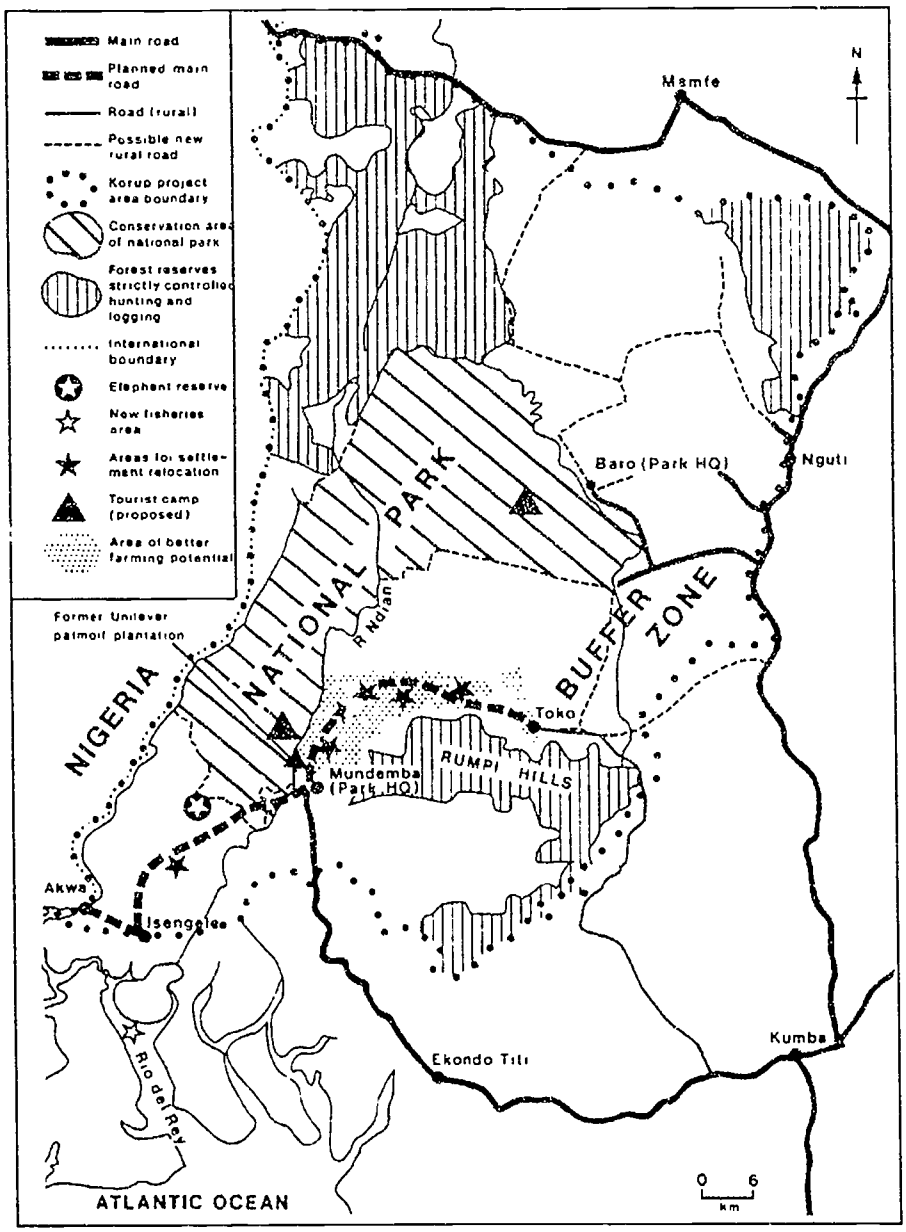
Korup is fortunate in lacking the conventional economic wealth, such as minerals, sought by developers. Remoteness, especially in the west, makes commercial timber difficult to extract. A combination of rugged terrain, easily impoverished soils, and an annual rainfall of up to 6000mm limits commercial agricultural use such as plantations. Hunting and trapping are a way of life for the tribal villagers, as there is lucrative trade in dried smoked meat across the border to the large market of Nigeria. As these activities disturb the forest ecosystem, they will become illegal within the National Park, and strictly controlled in the Forest Reserves.

The management objectives of Korup National Park are scientific, educational and touristic. At present there is no provision of visitor facilities, or any form of park zoning. Although much biological and ecological survey work has been carried out, there are no laboratory facilities for researchers yet.

The Korup Project recognizes that the future of Korup National Park will certainly be limited, unless sustainable forms of land use are promoted in the Buffer Zone. It is by no means unusual to find negative attitudes towards forests and their conservation within local communities, and Korup is no exception. Thus, all the Korup Project developments must be integrated with the regional management plans for all of South West Cameroon and with rural development in the Park's surrounding area. The local people must be educated as to the Park's purpose and must be fully involved in the whole development process.

ENCLOSURE 3

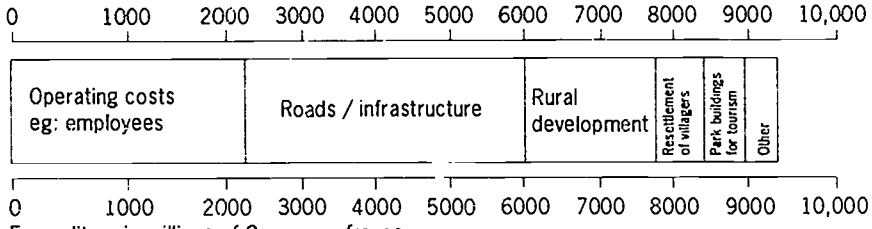
MASTER MAP OF THE KORUP PROJECT



ENCLOSURE 4

THE KORUP PROJECT

(a) EXPENDITURE



Expenditure in millions of Cameroon francs

(b) PLANNED PROGRAMME OF ACTIVITIES

	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95
Air photography		—				
Vegetation mapping			—			
Soil/land — use surveys			—			
Mundemba-Toko road — design		—				
Mundemba-Toko road — construction			—	—		
Mundemba - Isangela road — design		—				
Mundemba - Isangela road — construction			—	—		
Rural road repair		—	—	—	—	—
Agriculture, livestock, fisheries development	—	—	—	—	—	—
Water supply/health/education provision		—	—	—	—	—
Village resettlement— planning		—	—	—		
Village resettlement— relocation			—	—	—	—
Conservation education/awareness	—	—	—	—	—	—
Tourism facilities development				—	—	—
Forestry program — tree nurseries	—	—	—	—	—	—
Forestry program — forest demonstration plots				—	—	—

(c) Summary of Development Proposals

A	Agricultural development in Buffer Zone — includes cropping, livestock and agro-forestry plans.
B	Other rural development projects — includes forestry, fishing, rural crafts and workshops, and hunting and trapping management.
C	Alternative employment — includes new industrial developments and tourist-related activities.
D	Infrastructure — development of new roads, health and education schemes, provision of water supplies and power, and possibilities of new villages for resettled tribal peoples.

ENCLOSURE 5

WHAT THE EXPERTS SAY - A SUMMARY OF RECENT REPORTS

(A) SOIL/LAND USE

The soil chemical analyses show the inherent low fertility of all the soils. Soil erosion remains a potentially serious problem anywhere in the area. It is limited only because the present small-holder farming system of bush/fallowing relies on small fields and rarely leaves the surface totally bare. Land quality is non-viable for high technology farming such as plantations except near Mundemba. Any road developments could lead to a population influx and over-cultivation of areas such as the Rumpi Hills.

(Land Capability Survey, 1986)

(B) FORESTRY

Forestry development programmes must be integrated with agricultural development as the granting of logging licences can destroy the crops and land. Where the forests are of sufficient potential and are accessible, basic forest management strategies must be followed (tree nurseries, logging licences, permitted size and species quotas and close felling supervision). Further scientific surveys are needed to identify useful and unknown food and medicinal products. Agro-forestry techniques should be pioneered (see photograph 4).

(Synnott, 1988)

(C) FISHERIES

Fish is an important source of protein (30% of the local people eat fish four times a week). Surveys of existing operations in Rio del Rey are needed to investigate levels of pollution and toxicity, as well as overall fish stocks. Fisheries licensing and regulation may be needed. Surveys of the economics of fish farming and tropical fish exporting are needed. The Korup Project may designate some freshwater and marine nature reserves, and the impact of this decision needs investigating.

(Reid, 1989)

(D) LIVESTOCK HUSBANDRY

There is no tradition in the area of successful livestock farming. Practical help is therefore required on penning, feed storage, animal health, animal use etc. Guidance is also needed on the development of sour milk/yoghurt products, poultry housing, hide curing and meat packing. Encouragement is needed for villagers to use animals as manurers, and as living weeders. There is much potential here, even allowing for the remoteness of the region and the poor quality of the pastures in the dry season, if only tribal taboos can be overcome.

(Adapted from Wood, 1988)

(E) HUNTING

As a basis for sound management, research should be carried out to determine present numbers of wildlife in the whole Project area. Jobs with the Project and the development of livestock husbandry should reduce dependence on hunting. Great sensitivity is required if hunting controls are to be enforced. A quota system should operate in the Buffer Zone, with hunting permits for local tribesmen. Game guards must be appointed to enforce hunting bans within the National Park, as there is no way that controls can be introduced without increasing staffing. Certain species, e.g. rats, which are common and cause widespread crop damage, should be free from any hunting controls.

(Infield, 1988)

(F) CASH CROPS - MARKET SURVEY

The three existing cash crops were investigated: coffee, cocoa and groundnuts. There were problems of fluctuating world prices (coffee/cocoa), problems of quality and marketing from the thousands of smallholders (coffee) and problems of remoteness for high bulk/low value products (groundnuts). Oil palms may be viable, with the closure of the Unilever plantation. Research was carried out on two new potential products: kola nuts and peppers. Difficulties of financing tree crops, which represent long-term investments, and the threat from loggers, remain.

(After Ruitenbeek, 1987)

(G) CONSERVATION AND CONSERVATION EDUCATION

Protectionist management can create conflicts with local communities holding traditional rights to exploit resources in the designated areas. A conservation area established without the consent of the local people will only be a 'paper park'. Conservation education of decision makers, governments, local villages and park visitors is vital to ensure the success of the Park. Awareness-raising as to the purposes of the Park, and the ways sustainable economic development can operate in practical terms, is vital. Environmental messages should be part of schooling, worship and village life.

(Adapted from Connor, 1989)

(H) RESETTLEMENT PROGRAM

Resettlement of the six villages within the Park is an essential feature of the Project to solve the problems of hunting in a conserved area and forest destruction for fuel and farming. Resettlement should be voluntary, and achieved through powerful persuasion of the Chiefs. Compensation should be paid (perhaps in kind) and substantial benefits, e.g. new schools, piped water and power, be offered as part of the package. At all times the community should be involved in the planning process.

(Adapted from Devitt, 1988)

(I) TOURISM

There is a critical shortage of trained and educated staff in this sector. Although Korup has a high profile world-wide and attracts many international scientists and researchers, it is by no means ready for mass tourism, even though such tourism has the ability to contribute to the local and national economy. Management of forest tourism is always difficult compared to grasslands, as viewing (in a hostile environment) can only be on foot. Tourist potential is likely to be for specialist groups interested in birds, butterflies etc., but facilities of all types will need to be designed and managed.

(Tourism Plan, 1989)

(J) RURAL DEVELOPMENT

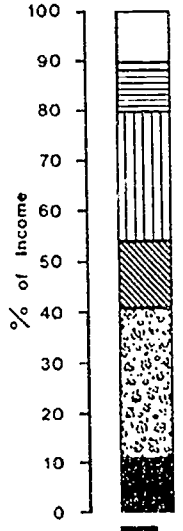
Intensified creation of job opportunities, especially in agriculture, is required. A rural development authority should be established to develop industries, services such as clinics and schools, to develop tourism facilities and to extend and develop the infrastructure. Diversification is the key to stemming the rural exodus. Malleson's recent report suggests that at present, with low rural population densities, there is little malnutrition but as life expectancy continues to improve and infant mortality decreases, there could be nutritional problems. Certain killer diseases such as malaria are widespread.

(M.E.A.L. Government Plan, 1986)

ENCLOSURE 6

TRADITIONAL VILLAGE LIFE IN KORUP

(a) The Mean Relative Importance of Various Classes of Economic Activities to the Six Villages within the Park



Notes

1 Cocoa *is* the main cash crop in spite of the isolation of villages — grown by older villagers — perhaps a survival from colonial German rule.

2 Bush mango is the main forest product collected. Only in accessible areas is timber felling significant.

3 Trading with Nigeria is very important. Products include food surpluses, cash crops, palm oil wine.

4 Trapping is more important than hunting — but the figures are probably an underestimate because of fear/distrust. Hunting supplies bif (meat) for trading.

5 Fishing is not a major earner. but it is very important for nutrition as, with beans, it is the most common source of protein.

(b) Mean Crop Areas Planted, Yields, and Crop Sales per Farm

Crop	Hectares in kilograms	Production kg/ha	Yield sold	Percentage comments	Fieldworker
Cocoa	1.1	735	625	100	
Coffee	1.0	349	349	100	
Maize	0.1	214	2140	45	
Cassava	0.5	7880	15760	58	Locally traded in the form of flour.
Cocoyam	0.3	1219	4063	19	Staple diet - shortage.
Yam	0.2	222	1110	19	
Groundnuts	0.1	77	770	59	Low value high bulk for export.
Beans	0.1	n/a	n/a	5	Short supply.
Sugar Cane	n/a	1069	n/a	58	
Bananas	<0.1	1977	<19770	43	Main food crop, most regularly eaten.
Palm Oil	0.2	196	980	24	Traded between villages. Unilever plantation now closed.

Note: Mean farm size: 2.5ha Crops frequently intercropped. Mean 3.9 workers per farm.

Source: Agricultural Census, SW Province, Cameroon

ENCLOSURE 7

WHAT THE TRIBAL PEOPLE FEEL ABOUT THE KORUP PROJECT

Awareness of the purpose of the Park

- 'The white people came and made Korup National Park - they are responsible for all these problems we now face.'
- 'The Government wants to take over all the forest areas. They will then sell the land to foreign companies for timber or palm oil. They are moving in.'
- 'The Government wants to preserve our animals for future generations. It is a good idea.'
- 'The game guards will take our bif (meat supply) away. We are angry - that it is what we know about Korup National Park. The forest is huge - why does it need to be preserved?'

(27 replies - 9 in favor of the Park, 18 against)

About the need to relocate the six villages

- 'If my people leave the forest, others from Nigeria will move in and there will be war.' (Chief)
- 'This place is a good place. Our fathers were not fools when they chose it seventy years ago. We will be moved to an unknown place, with bad spirits and I will die.' (Old man)
- 'We will lose our tribal lands and my sons will blame me. How will we own land in an area owned by another tribe?' (Korup tribesman)
- 'Resettlement will bring a new school, water supplies to each house, electricity for modern machines, a new road, new jobs . . .' (Educated 23 year old)

(Half favor relocation, half do not)

Attitudes to possible regulation of hunting and trapping

- 'Hunting is too hard work, I don't like to struggle in the bush with this hunting but I need to get big money fast.' (Young man from Ekundukundu)
- 'If I can make a farm for cocoa, and with the new road who knows, when I die my son will get it. Hunting leaves nothing.' (30 year old man from Erat)
- 'Hunting controls — it's no worry for us — go for the big boys from Nigeria who use modern hi-tech trapping methods.' (Chief of Bakoko in Bera)
- 'It would be a brave man who would take my bif from me.' (Elder from Erat)

(Overall Survey:
35% prepared to stop hunting
65% not prepared to stop hunting)

Attitudes to wildlife

- 'We are killing off the wildlife too fast, I have to hunt for my family.'
- 'I am educated to standard 7 — I have lost my job at Unilever Palmoil plantation and I would like a job as a game guard or tourist guide in the forest.' (Young Erat villager)
- 'It's good if the wildlife reduces; as the land is being more developed for farming we cannot afford the crop losses.' (Farmer from Ikenge)
- 'Almost all the people of the area depend on wildlife for animal protein; they will need land to grow food crops.' (Health worker Mundemba)

Adapted from: Infield, The Hunting Question. 1988

Erat, Ekundukundu, Bera. Ikenge, Esukutan and Barekabatanga are villages within the Park which may need to be relocated (see Enclosure 8).

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ENCLOSURE 8

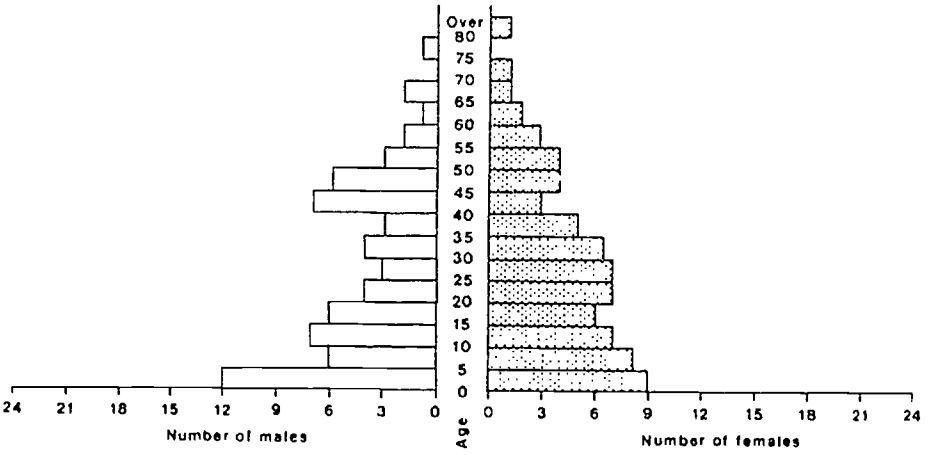
Settlements in the Korup Project Area

		Settlement	Tribe	1988 Households	Population 1972	Population 1988	Services	Population Distribution
Inside Park		Erat	Korup	38	187	278	Primary school	
		Ekundukundu	Korup	18	64	92		
		Esukutan	Bakoko	22	81	155	Primary school	6%
		Bera	Bakoko	12	40	55		
		Ikenge	Bakoko	22	100	146		
		Barekabatanga	Batanga	7	90	24		
Outside Park	NE	16 villages	Bima Batanga, Korup Ejagham.	189	1040	1140	Several Primary schools	9%
	S	Mundemba	Mixed	N/A	5000	6628	Town facilities Several schools	85%
	S	Ndian, including Unilever Palmoil Estate	Balonda, Badiko.	N/A	4100	3000	Three schools	

Note: the six villages in the Park will be resettled in the Buffer Zone.

Source: Devitt, P. Socio-economic Survey of Korup 1986.

Population Pyramid for a Typical Korup Village



LETTER OF INVITATION

Orbit House
Milton Keynes

Wayne Houston, Swindon
Tracey Balu, Oldham.

I am delighted to tell you that, following your interview and selection tests, you have been awarded one of the most exciting 'Operation Raleigh' placements we have to offer. You will be working for ten weeks with WWF (World Wide Fund for Nature) on the Korup Project in the Republic of Cameroon, in Central Africa. We were very impressed by your competence in languages and fieldwork, and your good knowledge of both agriculture and ecosystems (all of which will be most useful as you will be working with the tribal peoples in the six villages within Korup National Park). These people may need to be resettled, as their way of life (hunting, farming, etc.) conflicts with the conservation aims of the National Park. At the moment many of them, especially the older men, have a very negative attitude towards the Project.

You will be involved in *three* major tasks.
• Initially, you will need to identify the potential conflicts that might arise between the conservational aims of Korup National Park and the development of the area. You will be preparing draft notes for the materials which will be used to educate village communities as to the purpose of the National Park, and also how conflicts might be minimized by 'sustainable' development and people involvement.

• For most of the time. you will be evaluating the suitability of various development proposals. which will largely take place in the Buffer Zone. This is the zone immediately surrounding the National Park, which forms a vital part of th- Korup Project as, without economic development within this area, the ideal of the National Park could never become a reality. You will need to look at the ways in which agriculture should be developed and how this relates to other primary activities, as well as considering what alternative employment may be required for the expanding population. Equally important are the plans for development of infrastructure, which are being used as a 'carrot' to persuade the people of the six villages to resettle in the Buffer Zone. You will need to look at possible impacts on the environment and the community and identify any potential problems.

• As you finish your time in Korup, and get to know the area well, I would like you to do one of the following two investigations:

We need advice on either a fieldwork programme for monitoring the impact of the various development proposals, *or* you might prefer to look at possible projects for the period beyond 1995 when the first phase finishes. Perhaps you could use your knowledge of energy resources, hydrology and industrialization here.

I am enclosing a Resource Pack for you, so that you can familiarize yourself with some of the background to the Project — see the itemized list overleaf. I'm also sending you a selection of photos, which give you the best feel of Korup.

The next time we see you will be at the Godalming offices, for a training weekend, including a crash course in the local language. Meanwhile, keep working at the fund-raising. Every hour spent in the biscuit factory, or in your case Wayne, the kitchen will be worth it, when you get off that Swissair flight in Douala.

Best wishes

Simon Lyttleton-Hughes ARCM

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List of Enclosures.

Enclosure I shows you where the Korup Project is.

Enclosure 2 is a concise guide to the Korup Project.

Enclosure 3 provides you with a master map of the National Park and the Buffer Zone.

Enclosures 4 (a), (b) and (c) summarize the development proposals.

Enclosure 5 tells you what the experts say about the environment and communities of the area.

Enclosure 6 gives you information on the traditional way of life and the nature of farming in the area.

Enclosure 7 shows what the tribal people feel about the issues.

Enclosure 8 gives information on the population distribution and structure of the villages in the Korup Project area.

Enclosure 9 is a set of colour photographs.

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