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ON THE NATURE AND LIMITS OF EXPLANATION IN URBAN GEOGRAPHY:
WITH SPECIFIC REFERENCE TO THE SPATIAL STRUCTURE OF
VICTORIAN EDINBURGH

ELSPETH GRAHAM

Thesis submitted for
the Degree of Doctor of Philosophy
in the University of Durham

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ABSTRACT

The thesis is an enquiry into the nature of urban geography, into how we are properly to understand and explain the patterns we find within a city. In Part I the characters of both human geography and scientific method are explored and the question, "Can we study human geography scientifically?" is posed. The answer given is a negative one and much of the discussion is devoted to making plain the way in which it is arrived at. The implications of not adopting a scientific mode of thought in the study of urban and human geography are then traced. The use of models and analogies as theoretical tools is examined and the essentials of theory formulation explored.

Part 2 is concerned with the particular problems of the urban geographer - how he is to determine his object of study and what use he can legitimately make of quantitative techniques. It ends with the positive recommendation that urban geography be studied historically for, it is argued, urban geography is urban history.

Lastly, Part 3 is devoted to Victorian Edinburgh between the years 1851 and 1891. It is an illustration of how the historical account of a city is to be constructed. The nature of historical explanation is further explored in the context of this specific example.

"....the practical danger of an erroneous theory is not that it may persuade people to act in an undesirable manner, but that it may confuse activity by putting it on a false scent."

M. Oakeshott (1962) p.89

PREFACE

The major questions of this thesis are methodological ones, questions about modes of thought and methods of analysis. The purpose of any academic study is to increase man's knowledge and understanding of the world about him and the experiences he has of it. Geography is, by tradition, the academic subject which has the surface of the earth as its object of study. Within geography certain specialisations have emerged and the division between physical geography (dealing with natural landforms) and human geography (dealing with man-made landscape features) has become a popular one. Thus we have urban geography, a subject within a subject, placed firmly on the human side of the geographical divide. We can ask, then, how we are to study urban geography and which analytical methods will increase our knowledge and understanding of the city as a landscape phenomenon. This is a question about methodology. Some of the methodological problems of urban geography are problems for the whole of human geography. In exploring the nature of urban geography, then, questions of a much wider methodological relevance also require to be asked.

Any methodological investigation presents one special difficulty to the researcher, for almost every piece of literature in the subject as a whole is of potential relevance. Every article and every book, if it is not itself a methodological treatise, reveals the way in which the author has approached his subject matter and tells us something about the methods he has used. Where then is the researcher to begin and upon which criteria is he to select his material? In this thesis I have tried to cover the major approaches evident in the urban literature of the past two decades. The organisation of the thesis does not necessarily place these in chronological order, however, for the primary concern is to present a systematic methodological argument which

traces the essential characteristics of the subject matter of human and urban geography and relates them to different modes of thought and methods of analysis. Because the task of the thesis is to establish the fundamental nature of urban geography, I have chosen wherever possible illustrations from the geographical literature which reveal the basic features of the methods being used. Such works are not always the best known. Of all the works I have consulted two deserve special mention. Richard Hartshorne's The Nature of Geography and his later Perspective on the Nature of Geography not only fired my enthusiasm for methodological enquiry but also presented a particular challenge to my own conception of the nature of the subject. Together these two works prompted several of the questions of this thesis.

At a more personal level I owe much to my colleagues and erstwhile teachers at the University of St. Andrews for fostering my interest in methodological questions and, later, for so generously making available the facilities without which the completion of this thesis would have been a far more difficult task. My thanks must also go to the postgraduates and staff, especially my supervisor Dr. Douglas Pocock, of the Department of Geography in the University of Durham where I spent three years in full-time research. Discussions and seminars in both these departments have helped me considerably in the formulation of the argument of this thesis. I am, of course, responsible for any weaknesses that remain.

I am also indebted to the staff of the Edinburgh Room, George IV Bridge Library and of Register House, Edinburgh for their cooperation, to Mr. C. B. Bremner for his advice and help in compiling the maps and other illustrations and to Miss Joyce MacAlindin for her most efficient typing of the script.

Lastly, the writing of the thesis would have been far less enjoyable without the distraction of my family. I am particularly

grateful to my husband Gordon who both corrected the typescript and took a lively interest in several of the topics therein. The many fruitful discussions we have had have greatly aided the completion of the thesis. To him and to my children, Murray and Lindsay, go my thanks for all their patience.

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I N T R O D U C T I O N

A P R O B L E M I N G E O G R A P H Y

It is the purpose of this thesis to explore the whole question of explanation in the field of urban geography in order to clarify both the nature of the questions the urban geographer might wish to ask and the ways in which such questions might legitimately be answered. The considerable volume of literature related to the study of urban places reveals a great diversity of approach to the problems posed and this must surely present the novice researcher with a difficult, if not impossible, choice. It is my intention to examine critically these approaches themselves and in so doing to assess their logical status in relation to the questions they purport to answer; i.e. to examine the coherence of each approach in terms of the answer provided to a certain question or set of questions. Thus an enormous variety of topics will be touched upon in the course of the discussion which follows. The thesis, however, is intended as a whole with the one main argument being developed and pursued throughout. The success of such a methodological enterprise must lie not in an increased knowledge of facts about the world, but rather in an increase in understanding; a greater appreciation of what urban geography is and how it might legitimately be studied.

Parts 1 and 2 of what follows will be entirely methodological, and Part 3 will serve as an illustration of the major conclusions of the methodological discussion as well as providing a specific urban context in which the argument can be further developed. As Richard Hartshorne takes care to point out in his Perspective on the Nature of Geography ,

the purpose of methodological writing is
neither the assertion of independent opinion
nor contentious argumentation, but rather
the clarification of problems of mutual

concern. This purpose necessarily involves logical disputation.....¹

So we are involved here with logic, with the coherence or logical consistency of various claims about human geography and about the methods employed in its study. The arguments presented are matters of logic and if they are sound the conclusions follow from the premises. If the conclusions themselves are to be challenged, then the onus is upon the reader to demonstrate the falseness of a premise or the flaw in the argument. It is not my concern here to offer an opinion or even a variety of opinions on the topics under consideration, but rather to present arguments which necessarily lead to certain conclusions. As Hartshorne comments "this is a different level of rational thought than mere difference of opinion"². It would not be enough to object to the conclusions of this thesis simply by voicing an opinion to, or belief in, the contrary. Matters of logic are open to rational dispute in a way that matters of opinion are not and thus the former and not the latter are proper to an academic discussion.

So far we may agree with Hartshorne as to the fundamental nature of methodological argumentation, but, although the problems involved are similar, it is not the intention of the present writer to follow the approach evident in either the original The Nature of Geography or the later Perspective on the Nature of Geography. Indeed I would take issue with Hartshorne when he supposes that

¹ R. Hartshorne (1960) p.7

² Ibid p.8

"Geography is what geographers have made it"³ and that thus his task is primarily one of empirical research. The problem of determining the nature, scope and purpose of geography would, on this reckoning, be reduced to the detailing and perhaps classification of all available written works by those calling themselves geographers. These need not have much or anything in common save the label attached to their authors. On this account too, the nature of Geography could change overnight at the whim of the geographic community. Hartshorne himself might dispute this account of his conception of the problem tackled in his famous works by pointing out that his claim is 'Geography is what geographers have made it' and that in order to qualify as a geographer a person would have to demonstrate an interest in geographic things such as the landscape. If a geographer wrote an article on 'how to build your own canoe' we should not mistake this for geography. Indeed we shouldn't, but this is merely to admit the absurdity of the original claim, whatever the emphasis, for of course we do have some conception of what Geography is, or should be, which enables us to distinguish geographical writing from say, works in physics or chemistry without knowing anything about the author. To admit that this conception is vague is merely to emphasise that there is a problem in determining the nature and scope of geography, but it cannot be solved by merely looking at what 'geographers' have written because both the determination of who is to count as a geographer and which of their written works is to count as geographical require some preconception of the nature of the subject. Thus the nature itself being presupposed cannot subsequently be determined.

³ Ibid p.8

So I take it that the subject of this thesis, namely the investigation of the nature and scope of urban geography, is not primarily an exercise in empirical research. The literature of urban geography multiplies each year and although it might be interesting to chart the many different areas such research has covered this would not in itself be pertinent here, for the questions of this thesis are of a fundamental nature concerning the logically necessary features of the study of human geography; i.e. those features which set it apart from other academic enquiries.

Nor can we dismiss such methodological questions as unimportant or contemplate them merely as an afterthought, for if geographical research is to be successful in its aim or theoretical in its approach, then we must first understand, and understand clearly, which methods are appropriate to this aim and how we can validly achieve a theoretical approach to our subject matter. As Lukermann remarks,

geographers cannot avoid their methodology or lack of it. One cannot do substantive research without knowing how one explains, and how one explains is methodology.⁴

So this thesis will concentrate on explanation in human geography, on the fundamentals of how one explains.

It would not be irrelevant at this juncture, I think, to mention certain background details concerning the manner in which several problems encountered at an early stage of investigation prompted the methodological discussion which follows. This will

⁴ F. Lukermann (1961) p.5

put the reader in the picture so that the difficulties I encountered initially can better be appreciated as such. We begin with Edinburgh, a large and interesting city varied in both its form and the social characteristics of its inhabitants. This is to be the focus of our study and the intention is to look in some detail at the urban structure of the Scottish capital. In particular two features of the urban form seem of considerable interest. First, the distribution of house-types, a distribution of immense variety not least in the contrast between the elegant geometry of the crescents and squares of New Town houses and the towering irregularity of the Old Town tenements. And secondly, the residential distribution of various social groups; this distribution being revealed by the citizens themselves in their acknowledgement of certain districts as prestige areas and other districts as quite the reverse. Would it not, one might suppose, be of interest and value to investigate these two distributions and, if possible, discover the relationship between them. This was never conceived as a small task, but the more thought that was given to the manner in which the distributions were to be "investigated" and to the way in which any relationship between them was to be established and expressed, the greater the problems that seemed to arise. It became clear that questions of a more general nature would have to be raised pertaining not only to the study of Edinburgh, nor only to the study of urban geography, but rather questions concerning the very nature of the whole enterprise of human geography itself. If we want to ask why a particular group lives in this area or at this particular location within the city, how would we set about answering such a question? Again if we want to construct a model of the urban form of the Scottish capital on what criteria are we to divide up the

urban mosaic? Could we relate types of housing to the social groupings of their inhabitants? If so, in what way? The questions we might want to ask about any urban centre are many and varied, as are the answers we might provide. It is not the content of the answer which is of methodological interest, however, but only the form. If we wish to explain we must understand what is to count as an explanation. Without first arriving at some clear conception of the nature and scope of explanation in human geography the investigation of the urban structure of Edinburgh cannot proceed.

So the main concern of this thesis is to clarify the way in which explanation can legitimately be achieved in human geography, to attempt to lay bare the form such explanation must take. The urban structure of the Scottish capital then provides both context and content for our methodological discussions. We start and end with Edinburgh, but the thesis being advanced is more fundamental to the subject of Geography than the investigation of even that great city alone.

CHAPTER I

BEHAVIOUR AND LOCATION

In this first chapter I wish to examine what I shall call the 'central problem' of locational analysis, in order to see in what manner the major theoretical statements in urban geography deal with this problem, and indeed whether they recognise it as a problem at all. This section of the literature of urban geography was found to be unable to provide a suitable framework for the study of the urban structure of the city of Edinburgh and, in particular, to be devoid of any substantial and applicable guidelines as to the proper method of explaining the areal distributions of house types and social groups. It is our task here to discover the source of this inapplicability, and indeed to clarify the extent to which such approaches themselves could ever be expected to throw light upon the urban structure of any particular town or city. This brief critical review will take as its yardstick questions concerning the two areal distributions, and the emphasis throughout will be on explanation.

The central problem of locational analysis:

It is always wise to start with the simple and progress to the more complex. Let us think, then, of an everyday situation in which the location of something is explained. We might ask, 'why is this bicycle in the kitchen?'. This is certainly a question about the bicycle, but not a question which could be answered by offering a more precise description of the bicycle's location. The kind of reply which would satisfy the questioner would be, for example, 'Johnny left it there because it was raining outside'. But what

kind of explanation is this? At first sight the connection may be supposed to be between the meteorological facts and the location, but this is to miss out the essential factor, namely Johnny. It was he who put the bicycle in the position which prompted the question in the first place, and the explanation provided was then in terms of his reasons for so acting. Is this not the case with the location of any human artifact? Its location may be accidental in the sense that it is not the outcome of an intentional act, but in every case some human agency will be involved. And where the act of locating is intentional, no matter how much we may suppose that natural factors (or economic factors or whatever) may have influenced the choice, this is only to say that such factors constituted very good reasons for the agent acting in that manner. Most urban artifacts are of exactly this nature, their location being the deliberate decision of a particular person or body of persons, and so it is not surprising if we are forced to conclude that any adequate explanation of the location of any such artifact would require reference to human agency and reasons for acting. It is the characterisation of this relationship between human behaviour and the spatial distribution of human artifacts which I take to be the central problem of locational analysis. It must be noted, however, that it is only a problem which arises if one is concerned to explain locations or analyse the distribution of artifacts. It is not a problem for those who seek only descriptions, however detailed. I can describe the location of the bicycle accurately without ever mentioning the fact that Johnny had left it there. Indeed to mention Johnny at all would not be to add to the locational description.

Curiously, this central problem has not been recognised as such

in much of the literature in this sphere, and it is, I think, precisely because of this omission that the major theoretical statements about urban structure have failed as explanations. It is, therefore, both interesting and instructive to examine closely the ways in which human behaviour has been ignored or 'dealt with' in such statements and the types of answer they have attempted to provide. First, however, it is necessary to clarify the nature of the questions being asked by locational theorists in order to judge whether the proffered answers are indeed adequate and acceptable.

The interests of the geographer in this sphere are, it seems, firmly rooted in the spatial aspects of the urban scene or of settlement groups. That is to say, that he is interested in the distributional patterns created, at least at the theoretical level, rather than in the location of any one phenomenon alone. It would, of course, be of geographical relevance to study the growth and development of one particular city, and its site and situation could be adequately detailed and explained with only secondary reference to surrounding settlements; likewise the site and situation of a single building, especially if it is a building of some importance as, for example, Edinburgh Castle. The theoretical work in urban geography, however, constitutes an attempt to move away from this preoccupation with the particular in order to provide some general statements concerning either the distribution of settlements or the internal structure of a city. Christaller's work on Central Place Theory is one of the most interesting and complete examples of the former, but for present purposes we must concentrate on the latter as it is the internal urban structure of Edinburgh which we wish to explain and it is the theoretical statements concerning the internal

structure of a city which were originally found to be unhelpful in this context. It is this pursuit of the general in the social sciences at large which will form a central theme of this thesis.

The urban geographer, then, will ask such questions as 'why has this pattern of urban layout or this pattern of settlement emerged?'. It ought to be pointed out immediately that even at the level of the particular this is by no means a simple question as the problem of specifying what the urban structure actually is - i.e. identifying the elements of it - has first to be solved. Nevertheless, assuming for the present that we are able to make sense of this question by overcoming this problem, then the question can be seen to have the same form as the simple question 'why is this bicycle in the kitchen?' and hence demand the same sort of answer; that is an answer which includes reference to people's motives and reasons for acting. To examine pattern may complicate the issue, especially if, as in most urban situations, the overall pattern as such is not deliberately created, but the question or series of questions of interest to the urban geographer will all be of the same type as the simple locational question discussed earlier. Also it must be noted that to give an answer in terms of someone's reasons for acting does not necessarily require knowing who the agent was. For example, we may wonder what a bicycle is doing in the kitchen and the retort 'someone put it there because it was raining' would answer our original question. It may not be an entirely satisfactory answer and it may prompt questions as to who the someone was, but nevertheless an answer has been provided to the question concerning location and an answer which made no reference to a particular person. Thus knowledge of who the agent was may help us to provide a more satisfactory answer (i.e. one which does

not encourage further questions) but lack of such knowledge (a situation which might be expected to occur all too frequently in urban geography) does not involve the impossibility of providing an answer in terms of the reasons and motives of human agents. Bearing this in mind we can now turn to the existing theoretical literature relating specifically to the internal structure of the city under two main headings, the ecological school and the land economists, in order to examine the ways in which the central problem of locational analysis is resolved, if at all, and the sorts of explanation these general statements attempt.

The Ecological School:

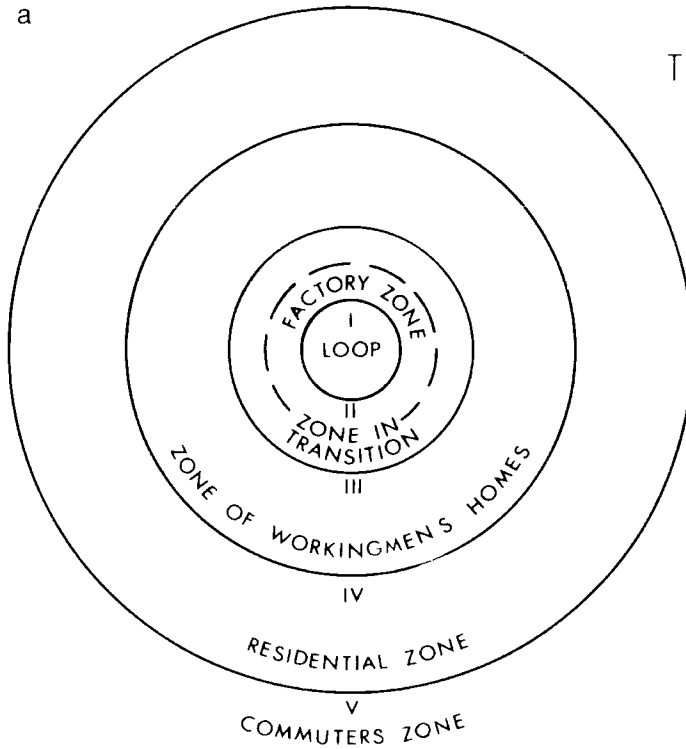
The work of the ecological school will be familiar to most geographers, although in fact the founder members regarded themselves as sociologists and their work reveals a wider variety of interests than would concern the locational analyst, or even the urban geographer. Their diagram of the concentric ring model of urban growth now appears in most introductory urban textbooks. Its properties if not its origins are thus well known. Originally formulated over fifty years ago it appears in a collection of essays by Park, Burgess and McKenzie. "The chart", Burgess claims, "represents an ideal construction of the tendencies of any town or city to expand radially from its central business district"¹. This chart is then applied to Chicago in order to give a general picture of the urban areas of that city. (see Fig.1). The authors, however, claim a more widespread applicability for their model. In the initial study of the present day structure of the city of Edinburgh, and after attempting to sort out the various zones as they appear in a

¹ R.E.Park, E.W.Burgess and R.D.McKenzie (1925) p.50

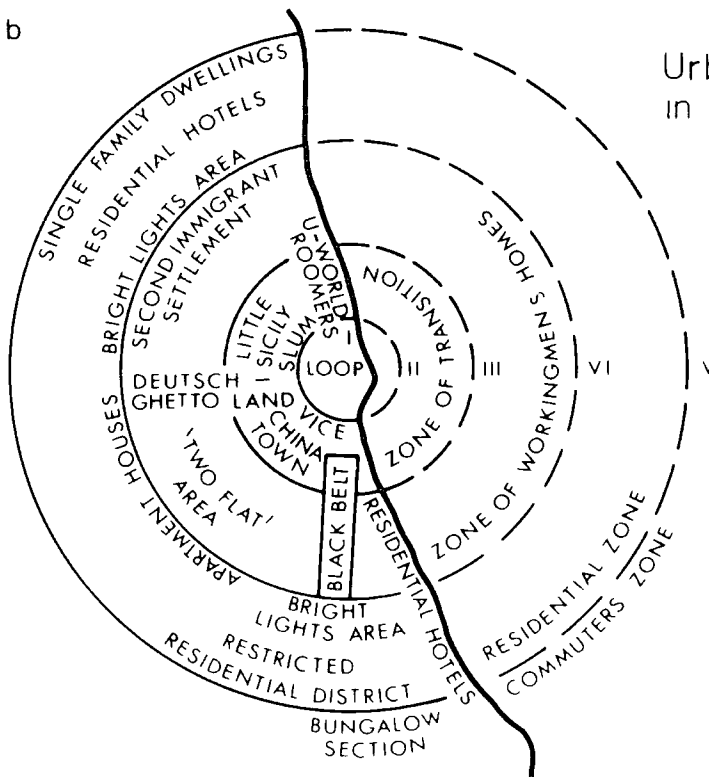
CONCENTRIC THEORY OF URBAN STRUCTURE

Fig 1

a



b



general rather than a particularly detailed fashion, it was found to be impossible to derive any pattern which even approximated to concentric rings. It was the apparent inapplicability of the model in this context which led to the present investigation of the method itself. So let us now take a closer look at the particular methodology which underlies the work of any urban ecologist.

Much is revealed by the way in which Park, Burgess and McKenzie present their theories, and to illustrate this point, I wish to consider several extracts from their work. First a passage related to Fig.1a:

This chart brings out clearly the main fact of expansion, namely the tendency of each inner zone to extend its area by the invasion of the next outer zone. This aspect of expansion may be called succession, a process which has been studied in detail in plant ecology. ²

Here Burgess uses the language of plant ecology in his clarification of what the chart is intended to show and the construction of the chart itself is based on the concepts provided by such language. Making reference to the urban areas of Chicago as illustrated by his model (Fig.1b) Burgess explains that "In the expansion of the city a process of distribution takes place which sifts and sorts and relocates individuals and groups by residence and occupation."³ Again the influence of plant ecology is evident; a fact indeed which is explicitly recognised and commended by all three writers. Now it seems that what Park and his colleagues are trying to do when they ask us to think of the city as a living organism is to provide, by using this analogy, some insight into the workings of the city, and then by extending the initially appealing parallel, to employ the concepts

² Ibid p.50

³ Ibid p.54

and language of natural ecology in an explanation of human behaviour in an urban environment. Thus human groups, like species of tree or plant are seen as following the laws of Darwinian biology, and hence their behaviour can easily be characterised by such notions as 'survival of the fittest', 'invasion', 'succession' etc. "These spatial relationships of human beings," remarks McKenzie, "are the products of competition and selection, and are continuously in process of change as new factors enter to disturb the competitive relations or to facilitate mobility".⁴

It follows from this particular explanation of human behaviour, or so the ecologists claim, that a concentric pattern of urban expansion will emerge, and their diagram of Chicago was drawn to illustrate if not to prove the point. But how is human behaviour linked to the spatial location of phenomena (or indeed social groups) in the ecological approach? At the heart of the approach lies a view of the city as a social organism, a view originally put forward by Park as early as 1916. By such reasoning, as Reissman comments, "the study of society would become a final extrapolation of what was at root a biological datum".⁵ Thus, although the ecologist does not deny that people are in fact motivated, can in fact produce reasons for acting in the way they did, this is either irrelevant or secondary to the more general underlying causes of action. Social organisation can then be divided into the biotic and the cultural and although these are inter-related, they are analytically separable and the former is both more important and more amenable to analysis. In fact the early ecologists did little more than mention the existence of a 'cultural level', for their studies were firmly based on the biotic level where,

⁴ Ibid p.64

⁵ L. Reissman (1964) p.96

it is claimed, as in the natural environment, competition is the guiding force. Even when writers explicitly recognise the influence of factors such as the social value invested in a piece of land, they characteristically fail to include such influences in their ecological analysis.⁶

So can this ecological account of the processes at work in an urban area help in the solution of the central problem of locational analysis? Can the ecologists help in the explanation of human actions? Clearly the theoretical framework of urban ecology is in conflict with our earlier account of the way in which simple location questions can be answered. Such a framework does not provide a reason-giving explanation but rather appeals to what are construed as more basic or underlying forces. It is this conflict with what could be called the common-sense view of location which encourages doubt as to the validity of the ecological claim and invites further examination of the ecological methodology. Not surprisingly, the representation of human behaviour embodied in this methodology has brought considerable criticism from other writers. The ecologists have been condemned as biological determinists, and indeed any attempt to portray human behaviour as subject to the operation of basic laws of whatever kind can hardly avoid the determinist trap. As Rugg comments, "...although the schemes of Burgess and Hoyt have contributed to urban studies, both are relatively unsophisticated, and acceptable only to those who also support the deterministic sorting-out of society which is implied in each."⁷

⁶ see, for example, R.A.Murdie (1969)

⁷ D.S.Rugg (1972) p.214

And as Gans remarks, "Ecological explanations of social life are most applicable if the subjects under study lack the ability to make choices."⁸ It is, I will argue later, precisely because of the nature of human behaviour that no such laws can apply. At present, however, it is of interest to note that neither Park, Burgess nor McKenzie make any attempt to justify the analogy, the concepts and language of which they utilise so fully. Indeed at the beginning of his well-known essay Park states, as if it were a matter of fact rather than an hypothesis to be justified, that "there are forces at work within the limits of the urban community which tend to bring about an orderly and typical grouping of its population and institutions."⁹ In other words the claim of the human ecologists is much the same as that of the natural ecologists; i.e. by looking at the spread or decline of a particular community in this way we can make more sense of it. But the latter can produce numerous reasons or 'evidence' to justify the applicability of their ecological perspective while the former, rather than establishing its relevance to their problem, appear to adopt the perspective in the hope that it will afford some insights into the evolution of city structure. Human behaviour, then, is seen by the ecologists as sets of responses to certain basic stimuli, and as such is thought to be predictable in the same way as the spread of any other ecological community. The many and, it is claimed, insuperable problems of this viewpoint will be discussed at length in the chapters which follow.

The Land Economists:

The second type of approach in this sphere has come mainly

⁸ H. J. Gans in A.M.Rose (1962) p.639

⁹ R.E.Park et al, op.cit. p.1

from those with an interest in economics and bears some similarity to other branches of economic theory. There are several writers, however, who attempt to combine an ecological approach with the analysis of economic variables, but they may for our present purposes be mentioned only briefly since their methodology is open to the same criticisms as that of the ecological school itself. Here I am thinking primarily of Homer Hoyt, although Harris & Ullman and Davie have also attempted to analyse the land-use pattern of the city in this way. These theorists all emphasise the search for pattern, although Davie recognises explicitly and Harris & Ullman implicitly that there is no universal city land use pattern, not even of an ideal type. As Firey has pointed out in a discussion of Hoyt's model, "nowhere in the theory is there a definite statement of the modus operandi by which people and groups are propelled to their appointed niches in space"¹⁰; or to put this another way, Hoyt simply ignores the central problem of the relationship between human behaviour and the spatial location of phenomena. Although such writers do in fact utilise economic variables, particularly income statistics, their theories are not primarily economic theories. This point is brought out by Alonso who labels the Burgess-Hoyt explanations as historical theory to distinguish them from his own structural theory which does not explain in terms of the passage of time and is thus methodologically aligned to standard economic theory.

In a sense the main thesis of the ecological explanation is a proposition about human behaviour and, although I will argue that the ecologists have come up with the wrong answer, it must nevertheless be admitted that they do recognise at least part of the problem. Such cannot be said of the first group of economists I wish to consider.

¹⁰ W. Firey (1947) p.7

These proffer what may be called Christaller-type theories, and their essential feature is that they concentrate on the examination of the pattern produced in the landscape to the exclusion of any detailed consideration of the processes involved in its creation. Thus the language that they use tends to be that of geometry which in isolation certainly does not lead to explanation but at best to more precise description. Other writers, like Christaller himself, have combined geometrical concepts with economic postulates concerning threshold size, number and kind of economic activities etc., and either fail to mention human behaviour at all or else subsume it under some 'law' such as Zipf's 'principle of least effort'. We are all familiar with the hexagonal model of Central Place Theory. Again, the following discussion will consider in some detail the relationship between behaviour and location and I shall argue that this is a relationship which cannot validly be ignored in locational analysis. Further, I shall contend that because of the very nature of human behaviour itself it is inappropriate to talk of laws governing such behaviour in the way that these writers wish to do.

It is interesting to note, however, that both the ecologists and this group of economists have either explicitly or implicitly assumed that the aspects of human behaviour of interest to locational analysis are governed by laws of some kind. These are seen as having the same scientific status as, for example, the laws of motion in physics. Christaller does momentarily doubt this status when he remarks that these 'special economic geographical laws' would perhaps be more conveniently designated as tendencies, "because they are not so inexorable as natural laws".¹¹ But his characterisation of them

¹¹ W. Christaller (1966) Central Places in S. Germany, p.3.

as 'determining' the size, distribution and number of towns, and his subsequent 'scientific' treatment of them in his study of southern Germany overshadows the original doubt. Christaller's particular concern is the distribution of settlements rather than their internal structure and thus his central place theory could not be of direct relevance to the proposed study of Edinburgh. His methodology, however, is of much more general interest both as one of the earliest theoretical statements in this sphere and for the considerable influence it has had on other geographers concerned with the problems of locational analysis.

A more recent development in the field of spatial economics has brought the analysis of urban structure even closer to traditional economic theory. An extension of part of the theory of the firm to residential location decisions has resulted in a complicated body of literature discussing idealised (or economically rational) patterns of location in the context of an infinite homogeneous plain. It is not always clear whether, as Isard would claim, the theoretical distribution provides an ideal at which we should aim, or whether the theory itself is offered as an explanation. If it is prescriptive then clearly it cannot interest us in the present discussion. If this is what we should be doing then it cannot be used to explain what we have done in the past although it might serve to assess it. If, on the other hand, it is an attempt at explanation then it can be seen that these spatial economists, in their zest for quantification, have avoided any discussion of the problem of representing human behaviour by instituting the elaborate design technique of the utility curve, playing off, for example, lot size against transport costs. Thus the behaviour of economic man becomes predictable with the 'rational' decision being that which minimises costs or maximises utility. Such models of the land market

follow closely the original formulation by Von Thünen of the distribution of land uses in agricultural regions,¹² although both Alonso and Muth,¹³ for example, recognise the more complex nature of the operation of the urban land market. Nevertheless the central notions employed are those of the maximisation of rents, the optimal location of activities and the maintenance of equilibrium. This approach has been criticised by several writers. Greer-Wootten,¹⁴ for example, maintains that the factor of transport cost at the centre of Von Thünen's theory has little relevance in modern economics. My own criticism is, perhaps, more fundamental. These land economists recognise at least implicitly that land use patterns result from a multitude of decisions made by individuals about location, but does the rational economic behaviour which they assume really apply to residential location decisions? And does the utility curve framework really help these models to overcome the defects of the strictly economic assumptions? Even as a behavioural postulate in the theory of the firm, this latter construct is apparently unable to overcome the problem of the less than perfect state of knowledge in the real world. I would suggest that it is even less able to deal with other locational decision situations. The dubious concept of a specifiable utility curve, whilst theoretically recognising the fact that decisions will not always be 'economically rational' though at the same time they need certainly not be irrational, inevitably ends up as a cost minimising construct and as such defeats its original purpose. This, it appears,

¹² Von Thünen, J.H.(1826)

¹³ see W. Alonso (1964a) and R.F.Muth (1962)

¹⁴ see B. Greer-Wootten (1972)

is because of the non-quantifiable nature of the non-economic decision elements the utility curve was designed to introduce. The sacrifice, therefore, must either be one of exactness (which is rarely the case) or of the utility concept itself (which is rarely admitted to be the case). Alonso himself recognises the limited applicability of his model to the operation of any particular land market when he declares, "It is an economic model, it speaks of economic men and it goes without saying that real men and social groups have needs, emotions and desires which are not considered here."¹⁵ The question whether this type of model can, nevertheless, be said to provide a theoretical explanation must be left to later in the discussion.

Despite, then, the recognition of the importance of the location decision itself, this group of economists emerges as unable to provide any explanation of the patterns of urban structure or settlement as they appear in the landscape. The tight logico-deductive nature of their argument may ensure that their conclusion follows from their premises, but the grossly unrealistic nature of these premises in turn ensures that their account bears no relation to observable phenomena and that its status is problematic. What they try in fact to do is to reduce all location decisions to a common denominator by specifying the trade-off nature of the utility curve. Rather than introducing underlying influences on behaviour, however, this does, importantly, include - albeit unrealistically - the actual location decision. Thus the answer to any location question on this account is in terms of peoples' actions or decisions which profoundly distinguishes it from any attempt at law-like

¹⁵ W.Alonso (1960) p.150

statements. The gulf between the theoretical and the empirical may appear unbridgeable within the present frame of economic theory but nevertheless the shift from laws of human nature to a utility curve decision framework is, I think, a significant one.

Thus it can be seen that as research in this and related fields has progressed there has been a gradual move away from the bold and often unsupported theoretical statements to some attempt at explanations which can be seen to bear some relation to observable phenomena and common human experience. Despite this, however, the central problem of locational analysis which we outlined at the beginning of this chapter remains largely undiscussed. What is the relationship between spatial patterns and the actions and decisions of the individuals involved in their creation? Neither the ecologists nor the land economists have provided an answer.

The possibility of other approaches:

This review of a section of the current theoretical literature has revealed an overriding concern with the patterns created and it is suggested that this concern itself may be misplaced. The purpose of this chapter has been simply to indicate some possible inadequacies of these theories as well as to highlight the way in which they attempt to explain. The various methodological problems involved will be dealt with in depth in the subsequent chapters and an attempt will be made to clarify the nature of explanation appropriate in the social sciences.

From the review, then, it emerges that some characterisation of human behaviour - whether in law-like statements or in a decision framework - underlies all theoretical formulations in locational analysis. And yet none of the writers whose work we have considered

makes specific mention of the human agent and his actual decision to locate.¹⁶ It is hardly surprising therefore that even amongst geographers themselves alternative approaches have been suggested, the most important of which may be characterised as behavioural geography. Such an approach begins by recognising that actual behaviour differs, in many cases radically, from that of economic man and thus focuses directly on the central problem of locational analysis. It is the behavioural approach which provides the starting point for the discussions of Part 1.

¹⁶ I take it that 'economic man' is an ideal, and that in any theory or explanation based on the assumption of perfect (economic) rationality the reference is to an ideal rather than an actual decision.

P A R T I

HUMAN GEOGRAPHY

AND SOCIAL SCIENCE IN GENERAL

The three chapters of Part 1 will be concerned with several methodological problems raised by the social sciences. The aim is to provide a general examination of the various approaches which have been tried in geography and to investigate their adequacy or otherwise as bases for the study of human behaviour. Clearly the behavioural approach itself is of great importance in this context. Its promise of sound theory has attracted many geographers and produced a large body of diverse literature. Some aspects of this literature will be examined in detail.

The point of Part 1, as of the whole thesis, is to clarify the nature of urban geography, the way in which such a subject may be coherently studied, and the kind of explanation appropriate to it. The discussion must, however, range over the literature of many social sciences and indeed of the philosophy of science, for in an examination of the methodology of any academic subject it is the mode of thinking involved in its research which is most important. Such a methodology is nothing other than a discipline of thought and may be common to more than one subject, the subject itself being the application of that disciplined mode of thinking to one area of study. This distinction between subject and discipline must be kept clearly in mind.

Science, as a discipline of thought, is frequently advanced as the methodological blueprint for geography. Because of this, it is vital to explore the characteristics of science in an attempt to establish whether or not human geography is a scientific enquiry. Any conclusion on this question plainly has important consequences for future research work in human geography, but it will also provide an indication of how (and whether) geographical theory is to be formulated.

It may be that human geography can never be theoretical even if it joins the model building enterprises of systems research.

The crucial relationship in all this is that between what is studied (the subject matter) and how it is to be understood and explained. We must ask, "Given the character of human behaviour, can scientific method help us to understand it and its spatial repercussions?" The aspirations of many, perhaps most, urban geographers are twofold. First, they seek to provide a theoretical basis for their subject. Secondly, they seek to replace mere description with explanation. (It has been said that, "Usually it is better geography which leads to the explanations."¹) In both these aspirations geographers look to the natural sciences. But in fact, when he adopts scientific method, the geographer produces theories which do not explain. The next three chapters will serve to resolve this conundrum.

¹ J. W. Watson (1955) p.3

CHAPTER 2

BEHAVIOUR AND PERCEPTION

If one looks at the earlier literature in behavioural geography it is evident that this particular approach to the subject arose out of a certain disquiet with the deterministic theories and law-like statements produced both by economists and by those who sought to borrow models from the physical sciences and apply them in human geography. The common element in the work of the behavioural geographers lies in the attempt to tackle problems at a micro-analytic level. Understanding is to be gained by examining the decision process of the individual and this, it is claimed, provides a radical alternative to approaches such as those of the ecologists and land economists. For example, Wolpert in his paper on 'Behavioural Aspects of the Decision to Migrate'¹ is concerned to predict migration via an understanding of the migration process as illustrated by the individual's decision to migrate. This approach has been understood as profoundly different from previous methods of projecting past (statistical) trends into the future. Again, in his study of Middle Sweden's farming population² Wolpert was concerned to demonstrate how actual behaviour differs from that of economic man and to promote the behavioural concept of bounded rationality. Goals, he argues, are likely to be multi-

¹ J. Wolpert (1965)

² J. Wolpert (1964)

dimensional and the criterion of optimisation irrelevant.

In a paper on 'Inference Problems in Locational Analysis'³, Olsson gives a clear indication of the distinctive nature of the behavioural approach. He suggests that it provides a different solution to the geographical inference problem of form and process. The spatial analysts (and I take these to include the theorists of Chapter 1), he points out, attempt to infer individual behaviour from knowledge of a given spatial pattern while the behaviouralist argues for reasoning the other way round. He concludes, "large-scale patterns should be deduced from explicit statements about individual behaviour rather than the other way round."⁴ This is a different way of looking at landscape patterns for it emphasises the part played by the individual. What a behavioural approach to locational problems explicitly recognises is that the structure of an urban area is simply a reflection of a multitude of individual decisions and it is the basis of these decisions and the relationship between decision making and the subsequent locational behaviour which becomes the central concern. What is significant about behavioural studies, therefore, is the focus on explanation and understanding and the proposal to analyse at the level of the individual.

It might be thought that we have now found a methodology which addresses itself specifically to our central problem of location and that all that remains to be done is to proceed apace with the exploration of the urban structure of the city of Edinburgh. This is, however, not the case, for where is the body of behavioural theory to which we may refer? It appears from a perusal of the literature that

³ G. Olsson in K. R. Cox and R. G. Colledge (1969)

⁴ Ibid p.21

the development of such theory is as yet in the initial stages and that there is still considerable dispute as to how to go on. Harvey's comment that "Human geographers have long recognised that geographical patterns are the end product of a large number of individual decisions made at different times for often very different reasons"⁵ may be taken as a note of foreboding. This initial stage has lasted more than ten years and many researchers seem uncertain of the next stage. A mood of pessimism is apparent in a recent discussion of behavioural processes by Amedeo and Golledge. They conclude on this sombre note:

In neither example did we arrive at any significant generalisations. This state is very descriptive of geography today, for much of the discipline's research exists in an incomplete form, being inadequately reasoned with little scope for generality, but associated with some fascinating and relevant problems. In some cases our analytical methods and our symbolic models add little in the way of increased explanation; in other cases even our most complex and complete methods and our most rigorous reasoning efforts have contributed little to our general understanding and knowledge of phenomena.⁶

What these writers are highlighting is the lack of progress made by the behavioural geographers in the understanding and explanation of the phenomena they study. The method which promised so much has in fact produced very little. This, it is suggested, is because there still exist methodological confusions within behavioural analysis which on occasion have led research in the wrong direction. The complexity of the individual location decision and the further problems involved in relating a host of such decisions to locational patterns are certainly daunting. By a careful consideration of the nature of these problems, however, we can perhaps achieve some understanding of how they might

⁵ D. Harvey (1969a)p.119

⁶ D. Amedeo and R. G. Golledge (1975) p.420

legitimately be resolved. The heart of the matter is illustrated by the following passage from the editorial introduction to a collection of papers from a symposium on behavioural problems in geography:

The use of sociological postulates, however, while explaining some of the discrepancies between the real world and a spatial theory based on economic man assumptions, is bound to be less than perfect in the sense that information is rarely received in the same form in which it is transmitted. Intervening between the sending of information and the decision to locate are perceptions of information.⁷

It is the problems and confusions surrounding notions of perception which we must examine first. For it is commonly supposed that locational decisions, and hence locational behaviour, cannot be understood or explained unless we know how the agent or agents involved perceive the world.

I

PERCEPTION STUDIES IN GEOGRAPHY:

Few geographers today would, I think, doubt the importance of studies of differential perception and many writers in this field would agree with Harvey that, "The problem of perception, for example, is basic to everything we do and think and it is basic to our understanding of knowledge itself."⁸ And yet the considerable literature on this topic, far from resolving the 'problem', reveals a growing confusion as to the nature of some of the concepts employed and their implications. It is the purpose of this section therefore to explore a few of these concepts and, most importantly, to trace some of their logical consequences in an attempt to discover whether the latter do

⁷ K. R. Cox and R. G. Gollidge (1969) p.6

⁸ D. Harvey in K. R. Cox and R. G. Gollidge (1969) p.64

not prove very much less palatable than the original concepts themselves. As the field of behavioural studies extends beyond the reaches of geography the discussion will necessarily be centred on one small corner. It will be seen, however, that the methodological conclusions are not restricted to what has been called the approach's "most developed component"⁹, perception. This is because of the fundamental nature of such a notion. Harvey states:

We know too, that mental processes may mediate the flow of information from the environment in such a way that one individual perceives a situation differently from another even though the external stimuli are exactly the same. Each individual may be thought of as making decisions with respect to his attitudes and in the context of his perceptions.¹⁰

If he is right then we could not begin to understand an individual's decision unless we first understood how he perceived the world.

Perception and observational skill:

What is perception? Strangely, perhaps, this seems a difficult question to answer and it is the concepts and notions embodied in the answers proffered by geographers which are surrounded by considerable confusion. "Decision makers", we are led to believe, "...base their decisions on the environment as they perceive it, not as it is"¹¹; and Tuan asks, "What is the nature of the objective space over which human beings have variously projected their illusions?"¹² Many similar quotations could be cited, but essentially they are all making the same claims. First, that there is somehow a real environment on the one hand and a

⁹ P. Sarre (1973) p.7

¹⁰ D. Harvey in K.R.Cox and R.G.Gollledge (1969) p.36

¹¹ H.C.Brookfield (1969) p.53

¹² Yi-Fu Tuan (1974) p.215. In this essay Tuan introduces the 'phenomenological perspective', a sophisticated version of differential perception. In making similar presuppositions, however, (such as "Mental maps differ from person to person") Tuan's phenomenology is also open to the criticisms below.

perceived or subjective environment on the other; and secondly, this not always being explicit, that, as Brookfield has it, geographers study reality. The nature of the dichotomy becomes clearer in the following extract:

Environmental perception is the cognitive structuring of the physical and social environments in which the actual or objective world is replaced by a simpler subjectively perceived environment.¹³

But what is this objective world that has been displaced? And how then do we apprehend this reality without falling into the trap of subjectivity? The subjective environment appears as a simplification of the objective environment. Goodey notes several meanings of perception and concludes that "most workers would probably support the second (i.e. 'The awareness of objects or other data through the medium of the senses') as offering the best simple statement of the process that they are seeking, in various ways, to examine."¹⁴ To take the example of a painting therefore, the total painting in all its detail might be called the objective environment, and that part of the painting on which one initially focuses one's eyes might be the subjective environment. This analogy would fit well with such comments as "only a fraction of the total stimuli is consciously selected and processed" and "the capacity of the brain is genetically limited".¹⁵ But if this is what is meant by 'subjective' then what we are talking about is observational skill. If two people are given five minutes to look at this picture and then recount what they have seen, the accounts will most probably vary in a number of ways. For example, where A will have noticed birds sitting on the telegraph wires in the distance, B will perhaps have concentrated

¹³ D. C. D. Pocock (1972) p.115

¹⁴ B. Goodey (1971) p.3

¹⁵ D. C. D. Pocock (1973) p.252

on the closer features and describe in detail the elaborate layout of an ornamental garden in the foreground. This does not mean that the two people in any sense see the scene differently, for if A pointed at his birds on the telegraph wire, B's attention would then be directed towards them and he might comment that he hadn't noticed them.

Secondly, B might recall having seen three cows in the meadow, whilst by A's account there were four. Here either one was mistaken in which case a recount would settle the matter, or one of them had simply forgotten how many cows were in fact there. Either way the dispute can easily be settled with reference to the original painting. The 'subjective environment', on this account then, can be seen to be an idiosyncratic selection of what is there to be seen. But given the development of appropriate observational skills, one could, given long enough, note every detail of the painting in which case the objective/subjective distinction breaks down and it becomes a matter of the extent of one's observational skill. What one sees is what is there to be seen; the point is that one doesn't see the whole of it at once. In no sense is this a 'subjective reality'. If, however, this selection is what is meant by perception being subjective, then what problems does it pose that could be of interest to geographers? Could it ever be useful to know that A saw the birds on the telegraph wire and B didn't? Or more pertinent, could it be a phenomenon worth explaining? One could envisage circumstances where impact studies could have some significance. We are all familiar with the advertising tricks where 'free glasses' appears in enormous colourful letters and only on a much closer inspection does it emerge that one must first purchase six packets of that particular product. It is true that in this sort of case one can make generalisations about large letters being more noticeable than small ones. Importantly

however, this is a comment about the signs and not the seers.¹⁶

Again it might be extremely important, e.g. in court cases, to know what part of a particular scene a witness saw, and this knowledge may even help to explain his subsequent actions. For example, that the witness saw a child lying in a pool of blood on the road would explain his running to the nearest telephone and calling an ambulance. If one asks the further question, however, 'why did he see what he saw?', I am not at all sure what sort of answer one would be looking for. It is worth noting that the selection is not a conscious selection in the sense that we chose to look at certain things rather than others. It is possible in many cases to explain why someone did not see something, e.g. because a bus stood between them and whatever they failed to see, and even in a limited number of cases to suggest why someone's attention was attracted, e.g. by the noise of the crash. In general, however, I would suggest that one cannot explain why a certain person saw what they saw, but merely note that they did. An account of what someone saw would be descriptive and not explanatory, although the account itself might be used as an explanation of something else, for example, the subsequent actions of that person.

Perception and language.

In the previous section we have seen that if an individual's perception is simply that part of reality he happens to notice then what we have is objective reality on the one hand and the fact that individuals usually only observe parts of it on the other. There is no room in these circumstances for the term 'subjective reality'. And yet many geographers claim that what they are trying to theorise

¹⁶ Likewise, Lynch (1960) is concerned with the visual qualities or the legibility of the American city rather than with the seers. The main elements which he distinguishes (the paths, edges, districts, nodes and landmarks) are all signs which, together, make up the "public image" of the city.

about is precisely subjective reality. It must be, therefore, that they hold a very different notion of what perception is. It seems at this juncture beneficial to reflect briefly on the nature of perception. When we see an object e.g. a chair, there are two things involved. First actually seeing the object, and secondly identifying the object as a chair. For many objects this identification is automatic. Even small children have no problems identifying chairs, tables etc. It simply requires having learnt how to apply the rules of the language in which they express themselves. It must be noted, however, that in order to claim that one sees a chair, for example, the identification is just as important as the physical act of seeing. In this simple case if there is a dispute about whether a certain object is a chair or a table, it could arise for one of two reasons. Either one or both disputants cannot see the object clearly enough (they have bad eyesight or the object is too distant) or one or both has not learnt how to apply, for example, the word table according to the rules of the English language, and has mistakenly supposed that a table is also something one sits on. In other words there is something preventing the physical process of seeing properly, or there is some mistake in identifying the particular object. It is the latter which seems the more interesting case. To take a more complex example; let us suppose that two people come across some object half buried in the sand and clearly worn in places through having been exposed to the elements. They might indeed ask, 'what is it?', and each might attempt to identify the relic. Person A might judge it to be the frame of a bicycle, whilst person B claims that it appears to him more like some sort of old fashioned plough. Both A and B could try to support his claim by citing various pieces of evidence, or attempt to refute the other claim by pointing to counter-evidence. Of course one or both of them must be wrong and although the matter might never be settled, given further information it is most likely that it

would be. For example, after finding two rusty bicycle wheels a few feet away both A and B would no doubt be prepared to agree that the original object was a bicycle frame. The problem here has been one of identification, of which word to apply to the object that was found. Where such a problem arises it appears that we do weigh up the evidence and make a kind of judgement as to what the object could be. Nevertheless, importantly, the judgement itself must be made within the rules of the language; it is a judgement about how to apply certain words or phrases of the English language and this is certainly not arbitrary. Goodey writes:

Perceiving the environment through all his senses, man is required to interpret the various components which appear in the perceptual field. Hypotheses are formulated concerning each component and these are accepted or rejected on the basis of experience and intuition.¹⁷

But surely this is not so. If we are talking about what people see etc. we can only do so in terms of the concepts the English language allows and according to the rules for their application. Experience plays a part in increasing the number of concepts with which we are familiar, but we cannot accept or reject identifications 'locked in our own environment' or as fancy takes us. We are not in other words at liberty to assert correctly that an animal is a giraffe if in fact it is more the shape of a horse and is covered in black and white stripes. The problems of perception, it seems, arise either in the physical processes of seeing, hearing etc., or in the identification of what is being seen, heard etc., and it is only the latter that could be of interest to the social scientist. The former is commonly the concern of the optician. Further, notions of the 'subjectivity' of such identifications amount to the indisputable fact that in some cases

¹⁷ B. Goodey, op.cit. p.4

people make mistakes or are uncertain when identifying. Thus no contrast can be made between subjective impressions in this sense and an objective world 'out there' which can only be apprehended subjectively. If this is what is meant by subjective we cannot sensibly speak of 'the world as it is' versus 'the world as it is seen'. Identifications can certainly be mistaken, but mistaken they are and not idiosyncratic views of the world.

Mental images and mental maps.

I would like now to turn to Sarre's discussion of perception in the Open University publication on the subject and consider his account in the light of the foregoing observations. The term perception, we are told, is used in two senses.

- (1) a process in which an individual receives stimuli from the environment through his senses.....and stores some of them in his brain.
- (2) a model of the environment which is built up over time in the individual's brain.¹⁸

These will be discussed separately. The first, it seems, is what I have noted as the physical processes of seeing, hearing etc. For example, in sight the chain process is "light waves travel from the object, strike the retina of the eye and produce chemical changes in it: these in turn cause impulses to travel along the optic nerve to an area of the brain where they set up activity which spreads also to certain associated areas."¹⁹ Thus a complex system of lightwaves, sometimes emitted by the object but normally a differential reflection of light from the object's surface, travels from the object to the percipient's eye. One could further explore the process and discover, for example, that each retina has a mosaic of over 120 million receptors

¹⁸ P. Sarre, op.cit., p.16

¹⁹ R. J. Hirst (1965) p.10

which are activated by the light cast on them. The main point however is that this explanation of how we see things is a physiological one and primarily the domain of the neurologist. It is certainly not an area geographers are equipped to explore and not, I think, an aspect of perception which is of relevance to the development of theory related to human behaviour. That an individual is blind will certainly influence his behaviour, but even if we are interested in this particular individual's behaviour, to know that he is blind is sufficient. We do not need to know the physiological causes of his blindness.

The second definition offered by Sarre is at once misleading and confusing, but it is one entertained by a number of geographers. Harvey talks of perception as "the central node in a network which brings together cognitive processes and environmental stimuli and which projects to the act of decision"²⁰ and Pocock refers to "the output from the processing centre - the image".²¹ These characterisations of perception have built into them certain concepts such as 'central node' which are themselves highly problematic and thus it is precisely these characterisations which require support or refutation.

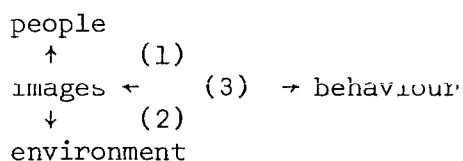
We can I think safely claim that an individual will have a conceptual schema which he uses to refer to the surrounding environment and in terms of which he can make sense of that environment. He can, for example, talk of slum areas, the historic centre, the main shopping street etc. and describe his own intra-urban movements with reference to these. To further claim that these concepts are somehow built up over time in the individual's brain is at best to obscure the issue. Does one really store the term 'slum area' in one's brain? Obviously we must remember how to apply the term but surely this does not constitute storing in the brain. If, however, the claim is that we build up an

²⁰ D. Harvey in K.R.Cox and R.G.Gollege (1969) p.52

²¹ D.C.D.Pocock (1973) p.6

image or a picture of a slum area in our brain and use this in the identification of slum areas then I think it is simply false. The continued use of language depends on the following of the appropriate linguistic rules and not on any idiosyncratic notions of what a particular concept applies to. Besides, what is important is the knowledge of how to apply the concepts, of how to identify slum areas, and not whether these concepts are stored inside the head.

The use of this notion of mental storage is, however, widespread; witness the increasing literature on mental images and in particular mental maps. Goodey, introducing his review of the perception literature writes, "Stated simply this paper is concerned with the world outside and the images in our heads"²² And Downs characterises the process of perception by what he calls an interrelated system, thus:²³



Here we have 'images' playing a key role. L.J.Wood follows Downs when he comments, "in order to break into the system one must study the images, which are the points of contact between people and their environment."²⁴ Finally Bordessa confirms this preoccupation with images when he writes. "The perception or mental image of the world that is held by individuals is at the root of all studies of perception conducted by geographers."²⁵ Thus if 'mental image' is either a vacuous concept in itself or irrelevant to the study of geography this has obvious and important implications for the future direction of perception

²² B. Goodey, op.cit., p.1

²³ R. M. Downs (1967)

²⁴ L. J. Wood (1970) p.131

²⁵ R. Bordessa (1969) p.1

studies in our subject.

What then are mental maps? We understand well what maps are, but what is the force of calling them 'mental' maps? Several articles have been written on the subject of mental maps and I shall first turn to them for an answer. There are, it seems, at least two types of mental map. On the one hand there are the maps purporting to illustrate iso-percepts or lines of equal perception. Gould and White have constructed such maps for the British Isles after interviewing groups of British school leavers and they suggest that the results obtained for a sample group in Bournemouth best illustrate the general features found in British preference maps:

Starting from a ridge of high density along the entire south coast, the surface falls steeply to a sinkhole centred over the metropolitan area. However two prongs of residential desirability extend through East Anglia and the counties bordering Wales to produce a 'mental cirque' in the Midlands. Generally the entire surface declines with a considerable degree of regularity northwards to Scotland, with a major anomaly of a mental dome centred over the Lake District.²⁶

Or as Abler Adams and Gould put it in one of their examples, "Like a contour map whose lines connect points of a certain height above sea level, so the perception surface shows the hills and valleys of residential desirability for a particular group of people."²⁷ Of course there is nothing directly 'mental' about these maps: they are drawn using ink, paper etc. in exactly the same way as other maps. At most it is what they claim to measure - if this is not a contradiction in itself - i.e. their content, that bears any relation to mental processes.

The other type of mental map appears to spring more directly from

²⁶ P. Gould and R. White (1968) pp.165-6

²⁷ R. Abler, J.S.Adams and P.Gould (1971) p.519

talk of images. Thus in Stea we find a "mental map" as "an image" of the larger environment.²⁸ This results apparently from the mental filtering and coding of sensory data and is something subjective, private, unique. In practical terms we are told "it provides for the orientation, comfort and movement of man within his environment,"²⁹ and as one of the consequences of being without a mental map in a busy or unfamiliar city is said to be the feeling of uneasiness experienced, it would appear that knowledge of the area concerned is a key factor in the formation of such maps. And yet this creates many problems, for how do we obtain these maps? How many do we have? And where do we store the ones we have? Just how much knowledge of an area do we require before we can obtain or retain a mental map? Can I be said to have a mental map of Newcastle if I visited the city for the first time last week? Or does it take a number of visits before I can claim to have formed a mental spatial schema? If so, how many? Again, my familiarity with a certain town may have been considerable but because I have not visited that area at all in the last ten years, I might if I did return be unable to easily find my way about. How can this be explained in terms of mental maps? "Retention of the mental image", we are told, "depends on the relative rates of information renewal and decay, for the mental map undergoes continuous renewal."³⁰ But how does this differ from simply remembering somewhere? And can I lose my mental map?

If having a mental map is to have some idea of the layout of a place, can these be derived from second hand knowledge? i.e. can mental

²⁸ D. Stea in K.R.Cox and R.G.Golledge (1969) p.229

²⁹ D.C.D.Pocock (1972) p.115

³⁰ Ibid. p.123

maps be derived from real maps? Again if Mr. Brown gives me directions for crossing the centre of a city unfamiliar to me, and I follow his instructions perfectly, have I been following his mental map? These questions may appear trivial or outwith the scope of geography, but if we are to make sense of the characterisation of mental maps as images in the head, then we must at least be able to indicate what kind of answers would be appropriate.

I will take one particular set of claims to illustrate the nature of the problem involved; namely claims about where we keep our mental maps. Consider mental maps as being stored in the brain. This seems to imply some sort of image or picture of, for example, Durham which can be said to be located inside the head. But surely images are not the sorts of things which have a location in space; they are not in fact material objects at all. 'Image', like 'thought' and 'memory' is a concept which has no independent existence outside the linguistic framework. An image is simply one incidence of imagining in the same way as a memory is one incidence of remembering. To ask further, 'what is it to remember?', if one is not simply looking for elucidation such as one might find in a dictionary, is to look for an answer in terms of the cerebral processes involved when one is remembering; i.e. in terms of physical processes. It is not only that as Stea points out "in physiological fact, we do not know that such maps exist. We have no reason to suppose that we will find patterns isomorphic to the larger world or portions of the larger world, on the cerebral cortex",³¹ but that it does not make sense even to suppose that we might find such patterns imprinted on the brain. Maps are not the sorts of things that one finds during a surgical operation.

³¹ D. Stea, *op.cit.*, p.230

Not many geographers, it may be objected, would want to claim that they are, and yet 'mental images' and 'stored in the head' make frequent appearances in the literature. What then can they mean? 'City of the Mind',³² the title of a review of mental maps presents us with another possibility. Mental images it seems are in fact stored in the mind. But where then is the mind located? In the brain? And if mental phenomena can't be said to have physical existence what then is the relationship between the physical process of seeing which takes place in the brain, and the supposed sight image as stored in the mind? Surely the mind cannot be said to have material existence, i.e. existence in space, and it is just because of this that it does not make sense to ask what might be found inside it. Spatial vocabulary has no relevance to non-spatial concepts.

The elicitation of mental maps

Despite this, many geographers appear intent on trying to expose the geographic content of people's mental images. Because of the way they characterise this 'black box' phenomenon however, I suggest that they in fact start with a concept which can of little use to them. Each person's mental image is apparently unique: i.e. "his own private geography",³³ and thus the professional geographer is left entirely dependent on the goodwill, cooperation, and integrity of the individuals whose mental maps he wishes to examine. But that is not the end of the matter. Following Klein³⁴ there appear to be at least four ways in which individuals could communicate to the geographer the features of his private image:

³² D.C.D.Pocock (1972)

³³ P. Sarre, op.cit., p.18

³⁴ H.J.Klein in E.J.Brill (1967) pp.286-306

- (1) Free verbal description
- (2) Selection of locations from a list
- (3) The sorting of cards carrying the names of locations
- (4) drawing a map

As what is under discussion here is the communication of a mental map, the latter would seem to be the most appropriate form of portrayal. Indeed Pocock³⁵ presents us with four sketches of 'perceived street pattern' in central Dundee. A group of students were each given an outline of one street in the centre of Dundee and asked to complete the area within a circle. In what way could these sketches possibly be duplicates of some mental image? And if they are how do we know that they are correct? I may, for example, have a mental map of Dundee which closely resembles an actual map of Perth, but because I am such a bad cartographer, when I attempt to draw my mental map it closely resembles an actual map of Dundee. How then is the geographer to know that my mental map is closer to the map of Perth? One thing that would certainly complicate this method of communicating mental maps would be variation in cartographic skills. Further, if one asked the same group to sketch the centre of Dundee the following week or even the following day their maps would almost certainly differ from their last attempt. What then would be the value to the geographer of these very temporary mental images?

Stea attempts to avoid some of these problems by claiming that the study of mental maps need not necessarily be 'geography in the head'. "It matters not a whit," he adds, "that we cannot directly observe a 'mental map' or even that we cannot know for sure that it is actually 'there'; if a subject behaves as if such a map existed, it is sufficient justification for the model."³⁶ But this is no solution, for in order

³⁵ D.C.D.Pocock (1972) p.118

³⁶ D. Stea, op.cit., p.135

to know that someone is behaving as if he were following a mental map we must first know what it would be for someone to be following a mental map and this is precisely what we could not make sense of in the first place. The coherence of the remark 'he rushed up the street as if he were being pursued by the police' depends entirely upon the coherence of the remark 'he rushed up the street pursued by the police'. If the latter is unintelligible then so is the former.

In the explanation of behaviour it appears to be no help at all to appeal to mental maps. I may make my way from A to B by a circuitous route, but that behaviour is not in any way explained by remarking that I was following my mental map. If this mental image is some sort of personal idea of the layout of a city, then in any particular case we can never tell if someone is following his private map or not. If, on the other hand, it is impossible for him not to follow it then how could we distinguish between his mistakes and the idiosyncrasies of his personal image? Suppose that in taking a circuitous route from A to B, I had in fact made a mistake and had imagined that the route I had taken was the shortest one between the two points. If we are to claim that I was at the same time following my mental map - this was what I supposed to be the shortest path - then either there is no room for suggesting that I made a mistake (and this would seem absurd as I might be aware even before arriving at B that I had not actually chosen the shortest route), or we would have to say that my mental map itself was mistaken, and this, apart from reducing the claims of differential perception to 'some people act on wrong information' is simply a misleading way of saying that I forgot or didn't know about the shorter route. What difference would it have made to the four maps of central Dundee offered by Pocock if the students had simply been asked to draw what they remembered of the

layout of the centre of the city? None. And yet an account based on what is remembered does not require problematic claims concerning 'subjective realities'.

The form of explanation appropriate to actions of this sort is the advancement of reasons for acting, and to claim that I went from A to B by some roundabout way because I was following my mental map is to fail to meet the basic criteria of intelligibility. We all know what it is to remember because we are always remembering places we have seen, things we have done etc. We certainly find our way around a town successfully because we have remembered the location of the places we wished to visit, but then this is no great revelation for we cannot act upon information we have forgotten. We also understand well what it is to have a slip of memory or to be mistaken about something we claimed to remember; so this account copes better with such everyday occurrences than does that of the mental map.

We have seen that the claim that a person can be said to have or possess, in some strong sense, a mental map, cannot be rendered coherent, for the notion of possession is only appropriate in relation to material objects. The fact that we can see objects and hear sounds at one time and recall them later does not imply that they must have been stored somewhere in between times. If one asks 'where does a flame come from when we strike a match?', clearly we are not looking for an answer in terms of a physical location, for flames are not the sort of things that could be stored anywhere. In the same way memories are not the sorts of things about which it makes sense to claim that they are stored somewhere. Because of this the concept of a mental map loses much of its appeal and is reduced to the weaker claim about people behaving as if they were following such a map. As we have seen this avoids none of the problems, for if the stronger claim is to be declared incoherent then so also must the weaker claim. Explanation in the sphere of spatial behaviour gains

nothing by appealing to notions of image storage. In everyday life we know very well how to explain people's behaviour. We do it all the time. If then we are to attempt generalised explanations about such behaviour surely they must embrace the same form as those we already use.

We have seen that for sense perception the objective/subjective distinction breaks down. What we see, hear, touch etc. just is the material world, albeit not in every detail. The problems which arise in this sphere are ones of identifying objects; that is ones concerning use of language. Many geographers have built in a number of difficulties to their initial definitions of perception and have apparently failed to realise that it is these basic notions of what perception is that require justification. There appear to be two aspects to perception studies. The first concerns the physical processes involved, and is the domain of the neurologist. The second concerns the conceptual schema which an individual uses both to make sense of what he sees and to communicate his perceptions to others. It is the latter which must be the concern of explanations of behaviour, and the concepts of which are the concepts of the language he speaks. The study of mental maps as spatial images is, it seems, counter-productive if one is concerned to develop behavioural theory.

Perception and significance:

What then is left of perception studies? Looking at the literature there seems to be yet another aspect of perception, but an aspect which has become so interwoven with the subjective/objective distinction and the elicitation of images, that it has become submerged in the growing confusion. Before attempting its elucidation, however, it seems wise to dwell briefly on the relevance of such studies to human geography. What is it that we are trying to explain and in what

way could perception studies aid our understanding? Geographers writing in this area appear to entertain few doubts as to the relevance of their work to behavioural studies. Sonnenfeld remarks, "understanding of the sources of variance in environmental perception is essential to an understanding of man's environmental behaviours,"³⁷ and L.J.Wood writes in the same vein, "the explanation and understanding of the vast range of material which human geographers study can be greatly increased by consideration of the individual's perception of his environment."³⁸ Finally Bordessa confirms this confidence when he declares "the basic reason for the development of perception studies in Geography is to aid in understanding spatial behaviour."³⁹ Few writers, however, have attempted to specify the relationship between perceptions and the resultant actions or 'overt response'. Sarre complains that although Gould (1966) concentrated on evaluation rather than description, and although this is conceptually closer to behaviour than some of the descriptive concepts, he made no attempt to link responses operationally with any form of behaviour. Gould's approach, however, appears to be unable to advance the understanding of migration and thus its usefulness for prediction is severely limited. Sarre claims that "we are closer to being able to predict whether a person will go to resort A or B for his holiday if we know that he prefers A to B than if we know he thinks A is in the south-west while B is in the south-east." This would be true of course only if we knew that the person preferred A as a holiday resort to B as a holiday resort. If however an academic preferred A because it provided the better library facilities, this might prove a

³⁷ J. Sonnenfeld (1967) p.42

³⁸ L.J.Wood (1970) p.129

³⁹ R. Bordessa (1969) p.3

very good reason for his not going there for a holiday. If then the questioner must ask which holiday resort an individual prefers in order to predict where he will go for his holidays, one wonders why, in the first place, he doesn't simply ask the interviewee where he is going for his holidays and settle the matter.

There are many incidences of human behaviour that geographers might be concerned to understand or explain, and there has been a recent and growing preoccupation with the development of theory in the study of locational behaviour. It is not any incidence of human behaviour which is of interest here, but only such behaviour (e.g. residential choice) as would relate to the wider geographical concern of spatial distributions. Further, the common supposition of those who seek a theoretical base for their subject is that they must first supercede the idiosyncracies of the unique. This results in several problems for those who have adopted a behavioural approach. Having started with the unique or individual decision they must then, apparently, move to something more general. It is in the light of this notion of the theoretical that we can discuss the possibilities of an approach hinted at by many geographers.

What we have examined in the first part of this section is sense perception, ie. seeing, hearing, touching, smelling, tasting, and it appears that the relevant problems in this field are those connected with the identification of objects, ie. with the use of language. And yet there appears to be an aspect of perception in the literature which does not fit in with this analysis. Pocock writes "an attitude disposes an individual to behave or perceive situations in a particular way."⁴⁰ But this is a use of perception other than that of apprehension by the senses. If one asks, 'do you see the distinction?', this is not to use

⁴⁰ D.C.D.Pocock (1973) p.5

'see' in the literal sense, but rather to use the word metaphorically. Distinctions cannot be seen in the same way as chairs and tables. Likewise the word 'perception' has often been used metaphorically but, because the context has not been so apparent as in the case of 'seeing a distinction', many writers have treated these propositions literally. This has been, possibly, the largest source of confusion in perception studies. To avoid further misinterpretation, therefore, we shall avoid using the word perception in this potentially misleading way, and talk instead of significance.

We have seen that sense perceptions depend on the rules of language and the identification of phenomena according to these rules. In this there can be nothing unique about each man's 'image'. What can vary, however, are the implications of certain concepts or the significance lent to them. This has nothing to do with sense perception as such. Prokop has come closest to recognising this variability:

The image which a city dweller possesses of his own city (and of other cities) is structured by his own activities, by the frames which his membership groups set for him, and by the functions which the city or parts of the city fulfill for him, for his groups, and for other groups (or societies). Many of his activities are influenced by his social status or class - and there are other statuses too, and as a consequence the activities of other classes remain unknown to him: so do the places where the activities of these socially invisible groups or strata take place.⁴¹

In other words the significance of various parts of the city changes depending on one's relationship with them. For the Dundee jute mill worker the mill area will naturally have particular significance as will the university area for the student, though each may be unfamiliar with or unaware of the other's place of work. In the same way the significance of a rural landscape will change depending on whether one

⁴¹ D. Prokop (1967) p.28

is surveying it as a geomorphologist or as a camper. On the one hand a valley may be of interest as evidence of glaciation, while on the other its significance may be as a sheltered spot for setting up camp. In this example the significance of the scene to each individual is different. In order to understand the source of variance, however, it is the individual as a geomorphologist or as a camper that we must consider. Following Prokop it may be contended that the significance derives from the frames which an individual's membership groups set for him. Thus it is not the individual as such in which we should be interested but rather the group of geomorphologists or the group of campers. An individual's understanding of a particular scene, or the significance it has for him, can themselves best be understood by thinking of him as a member of a group and discovering that group's frame of reference. Of course one individual is likely to be a member of more than one group. For example, he could be both a geomorphologist and a camper. This would in no way invalidate the form of the analysis for one still requires reference to group significances. If the action we are seeking to explain is the pitching of the tent (ie. if we want to answer the question 'why did he pitch his tent on that spot?') what we would be interested in is how experienced a camper the person is and the sorts of things campers find significant eg. flat, sheltered spots above the flood level of the river or stream. To know that this man is also a geomorphologist is unlikely to help in this particular explanation. We would need to discover, therefore, not only which groups the individual may be a member of, but more importantly which groups are relevant to any particular explanation.

Suppose, in the sphere of urban geography again, that one is trying to explain changes in the residential structure of the city, defined in terms of socio-economic groups. In order to understand the shifts of these groups in these terms one must first think of the social

significance of various parts of the city; that is, the frames within which each social group operates. Such an approach is not new for it has been the practice of social historians for over a century to talk in this way. The urban geographer might find it equally fruitful to turn his attention in a similar direction. His concern would then be to examine residential location and decision making according to the differing perspectives of various social groupings and to explain observed regularities thereby. For example, it may be that the prospect of acquiring a home has varying geographical implications for different social groups. To the urban working class the residential geographical horizons may be limited by the fact that the business of acquiring a home consists simply in joining the council housing list. This would almost certainly not be the case for the company director. What is important here is not idiosyncratic perception but the fact that geographical areas have social significance.⁴² Crucial, then, to any explanation of changes in the residential structure of a city will be the historical investigation of the changing social significance of parts of that city. In such an investigation interest would focus upon the group and not the individual, as the unit of study, and consequently the complexities involved in the study of individual decisions would be avoided.

Would this be an acceptable approach? To abandon the individual may dispense with certain complexities, but do we not embrace others when we attempt to delimit the relevant groups? Saarinen comments that perception "also varies with the individual's past history, and present 'set' or attitude acting through values, needs, memories, moods,

⁴² 'Social significance' need not be understood merely as 'prestige value'. Various areas of the city will not appear as residential possibilities to various social groups for many reasons, not all of which will be concerned with the status or prestige of these areas.

social circumstances and expectations".⁴³ It is the needs of the moment, the "haste, anger, hunger, illness, for instance," which we are told, "would highly colour the response to a particular environment."⁴⁴ If, however, we are not concerned with the individual decision itself, the peculiarities of particular individuals cannot be of general relevance. Nor is it evident that those actions which spring from the individual motives of anger, haste etc., often have major geographical repercussions. Though the approach we have isolated may reduce the complexities of studying such a wide variety of behavioural responses, it remains to be seen whether it solves the problem with which the thesis began.

In this part of Chapter 2 we have tried to make sense of the proposition that people 'see' the city differently and have concluded that this cannot be done by appealing to differences in perception as it is commonly understood. Rather, our concern must be with the variation in the significance of certain parts of the city to particular groups of people. If we are trying to develop ways of understanding and explaining changes in the residential structure of the city, we must attend to the aspects of the city or the housing market which may be of significance in the choice of residence. These significances would not be idiosyncratic for they are dependent upon group norms and group perspectives. Our study would require, first, the reconstruction of the residential structure from existing evidence (eg. census returns) and the detailing of its changes from one period to the next. And, secondly, the examination of the perspectives or frames of the various groups with regard to their residential behaviour, the discovery of their needs, expectations and perhaps even their moods, and the investigation of the implications of 'the place of residence' and

⁴³ T.F.Saarinen (1969) p. 5

⁴⁴ Ibid.

'acquiring a home' for these various groups. The study of urban geography, therefore, would become at once historical and conceptual.

II

THE STUDY OF THE INDIVIDUAL:

It may seem that the conclusions of the previous section accord well with the behavioural methodology. Many geographers would claim that the development of behavioural theory depends on studying the individual not as a unique agent but as a member of a group or, perhaps, as the paradigm case of a type of person. They further suppose that if we can outline the mechanics of individual decision making we are well on our way to explaining 'action patterns'. The ultimate concern of the geographer would be with such general patterns. This is the methodology offered to us by most behavioural theorists.⁴⁵ It is a framework which requires further examination, however, for what is the relationship between the particular action of an individual and the behavioural pattern or collective action? How far can we go in explaining the actions of individuals, and what sort of grouping of human agents would a theoretical analysis of behaviour require? It is the relationship between the particular action of the individual agent and more general statements concerning action patterns which provides the theme of this section. This relationship is widely recognised as being problematic. Hudson, for example, in a recent article, discusses one method of 'Linking studies of the individual with models of aggregate

⁴⁵ See, for example, Wolpert (1965). His interest lies in the common components of migration behaviour although his analysis concerns the individual decision to migrate. And Harvey (1970 p.57) makes a similar distinction when he suggests that "individuals possess some proportion (as yet undetermined) of 'common image' derived from some group norms....., and a proportion of 'unique image' which is highly idiosyncratic and unpredictable".

behaviour'⁴⁶ and, after an empirical examination of the behaviour of shoppers, recognises the serious problems involved in "attempting to combine such people into groups that were homogeneous with respect to their choice process".⁴⁷ Whatever the resolution of this problem, however, the geographer will still experience limits to his ability to explain and these limits will be set by the nature of the task in hand.

The individual and the availability of evidence:

In locational analysis it must be allowed that particular actions of a specific nameable individual may provide fit subject matter for the human geographer. If one is puzzled by, for example, the existence of a certain type of building in an area which has been designed as a whole (eg. the New Town of Edinburgh) then to refer to the architect's reasons for including such a building in his original plan is to explain its position and its design. Such reasons could be architectural. It could be pointed out, for example, that the low elevation allows a panoramic view from the opposite side of the street. Or they could be pragmatic. Perhaps money was short and a building of low elevation in this position allowed a considerable saving. If the architect is well known then there is likely to be a considerable body of evidence relating to his architectural achievements. This could include diaries, memoirs and the original documents presented to the town council detailing the projected scheme. It is evidence of this sort which must provide the material for our explanation in all cases where we are not dealing with the actions of living individuals. The extent of this presently existing evidence imposes limits on our explanation.⁴⁸ This

⁴⁶ R.Hudson (1976) p.159

⁴⁷ Ibid.

⁴⁸ The distinction between existing evidence and available evidence is an important one and one to which we will return in Part 3.

does not mean that we cannot have inspired guesses where the evidence is not conclusive, but only that our explanation must in some way be supported by evidence. Further it must not be in conflict with any known piece of relevant evidence.

Most of the human agents whose actions are of interest to the urban geographer, however, will never have enjoyed such prominence as the architects of Edinburgh. Their actions are unlikely to have been documented and the evidence which endures of what they did and why they did it may be very scanty indeed. Explanations of the form suggested in Chapter 1 (ie. in terms of reasons for acting) are, therefore, likely to prove difficult. Information about the actions of ordinary people is frequently gained only by knowing them personally or questioning them directly. Such personal familiarity cannot be sought on a scale sufficient for the analysis of an urban area, and it is hardly surprising that behavioural geographers have characteristically used questionnaire techniques to gain the necessary information about their subjects of study. There is presently much discussion about the problems of survey design and interpretation and for those involved in survey work these considerations are certainly important. For the urban geographer, however, the possibility of questionnaire work may not even present itself. The layout of many parts of an urban area will have been shaped by people long since dead and they, obviously, cannot be questioned directly. If, then, it is the actions of such ordinary people that are of importance in urban geography and many other areas of human geography, what evidence of their reasons for acting is available to the geographer? If they have not kept diaries or published their memoirs must we abandon our explanatory enterprise and content ourselves with descriptive or prescriptive studies?

The temptation is to answer the last question in the affirmative and declare that the form of explanation appropriate in locational

analysis cannot be realised in practice. And yet this is to forget one important aspect of our answers to simple location questions. We can and do formulate such answers in terms of reasons for acting without referring to specific individuals. Thus in the case of the bicycle in the kitchen we may simply suppose that someone put it there because it was raining. We may in fact be wrong. Our agent may never have noticed that it was raining and if this latter fact ever came to light we would certainly have to change our account in the face of the counter-evidence. Until such time, however, that it is raining provides some support for our explanation. As we have seen before, the explanation itself may not be an entirely satisfactory one but it is an explanation, it does answer our question, and it is not demonstrably false. Thus, although evidence in diary or memoir form is likely to be restricted for the ordinary individual, other evidence becomes more important, evidence of what could have provided a reason for X to act in a particular manner. Such evidence is in an important way impersonal. The claim is not that a certain historical fact could have provided Napoleon, or Mr. Brown, with a reason for acting in a particular way, but that it could be construed as a reason for so acting by anyone in that situation. And this is to say that it is an intelligible reason. Nevertheless, the explanation is still limited by the extent of present evidence relating to the particular actions in which we are interested.

Two points emerge here. First, if we are concerned to make general or theoretical statements about urban structure then we need not be concerned with specific individuals, although their actions may still be of interest in so far as they may be regarded as typical. And, secondly, the present behavioural literature could be of use to the locational analyst only in so far as the geographic pattern of concern is of recent origin, for the behavioural methodology is best suited to

contemporary situations where the agents involved can themselves be questioned. This is certainly the most direct manner of discovering why individuals acted in a certain way. Even here, however, the researcher cannot avoid problems and it will be difficult in practice to provide an explanation in terms of an individual's reasons for acting, not least when one recognises the possibility of 'hidden' reasons.⁴⁹ Even when agents can be questioned directly their own explanation of their decision or action need not be the right one and to judge this an extended familiarity with that agent is, apparently, a necessity. Hidden reasons will always be difficult to ascertain. The prospects for the social scientist seem grim indeed, for he cannot possibly enjoy the privileged position of an observer of the general conduct of all the individuals whose decisions and actions he wishes to study. It would take considerable time and effort to become acquainted with one man in order the better to explain his actions, far less with the multiplicity of individuals who take part in shaping an urban area. Even face to face interviews cannot solve all the problems a researcher will encounter in the field of behavioural studies.

⁴⁹ For example, it would be difficult to cope with perfectly acceptable explanations of the sort: 'Joe Smith moved from district A of the city to district B because a number of Asian immigrants had recently moved into district A', even though Joe Smith hotly denied that this had anything to do with his decision to move. That we would not necessarily believe Joe Smith in this case is apparent. And it is interesting to note that at this level it is not only the reasons for acting provided by the subject himself which form the explanation, but rather that the way in which we judge the explanation to be a good one or a bad one is by an appeal partly to such proffered reasons, but more importantly to the conduct of the subject himself in relation to these stated reasons. Thus Joe Smith may claim that he just thought he would like a change. If we know, however, that he has erected a high fence between his garden and that of his new neighbours and has been heard, on occasion, to protest about the influx of Asians, we would be justified in disbelieving this claim. Our explanation of the decision to move, then, would include reference to a certain dislike of immigrants whether or not Joe Smith agreed with our account.

That explanations of human actions will vary in their completeness is obvious. Correspondingly some will be more satisfactory than others, prompt fewer further questions than others. The behavioural theorist may argue that the limits to such explanatory enterprises impinge only marginally on his work. Whilst he is concerned to understand individual behaviour it is only as a step towards understanding a more complex whole and it is not necessary to know the minutiae of particular decisions in order to make general statements about, for example, migration streams. The extent to which this does avoid the problems already outlined must remain an open question for it is the jump (from detailed particular to general pattern) on which attention can be most profitably focussed. How are we to arrive at general propositions relating to human behaviour? Within behavioural geography there are two ways in which the questions of the individual's decision to act can be approached in order to yield general statements in terms of reasons for acting.⁵⁰ We could attempt general statements by thinking in a general manner of any individual's decision to change, for example, his place of residence. We could ask, "What sorts of things would someone (anyone) take into consideration when he wished to move house?". Or we could start with the particular and subsequently attempt to derive general propositions. For example, we could question a significant sample of some population and then make statements about that population as a whole based on the questionnaire returns. Both these approaches require more careful consideration.⁵¹

⁵⁰ Our interest being in the relationship between the decision to act and the spatial repercussions of that decision, all we need to know in order to explain the action is why the agent decided to act in that manner. We do not need to know, for example, how information is collected. In this way I take work on search behaviour, such as that of J.A.Silk (1971), to be beside the point in the present discussion.

⁵¹ It should be noted that the distinction between these two approaches does not correspond to the deductive/inductive dichotomy.

General statements from general observations:

Wolpert in his paper 'Behavioral Aspects of the Decision to Migrate'⁵² provides us with a good example of the former. He does not consider a particular set of questionnaire returns but arrives at his theoretical framework after a much more general reflection on the subject. Wolpert reveals his desire for generality by suggesting that,

.....understanding and prediction of migration streams require determining of the constants in migration behavior and distinguishing these from the variables with respect to population composition and place characteristics which evolve differentially over time.⁵³

There are three elements to Wolpert's framework: place utility, search behaviour and life cycle. The latter involves the notion that at certain stages in the life cycle human agents will be more likely to migrate. The young and unmarried are likely to be adventurous in this respect and frequently retirement is a time when the individual moves house. Such general propositions are hardly contentious, but over the whole life span the pattern is vague and possibly changes rapidly. The economic climate of the time will certainly have an influence here. Whilst Wolpert has pointed to what may be a regularity in migration behaviour the notion of life cycle as presented is of minimal use in explaining such behaviour. It may make the researcher aware (if he was ever unaware) of the fact that there are certain circumstances in which individual agents are likely to find it easier to move, for example when job or family ties are broken. This in itself, however, only prompts us to look for certain sorts of reason rather than others

⁵² J. Wolpert (1965)

⁵³ Ibid. p.160

and cannot provide us with a ready explanation.

The second element of Wolpert's model is search behaviour. This appears as a description of how an individual gains information about other places and is said to lead to the delineation of 'action space'. This, like the work of Silk, is beside the point in the present discussion, for it is not of relevance to the explanation of actions. We can only attempt to explain actions which have already taken place and action space as Wolpert conceives it would be used to predict where a person might move in the future. It is interesting to note in passing, however, that in practice the delineation of the action space of one man would be an impossible task for the geographer for again it would require an extraordinarily privileged position to be able to plot every significant spatial movement of an individual throughout his lifetime.

The third and most important element is place utility. This, like the economist's notion of utility, involves a consideration of the value an individual places on, in this case, a place. The greater the value or utility an individual considers his place of residence to have the less likely he is to move, and Wolpert supposes that it is possible to isolate the factors which influence an individual's assessment of this place utility. But the generality here is superficial. The influencing factors may vary widely and, as it stands, this third element seems to amount to the proposition that, "If we know that a person at Place A likes another place better then we can say that he is likely to move, and vice versa." Clearly this is not going to advance prediction. Could it ever help to explain migration, however? Wolpert might argue with some justification that, following the form of explanation of human actions outlined in Chapter 1 of this thesis, the reasons which individuals have for moving house frequently fall into two categories. There will be a set of reasons for leaving Place A and there will be

another set of reasons for choosing place B as the new location. Both of these sets could be thought of as making up the individual's assessment of the utility of the particular place. Importantly, however, the set of reasons comes before the notion of place utility here and it is these reasons, under whatever heading, that provide the information for the explanation. One is left wondering how the place utility element could be other than superfluous.

This, then, is Wolpert's framework, and one measure of its worth must surely lie in the extent of its applicability. Superficially the generality seems complete. Everybody makes assessments of places and chooses (in so far as it is a matter of choice) new residential locations accordingly. But would anyone ever have doubted this? It takes no expertise whatever to make general observations at this level. We do not need to have undertaken research to know that most people weigh up the pros and cons before making migration decisions. Wolpert is not alone here,⁵⁴ but his work illustrates well the difficulties involved in making general statements of any substance without reference to the specific. Such statements are always in danger of being so general as to be trivial.

General statements from particular observations:

The alternative approach of attempting to generalise from a limited number of particular instances which have been examined in detail has been adopted by many writers. The adaptation of Kelly's 'Personal

⁵⁴ Push/pull models such as that suggested by E.S.Lee (1966) may be said to have been derived from the same general observation as that of Wolpert's notion of place utility. Both are subject to the criticism presently advanced.

Construct Theory'⁵⁵ (P.C.T.) for use within human geography provides us with a good example of such an approach. Those geographers who advocate its adoption suggest that it can be applied in a wide variety of behavioural contexts. Attempts have been made to analyse the spatial behaviour of shoppers, for example, with the aid of Kelly's theory.⁵⁶ Kelly himself, however, being a practising psychiatrist, is concerned to understand the actions of specific individuals. He starts from the premise that in order to understand a person's actions we must first understand the way in which that person interprets the various situations in which he finds himself.⁵⁷ Further, he contends that an individual comes to understand a situation by erecting constructs which involve similarity and contrast. By drawing on his previous experience of situations and events, the individual notices features which characterise some such situations but are uncharacteristic of others. All constructs, according to Kelly, are bi-polar for they rely on contrast. This polarity has given rise, within geography, to the technique of the repertory grid on which constructs can be plotted.

P.C.T. was, therefore, originally developed in a practical context. Kelly's interest is in the 'whole man' and his concern is very much with the mental health and welfare of each of his patients. As far as the theory is concerned it stands or falls according to the improvement or

⁵⁵ see G. Kelly (1955). P.C.T. is said to be a theory about the way in which a person comes to understand his reality. It was originally developed for use in a psychotherapeutic context but has no situationally specific content.

⁵⁶ see, for instance, R. Hudson (1976)

⁵⁷ This question of idiosyncratic or personal interpretations of situations is a contentious one and one which is examined in more detail in Chapter 3.

otherwise in the condition of these patients. For the geographer interested in patterns of spatial behaviour the situation is rather different. He has no such criterion for judging the success or failure of personal construct methodology in the new context. Further, it is interesting to note in passing that if all constructs are indeed personal in the way Kelly suggests it is at least contrary to the spirit of P.C.T. to attempt to make general statements about the construct employed in specific behavioural situations. Geographers do attempt such general statements, however, and it is instructive to examine both the relation of P.C.T. to the explanation of action patterns and the way in which general statements are derived from particular instances.

Researchers who adopt this methodology rely heavily on questionnaire surveys and this clearly restricts the scope of their work to contemporary situations. Such questionnaires need to be carefully designed as the elicitation of constructs is not without its problems. It is not at all evident that people do order their understanding according to simple contrasts of the form good/bad, kind/cruel etc.⁵⁸ And even if it could be shown that all evaluations, for example, are reducible to these bi-polar constructs it is clear that few, if any, undirected answers to the geographer's questions would be given in such a form. The geographer who adopts the P.C.T. methodology is then faced

⁵⁸ Many of Kelly's followers suppose that the contrast in the bi-polar construct is a personal one; I might evaluate a situation in terms of kind/cruel whereas your criteria might be kind/critical. The proponents of P.C.T. are forced into an untenable position here if they want to claim that the contrast is entirely a personal matter. It is no accident that both 'cruel' and 'critical' can be construed as 'unkind'. We are bound by the meanings of the words and must surely be prepared to dismiss a kind/purple construct, say, as nonsense.

with the task of interpreting more detailed answers in bi-polar terms.⁵⁹ Again it would seem that if constructs really are personal the geographer is in no position to make a pronouncement about someone else's. More important in the present context, however, is the relationship between the body of evidence (as to the reasons for the action) and the personal constructs which are also thought to help in the understanding of the action. The answers given to survey questions would provide us with the former. These answers, however they are presented, constitute some of the available evidence from which the explanation of the action can be pieced together. Personal constructs in so far as they have to be derived from such answers must be subsequent to them. And being subsequent to rather than part of the body of evidence itself, personal constructs are therefore superfluous theoretical devices, since actions can be explained prior to their formulation.

It might be objected that personal constructs are no more than a simplified but useful way of listing the criteria one individual uses to evaluate a certain situation. It would not matter, then, if the man in the street were unable to produce a list of his constructs when asked, for these would merely be the geographer's shorthand. Even supposing we allow a revision of the original P.C.T. however, what does this imply for the understanding of human actions? If we knew that a man evaluated a certain situation in terms of a cheap/expensive construct would we necessarily know anything about his shopping behaviour? If the action of interest to us has already taken place we may find that our agent bought his groceries, for example, in a supermarket because of the cash saving this allowed; that is, he went to the supermarket because it

⁵⁹ Alternatively he can, of course, direct his subjects to answer according to the bi-polar format. But the theory would thus become self-fulfilling and as such of little interest.

was cheaper. This is a perfectly straightforward explanation of his action and the 'shorthand' method of representing it cannot enhance our understanding of the situation.

If not explanation, what about prediction? Is this not perhaps a sphere in which P.C.T. can be of use? Some theorists would argue that if we examine routine situations in which an individual uses a construct or set of constructs again and again, then, once the constructs are known, all subsequent behaviour of the same kind could be understood and indeed forecasted. In principle it would be impossible to establish that the set of constructs would remain unchanged even in routine situations. And once one allows that the constructs may change, the prediction of subsequent behaviour is no longer possible. Further, even if an individual could be said to employ a constant set of constructs in a given situation it is not at all clear that anything follows necessarily for his future behaviour.⁶⁰ P.C.T. cannot help us in the explaining or forecasting of the behaviour of individuals. If it is useful, then its use must lie outside the sphere of human geography.

If the personal construct methodology cannot help us in the overall task of this thesis (the search for ways in which we can understand and explain human behaviour), it can provide us with an illustrative example of the way in which general statements have been derived from particular observations. The theorist employing P.C.T. is rarely content with the collection of information on, say, the shopping behaviour of a number of individuals. What he wishes to do is to find some way of grouping such

⁶⁰ An individual may always evaluate shops according to whether they are cheap or expensive and may generally choose the cheap shops because they are cheap. We cannot exclude the possibility, however, that on some occasion he may choose the expensive shop because it is expensive.

individuals in order to reveal the behavioural pattern. After the sorting out of the questionnaires, the construction of the repertory grid and the application of a statistical grouping technique, however complex, what emerges are behavioural sub-sets grouped according to shared reasons. These could be reasons for choosing certain shops rather than others, or certain shopping centres rather than others. We would thus have a group of people who look mainly for cut-price shops, another group whose primary concern is with personal service, etc. General statements could be made as to the percentage of the population in each category and a list could be drawn up of the main criteria used by shoppers to evaluate their places of purchase. Such general statements would necessarily be of limited generality, however, for they refer only to the population questioned. Or more correctly, the sphere of reference is limited to the set of questionnaire returns.⁶¹ Non-trivial statements of wider applicability cannot be generated from such a study. This is because of the problems involved in identifying the 'same' situation in a wider context. It is to be noted, however, that when adopting this strictly inductive reasoning, the groupings on which general statements would be based are derived from professed reasons of particular individuals for acting in a particular manner. We have already seen the limits imposed on explanation here for a simple interview does not, and cannot, take any account of hidden reasons.

The general and the trivial:

In this section we have discussed the many problems involved in the

⁶¹ The question of the size of sample which can be said to be representative of a particular population is indeed problematic. In the present context it is enough to note that general statements about a sample will be applicable to the total population only in so far as the sample is representative of that population. Further, since the sample population could either misunderstand the questionnaire or deliberately mislead the researcher, any general statements will be descriptive of the questionnaire returns rather than of the individuals themselves.

explanation of the actions of even one individual. And the formulation of general statements about human behaviour is no less problematic. There are two points of primary importance. First, in the explanation of human actions the extent to which we can discover the reasons for a particular action is most likely to vary according to whether the agent is a contemporary or an historical figure (ie. according to whether he can be questioned or not.) The form of the explanation remains the same, however, and the purpose will be to render the action intelligible. The agent's own account of his reasons for acting need not be definitive (he could be lying, have forgotten why, or perhaps even be unaware of the 'real' reasons). Thus his account is merely one more piece of evidence which can be used in support of the explanation. It is in the judgement of the validity or otherwise of this account that direct questioning provides a considerable advantage. A face to face interview facilitates the detection of deliberate omissions or misrepresentations, as well as permitting a much fuller elucidation than is likely to be found in an historical document. Nevertheless, the form of explanation is historical⁶² and the explanation itself will be hypothetical, being supported by the available evidence. If counter-evidence were subsequently discovered the explanation would have to be altered accordingly or abandoned. The limits to explanation here, then, are the limits set by the existing evidence.

Secondly, it is apparent that statements of any generality cannot be readily formulated from such explanations of the particular. General conclusions drawn from questionnaire surveys have a restricted reference

⁶² The nature of historical explanation is discussed in Part 2.

especially when expressed in percentage terms.⁶³ Any attempt to extend the scope of such conclusions either involves the researcher in unwarranted inferences or runs a real risk of being trivial. A conclusion such as, "Other things being equal (or mostly) people will choose the cheaper shop rather than the more expensive one", tells us nothing that we did not know before the interviews took place. Nor does the more general speculation seem to add much, for it is speculation and by the very nature of reasons, of human actions, and of social situations, one could go on speculating ad infinitum about why people might be likely to move house or whatever. Such truly general statements as we can make (eg. people move house from A to B either because there are some negative factors operating at A, some positive factors operating at B, or a combination of the two in which the latter outweighs the former) are in a good sense trivial. It takes no expertise to observe that, in general, people move house either because they don't want to be where they are, or because they want to be where they are not. The apparent sophistication of many push/pull propositions is only apparent and the jargon can only deceive the unreflective. That many, if not all, general statements attempted by geographers espousing the behavioural methodology are of this kind is beyond doubt. And it is this inability to formulate the kind of general statements thought to be necessary for the construction of a body of behavioural theory, without recourse to the trivial, which calls into question the search for generality itself.

In this chapter we have examined the possibilities of a behavioural approach to human geography. Over a decade ago the ineptitude of

⁶³ A researcher might calculate that 90% of those interviewed prefer supermarkets to corner shops because the former are cheaper and offer a wider range of goods. Conclusions of this sort, presented in numerical or percentage terms, refer only to the sample population.

economic formulae to capture the essential features of human behaviour in a geographical context led to a worthwhile change of emphasis within the subject. The 'human element' was to be tackled directly and no longer was residential location to be thought of, unrealistically, in solely economic terms. Study was to be concentrated on the actual behaviour of individuals in order to gain an understanding of the spatial outcome of that behaviour. Despite the optimism which accompanied the introduction of the behavioural methodology, however, original promises of a substantive body of behavioural theory have never been fulfilled. Pessimism has replaced optimism, and the enthusiasm amongst behavioural researchers appears to have faded. Why should this be so? It may well be the result of misdirected energies, many of the practitioners having ended up in methodological cul-de-sacs. It is the behavioural theorist's failure to consider the coherence of his central concepts first which has led him to this impasse. And any analysis based on the incoherent guarantees from the outset the invalidity of its results. The notion of 'perception' is a good example here. Widely used in the literature, it is a notion which, nevertheless, requires further clarification to establish its coherence. If we were 'shut in our own little worlds' in any strong sense, then this would certainly have many implications for the understanding and explaining of human behaviour. On reflection, however, one cannot avoid the conclusion that we do not all 'see' the world differently in any literal sense, for what we see depends on the frame of the language which we speak and that is, and must be, shared. As Winch succinctly puts it:

Our idea of what belongs to the realm of reality is given for us in the language that we use. The concepts that we have settle for us the form of the experience we have of the world. It may be

worth reminding ourselves of the truism that when we speak of the world, we are speaking of what we in fact mean by the expression 'the world'.⁶⁴

This does not mean that people's opinions of places, other people or whatever cannot and do not differ. Further, that people do act upon such opinions is apparent, but opinions are not perceptions. And even if it was considered important to discover what people thought of a particular place, event or person in order to understand their subsequent action, it would still have to be admitted that not all actions are opinion informed in this way. If Johnny put the bicycle in the kitchen because it was raining, it is quite irrelevant to the explanation of that action that Johnny was pleased or otherwise about the state of the weather. The explanation here would be quite intelligible without any reference to opinions. Even where the inclusion of such a reference is essential to the understanding of the action, the explanatory mode would not differ from the commonsense view examined in Chapter 1. From day to day we are used to explaining the actions of those who surround us in terms of the reasons they had for so acting. Any departure from this form of explanation, in order to be justified, would have to provide a demonstrable increase in understanding.

The understanding sought by most behavioural geographers, however, is not of the particular decision (or action) of one human agent but is more general in nature. We have seen the difficulties involved in trying to formulate general propositions about human behaviour without recourse to the trivial. Yet the search for generality dominates behavioural studies and is closely associated with the declared aim of developing a body of theory. By theory here is meant, apparently, a set of inter-related statements or laws very much like those of the natural sciences. The model which informs the behavioural researcher's notion of theory is a scientific one. The general is equated with the

⁶⁴ P. Winch (1958) p.15

theoretical and the hope is for the discovery of laws of human behaviour. The very paucity of the general statements contained in the present literature, however, calls into question the possibility of producing substantive scientific theory. Could 'laws' of human behaviour ever be equivalent to the laws of physics, or are the behavioural geographers employing the wrong model? In order to answer this question we require a more detailed account of the nature of human action and the sorts of explanation appropriate to it. We must also investigate the nature of scientific method and examine the implications of a scientific approach to the study of human affairs. This two-fold interest provides the subject matter for Chapter 3.

CHAPTER 3SCIENTIFIC METHOD AND HUMAN GEOGRAPHY

Most contemporary geographers, accepting the quantitative revolution as a fait accompli, identify their subject with the sciences rather than with the humanities. Even urban geographers, and in particular urban theorists, think of themselves as scientists. This is apparent from the attempts at theory construction which have frequently been modelled upon the theoretical formulations of the physical sciences. Despite this, however, there is a certain vagueness about what being a 'scientist' means and an uncertainty as to what 'scientific method' is and how it should be applied. It is the concern of this chapter to examine the distinctive features of a scientific mode of understanding the world in order to judge its relevance to the subject matter of human geography. Can scientific method help us to understand and explain the phenomena of the social world? This question is an important one for Geography at the present time, and one which can only be answered after a careful examination of the nature of science and of the social world.

I

THE NATURE OF SCIENCE:

Sometimes the words 'science' and 'scientific' are used in a very general way to convey the idea of disciplined thinking. Thus to call a study unscientific in any academic sphere would be to condemn it as displaying undisciplined thinking and therefore not acceptable as a piece of academic work. In this sense all academic pursuits must be scientific for, to be regarded as academic in the first place, they must involve disciplined thinking. When geographers claim that the methodology most suitable to their studies is that of science, however, they are not simply maintaining that, in order to study geography, we are required to think in a disciplined manner. Indeed, who would doubt that? Rather, these writers wish to align themselves not with academic pursuit in general but with the more popular notion of science, namely natural or physical science. Thus the methodology which they advocate and employ is that of the physical sciences. And if we ask 'what is science?', it is some account of this methodology which would answer our question.

What sort of account would this be? Clearly we could describe the sorts of things studied in departments of physics and, equally, the very different sorts of things studied in chemistry. But this is unlikely to reveal what makes them both 'science'. As Alexander, in an introductory text on the philosophy of science, points out, ".... the question is to be understood as a request for an account of the features of these activities which lead us to classify them together in this way and to distinguish them from other activities."¹ Thus

¹ P. Alexander (1963) p.13

what we wish to know is what is distinctive about science as a mode of understanding the world. What distinguishes it from other modes of understanding? And this is a request for the tracing out of the internal logic of science. Any separate discipline of thought must have a distinctive internal logic in order to establish it as a distinctive discipline.

At the same time, to trace out the unique internal logic of a discipline is not necessarily to say anything about the conduct of such a discipline in the contemporary academic world. To enquire into the nature of science is not to make any claims about what anyone is actually doing. As Alexander says, "A logical analysis of a method need not look like a description of that method, or a recipe for doing something, any more than a critic's comments on the merits of a painting need look like an account of the artist's behaviour while painting it or of the factors which led him to paint it as he did."² If we are to talk of the logic of science this must bear some relation to science as it is practised, but the fact that the work of some scientists, or the methodology which they employ, conflicts with our account cannot, in itself, throw doubt on that account. To describe the internal logic of science is quite different from describing what scientists actually do.

If we are to call a certain area of study 'scientific' we must be able to distinguish the mode of understanding appropriate to it. It is not enough to demonstrate that some techniques used in physics can also be employed in human geography, for there may be nothing peculiarly scientific about such techniques. One could perhaps utilise them within other modes of understanding. If, then, we are convinced as geographers

² Ibid. p.15

of our affinity to science, our task must be to demonstrate the appropriateness of scientific method to our subject matter. First, however, we must examine what constitutes a scientific mode of understanding; ie. we must trace the internal logic of science.

The Baconian view of science:

One popular view of the nature of science is the Baconian or inductivist view. On this account, "The one basic method of all the sciences is generalisation and the advance of science consists in the making of wider and wider generalisations."³ That this is a popular view should be evident, for we have noted that many geographers (and they are not alone) associate the development of theory with the formulation of generalisations. Such generalisations are thought to be obtained by means of a series of inductive inferences.⁴ It is certainly true that the practice of science involves the making of statements of a universal nature and that these statements have general applicability. For example, the scientific statement 'all gases expand when heated' applies to all gases, even those which may not yet have been discovered. It is a statement about the nature of gases, about the essential properties of a gas. Despite its universal or general applicability, however, such a statement is not a generalisation. It is the mistake of supposing it is which characterises the inductivist position. Geographers, in so far as they share this view, are also labouring under the misapprehension that science involves generalising

³ Ibid. p.102

⁴ This is generalising from the observation of particular instances such as in the application of P.C.T. to shopping behaviour.

from many instances of the particular. This point can best be appreciated by examining this popular notion of what science is.

If we adopted the Baconian view of science, and wished to make general statements about, say, the nature of gases, we would need to study as many instances of the heating of gases as we possibly could. The generality of such statements must bear a direct relationship to the volume of experiments. If this was the only method of science, however, and even if we had conducted several hundred experiments of the same kind, we would have no reason at all for supposing that the general statement would be true of the next instance of the same phenomenon. The referent of the generalisation would only be the observed instances from which it was induced and this provides no basis for asserting that further occurrences of the phenomenon would exhibit the same properties. Clearly scientists do not consider their results to be confined to observed occurrences and cannot, therefore, consider induction to be the method of science. They claim universal applicability for the laws which they formulate and by accepting or assuming the basic uniformity of nature are released from the stringencies of inductivist method. The scientific laws which are advanced are timeless and must apply to any gas, or whatever, whether at the present moment, in the past or in the future. They are general but not generalisations. This is not to say that such laws are immutable, for under certain circumstances it would be possible, and indeed necessary, for scientists to discard them. Scientists can and do make mistakes, but a scientific law cannot be true then and false now. If a serious counter-example is found, the law cannot ever have been a true representation of the nature of the world.

The universal statement in science:

We have seen that scientific method does not involve purely inductive reasoning. Let us now attempt to isolate certain features which are characteristic of science. Braithwaite provides us with a starting point in his discussion of scientific explanation when he states that "The function of science is to establish general laws covering the behaviour of empirical events."⁵ These are the universal statements of science and few would dispute their importance as part of the scientific methodology. Zelinsky, in a recent presidential address, endorses this view when he remarks,

scientists are the creatures concerned with universalities, with the pursuit and testing of general laws, presumably applying to all the subsumed objects. This is the ultimate official identity of science even when the immediate agenda covers only the seemingly unique.⁶

It is this way of seeing the world, this search for general laws, rather than any peculiarity of subject matter which marks science as a distinct academic discipline. If the derivation of general laws is logically inappropriate to any particular phenomenon, then, it must necessarily be outwith the scope of the scientist and of no scientific interest.

But how is the geographer to discover the appropriateness, or otherwise, of the universal statement to his subject matter? It is often supposed that geography, being a young science, has not yet reached such an advanced stage and that the volume of comparative studies must first be increased. Certainly the body of theoretical knowledge in science has been built up over a considerable period of time and has involved the establishment, modification and replacement

⁵ R. B. Braithwaite (1953) p.1

⁶ W. Zelinsky (1975) p.127

of the general laws advanced by the scientist. Further reflection on the universal nature of such laws, however, reveals an essential facet of truly scientific subject matter. The presence (or absence) of this, then, would confirm the appropriateness (or inappropriateness) of a scientific mode of understanding as the methodology of human geography.

The universal statement is a central feature of science, but what is the central feature of the universal statement itself? What is it that allows the logical possibility of making statements which refer to all occurrences of a particular phenomenon where this even includes future occurrences? On closer inspection we can see that all universal statements of the form 'all gases expand when heated' refer both to anytime and to everytime. Thus the notion of time itself must be unimportant and scientific laws can be seen to be timeless. The nature of statements as universal excludes any notion of chronological time. If a law is applicable to all gases the time at which any such gas happens to be discovered by a particular scientist must be quite irrelevant. This timelessness allows us to contrast science with history for, of course, an historical understanding is directly concerned with the passage of time, 'the past' and 'the present' being two central notions in any characterisation of the nature of history.

The empirical test in science

This account of what is involved in scientific method is supported by a consideration of the way in which such universal laws have been established in science, as well as the logically necessary conditions for their verification. Here the empirical test plays a prominent part.

Sarre recognises this when he concludes a discussion on perception by reminding us that "scientific method was characterized as involving both induction and deduction, but with emphasis on building and testing hypotheses as a route towards producing geographic theory."⁷ Some empirical confirmation of an hypothesis will be required for the conduct of science. As Braithwaite points out, the function of science is to establish universal statements and it is in relation to the establishment of hypotheses that scientists require a check against reality. It is worth noting that there is a problem of verification in science. Recent writers in the philosophy of science have been concerned to demonstrate that verification taken literally as 'the assertion of the truth of' is impossible in science and that hence scientific hypotheses can logically only be subjected to Popper's famous falsification criterion. That is to say that no particular number of instances on which an hypothesis could be said to hold could (logically could) validate that hypothesis. One single counter instance, however, would (indeed logically must) invalidate or falsify that hypothesis. All hypotheses, if they are to be called scientific, must be amenable to such a test. To use Popper's terminology, scientific hypotheses must be in principal falsifiable.⁸ Whatever else might count as part of scientific method, then, the application of an empirical test is both central to the practice of science and logically necessary to the establishment of a scientific hypothesis. The scientist postulates an hypothesis, deduces its consequences for a particular case and falsifies it, or fails to do so, by comparing

⁷ P. Sarre (1973) p.7

⁸ see K. Popper (1959)

these consequences with the results of an empirical test.⁹

It is important in such a context to be able to repeat such a test or to reconstruct a particular instance at least once. If repetition of this kind is logically impossible, the hypothesis would not be in principal falsifiable and could not, therefore, be subjected to scientific scrutiny or be amenable to scientific method. Further, the logical possibility of such recreation depends upon the essential atemporality of science. This is a point of considerable import, for it is only because the notion of the specific time at which a phenomenon occurs plays no part at all in science as a mode of understanding the world that we can be said to recreate the same situation five minutes later. If this were not so, two experiments would not be the same if the time at which they took place was itself different. Only if we have the logical possibility of identifying the same situation could we be said to test universal statements empirically. And only if we have the logical possibility of such a test can any such statements be in principal falsifiable and hence subject to the canons of scientific reasoning.

The investigation of the nature of science has led to the isolation of two features which are fundamental to the practice of science. The aim of science is to further the understanding of the way the world is by the formulation of universal laws and the establishment of a body of scientific theory. The establishment of laws and theories requires the application of an empirical test, and

⁹ I do not mean to imply that this is a simple or unproblematic procedure, but for present purposes it is enough to note the function of the empirical test in science.

it is in relation to this that not only the ability to conduct laboratory experiments but also the essential timelessness of scientific understanding are crucial. There are perhaps other logically necessary features of science which could have been elaborated but even without a full account of what science is we still have one very explicit criterion by which to judge the applicability of scientific method to the world of human affairs.

We have said nothing here about the practice of science. Scientists, like other academic researchers, do meet practical problems. They debate the best way to proceed, disagree about the significance of findings and spend considerable time perfecting the design of experiments.¹⁰ That individual scientists will experience difficulties when attempting to recreate the same situation (ie. repeat a test) cannot be denied. We have been concerned, however, only with the more fundamental question of what makes such attempts logically possible.

II

THE NATURE OF HUMAN BEHAVIOUR:

What we are attempting to ascertain in this chapter is whether a science of society is possible, whether the social world can be studied scientifically. We have seen something of the nature of scientific

¹⁰ E. F. Çaldin (1961 p.21), for example, points to the experimental rule in Chemistry of 'varying one factor at a time', but adds "this is not the whole or even the half of scientific method; for the art lies in guessing which factors are relevant." There is an important distinction between such rules of thumb, or ways for the scientist to proceed, and the logically necessary steps in scientific reasoning.

method and must now turn to a more detailed exploration of the nature of human affairs before we can judge the appropriateness of the method to this subject matter.

Meaningful and automatic behaviour:

What is it that distinguishes human behaviour from the behaviour of electric currents, trees, plants or even animals? In other words, what makes human behaviour specifically 'human'? One possible answer would be to cite the freewill or choice element involved in such behaviour, and indeed MacIntyre puts forward a convincing case for supposing that explaining actions is explaining choices.¹¹ To avoid the well-worn deterministic/probabilistic controversy, however, another distinction which renders it irrelevant is worthy of emphasis. This is the distinction between meaningful and automatic behaviour. Any human action will have meaning for the agent or agents involved over and above the physical dimensions of the action itself. Thus on two separate occasions I may perform the physical movement of raising my right arm, but once it is realised that on the first occasion I was hailing a taxi and on the second I was waving goodbye to a friend, these can be seen as two quite different and distinct actions. The physical element of the action (the raising of the arm) may remain unchanged, but if the purposeful element changes, the action itself changes. Further, it is the absence of this purposeful element which distinguishes automatic behaviour, as in, for example, a nervous twitch. This is not a human action, as hailing a taxi is, or waving goodbye. Rather it is simply a physical movement, it is not meaningful or purposive, and the agent could not do otherwise.¹²

¹¹ see A. MacIntyre (1969)

¹² Automatic behaviour of this kind requires a physiological explanation in terms of, for example, nerve impulses.

Can actions be caused?

If human actions are essentially meaningful and can be contrasted with automatic behaviour associated with physiological causes this again raises the question of the appropriate explanatory mode for such actions. The commonsense view of explanation led us to suppose that in explaining actions we must look for the reasons of the agents themselves. The idiom of science, however, is usually associated with causal explanations and we can now ask whether the two are exclusive or whether we could have causal explanations of human actions. Clearly we do in fact talk of a certain event causing a person to act in a certain way but it is not at all clear that this is the same kind of causal connection as in heating and the expansion of gas. The imprecision of ordinary language here may be a source of considerable confusion.

The following example is instructive. Suppose that an alien being was to observe the behaviour of motorists at a set of traffic lights. It might not be long before he came up with the hypothesis that 'red lights cause cars to stop', and this may even be satisfactorily confirmed when 99.9% of a further sample of cars also stop when the lights turn to red. But to invoke a law-like hypothesis in the explanation of this piece of human behaviour is to completely miss the point. Red lights do not cause cars to stop, and the explanation of why most cars do in fact stop would require an understanding of what traffic lights are and of the conventions associated with their use. A driver who had never seen traffic lights before and knew nothing of them, could not observe the highway code in relation to them. This is a clear example of social behaviour as rule-following rather than law-governed behaviour. The regularity in social behaviour at traffic

lights (the fact that most people do stop when the lights are red etc.) results from first, the fact that the people involved understand what traffic lights are and, secondly, that they are following the appropriate social rules.

Again, if one were to witness the activities of a bank, no matter how detailed one's description, or how sophisticated one's correlations, the situation could not be explained without an understanding of the concept of banking, a social institution. Though we frequently talk about something causing a human agent to act in a certain way (especially where a large measure of regularity can be observed in the way people act and react), social behaviour is not caused but rule-following. Ignorance of the rules or non-observation of them can result in some peculiarities in the pattern of behaviour. Rules, too, can be seen as providing an agent with a reason for acting as he does. An account of social behaviour as rule-following, therefore, confirms the appropriateness of reason-giving explanations rather than rendering them redundant.

The automatic/meaningful distinction is of prime importance, for once we have distinguished human actions as meaningful and therefore rule-following we can contrast such actions with behaviour which is caused in the strict sense. And rules here are very different from laws such as we find in science. A particular human agent could break a rule without altering its status as a rule. An individual motorist may fail to stop at a red light, but the rule (that cars must stop when the lights turn to red) remains unchanged. This would not be the case for a scientific law. Such laws must be immutable and if counter-examples are found the law itself must either be modified or discarded. Further, the reasons (associated with the rules) and the

causes (associated with the laws) can also be shown to be very different in nature. It is frequently not only appropriate but necessary to enquire into the rightness or wrongness of an agent's reasons for acting in a certain manner. Such questions just do not arise in a discussion of causes. If gravity causes the downward fall of an apple from the branch of a tree it makes no sense at all to ask whether this is a good cause or a bad cause. We simply accept it as a cause. The same would be true of automatic behaviour such as the nervous twitch. Blame or praise may be attached to human actions after a consideration of the reasons for and the circumstances surrounding the action. The same would not be true of automatic behaviour, behaviour which is caused. It is just as inappropriate to blame or praise anyone for having a nervous twitch as it is to blame or praise an apple for falling from a tree.

So far, we have at least good grounds for doubting that a scientific mode of understanding is relevant to the social world. In the study of human affairs we could not sensibly advance the kind of causal explanations commonly associated with science. The rules of social behaviour are quite different from the laws of science. And it is to be noted that this is so not because of the complexity of the subject matter in the social sciences. As Harvey emphasises, ".... there is absolutely no justification for the view that laws cannot be developed in human geography because of the complexity and waywardness of the subject matter."¹³ It is not that law-like statements seem inappropriate but may prove not to be so if more research were done. Social behaviour is rule-governed and rules are not laws. Nor can the sheer number of factors involved in any social situation be deemed

¹³ D. Harvey (1969a) p.133

responsible for the social scientist's inability to control experimentally his subject matter. The identification of any human action depends upon the social context in which it is performed. The action has meaning by virtue of its context.¹⁴ To change the context is to change the very nature of that action. Many writers, however, have mistakenly supposed that the complexity of human behaviour is the only stumbling block to the scientific investigation of such behaviour. Over a century ago Mill in A System of Logic noted that, "The agencies which determine human character are so numerous and diversified (nothing which has happened to the person throughout life being without its portion of influence) that in aggregate they are never in any two cases exactly similar".¹⁵ Nevertheless he supposes a science of human nature to be possible despite the great difficulties involved in its development.¹⁶ That this is a mistaken view should now be apparent. It is the nature of a human action rather than the complexity and volume of the influencing factors which makes the search for laws and causal connections a fruitless

¹⁴ The physical movement of raising an arm only becomes the action of hailing a taxi or waving goodbye to a friend in a particular social context.

¹⁵ J. S. Mill (1865) Vol.2, Book VI, Ch.III p.427

¹⁶ Mill claims that a science of human nature could be developed at least to the level of Tidalogy and that the study of human behaviour could achieve the same scientific status as the study of tidal movements. Just as the irregularity of the latter between different places on the globe does not mean that there are no regular laws governing them, so, he supposes, the variety of human behaviour does not preclude regular laws in this sphere. As we have seen, however, the regularities of human behaviour are appropriately characterised as rule-following and not law-governed.

one. On a wider understanding of what constitutes science (ie. any form of disciplined thinking), it is as unscientific to attempt to explain the actions of individuals by subsuming them under some universal law as it is to try to explain physical processes and phenomena by exhibiting their reasons for acting. Gases do not have reasons for causing explosions.

The empirical test in social science.

Mill notes that in relation to human character there will never be two cases exactly similar. And human geographers also readily admit the unique aspects of the landscape patterns and the places they study. In the last two decades, however, the uniqueness of the 'capes and bays' geography has been widely criticised and the focus firmly established on the similarities of pattern and on the constants of behaviour. That controlled laboratory experiments are inappropriate to the study of human behaviour may not worry many geographers, for they can go out into the field and view the pattern and the behaviour related to it at first hand. This, then, would be their check against reality, their empirical test, and thus their hypotheses (whatever the form) could be established in a scientific manner. Scientific hypotheses must be in principle falsifiable and could not geographers, using 'the field' as their laboratory, meet this criterion? We have seen the crucial part played in scientific methodology by the empirical test and we cannot abandon such a methodology completely without first investigating the possibility of such a test in the social sciences.

In order to test an hypothesis empirically it must be logically possible to identify at least two occurrences of the same situation.¹⁷

¹⁷ This is the minimum requirement for testing an empirical hypothesis. Since geographers are not in a position to recreate the situations they are studying they would be required to identify in the field rather than reconstruct in the laboratory.

Within the scientific mode of understanding the logical possibility of repeating the same test depends upon the essential atemporality of science. The time of the day, week, month or year at which experiments take place are, and must be, irrelevant to the experiment itself. In the social world, however, notions of time play a large part in the conduct of human affairs.¹⁸ Indeed it is impossible to imagine a society without temporal vocabulary or any notion of the passage of time. The intelligibility of many explanations of human actions essentially depends upon temporal vocabulary.¹⁹ Any two social situations, however apparently similar, must be logically distinct if the time at which they take place is itself different. Even the same kind of action performed by the same agent on two occasions must be logically distinct (ie. essentially different) simply because on the second occasion the agent will already have experienced the first.²⁰ Further, since two such occasions cannot take place at

¹⁸ Time matters when studying human affairs, and this has an obvious relevance to human geography. Notions of time are also important in physical geography, however, for example when looking at the development of a drainage network or determining the limits of glaciation at various periods. In so far as temporal vocabulary is necessary to such study, the arguments presented in this section are germane.

¹⁹ We might explain the fact that a farmer had left a field fallow by pointing out that it previously had been cultivated for five years in succession. Without notions of time here we simply could not offer an explanation.

²⁰ Any action performed at time (t+1) must be logically distinct from an action performed at time t because at time (t+1) the knowledge of the agent involved will have increased and will include the knowledge of the action performed at time t.

the same time and therefore the time itself must differ, we must conclude that in the social realm it is logically impossible to identify precisely the same situation even twice.

Clearly this is a point of some import if one is concerned to understand and explain human actions. The essential temporality of the social world not only precludes the possibility of identifying the same situation but also, therefore, precludes the possibility of an empirical test such as is necessary to the conduct of science. A scientific mode of understanding the world is essentially atemporal, this being one feature of its internal logic. Thus the social world, being essentially temporal, cannot, logically, be subject to a scientific mode of understanding nor could scientific method ever be relevant to its study.

When it is pointed out that any two human actions must be logically distinct this is not to say, of course, that two actions could never legitimately be called the same. Clearly such general descriptions as 'crossing the road' may apply to the actions of one agent several times in a single day, and we would know what is essentially involved on each occasion. It is quite intelligible to identify actions as the same in so far as they come under the same general description. Nevertheless, this does not weaken the case against the appropriateness of scientific method which requires that two instances of a phenomena be logically the same. It is only possible to repeat a test where precisely the same situation can be identified.

The essential differences between the social world and the physical world:

Whenever we wish to identify two things as the same we must have

some criteria of relevant differences. As Winch points out in The Idea of a Social Science,

Two things may be called 'the same' or 'different' only with reference to a set of criteria which lay down what is to be regarded as a relevant difference. When the things in question are purely physical the criteria appealed to will of course be those of the observer. But when one is dealing with intellectual (or indeed any kind of social) 'things' that is not so. For their being intellectual or social, as opposed to physical, in character depends entirely on their belonging in a certain way to a system of ideas or mode of living. It is only by reference to the criteria governing that system of ideas or mode of life that they have any existence as intellectual or social events.²¹

This underlines one essential difference between the physical world and the social world, namely that it is impossible to be an 'observer' of social life in the same way as one can be an observer of the natural world. This has been construed by many writers as the impossibility of objectivity in the social sciences resulting from the necessary participation of the researcher in human situations. This participation, it is not infrequently claimed, leads to a value-laden analysis. Whilst the 'impossibility of objectivity' thesis can be shown to be false²² it is the case that the social researcher has a relationship to his subject matter which the physicist does not have. To speak a language is already to participate in the social world of the speakers of that language. It is impossible both to understand this social life and to stand outside it and treat social phenomena as

²¹ P. Winch (1958) p.108

²² To argue the case here would be to detract from the present discussion. It is worth noting, however, that in order to declare any statement objective we need criteria of objectivity and these are evident within several modes of understanding the world. Further, a charge of subjectivity is only interesting or problematic if we have objective statements from within the same mode of understanding with which to compare the subjective.

experimental facts. In contrast, the study of purely physical phenomena requires criteria for distinguishing one from another which must be those of the observer. Whatever these criteria, they could have no effect on the nature of the phenomena themselves. The pure scientist and the social scientist stand in very different relationships to their respective subject matter.

Again it must be stressed that this necessary involvement of the social researcher in the social world does not preclude objective study, indeed the researcher is constrained by conditions which preclude the totally subjective. In order to understand, or even attempt to explain social phenomena, the researcher must have a considerable familiarity with the shared language. As we have seen behaviour at traffic lights or in a bank could not be understood or explained unless the researcher first understands the concept of 'traffic lights' and the concept of 'a bank'. And to share a language is to share a social world. This makes reason-giving explanations quite different in kind to causal explanations. Not only does talk of causes prompt different sorts of questions to talk of reasons, but the concept of 'cause' itself, unlike that of 'reason', is external to the phenomena which are said to be causally related. Suppose, for example, we appeal to an agent's motives in order to explain (or even predict) his actions. This would be an explanation of the same form as the reason-giving explanation.²³ We could only explain in this

²³ There is a distinction to be made between motives and reasons, but it is not an important one in the present context. A statement about an agent's motives, unlike a dispositional or causal statement, is not based on generalisations from what has been observed to happen, and "...is better understood as analogous to a setting out of the agent's reasons for acting thus." (P.Winch, 1958 p.81). For present purposes we can use 'reason-giving' explanations to denote a certain explanatory form, one which includes statements about agent's motives and which can be contrasted with causal explanations.

way, however, given that we already possess the concept of a motive (ie. that we already know what is to count as a motive). Winch reminds us that, "Learning what a motive is belongs to learning the standards governing life in the society in which one lives; and that again belongs to the process of learning to live as a social being".²⁴ Thus the concept of a motive is not in the first place learned as part of a technique for explaining or making predictions, unlike the concept of cause.

The externality to the phenomena of the physical world of explanatory techniques is at the heart of the matter. The planet Earth existed long before there were any human beings who sought to study its physical form. Methods of explanation and the related vocabulary have therefore been developed quite independently of the behaviour of any natural phenomena. Social behaviour, in contrast, is closely and inextricably linked to the language that we speak. As Winch puts it, "...our language and our social relations are just two different sides of the same coin."²⁵ It does not make sense to suppose that human beings might have been obeying orders or giving commands, for example, before they came to formulate the concepts of 'order' and 'command'.²⁶ We cannot, therefore, choose which concepts

²⁴ P. Winch, op.cit.,p.83

²⁵ Ibid. p.123

²⁶ This point is possibly clearer if one thinks of the practice of duelling. It does not make sense to suppose that human beings fought duels before they came to form the concept of a duel. To fight a duel is to follow certain social rules appropriate to duelling. If one did not know what a duel was (ie. did not know the rules appropriate to duelling) then one simply could not fight a duel. Knowing the rules in this sense, however, does not necessarily imply being able to set them out when asked.

to apply to social life for these are given for us by our language whereas the physical world is as it is independently of what men may say about it.

Again, this particular distinction is illustrative of the profound differences between a scientific understanding and any understanding of the social world. It must now be clear that the study of society could never be 'exact' in the way that the physical sciences are. (They are often called the 'exact sciences'.) If we are at liberty to choose which concepts to apply to the physical world,²⁷ we are also at liberty to define these concepts in as exact a manner as we choose. On the other hand, because concepts cannot be applied to social life in the same way, the social scientist is certainly not at liberty to define them any more exactly than the lexicographer (who is interested in usage) and at the same time claim to study social life. For example, the social researcher could not stipulate that for an exchange of words to be called an 'argument' voice levels must rise above 65 decibels, and still claim that his study was one of arguments. What constitutes an argument has to do with the meaning of the word in the English language. The inappropriateness of exact definitions is a point frequently overlooked by social scientists.

The fallacy of idiosyncratic world views:

Some writers do recognise the incoherence of attempting to impose conceptual frameworks on their social subject matter, but they remain largely mistaken about the source of the incoherence. The

²⁷ This does not mean that any individual language user could choose any concept he pleases, but merely that the development of language is independent of the physical world.

researcher himself, it is supposed, cannot define 'an argument' because he must remain sensitive to what the human agents (whose arguments he wishes to study) take an 'argument' to be. This in itself is unobjectionable. It is commonly concluded from this, however, that each agent or group of agents may have a different interpretation of what constitutes an argument and that their interpretation must first be known before the research can proceed. This is the mistake. It arises directly from the false suppositions that, first, all individuals have idiosyncratic views of the world, and, secondly, that knowledge of these views is vital to the social scientist. The popularity of talk of differential perception suggests that the fallacious nature of such suppositions is far from obvious and thus requires elaboration.

Given that idiosyncratic interpretations of the word 'argument' are going to influence whether the agent thinks himself to be involved in an argument, what are we to say about the situation in which an individual appears to be engaged in an argument but maintains that he is not?²⁸ There are two possibilities. Either we can accept that on the agent's idiosyncratic view of what an argument is he is not engaged in one and his exchange is irrelevant to a study of arguments. Or we can discount his claims to the contrary and proceed with our study on the grounds that whatever he may suppose he is doing he is in fact arguing. The former, although the more popular, is problematic. It necessarily precludes the possibility of a mistake or a deliberate

²⁸ A similar point is dealt with in Chapter 2 in the discussion of perception and language.

deception on the part of the agent.²⁹ And to be consistent we would have to include in our study of arguments any exchanges, even the most convivial, where the agents involved maintain that they are arguing. This would clearly be ridiculous. In order to decide what is an argument and what is not we do not appeal to any idiosyncratic notion of an argument (whether the view of the agent or the researcher) but to the meaning of the word in the English language. In order to call several different exchanges 'arguments' there must be something similar about each of them. Learning both to argue and to use the word 'argument' is precisely to learn what is involved in that similarity, and this itself is to recognise certain social rules. Both the language and the rules must be shared.³⁰

²⁹ The untenability of such a position (which is not as uncommon as it is mistaken) is well illustrated if considered in the context of a court of law. Imagine the chaos if it could be offered as a serious defence that a killing was not a murder because it did not coincide with the accused's definition of 'murder'.

³⁰ It does not make sense to suppose that someone may have a private language, for if it is to be called a language then there must be rules by which any single usage can be judged correct or incorrect. It must, therefore, be possible for others to learn these rules. Thus if we have only one speaker of a language this must be a contingent matter as it must be logically possible for there to be more than one, the rules of usage being open to anyone who cares to consider them. See L. Wittgenstein (1953).

This is not at all to deny that different people will have different experiences in the course of their lives, nor indeed that there can be sharply conflicting opinions, but only to maintain that such experiences or opinions are in a good sense not private, unique or idiosyncratic. In Chapter 2 we saw that no sense could be made of the claim that people literally see things differently. Identifying what is seen depends upon having learned a language and a language itself cannot be private. For any language there must be rules of usage. If this were not so mistakes could not be corrected and, because two people could never be said to be speaking the same language, there would at least be doubt as to the possibility of any communication. The same point can be made regarding opinions. Any one person's opinion of another person, event, place, or whatever, could not be private or idiosyncratic for, in order to be coherent at all, it must be recognisable as an opinion. Learning what counts as an opinion is part of learning a language, and in this sense all opinions must be shared.

The same would be true of reasons. In any reason-giving explanation the proffered reasons must be intelligible as reasons for the action under consideration. As such they must be public and shared. It is important here to distinguish between identifying what is to count as a reason (a matter of having learned the language) and espousing a particular reason oneself. Someone else's reason for acting in a certain manner may not be your reason for acting similarly³¹ but as long as it can be understood as a reason (ie. he is not talking nonsense) it is public and shared rather than private and idiosyncratic.

³¹ One farmer may plant potatoes because higher prices have made this potentially very profitable, another because the soil and the climate are best suited to this crop. Both plant potatoes but for different reasons. Each, however, will be able to understand the other's reason although it is not his reason.

We are now in a position to ask if anything can be made of the claim that people 'view' the world differently. At the end of Chapter 2, Section 1 it was suggested that such claims could be taken non-literally and the differences considered in terms of significance. Undoubtedly different people will find different areas of the city significant (the jute worker the mill area, and the student the university). However, significance (like reasons) is shared. Both the jute worker and the student find their places of work significant. That these occupy a different physical location within the urban area does not effect the common source of the significance. We understand what is said only because we understand that a place of work may have significance for an individual.³² Even talk of significance cannot accommodate the claim that people view the world differently in any strong sense. To assume idiosyncratic views of the world is now shown to be fallacious.

Whatever the form of explanation appropriate to the academic study of the social realm it is clear from the discussions of this chapter that scientific methodology could not enhance the understanding of human actions. The distinction between automatic and meaningful behaviour, the inapplicability of the empirical test to human events, the importance of context to human actions and the impossibility of 'observing' the social realm from outside, all serve to illustrate this point. The natural world and the social world are essentially

³² This point is perhaps clearer in the following example: A man, born on March 1st, is the only living person to have been born on that date. We might be tempted to suppose that March 1st has a significance for that man which is in some way unique. Once it is realised, however, that it is March 1st as the man's birthday and not something intrinsic to March 1st which is significant, then the significance itself is seen to be a general or shared one.

different and scientific method is appropriate only to the former. We must therefore conclude that a science of society is not a possible academic pursuit. Any understanding of the social world could not, logically, be encompassed in a scientific mode of understanding.

The human geographer cannot look to science for suitable methodological underpinnings. How then is he to conduct his enquiry into the human behaviour of interest to him? And to which distinctive discipline or mode of understanding the world would such an inquiry belong? We have seen that the inappropriateness of controlled experiments in the study of social life is due, in part at least, to the essential temporality of human affairs. Any human action takes place in time, is often connected with what has gone before and may have consequences in terms of future actions. This alone suggests that the consideration of an historical mode of understanding may afford some insight into how properly to explain in human geography. History, certainly, is a discipline centrally concerned with notions of time and the temporal sequence of events.

To redirect the present discussion away from science and towards history may disturb many geographers, even those who make no particular claim to be scientists. Some may even suppose it a backward step, foresaking all that the quantitative revolution brought to geography. Inevitably some doubt and uncertainty will surround any methodological revolution. The scientific paradigm underlies a wide range of research in the social sciences and it is not, if the arguments of this chapter are correct, simply a few research methods which are inappropriate but a whole way of thinking about social phenomena. The extent to which scientific ways of thinking have permeated methodological discussion within human geography is considerable. The very aims of the urban

theorist are most frequently couched in scientific language or reflect the assumption that urban theory falls within the discipline of science. The falseness of the assumption leads to the questioning of the aims. Is it, for example, sensible for the urban geographer to attempt to build up a body of urban theory which future practitioners could draw upon for their own researches? Or, if theory and scientific method go hand in hand, must we abandon both and conclude that the study of human behaviour could never be theoretical? In short, is theory possible at all in the study of the social realm? It is to these questions that Chapter 4 is devoted. Only after they have been considered can the full import of abandoning scientific methodology be appreciated. The answers suggested can then be incorporated in our account of what urban geography is or ever could be.

CHAPTER 4THEORY AND MODELS IN SCIENCE AND SOCIAL SCIENCE

The aim of this chapter is to consider the possibility of approaching urban geography in a theoretical manner. To do this we must first have some idea of what is meant by 'theory' and be quite clear about the nature of a 'theoretical' account. The physical sciences are well known as theoretical studies and it is most often the scientific model of theory on which geographers and other social scientists attempt to base their own research. Phrases such as 'constructing a body of theory' and 'providing a theoretical basis' are familiar in this context. Having rejected scientific method as inappropriate to the social sciences we must now ask whether a scientific model of theory is not also inapplicable. And if so, where does this leave the urban theorist? We will again be concerned with both science and social science. The predominance of theory in science and the popularity of the view that one can theorise about the social realm in the same way as one can theorise about the natural world make both worthy of consideration. It does not necessarily follow from the rejection of a scientific mode of understanding that theory in urban

geography could not share some of the characteristics of theory in physics or chemistry. And consideration of the latter, even if it does not provide a viable blue-print, may nevertheless clarify the way in which we could study the social world theoretically.

Current 'theoretical' approaches in human geography:

What sort of activity is theorising? In the geographic literature one frequently finds the contrast between 'the theoretical' and 'the unique'. Indeed the quantitative revolution was hailed as a triumph for the theoretical approach, the latter having superseded the traditional descriptive accounts of the unique proffered by regional geographers. As Johnston explicitly states in a recent discussion of spatial structures, "The main aim of the 'quantitative and theoretical revolution' in human geography has been to develop general theory concerning the spatial patterns of human activities."¹ Now that the revolutionary methodology has itself become the status quo it is interesting to note that regional geography is far from dead. As Johnston himself notes,

.....paradoxically much of the recent literature in this field presents the results of specialized research projects, with no overall indication of their importance or position in the quest for theory.²

We cannot formulate theories in human geography without knowing what such a theory would look like. Methodological ignorance on this point may account for the paucity of theoretical work within urban geography.

In present urban methodology the search for theory heralded by quantification is still very much to the fore. Quantitative techniques are being presented as more desirable than qualitative techniques and frequently for the reason that the former and not the latter will aid

¹ R. J. Johnston (1973) preface.

² Ibid.

theory construction. The quantitative/qualitative distinction is aligned with the general/unique distinction and the status of quantification as more precise, scientific and respectable is rarely questioned. Meyer, in an article on the 'urban locational analysis paradigm' states categorically that amongst those subscribing to such a paradigm it is unequivocal that, "...in fact, quantitative techniques are more scientific than qualitative techniques."³ Such a description, far from being recommendatory as intended, can now be appreciated as casting doubt on the fundamental applicability of such techniques to urban analysis. If the attempt to study human geography scientifically is a logically incoherent enterprise, any ambition to be more scientific must surely be misplaced. Even Meyer, however, although he is concerned to demonstrate the inadequacies of present urban locational analysis, accepts that the problems of human geography require scientific treatment. The very fact that the article is based on talk of paradigms as expounded by Kuhn reveals such an acceptance.⁴ The following extract from Kuhn quoted by Meyer is revealing:

.....textbooks expound the body of accepted theory, illustrate many or all of its successful applications, and compare these applications with exemplary observations and experiments.⁵

Clearly these remarks are relevant only to science. The same could not be said of the social sciences for experiments are logically excluded from their methodology. It is the scientific paradigm itself which must be questioned in human geography.

The attempt by social scientists to adopt the methods of science

³ D. R. Meyer (1973) p.170

⁴ Kuhn is concerned with the structure of scientific revolutions. see T.S.Kuhn (1970)

⁵ D. R. Meyer, op.cit., p.169

is as understandable as it is misled. The physical sciences have enjoyed a considerable prestige in the last few decades and their success in the realms of the theoretical made it all the more likely that their methods would be tried out in other academic fields. It is in science that the distinction between the general and the unique originates. The general statement of science is the universal statement. This applies to all instances of a particular phenomenon and it is by appeal to the universal that the unique or individual occurrence can be explained. The universal statements themselves form the theoretical base of science, the body of established scientific theory. Geographers, unfortunately, have assumed the same relationships between the general, the theoretical and the unique. Johnston, for example, declares that his book "...presents a description of patterns and interactions along with hypotheses for their development and operation, thereby accounting for the spatial order (or lack of it). Testing many of these hypotheses," he adds, "remains the task of future research."⁶ If we were to build up a picture from the literature of human geography of what a theoretical account is and how it is to be arrived at, two principal features would emerge; first, that theoretical study must be general in nature (in urban geography conclusions must apply to all cities, or at least to all cities of a certain size or kind); secondly, that theories, based on observation of the particular, must be tested against the real world. As a preliminary step towards both generality and testing, a model is commonly set up. This is said to reduce the 'noise' of superfluous detail and, when operationalised, be amenable to scientific testing. Since such a key role is claimed for the model in urban theory it is worth examining its potential as a method of theoretical study.

⁶ R. J. Johnston, op.cit., p.13

One of the most familiar modelling exercises within geography is that concerned with the identification of a system. Systems research, it appears, embraces many levels of generality although the major concern of many systems theorists is with modes of organisation sufficiently general to embrace behaviour systems of any type.⁷ Such an approach has led to a considerable expenditure of time and energy on identifying systems, analysing input, output, feedback etc., and determining equilibrium levels. The system itself is represented by a model and it is this model which is said to embody the 'theory'. The severe generality of such models is often considered their primary virtue but, as we have seen, the general and the trivial frequently go hand in hand. The following warning is particularly apposite,

If a model can be developed which, when suitable parameters are fed in, fits everything from the rise and fall of New England stone masons to hospital management and the decay of the city, we may question whether the general system has not become so general as to become operationally meaningless or philosophically otiose.⁸

Certainly the trivial could never be academically respectable. When Buckley, in a discussion of physical, biological, psychological and socio-cultural systems, maintains that, "to base scepticism on some inherent 'substantive' difference among such systems is to retreat to an older philosophical position and miss the whole point of the current scientific trend",⁹ is it not he who has 'missed the whole point' of such scepticism? No trend can make sense of the incoherent. The scepticism attacked by Buckley is part of the much more general scepticism of the current vogue of scientism (ie. the attempt to make every study scientific) and the arguments of this thesis show it to be well-founded.

⁷ see, for example, W. Buckley (1967)

⁸ Times Literary Supplement (1971) quoted in B.T. Robson (1973)

⁹ W. Buckley, op.cit., p.

Whatever the faults of general systems theory, the systems framework has proved popular not only in geographic research, but also in other areas of the social sciences. The model of the system is the focal point of such study and model building (whether systems related or not) has become the immediate aim of many researchers. Urban theorists are no exception here. The exact relationship between model and theory, however, is almost always problematic, and rarely made explicit by the model builder himself. To determine the role of models in theory formation we must clarify this relationship. The model and the theory are sometimes taken to be synonymous. Chorley and Haggett, on the other hand, have the following to say about the function of models:

Models are necessary, therefore, to constitute a bridge between the observational and theoretical levels; and are concerned with simplification, reduction, concretization, experimentation, action, extension, globalization, theory formation and explanation.¹⁰

Here the model is said to come before the theory or the explanation, although the precise nature of the 'bridging' function is not clear. Chorley and Haggett, in these remarks, reveal their conception of both model and theory to be based on scientific methodology, for their account assumes the observational, experimental and theoretical stages usually accredited to pure science. Even within science, however, the function of a model is not readily apparent.

Any investigation of the role of models in theoretical research will meet one major obstacle, namely that models themselves are not all of the same type and therefore the roles they play can be expected to be many and varied. Several attempts have been made to classify models, but no standard classification has emerged. Meyer points to the common concern of geographers with models of different kinds and

¹⁰ R. J. Chorley and P. Haggett (1967) p.24

adds,

....urban geographers have their beliefs in models which provide them with legitimate analogies. For example, cities are treated as balls or planets so that interaction between cities can be represented by analogy with Newtonian physics using the gravity model.¹¹

Such analogue models are not only prominent in geographic literature. The borrowing of theories from one area to use as analogies in another area is also part of the practice of science. Models have been identified as iconic, symbolic, conceptual, experimental, classificatory, historical, descriptive or normative, static or dynamic; the catalogue of model types seems endless. It is the function of models which is fundamental here, however, and it is best to investigate this first in the realm of science proper. For there the use of models has a considerable history and is thought by some to provide the key to scientific research. Models in science, therefore, may afford some valuable insights into the possibility of model building and the development of theory in social science.

I

MODELS AND ANALOGIES IN SCIENCE:

This section will be devoted to an examination of the part models play in the on-going activity of science in order to establish the appropriateness or otherwise of the characterisation of science as 'model talk'. The place of the model in scientific reasoning will be made plain and the part models could play within science assessed.

¹¹ D. R. Meyer, op.cit., p.170.

It is the nature of the connection between the model and the advancement of scientific knowledge which is crucially important here.

The most commonplace notion of a model is that of a small scale replica of some already existing object or set of objects. the child's model aeroplane or the model of the planetary system in the museum. All such models are constructed as replicas or copies and, as such, lack one or more features of the original, this easily distinguishing them as models. If this were not the case we would just have another aeroplane rather than a model aeroplane. The most important feature of such models is that they are constructed, and constructed as a copy of something else. In order for the construction to take place at all, therefore, the properties of the original must already be known. One could not, in other words, construct a model of Concorde without knowing beforehand, at the very least, what Concorde looks like. Thus such models presuppose knowledge of the original and could not precede such knowledge.

It would not, of course, normally be supposed that these model aeroplanes or model soldiers have anything whatever to do with science; they are toys, or pieces in a game. But what about the model of the planetary system, could this not have something to do both with explanation and with science? Let us look at the nature of the association. A model of the planetary system is the same sort of model, exhibits the same essential features, as a model of Concorde, the difference being that in the case of the former the original of which it is a copy happens to be a set of objects with which science has been and continues to be concerned. The object of replication, then, also forms part of the subject matter of science. The

construction of such a model, however, does not affect the subject matter of science one iota. It cannot add to knowledge of the planetary system, for we know that it presupposes such knowledge. Such a model could have no place in the activity of science. The point of constructing it at all would be to impart, perhaps with greater ease, our own knowledge of the subject to others. It is, then, no more than a heuristic device and as such does not feature in the discipline of science, but rather in the imparting of scientific knowledge to non-scientists. Such models do not tell us more about how the world is than we already know.

A second, frequently employed, sense of the word model is that associated with a type of design or plan such as that used by architects, car designers and the like. This is quite different from the model boat or model aeroplane, for it is not constructed from existing information about any original, but is rather a feat of the imagination. Its essential characteristic is that it is the first stage in the creation of something which has not yet been constructed. Its function is therefore not one of explanation, nor indeed of aiding explanation, for before the design or plan itself is produced there is nothing to be explained. This sort of model, then, does not belong to science but rather to the field of technology, to the practical realm of our lives.

What then are 'models' in science? It is difficult to find agreement especially among scientists as to the nature of such models, or indeed the part they play in scientific explanation and prediction. That scientists do use models in the course of their scientific pursuits is not in doubt. It is the characteristics of such models and the uses to which they are put which are of primary interest in the present context. Can models, for example, be said to have a particular status

in science? Would there be no ongoing activity of science without models? Can we in fact say anything about the relationship between 'scientific' models in general and the activity of science, or are the characteristics and uses of such models so many and varied that each case must be considered on its own merits?

The Campbell/Hesse thesis and the status of models:

Hesse in her book on models and analogies gives an account of a model as "any system, whether buildable, picturable, imaginable or none of these, which has the characteristic of making a theory predictive."¹² Leaving aside for one moment the difficulties of acquiring an unimaginable system, let us consider her more interesting claims about the relationship between models and the predictive functions of a theory. Perhaps it ought to be pointed out at this juncture that a theory in science by its very nature as a scientific theory, is universal. We do not therefore have the formulation of the theory first, followed, however hotly, by its extension into the realms of prediction or at least predictiveness. It is rather the essence of a scientific theory that its very formulation allows the possibility of prediction. In the simple scientific statement "all gases expand when heated" there is no further step to be taken in order to make it predictive. Prediction is merely a matter of predicting. If we know that all gases expand when heated then we can predict in all confidence that this gas we have in front of us will expand when we heat it. Models then cannot be devices which allow theories to be predictive as opposed to being descriptive or explanatory. They must, if they are to play a part in science at all, bear some relation to the actual formulation of the theory.

¹² M. B. Hesse (1963) p.21

Having noted what Hesse cannot be claiming for models, let us now turn to the major thesis of her book. In this she follows the English physicist N. R. Campbell who in the 1920s put forward the view that models were necessary to the creation and extension of theory in science. His opponents on the other hand recognised the part models had played but claimed that, although they were useful, they certainly were not essential. The debate revolves round the question of whether there could be any ongoing activity of science without the proper use of models. Are models vital to science or are they mere aids to theory construction which can be thrown away when the theory has been developed? Both Campbell and Hesse wish to emphasise the essential nature of models in relation to the extension of scientific theory. There are, however, two possible claims that one could make in this respect. One could, for example, claim that, in the development of the kinetic theory of gases, the billiard ball model as it happens played an essential part. In this one would be right, but there is no necessity involved. One could even extend the claim to all past cases. In other words to the claim that in every case of the development of a scientific theory some model or other has as it happens played a part. One would then be either right or wrong - a fact which could only be established by consulting an account of the development of every theory and not by looking at the nature of science itself. Such a claim involves no appeal, muted or otherwise, to necessity. This, it must be added, is not what I take either Campbell or Hesse to be advancing.

The other possible claim, the more interesting one, and the one which summarises the Campbell/Hesse position involves logical necessity. When Campbell talks of the necessity of using models what he is talking about, declares Hesse, is logical necessity. The claim is that because

of the nature of science, theories could not (logically could not) be developed without the use of some analogue model or other. Here it is necessary briefly to digress in order to make plain the nature of an analogue model and the use to which Hesse supposes it can be put.

The analogue model in science:

An analogue model, as used in science, involves the employment of a set of relationships, already known in science, as an analogy in a sphere of science not yet fully understood. Thus the movement of billiard balls was taken as an analogy in the study of gases. In any analogue model there will be what can be succinctly described as the positive, negative and neutral analogies. Thus when contemplating gas molecules as analogous to billiard balls, there will be some properties of the billiard balls which are known to be similar to those of gas molecules (for example, that they are 'molecules' which may collide with one and other), some properties which are known not to be analogous (eg. colour) and other properties the relevance of which is, as yet, unknown. The most important part of such a model is, according to Hesse, the neutral analogy, for it is by extending the positive analogy in this direction that scientific predictions are possible at all.

Initially let us restrict the discussion to what could be labelled 'theoretical analogies', that is, any analogue model which consists of a set of already successful or well established theoretical statements from one area of science. The model is then applied to another less well known area with the purpose of increasing scientific knowledge of the latter. For example, suppose that we take the set of scientific propositions concerning the properties of light and use these as an analogy in the study of sound. To reformulate Hesse's thesis, the claim would be that, in order to produce scientific

hypotheses about the properties of sound, not only would it be necessary to use the positive and neutral analogies of the theory of light but it could have been done in no other way. For analogies or models to play a logically necessary part in the practice of science it would also be necessary to suppose that some analogy or other played a vital role in the formulation of hypotheses about light, as with every other scientific hypothesis. This seems implausible, for at some point there must necessarily have been no such theoretical analogy to act in this manner. This, however is not the main objection.

The claims of logical necessity must rest upon the contention that, to continue the above example, the scientific hypotheses about the properties of sound could not have been arrived at in any other way than by the use of analogy. But these propositions are about the properties of sound and the relationships between them, and only about such properties and such relationships. They can be presented and understood quite separately from and without mention of the properties of light. Their truth in no way relies on the truth of the propositions about light. This being the case it is at least logically possible that such hypotheses could be arrived at without reference to, and indeed in total ignorance of, the theory of light. If a scientific hypothesis is the sort of proposition which is directly or empirically falsifiable, then its validity depends on such empirical observations. No matter in what manner the proposition was actually arrived at, its plausibility as a scientific hypothesis requires only such direct observation. For example, it may come to me in a flash of inspiration that the earth moves round the sun, or I may arrive at the same conclusion by a process of logical deduction. The truth of the proposition 'the earth moves round the sun', however, does not rely in any way either on a flash of insight or upon knowing the rules of

logic. Any particular way of arriving at such an hypothesis is a contingent matter and will depend upon the other knowledge and experience of the individual scientist.

Rational conduct and the use of analogies:

Both Campbell and Hesse would, I think, be forced to concede this point. They have a further argument concerning analogies, however, which they put alongside the claims for logical necessity but which shifts the ground sufficiently to be put instead. This is, that to use an analogy, such as the one of our example, is the most rational way to conduct the business of science. The topic of rationality is dealt with at length in the philosophical literature. In the present context, however, a brief summary of some of the conclusions will suffice. In order to talk of rationality at all we must have agreed criteria for what is rational and what is not. These are, however, not arbitrary. That is, we cannot get together with a few friends and decide what is to count as a good reason and what is not in spite of the language which we speak and the society in which we find ourselves. Judgements of rationality and irrationality are judgements about conduct, about human actions. Such judgements rely on the conduct having a purpose and it is only in the light of this purpose that the conduct can be judged. The purpose itself, however, derives its coherence only from the realm of experience or mode of conduct of which it is a part. Thus, to follow Oakeshott, "no conduct, no action or series of actions can be 'rational' or 'irrational' out of relation to the idiom of activity to which they belong."¹³

Again there are two possible claims which could be made about the rationality of using analogies in science. First it might be said that in a particular case, for example the development of the kinetic theory of gases, the use of an analogy was, as it happens, the most rational

¹³ M. Oakeshott (1962) p.103

way for the scientist involved to proceed. It is difficult to know whether there is any sense in such a statement, but if there is then it is something of the form as follows: here we have a fellow earnestly engaged in scientific research concerning gases and he has X_{1-j} possible ways of proceeding open to him. He chooses X_1 , namely the using of an analogy, and in only Y hours he has come up with certain very promising hypotheses which over time become established as the kinetic theory of gases. If we then said of this scientist that given the possible options that presented themselves to him he proceeded in the most rational manner, we would mean something like that the particular procedure chosen had led to the formulation of important scientific hypotheses, and this quicker than any other manner of proceeding might have been expected to do. This is necessarily a retrospective judgement and just because this "most rational" course of action would not have been at all clear at the time of the agent's choice its philosophical respectability must also be in doubt. What certainly does not follow is that it would be always or even ever again 'rational' to proceed in the same manner. 'Most rational' in our example can be replaced by 'quickest', and whatever about the intelligibility of reference to rationality at all in relation to the speed of performing an action, it is clear that "the quicker the better" is hardly an idiom peculiar to science. Such a claim tells us nothing about how the rational scientist ought to proceed in the future and can have no bearing whatsoever on the manner in which the ongoing activity of science is conducted.

In order to be of any interest to science the stronger claim would have to be put; namely, that to use analogies in the development of theory is the most scientifically rational way to proceed. That is, that to proceed in this manner is somehow more scientific than to proceed in any other way. Let us look first at what it is to be

scientifically irrational. Suppose we have a man who claims to be and indeed appears to be a scientist, who refuses to accept the kinetic theory of gases on the grounds that gas particles are not coloured and billiard balls usually are, and proceeds to ignore this theory in his own researches into the nature of gases. We would, I think, be forced to declare this scientist irrational, for what he is doing is denying an established scientific theory on grounds other than scientific. So here we have a scientist being unscientific, and it is this that we call irrationality in science. Here the distinction between unscientific and non-scientific should be noted. In the example above we can see that to be unscientific is to bring non-scientific considerations (ie. considerations outwith the realm of science) to bear on a scientific problem. Now we can see that the reverse of the irrationality criteria must also be true. If some particular action or agent's conduct cannot be dismissed as non-scientific, and cannot be condemned as unscientific, then it follows that such an action or set of actions must be 'scientific', or, if it is clearer, scientifically rational. If the actions of a scientist (as scientist) cannot be declared unscientific then they are necessarily rational for they cannot be irrational.

It follows from the above exposition that if an approach becomes established within a discipline, it must conform to the norms of rationality which have evolved within that discipline. And this because to declare a particular action unscientific, for example, is just to declare that it does not conform to the norms and standards of science as presently practised. The use of analogue models is therefore certainly not unscientific and hence not irrational, but then few would have supposed that it was. This does nothing, however, to support the strong claim we have supposed Hesse to be making. That the use of analogue models in science is rational can no longer be in

question, and we have seen why this is so. To establish their use as the most rational way of conducting the business of science may seem only a small step away, but it is precisely this step which betrays a considerable degree of confusion concerning the notion of rationality. The idea that specific actions could be more or less rational than other related actions is a problematic one. For any action to be rational, it only requires that the agent puts forward generally accepted and appropriate reasons for so acting. Thus if I was asked why I had eaten some cheese, I might answer that I was hungry and I like cheese. Such reasons are perfectly intelligible as reasons for eating cheese. No one would doubt that my conduct was rational, and this even though they do not share my particular reasons; that is, they do not themselves like cheese. Reasons are intelligible or unintelligible only in particular contexts, but their intelligibility does not depend on them being shared in this way. Either a specific reason is appropriate to the context in which it is advanced or it is not. Thus either an action is rational or it is irrational. We cannot use 'most rational' as a synonym for 'best'.

It must be concluded from the preceding discussion that neither of the strong claims of Campbell and Hesse will stand up to much scrutiny. Whatever the role of analogue models in science, they cannot provide either a logically necessary step in the formulation of scientific hypotheses, or take precedence as the most rational method of procedure. This is not to say that analogue models have not played and continue to play an important part in the practice of science, but only that this is a contingent matter. A model may or may not be useful to the scientist, may or may not be used by the scientist. The model, then, has no particular status in science, although it may have a variety of functions. It is to the function of models in science that we now turn.

The function of scientific models:

When scientists have used models in order to further their scientific investigations, what part have such models played in the formulation of scientific hypotheses? What is the relationship between model, scientist and theory? In order to answer these questions it is necessary to have some idea of what a scientific theory is, and indeed what it is not. And it is precisely confusion on this point that gives Hesse's claims an initial plausibility; a confusion which Hesse herself appears to share. Briefly, a scientific theory consists in a set of statements about the properties, and the relationships between these properties, of some specific set of phenomena in the natural world. It has two essential characteristics. First, that it is universal; ie. of the form 'all gases expand when heated'. Secondly, that it has become established in science, this being related to the falsifiability criterion of scientific validity. Scientists do not astound the world with new scientific theory, they formulate hypotheses which may over time gain scientific respectability and become established as part of the body of scientific knowledge. The kinetic theory of gases is one such theory. The relationships revealed in such a theory may be expressed in several ways. Frequently in science mathematical symbols are used, not only for their brevity but also because of the ease with which they allow comparison and the determination of consequences. A mathematical formula is one way of expressing a scientific proposition and not something over and above such a proposition. The relationship between reflection and the brightness of light may be represented by mathematical symbols, but the mathematics neither adds to nor subtracts from that relationship.

In her discussion of reasons for using analogue models in science Hesse claims that "to assert an analogy between amplitude of waves and

loudness of sound or brightness of light, even before any experimental correlation is known, is to give a reason for the interpretation of the symbol a....."¹⁴ If an analogy is asserted then this does indeed provide a reason for interpreting the symbol a in a particular manner, but it is certainly not a scientific reason and in no way forestalls the more important question of why the analogy was asserted in the first place. If a stands for the amplitude of waves and an analogy is asserted between the amplitude of waves and the loudness of sound, then a will certainly be interpreted as the loudness of sound, and because the analogy has been asserted. But this is a trivial matter. It is similar to claiming that X must have red hair because X is a bachelor when you have started with the proposition that all bachelors have red hair. What requires explanation here is why you should have started with such a proposition in the first place. What is of interest are the reasons for asserting the analogy at all.

What would count as a good reason for using a particular analogy in science? This, I think, would be the same sort of reason as we might have for using an analogy in any context, namely that the essential characteristics (or at least the characteristics we wish to emphasise) of the one set of objects, action or whatever are similar to the essential characteristics of the set of objects, action or whatever which is to be used as the analogy. Thus we must have a similarity relation between objects (or whatever) which are nevertheless different in other respects. Analogies, in everyday usage, are most frequently employed in answering such questions as 'what did it feel like?' or 'what did it look like?', and in such cases the familiar can be used to describe the unfamiliar. Thus someone describing the space

¹⁴ M. B. Hesse, op.cit., pp.36-37

craft in a science fiction film might suggest that it was like a giant toadstool made of bright green metal with suction pads at the foot of the stalk. Here the essential characteristic is the shape and the two items are unlikely to be similar in any other way. We know immediately what the similarity is and, because of this, how far the analogy extends. That is to say, the inappropriateness of questions such as 'where do these spaceships grow?' is quite clear. Likewise in science the use of a particular analogy depends on observed similarities, the 'seeing' of which may or may not depend on scientific knowledge. The similarity of loudness and pitch as properties of sound to brightness and colour as properties of light might be supposed to stand or fall largely as a matter of common sense, and this because brightness, loudness etc. are notions with which we are all familiar. We do not doubt the similarity between a pen and a pencil; nor indeed do we overestimate it. To claim a similarity between gas particles and billiard balls, however, requires a familiarity with the properties of gases which goes beyond the common use of language and can only be found within the realm of science. In whatever context an analogy is asserted there is a limit to the appeal for reasons for supposing there to be a similarity at all. Nevertheless it is always possible to point to the aspects or characteristics which are similar.

Distinct from the reasons for supposing there to be a similarity, are the reasons for using not that analogy as opposed to any other, but rather any analogy at all. We could have described the spacecraft without reference to toadstools, and the scientist, as we have already established, could have (logically could have) developed the kinetic theory of gases without reference to billiard balls. As it is only human agents who have reasons for acting it might be supposed that in order to discover the reasons for using an analogy at all we would

have to ask the particular film goer and the scientist who developed the specific theory in which we were interested. And certainly if we wanted to know all the reasons for using particular analogies then quite often our only recourse would be to ask. Here, however, we are not concerned with the whims of individual scientists, but rather with questions about the nature of science itself and the part analogue models have to play.

What we can examine in science is the function of models, the part they play in the development of plausible hypotheses, and this in the same way as we might examine the function of certain figures of speech in everyday ^{language} / which also make use of similarity relations. Thus the function of a simile, for example, is one of emphasis irrespective of the particular reasons for its use. For the purposes of this discussion we can extend the notion of analogies in science to include any 'way of looking' at a scientific problem which makes appeal to the familiar (though not necessarily familiar to non-scientists) in order to make advances in science. This 'way of looking' at a problem can involve the use of an entire theory as an analogy, or simply the borrowing of a single concept from such a theory. It is the connection between this 'way of looking' and the continuing activity of science which requires examination. Analogies may "furnish plausible hypotheses, not proofs"¹⁵, but it is the way in which they do so that is of importance.

I wish to argue that any analogy used in the practice of science stands in relation to the development of plausible hypotheses as, and only as, an heuristic device. In other words that such an analogy would prompt the scientist to think in a certain way. It would help him to formulate the hypothesis, but it does not suggest the hypothesis itself. There is no necessary connection between the analogy and the

¹⁵ M. Black (1962) p.223

plausible hypothesis; the connection is between the analogy and the scientist thinking along certain lines. There is no necessary outcome of such thinking. It may or may not lead to the formulation of plausible scientific hypotheses. This is a contingent matter. That models do act in this way seems evident from the way in which language is transferred from the analogy to the field of study. Before considering this, however, let us examine two claims. First, that if the function of models and analogies in science is only an heuristic one then this implies an absence of explanatory power. Secondly, that if we wish to reap the benefits of an explanation then this involves the existential use of models and that this characterises the practice of the great theorists in physics.

Explanation and the use of analogies:

No analogy explains anything. Analogies do not answer 'why' questions. Further, scientists when they are engaged in investigating the nature of gases, for example, are not concerned with explanation. They are interested in the properties of gases, the way they behave when subject to various conditions etc. They are not interested in 'why' gases are as they are. Indeed it is not at all clear what would count as an answer to such a question. Scientific theories are concerned with universal description. Scientific explanation, on the other hand, involves only the particular and here a phenomenon is explained by appeal to the appropriate scientific theory or theories. So we could ask, 'why did this gas expand?' and the answer would be 'because it was heated and all gases expand when heated'. Analogies have no part to play here. If a scientist wishes to explain a phenomenon he does so by reference to an established body of scientific theory, unless the phenomenon is from the realm of the unknown in science in which case he may himself advance an hypothesis. This

theory or hypothesis, however, is not an explanation of anything. It can be used in the explanation of a particular instance, but standing on its own it tells us how things are. Scientific theory is in this sense descriptive. The role of analogy in science as we have seen is to prompt the scientist to think in a certain way, for he borrows the language and concepts of the analogy and uses them in his description. That such 'analogue models' in science lack explanatory power may therefore be an interesting observation, but it cannot be a criticism, for their function in science is not one of explanation, nor indeed of prompting explanation.

The second claim could be dismissed along with the first - (scientists are not involved in reaping the benefits of an explanation when they are engaged in theorising) - were it not for the rider that the great theorists in physics used models precisely in the way suggested, namely existentially. That they did so the better to explain must, if I am right, be discounted. That they did so at all is what is now in question. What would it be to use a model existentially? Max Black, in his book on models and metaphors, attempts to illustrate the difference between the model used as an heuristic device and the model used existentially by appealing to the distinction between simile and metaphor. He takes as an example for discussion Clerk Maxwell's celebrated representation of an electrical field in terms of the properties of an imaginary incompressible fluid. "The difference", he states, "is between thinking of the electrical field as if it were filled with a material medium and thinking of it as being such a medium. One approach uses a detached comparison reminiscent of simile and argument from analogy; the other requires identification typical of metaphor."¹⁶ This is hardly to clarify

¹⁶ Ibid., p.228

the matter, for metaphors do not involve existential claims but are, as with any figure of speech, merely a manner of speaking or a way of emphasising. 'Her eyes are like stars' is a simile and 'her eyes are stars' a metaphor. Both are a manner of speaking. The latter might be thought the more emphatic or even the more romantic, but no one would suppose the difference to involve an existential claim. No one, in other words, would suppose that one was claiming that her eyes actually are stars. Both the simile and the metaphor are ways of likening one thing to another, they may be different ways of doing so, but neither is more than that. If then scientists talk of an electric field as being an incompressible fluid, it does not necessarily follow that they are making existential claims. It may just be a manner of talking. Black, however, appears convinced that models have been used existentially for he continues, "Whether we consider Kelvin's 'rude mechanical models', Rutherford's solar system or Bohr's model of the atom, we can hardly avoid concluding that these physicists conceived themselves to be describing the atom as it is, and not merely offering mathematical formulas in fancy dress."¹⁷ This, as I hope will be evident from the arguments already advanced, is exactly what scientists are doing - describing the atom or whatever as it is. The analogue model is not included in such a description. The language of the model may be carried over to the description and used in a way similar to language in a metaphor. Here Black seems confused and is certainly confusing when he refers to Bohr's 'model' for this is surely the description or the scientific hypothesis advanced. It is not an analogy and not indeed the sort of model whose place in science we have been discussing.

¹⁷ Ibid., pp.228-9

The analogue model as an heuristic device:

The place of the analogue model in science, then, is as an heuristic device and no more than that. This is not, however, to underestimate its importance, for, in prompting the scientist to think along certain lines, it has in the past played a key role in the formulation of plausible scientific hypotheses. As Black says, the heart of the method consists in talking in a certain way. And here the vocabulary of one area of science is often transferred to another. It is not a case of 'applying' the model to the field of study as we might apply the replica of a geometrical shape to an ink stain to see if it fits or not, but rather an analogy is used to bring out and explore the likeness or similarities. Again, the scientist is not fishing in the dark. If his interest is in gases then he must know a considerable amount about the properties of various gases before he could have any idea of what might count as a suitable analogy. And most importantly he will be aware of the empirical facts which his description or hypothesis is required to take account of. Thus he is able to adapt the concepts of the analogue model to his own purposes. For instance, we are now quite familiar with talk of electric currents 'flowing', and this was presumably borrowed from the better known 'flowing' of liquids such as water. To conclude, however, that because electricity 'flows' it cannot travel uphill is both ludicrous and to mistake the way this vocabulary transfer works in science. When scientists adopted such terminology in relation to electricity, the notions involved were adapted to the new sphere of application. We are now fully aware that to talk of electricity flowing is not quite the same as to talk of water flowing. This adaption was possible precisely because scientists were not searching for models in complete

ignorance of the nature of electric currents nor without any inkling of how they might behave. If to use analogue models in science involves talking in a certain way, then it must be added that no particular model dictates the way the scientist must talk. The use of analogies of the kind we have been considering is an infinitely more flexible method of arriving at scientific hypotheses. It is, I think, a distinctive mode of achieving insight, but not one peculiar to science. That the practice of science is on occasions, and even on many occasions, conducted in this manner is certainly the case, but such models are neither logically necessary to the ongoing activity of science, nor indeed one of the major concerns of the discipline. It remains the insight which is of importance and not the method of achieving it, the 'model talk'.

II

MODELS AND ANALOGIES IN SOCIAL SCIENCE.

It is a good deal more difficult to examine the place of the model in the so-called 'social sciences', for this rather varied bundle of subjects does not appear to have the coherence of a discipline to provide unity. The suspicion that the models which have been used in sociology, human geography, politics, economics etc., are of a particularly varied nature has considerable foundation. Before we can embark upon the discussion of models in social science, and in order to reduce confusion as far as possible, a distinction must be made between a 'model' and a 'diagram' as used in the literature. This distinction,

although rarely made, is important, for once diagrams have been identified they can then be set aside as irrelevant in the present context.

A diagram may be said to represent uncontroversially. Like the model of the planetary system discussed earlier it is a purveyor of information (albeit a two dimensional one) and often has a similar teaching function. Where a diagram does appear in the course of an academic argument it is as a way of presenting evidence for a case, or for an hypothesis, and not itself the presentation of any case or any hypothesis. Following this it may be argued that if theory is simply well established and accepted hypotheses, a model would become a diagram when it is likewise accepted. This would be the case in science. Bohr's model of the atom was a way of presenting his hypothesis.¹⁸ When it became established in science others were able to use it as a diagram of what an atom is like. That the same is true in the social sciences must, however, remain in doubt, for until the possibility of a coherent discipline of social science can be demonstrated this collection of subjects continues to lack any criterion by which hypotheses could become (or fail to become) 'established'. Thus a diagram in the social sciences is not a presentation of what has once been a hypothesis. Rather it represents some everyday matter of fact which does not require to be established by any specialised enquiry. Thus a graph of population statistics would be a diagram, for it neither presents a case nor provides an explanation. Lössch's system of hexagonal trade areas, on the other hand, is a model, for it represents his hypotheses about the spatial distribution of economic units. Having made this distinction between diagrams and models, we can now concentrate

¹⁸ It should be noted that 'model' here has nothing in common with the use of analogies examined in the preceding section.

on the latter for if we are interested in explanation, the former may be discounted. We are left, then, with 'models' (such as Lösch's model) whose purpose is to present an hypothesis, and with the sort of analogue models used in science. Both may play a part in the social sciences. By taking a paradigm case of each we can discover what function they fulfill in the explanation of human actions.

Christaller-type models:

First let us consider the model which represents a set of hypotheses about the world, and in this case about the social world. There are many examples of this sort of model in economics, and Lösch, Christaller and many other geographers have borrowed notions from the economists and constructed their own models giving the 'bare economics' a spatial dimension. For instance, Christaller organized his basic model on what he calls the marketing principle and all geographers are familiar with the hexagonal patterns which he derives. What he purports to explain, however, is the distribution of market centres and it is not the model which explains this, but only the hypotheses on which the model is based. In so far as Christaller is answering distributional questions, the answer is being given by the 'market principle' and the 'principle of least effort', and the model is quite unnecessary to such an explanation. The function of this model appears very much like that of Bohr's model of the atom, namely a convenient way of presenting an hypothesis. On closer reflection, however, this can be seen to be the only similarity, for not only is the nature of both sets of hypotheses quite different but Christaller's model does not describe or represent any existing phenomena. The hexagonal model does not stand in relation to the social world as Bohr's model stands in relation to the natural world. It is not, in other words, a demonstration of 'how things are', but rather normative in character and derived from what has been termed

'explanation of the principle'. This is a form of explanation which is not found in science, and the character of which requires considerable elaboration and examination.¹⁹ Our main concern here, however, is with the heuristic nature of the hexagonal model which, if we have not fully understood the explanation in terms of the assumptions, may help us to grasp what Christaller is talking about. Like any heuristic device it can be discarded without in any way affecting the explanation.

Many geographers who would agree that Christaller's model is in this way unnecessary to his explanation of the distribution of market centres would nevertheless, I think, wish to maintain that the model could not be discarded. Such a claim would be that Christaller is dealing with the spatial distribution of phenomena (although it can be noted in passing that all phenomena are distributed in space); that the spatial dimension of the explanation can only be illustrated by constructing a model, and further that the validity of such an explanation could only be determined by comparing the model to reality. Thus the model becomes the vital link between the explanation and its acceptance into (or rejection from) the body of geographical knowledge.

Several points can be made here. First, we do not need to draw a map in order to direct someone from A to B, although it may be the best way of doing so. Likewise we do not need to construct a model in order to communicate the spatial implications of such general explanations, although again it may be the best way of doing so. Secondly, we return to the very problem which prompted this entire study, namely the comparison of such a model with reality. To compare

¹⁹ Explanation of the principle is discussed in section III of this chapter.

Christaller's model with the actual distribution of market centres in some selected area is indeed one way of assessing the plausibility of Christaller's explanation, but it is neither a necessary way nor the most direct way. The question which must concern a locational analyst is, 'For what sorts of reasons have people located market centres and how are such centres therefore distributed?'. Such a question can only be answered by offering possible reasons for the use of one location rather than another for the buying and selling of goods. It is the 'plausibility' of the hypothetical accounts incorporating such reasons (and indeed whether there could have been other reasons as well) which encourages their acceptance or rejection as explanations. The mistake often made is to suppose that if the model does not accord with reality then it need not be rejected but can easily assume the status of a partial explanation; it may not accommodate all possible reasons but it includes the most important, and this even if the model and reality appear considerably at odds. To take the concentric ring model of the Chicago sociologists as an example; when it was found that the patterning of the spatial structure of the city of Edinburgh bore no relation to that of concentric circles there were three possible conclusions which could have been drawn. The first involves rejecting the theory; the second, acknowledging Edinburgh as a special case to which the theory does not apply (although this raises questions as to the status of the 'theory'); and the third - the conclusion which interests us here - attempts to reconcile the model and reality by explaining or accounting for the differences. It could, for example, be pointed out that irregularities in the land surface (Edinburgh, like Rome, is built on seven hills) could certainly distort the circles since the model does assume an isotropic plane. The problem with this is that it effectively destroys any criteria for

distinguishing valid from invalid explanations. And if anything counts as an explanation then equally nothing is explained. Such accounting for differences also tends to take the focus away from the explanation itself and it is important to remember that the task in hand is one of explanation.

Models like Christaller's, then, are only heuristic devices. Their function may be to clarify the explanation, but they themselves do not explain. Indeed they presuppose the formulation of some hypothesis as an answer to the questions asked. The function of Christaller's hexagonal market area model is similar to that of the model of the planetary system or Bohr's model of atom in so far as it illustrates and clarifies. Their relations to explanation are, however, quite different.

The relationship between models and explanation.

We have seen elsewhere that explanations of the social world and explanations of the natural world differ considerably, and it seems reasonable to assume that the practice of social science and the practice of science will be easily distinguishable one from another. We have seen that scientific hypotheses do not explain anything but merely describe in a certain way. It is the particular which the scientist explains and the theories he may cite in such explanations are themselves universal descriptions. Thus models (such as Bohr's) in science bear only the indirect relation to explanation that hypothetical universal description does to explanation of the particular. In social affairs, however, there are no such universal descriptions. If the social scientist is directly concerned to explain, therefore, he does not have recourse to the same sort of theories as scientists

use in their explanations. If the nature of his subject matter does not admit of universal description then it is not hypotheses concerning such a description that his model represents. The scientist uses a model to illustrate how things are. The geographical or spatial models we have been considering are concerned first and foremost to illustrate how things would be if the preliminary assumptions were correct. It is often supposed that such a model will further accord with the world as it is, but its primary purpose is not one of describing reality - it may or may not prove to be an accurate illustration of this. Further, that any model does in fact provide an illustration of things as they are does not guarantee that the explanatory hypotheses from which it was derived are correct. One may derive similar expectations of what the spatial distribution would be from diverse sets of preliminary assumptions or explanatory hypotheses. Thus explanation and description remain distinct. Even when a certain description appears to be entailed by a certain explanation, if the description is correct, it does not necessarily follow that the explanation is the right one. Models of this sort in social science bear a more direct relation to explanation than do those in science, for it is claimed that the model is entailed by the explanatory hypotheses, that the model illustrates the spatial implications of the explanation. Thus the hexagonal areas model illustrates the implications of Christaller's explanation of the distribution of market centres in terms of the market principle. If the explanation is found unacceptable, however, then the model becomes irrelevant. Such models in social science are not advanced simply as descriptions of the social world - after all we have maps to show us where towns and villages are in relation to each other - but rather as deductions from some explanatory hypothesis. Their usefulness depends

upon the validity of the hypothesis, ie. whether it provides a plausible explanation or not. In contrast to this, the question relevant to the acceptance of a scientific model is 'does it describe correctly or not?'. This underlines again the essential difference between the scientific mode of understanding and the understanding of the social world.

Models as predictive devices:

A final position which could be adopted in an attempt to establish a necessary place for models in social science is to deny that geographers are interested in explanation at all; or at least to deny that they ought to be, for clearly there are many who do wish to explain. What geographers should be interested in, it could be claimed, is prediction. We want to know what is going to happen so that we can prepare for it, if not change it, and not why things, which are already past, happened at all. This view is most prevalent amongst geographical statisticians who, if provided with the appropriate data, make predictions by projecting past statistical trends into the future. In many cases such projections do prove useful. What must be noted, however, are their limitations. In the social realm prediction is closely linked to understanding and, since understanding and explanation are also related concepts, the ability to predict cannot be divorced from the ability to explain. Think of attempting to predict the behaviour of one's brother, sister or friend in some unusual situation. We do not need to have observed them in similar situations in order to attempt a prediction which is more than an inspired guess. Understanding or knowing the person as an individual is more important than having simply witnessed their behaviour on a couple of previous occasions,

however similar. And this understanding is quite different to the sort of understanding required to forecast the weather when the sky is filled with black clouds.

It is always open to the statistician to reply that this is not the sort of understanding sought by geographers; indeed one has to agree that geographers do not wish to predict the actions of any particular individuals. The geographer is interested in the aggregate outcome of a multiplicity of individual decisions and it is thus the relevant actions of various groups which must capture the geographic attention. Group actions, however, require the same mode of explanation, understanding and indeed prediction as do the actions of individual human agents. Thus the social scientist must explore the world of human conduct. If his questions concern the choice of residence or the nature of social stratification in the society, he cannot hide behind a wall of statistics and expect an answer to emerge.

Having said this, there is one social science which does use models for prediction and has recently become increasingly involved in the manipulation of statistical data. This is economics. Here the model can be presented as a mathematical formula, a graph, or a series of graphs. What is important is that given the assumed relationship between the variables (eg. supply, demand and the price of a good), if one of these changes, the resultant change in the other two can be predicted. Here the model is an expression of the assumed relationships and it is only because the variables are definitionally related that prediction (of a quantitative change) is possible. Only by grasping the nature of the relationships themselves, however, can one be said to understand the workings of the economy. The model could not have been formulated without some such understanding, nor could the appropriateness of any particular prediction be assessed.

Again the model itself is not necessary to this understanding although it may act as an heuristic device. As such, models in the social sciences are undoubtedly valuable and important but must necessarily be an aid to research rather than any end-product or goal. The achievements of human geography must lie in the understanding of the social world it provides and not in the number of models contained in its literature.

The use of analogies in social science:

Finally in this section, it is appropriate to examine the part analogies have played in the social sciences and attempt to determine what part they might play in the future. Analogue models have been important in the practice of science. They have, in the past, prompted scientists to think along certain very fruitful lines. From the discussion of analogical argument in science we learn that analogies, in order to be useful, must be appropriate. It is precisely this point that many social scientists have apparently failed to consider. A scientist who uses a theoretical analogy to further his research is not fishing in the dark and must know something about the nature of his subject matter before he can judge any other theory to be analogous. Indeed he must have considerable knowledge if, as is most often the case in science, he is to adapt the language of the analogous theory to his field of study.

The literature of human geography contains many examples of what look like the use of analogy; ie. of the exhortation to think of X as if it were (or less frequently as if it were like) Y. Consider the claim that the movement of human population on the earth's surface can be analysed as if it were the movement of iron filings in a magnetic field. We take a formula of physics, apply it in the field of human migration and talk about the attraction and repulsion

of various population centres. This appears to be very similar to the use of theoretical analogies within the physical sciences. Before we can legitimately use the theory of magnetism as an analogy, however, we must first be able to assert that analogy and this requires that the movement of iron filings and the movement of population be shown to be similar. It is not enough to say that both move. To assert an analogy important similarities must be pointed out and if this cannot be done the two are simply not analogous. The 'similarity' between iron filings and people does not bear such scrutiny. One only has to think of the questions relevant to each to realise that they belong to totally different realms. What caused these iron filings to move in that way? Were they positively or negatively charged? These questions belong to science and many such questions demand an answer in terms of cause and effect. The realm of human affairs is quite different. Why did so many people move to the west coast of North America in the 1890s? Here the answer would be in terms of the search for gold, dreams of riches, pioneer spirit, greed etc., all revealing the reasons (and motives) people had for going-West. —If one ceases to talk of people as motivated and regards them as a collection of inanimate objects moved by certain hidden physical forces, one ceases to talk about human beings at all and hence can say nothing about the movement of human populations.

The above example illustrates well the mistake made by those who fail to assert an analogy in the first place but proceed regardless in their attempt to argue analogically. It would be possible to cite other instances of this mistake in the geographical literature. As Olsson and Gale point out, for example, "...in effect, Bunge and the social physicists have drawn analogies with the fundamental optimality

principle in physics and, in this respect, their approach is similar to some biological studies and general systems theory in particular".²⁰ All commit the same sort of error by borrowing directly from the realm of science and trying to apply the hypotheses or theories in the realm of human activity. Whatever the conclusions reached they could not be conclusions about the nature of human activity for they deny the essential character of that activity. And, as Hesse points out, it must be remembered that "analogical arguments may be attacked not only on the grounds that they depend on superficial similarities but also on the grounds that the causal relations assumed are inappropriate to the subject matter".²¹

Not all theoretical studies in the social sciences which attempt to make use of analogies provide such clear examples of inappropriateness. Nevertheless many display a similar error to the one just examined, namely that the proponents fail to assert an analogy at all. They fail to 'make plain' the similarities. Much systems research relies on analogy either from the biological sciences (the ecosystem) or from the field of technology (mechanical and electrical systems). The members of the Ecological school of urban sociology base their work on the city as a living organism and employ the language appropriate to a biological community. But neither Park nor his colleagues point out the similarities between an urban community and a biological community before using the latter as an analogy in the study of the former. Similarities cannot be pointed to if there are not any. And even where there are some similarities these must be substantial or important before an analogy can be asserted. The scientist is aware

²⁰ G. Olsson and S. Gale (1968) p.230

²¹ M. B. Hesse, op.cit., p.89

of the positive, negative and neutral analogies before attempting to argue analogically. He knows the extent of the similarity, how far the analogy can be pushed. He is in control of the transference of language. If the social scientist is to make use of analogy in his research he must also be fully aware of the limits of such use, and of the way in which analogical reasoning must proceed if it is to be profitable. The analogy only prompts the researcher to think along certain lines; it could never replace such thought.

To conclude this discussion we are left only with the problem of indicating the possible part the model and the successful analogical argument might play in the examination and explanation of human actions. We have looked at the status and function of models and analogies in science. Models, as such, do not have a necessary part to play in scientific research, although they may be important as heuristic devices both to the scientist and to others who wish to learn about science. They have in the past proved a useful way of presenting an hypothesis. The use of analogy, on the other hand, has played a key role in scientific reasoning, although again this role is not a logically necessary one. The practice of science could (logically could) still proceed even if scientists never use analogies. That they frequently do employ argument from analogy is thus a contingent matter. Neither the model nor the analogy would feature in an account of the logic of science; ie. an account of what makes science a distinctive mode of understanding. Nevertheless, because analogy has played a major part in the formulation of many well established scientific theories, its use is of considerable interest. It is important to note the kind of language transfer involved, the nature of the scientist's control over the analogy, and the criterion for an appropriate analogy without which

the academic study could not advance.

Taken as a whole, the social sciences cannot be characterised as a distinctive mode of understanding. Consequently we cannot talk of the logic of social science as we can of science. The discussion of models and analogies in this sphere, therefore, has centred around their use in the geographical literature. It has been pointed out that certain fundamental mistakes are commonly made, especially in systems related research, and the sketching of the more important features of successful analogical argument allowed us to see more clearly the exact nature of these mistakes. Whether the social sciences could employ theoretical analogies at all must, for the present, remain an open question. The theory of social science will necessarily differ in certain respects from that of science and until the nature of such theory is clear we can say nothing about how it might be used analogically. It is possible that analogical argument will lead to an increase in our knowledge and understanding of the social world even if it is not theoretical analogy which provides the insight we seek. Above all, however, it is this insight, this understanding of the world of human affairs, which must be the primary concern of the social sciences and not the way it happens to be achieved on any particular occasion. The contribution of human geography (or any social science) to our knowledge and understanding of the world will be judged only by the validity of such insights.

III

THEORY AND THEORETICAL STUDY:

Models may be aids to scientific study, but the aim of science

remains the formulation of hypotheses and the establishment of theories. No study can claim to be theoretical simply because the researcher uses a model in the course of his research. If the model is not the key to theory, how then can we be theoretical in our study of the subject matter of human geography? In this section we will examine the relationship between scientific theory and scientific explanation in order to assess the possibility of advancing this type of theory within the social sciences. Since economics provides us with a competing framework on which to base our search for a valid theoretical approach to the realm of human affairs we must also consider 'explanation of the principle' and its potential contribution to this search.

The nature of scientific theory:

Theories in science embrace scientific laws; that is, they include universal statements about the nature of a particular class of phenomena. Whether the theory is more than a certain juxtapositioning of the laws is a question over which there is still considerable debate. Caldin, in a discussion of chemistry, claims that, "...the theory is a construction, not a deduction. It goes beyond representing the laws; it interprets them."²² Here we have the theory as something over and above the laws but not divorced from them. Alexander points to the practice of philosophers of science to regard a theory as "a complex structure of connected hypotheses relating statements about observable phenomena which otherwise appear to be unrelated".²³ Such statements, when of universal application, would be scientific laws. Again we have the theory as something grander than, but related to, the laws.

²² E. F. Caldin (1961) p.28

²³ P. Alexander (1963) p.111

Alexander adds,

Thus we have the Kinetic Theory of Gases, which is a complex structure intended to exhibit the relations between, and explain, the very different sorts of behaviour displayed by gases under widely differing conditions.²⁴

It is the scientific law which is a statement about the behaviour of phenomena such as gases. The precise relationship between law and higher order theory is, however, far from clear. Caldin is most revealing on this subject:

...in most chemical activities theories are of interest because they offer explanations of observations that would otherwise be puzzling. They are developed to help us understand the phenomena, not merely describe them.²⁵

It would not be pertinent here to take up the debate and it is enough to note two relatively uncontroversial points which can nevertheless contribute to the present discussion. First, whatever the relationship between them, the scientific law is logically prior to the scientific theory. If theories display connections between laws, the laws must come first. And secondly, the scientific law is an essential part of the scientific theory. The worth of a theory lies in the extent to which it can explain what had previously been regarded as anomalous. Such scientific puzzlement only arises because of some unfulfilled expectation, and such an expectation relies upon an acquaintance with the accepted body of scientific knowledge. For example, if during the investigation of the nature of an unusual gaseous substance we found that it did not expand when we heated it this would be, scientifically, very puzzling. This is because the universal statement 'all gases expand when heated' is well established

²⁴ Ibid.

²⁵ E. F. Caldin, *op. cit.*, p.32

in science. We do not feel immediately inclined to discount it and are therefore left with an apparent anomaly. We would have expected it to expand but it did not. It is anomalies of this kind that scientific theory must account for. And the anomalies could not arise if there were no established scientific laws, no accepted body of scientific knowledge. Science involves the constant search for better theories and theories are judged better if some occurrences which were previously problematic become both normal and predictable.

Implications for social science:

The theoretical study of human affairs must be quite different. The impossibility of deriving substantive general laws in this context immediately points to the impossibility of the theory of social science being in any way based upon a set of such laws or general statements. Further, new theories could not be provoked by puzzling occurrences of the same kind as found in the practice of science. Scientific puzzles arise when expectations, generated by a relevant set of scientific laws, fail to be met. Without such laws and the associated expectations the basis for theory adaptation and change within the social sciences could not be the same as that in the physical sciences. The search for theory within human geography, if it involves the attempt to copy the pure sciences, will only generate methodological confusion.

We cannot escape the consequences of the conclusions reached in the discussions so far (about the nature of the human world and the nature of scientific methodology) by taking up the following remark of Harvey's:

Using less rigid criteria the identification of laws in geography becomes partly a matter of identifying the relevant theory, and partly a matter of our own willingness to regard geographical phenomena as if they were subject to universal laws, even when they patently are not so governed.²⁶

To agree with Harvey in this respect would certainly be to commit methodological suicide, for we cannot pretend to study any phenomenon, in order to increase our understanding of that phenomenon, if we either deny its essential characteristics or spuriously credit it with some characteristic in order to proceed in some predetermined orderly fashion. Once we realise that the phenomena of human geography are patently not governed by universal laws, then to treat them as if they were is as ridiculous as attaching reasons to the vagaries of ocean currents or the deposition of lava after a volcanic eruption.

Our argument has led to the conclusion that whatever the approach adopted in the study of human geography it could not be both scientifically theoretical and methodologically sound. To deny that a study could be theoretical in the same manner as the pure sciences, however, is not to declare it unamenable to theoretical treatment. Having eliminated the possibility of scientific theory in human geography it does not follow that we have eliminated any possibility of theory. Our account of theory and of what it is to theorise must now be broadened. Not all theoretical activity is scientific activity, and caution must be exercised lest we unintentionally fail to acknowledge this in the questions we ask about theory. It may be, for example, that talk of 'building a body of theory' is quite inappropriate in the study of human affairs, whilst that study itself would be no less theoretical for the absence of such a central reserve. Care must be taken not to accept, without question, certain phrases widely used in the literature of human geography and thus unwittingly fail to abandon the scientific model of theory which so pervades current methodological thinking.

Theory and practice:

How are we to recognise a theoretical approach in the social sciences? Is there any other discipline which embraces the theoretical but not the scientifically theoretical? Or is there an approach within social science which is commonly assumed to be theoretical but which does not feature in the methodology of the physical sciences? In order to go some way **towards** answering these questions, let us examine the nature of the theoretical by introducing another distinction, namely that between theory and practice.

The theoretical and the practical are logically distinct. Practical activity can be contrasted with theoretical activity, and the fields of technology and science provide a useful illustration of such a contrast. Both are marked by the goals of their respective researches. Technological research is aimed at improving the ways in which man can exploit available resources. Its immediate goals are concrete and often closely specified (eg. the development of a more powerful warhead or the manufacture of a more effective drug). Stephenson's Rocket, Bell's telephone and Fleming's penicillin are all phenomena of the field of technology. The activity of science is quite different. The scientist, qua scientist, is interested in the nature of his subject matter and not in the practical use to which any particular ^{piece of} scientific knowledge could be put. If the scientist is studying steam he will want to ascertain, for example, the exact conditions necessary for its production. To the technologist like Stephenson, steam is primarily a source of power.

The fields of science and technology are not always easily distinguishable. The technologist requires a considerable knowledge of science to do his job and may even in the course of his practical research (his research into ways of doing things) contribute to the body of scientific knowledge by discovering something previously

unknown about the nature of the physical world. The one researcher may be both scientist and technologist. Nevertheless there is a logical distinction between the two fields which makes the contrast a valid one and which allows us to say something about the difference between theory and practice.

In order to use scientific knowledge to improve ways of doing things in the practical world, it is first necessary (and this is a remark about logic and not about the actual conduct of individual technologists) to accept such knowledge as given. One does not question the laws of aerodynamics and then base aircraft design upon them. In the field of technology current scientific knowledge is accepted as fact and the technologist proceeds from there. This is aptly labelled applied science. The scientist himself is in a very different position. He is not interested in using or applying the knowledge which he seeks and need never make the same commitment to its truth as the technologist must. Indeed it is in the nature of theoretical activity in science that it is constantly critical. Not even the most basic scientific law can escape this critical scrutiny, for the business of theorising within a scientific mode of understanding just is the critical scrutiny of the existing body of theory and the replacement of such theory in the light of apparently anomalous cases. The pursuits of the technologist and the scientist are logically distinct.

Theoretical study can be distinguished from practical activity in a similar manner. The practical man has a goal to achieve, his work therefore has both well-specified purpose and direction. The theorist, in so far as his research can be said to have purpose at all, is interested solely in increasing our knowledge of the world. Theorising is critical activity par excellence, and the theorist may be likened to an onlooker or spectator rather than a man obliged to

act upon the knowledge he acquires.²⁷

Economics - a theoretical or a practical activity?

A distinction similar to that between science and applied science (between theory and practice) is often assumed to apply within the sphere of economics. Since economics is a social science and more akin to human geography than is pure science, this assumption is worthy of investigation. On the one hand we have the economic theorist exercising his critical faculties to the full on the relationships of economic theory (between, for example, the money supply, public spending and rates of inflation). His interest lies in the relationships themselves. In contrast, the economic advisor, the practical man, is concerned with current economic problems. His advice will be on ways of reducing the present rate of inflation under circumstances x,y,z operating here and now. Like the technologist, he must apply accepted theory (however imperfect) in a particular practical context. The parallel is appealing, and in both cases it would be the theorist who is engaged in academic research. Having discounted scientific method as inappropriate to the subject matter of human geography we may nevertheless, as geographers, be able to theorise by modelling our research on that of economics. Before we examine that possibility, however, we must first ask if there is not more to the academic subject of economics than has so far been suggested.

Suppose, for example, we had a British academic who was researching into the effects of the East African Customs Union on the economy of Kenya in the late 1960s. Would he qualify as a theorist? He certainly could not be a practitioner, for he is not in a position to

²⁷ Interestingly, the one word in Greek means both 'spectator' and 'theorist'.

deal with current economic problems in Kenya even supposing his study bore some relevance to such problems. And yet his study could not be theoretical in the sense that it is solely concerned with the amendment and replacement of economic theory. The subject matter clearly belongs to economics and yet on the distinction outlined above the research can be declared neither theoretical nor practical. Suffice it to note at this juncture that there must be a third possibility in economics, for there is this large research effort directed at the study of actual events and specific economic statistics which has no practical purpose. Economic research of this kind, being non-practical, is more like theorising, with the researcher as spectator or onlooker to the events he studies.

Explanation of the principle:

If the human geographer cannot, with methodological integrity, adopt the scientific model of theory then perhaps he could still achieve the generality of economics by utilising its explanatory mode. The social sciences, it has been argued, cannot offer explanations of detail as physics can but they could give 'explanations of the principle'. And economic theory can be cited as a paradigm case of the latter. It is certainly true that a physicist could give a detailed explanation of a particular occurrence but it should be noted that the function of scientific theory is not to provide explanations of the world at all, either in detail or in principle. The universal propositions of science describe the world as it is. Economic theory and the attendant explanation of the principle, then, are not a kind of theory nor a mode of explanation found in science. Explanation of the principle is peculiar to the social sciences, and it might well be assumed that as such it will be better suited to social scientific subject matter. It does appear to provide the generality sought by

many theorists but whether it is indeed the key to a sound methodological base for urban theory remains to be seen.

What is explanation of the principle? Keynesian economics can be taken as a suitable first example. In his economic theory Keynes put forward a small number of related fundamental postulates in terms of which 'explanations of the principle' upon which economic phenomena appear are given. Within geography Christaller, for example, can be seen to have advanced an explanation of the principle, for he was also concerned to deduce the consequences of a small number of basic postulates. The spatial dimensions of Christaller's theory are important for geographers, but the explanatory power of the theory itself lies in the basic postulates rather than in any of the deduced consequences, spatial or otherwise. In his book Central Places in Southern Germany, Christaller devotes a chapter to 'fundamental meanings' and it is upon the notions discussed there that the whole elaborate construction of central places and hexagonal nets is based. The first of these meanings is both the most fundamental and the most important. It is 'centralization as a principle of order'. Here we have an attempt to explain the pattern of settlements (or at least market places) in the landscape by an appeal to the principle or principles which underlie their spatial organisation. Christaller maintains that,

The crystallization of mass around a nucleus is, in inorganic as well as organic nature, an elementary form of order of things which belong together - a centralistic order. The order is not only a human mode of thinking, existing in the human world of imagination and developed because people demand order; it in fact exists out of the inherent pattern of matter.

The same centralistic principle is also found in some forms of human community life, predominantly in certain organizational structures and expressed in an invisible objective form.²⁸

The landscape pattern arises from and is explained by the centralistic order of things. The crucial assumption of all those who attempt to provide explanations of the principle is that there is some such basic force operating upon a group of phenomena which results in the fundamental ordering of such phenomena. After this, the whim and fancy of fickle human beings provides the frills or details which make any particular pattern unique.

Unfortunately, explanation of the principle even in economics is not without its difficulties, for statements of 'the principle' have a peculiar relationship to directly observable phenomena.²⁹ Consider, for example, Zipf's 'principle of least effort' which, it is claimed, is "the primary principle that governs our entire individual and collective behaviour of all sorts, including the behaviour of our language and preconceptions".³⁰ 'Least effort' provides us with a paradigm case of talk of principles in relation to human behaviour and we can now examine the relationship between this principle and observable phenomena. When Zipf states that it is the purpose of his book to establish the principle of least effort we might well wonder how such an establishment is to be accomplished. What sort of evidence would

²⁸ W. Christaller (1966) p.14

²⁹ see T.S.Torrance (1973) for an extensive discussion of this point.

³⁰ G.K.Zipf (1965) preface. (One can only speculate about the 'principle' which guided Zipf's own behaviour in writing such a lengthy book on the subject.)

prove, or even disprove, the claim that human behaviour is governed by the least effort principle? Zipf himself attempts to answer this question when he points out that,

.....there is also admittedly no a priori necessity for our believing that all living process does in fact behave at all times according to one single invariable superlative, such as that of least effort, that, after all, must first be established empirically.....³¹

But is he not mistaken in supposing that the task is an empirical one? Statements of the principle, being contrasted with statements of detail, are not simple statements of what is there to be seen. They are more suitably characterised as referring to something basic or underlying and as such could not be verified or falsified by direct observation. In economics the phrase 'other things being equal' is the hallmark of such a principle; a principle which is said to guide behaviour at a basic level and which can only be 'discovered' after the superficial decorations of behaviour, the details, have been sorted out and discarded. To cite a detail as contrary to any suggested principle, if one is seeking to establish the principle, is to argue irrelevantly, for details have no bearing on principles. They can neither refute them nor support them. And when the economic theorist adds 'other things being equal' to his economic law he is deliberately laying aside such considerations of detail.

Could explanations of the principle ever be either verified or falsified by 'looking to see'? Indeed are statements of the principle empirical claims at all? Again Zipf's writings serve as a concrete example. Zipf characterises his notion of 'effort' as follows:

³¹ Ibid. p.3

In simple terms, the Principle of Least Effort means, for example, that a person in solving his immediate problems will view these against the background of his probable future problems, as estimated by himself. Moreover he will strive to solve his problems in such a way as to minimize the total work that he must expend in solving both his immediate problems and his probable future problems. That in turn means that the person will strive to minimize the probable average rate of his work-expenditure (over-time). And in so doing he will be minimizing his effort, by our definition of effort.³²

The way in which the principle here operates in any particular case is said to depend upon the individual's estimation of his own situation. Thus two individuals, with similar problems to solve, may choose to act in very different ways. Their behavioural strategies may nevertheless both be governed by least effort for, if we are to believe Zipf, actual behaviour results from the intervening subjective estimation of a situation. But if any course of action can follow as a solution to a set of problems then no particular course of action could possibly confirm that the principle of least effort did govern the behaviour. Conversely, to assume that this principle guides all behaviour is to be able to say nothing about specific behavioural strategies. Take Zipf's own example:

We might take the case of a student whose particular path of least effort out of his classroom would seem off-hand to be the path that leads from his seat to the nearest aisle, and thence out of the door, through the hall, to the nearest stairway. On the other hand, in the event of a fire, the student may prefer to run with least time to the nearest window and adopt a path that is simultaneously a path of least work and of least time and of least distance to the ground. This path will also be a path of least effort as estimated by himself, even at the risk of months in hospital with a broken back. Other students may prefer to take paths through the smoke-filled corridors. These paths are also paths of least effort, as estimated by the students in question.³³

32 Ibid. p.1

33 Ibid. p.7

The observation that considerations of 'effort' are unlikely to be entertained at all in such circumstances seems pertinent although it is not the academic point in question. All the students in the example are in the same predicament; their school is on fire. Their chosen escape routes, however, vary. This is neither surprising nor unintelligible. To observe further than each was following his own path of least effort is to add nothing to the account. It does not make any individual action more intelligible or less intelligible, for we have nothing with which to contrast the least effort path. And if there is no path which does not minimise the effort of the student who takes it, then it must be logically impossible both to provide a counter-example to Zipf's central contention and to establish the principle of least effort empirically. If we accept in advance that all routes taken by the students will be least effort paths then this necessarily excludes the possibility of looking to see if the students do in fact take such paths. The principle cannot be established empirically. Indeed it must be concluded that it is not an empirical claim at all.³⁴

³⁴ Other versions of Zipf's principle appear in the literature (particularly of locational analysis) and normally incorporate 'rational' man and a ceteris paribus clause; thus other things being equal the rational man would choose the path of least effort. This is plausible, but surely other things are rarely equal. And even if they were how are we to compare quantities of effort when it is quite inappropriate to attach even an ordinal scale to such a notion? Could we really take seriously the claim that there is more (or indeed less) 'effort' involved in writing a Ph.D. thesis than in training for the Olympic long jump? Such disparate activities cannot be compared in terms of the effort they require.

Further, the central notion of 'effort' is itself often extended in a way which renders it meaningless. Certainly, if any consideration can add to or subtract from the amount of effort involved in following a particular path then, in one sense, all other things will be equal for there will be no other considerations to be unequal. To do this, however, is merely to hide the multiplicity of considerations involved in the choice of a 'path' behind the general label of effort and to guarantee the incoherence of the questions one is then forced to ask. The choice between a beautiful path and an ugly one has nothing at all to do with effort. To deny this and translate any consideration (length, steepness, aesthetic quality, familiarity etc.) into quantities of 'effort' is to rob the notion of effort of any sense whatsoever.

Scientific laws are empirical laws. They describe the behaviour of phenomena which can be observed. Their competitors in economics are not empirical. Nor are statements of the principle analytic.³⁵ Could they then bear some alternative relationship to the empirical? Could they, for example, be neither fully analytic nor empirical and still contribute to a mode of understanding? To characterise such statements in this way, however, brings into question their potential contribution to any body of knowledge. For how are we to judge them true or false? The non-empirical cannot be tested empirically. This is precisely the problem outlined in Chapter 1 where we noted that it is not at all clear which empirical observations would support and which undermine a theory such as Christaller's. If no observation is to count against the theory (ie. if, whatever the divergence from the theoretical pattern, we attempt to account for the divergence rather than abandon the theory) then, since it forbids nothing, equally it could explain nothing. But are we on any firmer ground if we finally admit the non-empirical status of Christaller's thesis?

An attempt has been made in the case of economics to overcome the verification problem associated with statements of the principle. Non-analytic and non-empirical statements³⁶ are said to be open to an informal test of acceptability when considered as an integral part of a formal theory which is itself open to empirical refutation. But in

³⁵(a) All bachelors are unmarried men

(b) Income equals consumption plus savings ($Y = C + S$). These are both analytic statements. All such statements are true in virtue of the meanings of the words and symbols.

³⁶ For example, 'the quantity demanded and the quantity supplied of every good are some respective function of the ruling price' would be one such statement.

what would this informal test consist? And how are we to achieve the empirical refutation (or confirmation) of a theory the formulation of which itself involves statements which are neither fully analytic nor empirical? Here we can detect an essential difference between economics and the other social sciences, for although economics is certainly concerned with human behaviour (saving, expenditure etc.) the most sound economic theory is based on wholly analytic propositions and many economic variables are related definitionally. Further, most economic problems are part of the world of practice (ie. they call for practical solutions) and it is only in this context that we could have an informal test of acceptability. If a theory contains a statement about the principle at work in regulating the money supply, then the only possible candidate for a 'test' of that theory is to increase the actual money supply and compare the result with the theoretically expected one.³⁷

Two points require to be made. First, the claim that even though the basic statements of a theory are not amenable to any decisive empirical test, the theory itself is, is a peculiar one. The implications of a theory follow deductively from the statements of the theory itself, and therefore the bald claim that a theory's logical

³⁷ Exactly what such a comparison would confirm or refute is far from unproblematic. This need not concern us here, however, for it is enough at this point to establish that a comparison of this kind is the only way we can construe the 'informal test of acceptability'. It would merely detract from the main arguments of the thesis to comment upon the effectiveness or otherwise of this test.

implications but never its basic postulates can be tested, must be false. Secondly, even if the relationship between some postulates and some implications could sensibly be characterised as necessary but not deductively necessary, the human geographer does not have the possibility of testing a theory in a practical context. This last point may be questioned, for urban geography, at least, is often supposed to have a practical application in the field of planning. Could not the planner effect an informal test of acceptability for urban theory in just the same way as the economic practitioner could for economic theory?³⁸ The short answer must be no. In a theoretical account of the principle, the variables in question are general ones such as the money supply. The planner, however, is not in a position to alter such general variables even if the urban geographer could pass on to him formulae relevant to urban distributions. For example, the planner has no direct influence on the number of people of a particular socio-economic group who reside in urban areas. And no matter how powerful the planning legislation, the planner could never control the numbers of people in the same way as the economist can regulate the

³⁸ This, we can note in passing, raises several interesting questions about the kind of understanding that intellectual disciplines such as science, history and philosophy provide, and their relation to the world of practical activity. For example, does a competence in moral philosophy help one to lead a better life?

money supply.³⁹

Explanation of the principle, then, is not an explanatory mode which could sensibly be adopted within human geography. The formal theories of Christaller and Von Thünen are interesting attempts to extend economic postulates into the spatial dimension. In so far as they employ strictly economic notions (of market price, economic rent, income etc.) they can be classed with economic theory and verified or falsified accordingly. For the geographer, however, the interest lies in the extension of the purely economic model and it is here that such theories encounter insurmountable problems of verification. No statement of the principle which is not analytic can escape the fundamental flaw of untestability. To employ such statements, or theories which embody such statements, in human geographical research would necessarily be to engage in unsubstantiated speculation.⁴⁰

³⁹ To characterise planning as applied urban geography is utterly misleading and a distortion of the part a planner might play in the urban scene. It is a popular fallacy, but a fallacy nevertheless, that theoretical advancement in urban geography will help the planners in their job of constantly improving the urban environment. This is also the myth of Harvey's socially relevant geography. Geographers are in no position to change the world. The urban theorist is not a practical man. His theoretical findings may increase our understanding of present spatial distributions, but if the theory is not scientific (ie. not universalisable) then it cannot be applied directly to future occurrences, however similar. The planner would benefit from knowing the future effect of current decisions. The geographer may be able to provide him with relevant information, but urban theory could never provide him with the answer.

⁴⁰ This is well illustrated by Von Thünen's own work when he attempts to relax one of the many very limiting assumptions from which he derives his initial model of the concentric ring pattern of agriculture in an isolated state. After introducing a major waterway through the market centre, the way in which this is said to distort the rings is entirely a matter of speculation. Nothing follows deductively from the remaining assumptions. The criticism, it should be noted, is only of those theories which do purport to be explanatory (ie. increase our understanding of how certain patterns come about). A model of an ideal pattern which is part of a prescriptive enterprise is quite another matter.

The discussions of Chapter 4 have been wide-ranging. Their implications for the way in which we could study human, and in particular urban, geography are central to this thesis and can, therefore, usefully be summarised in three main points:

1. Model building or the use of any modelling techniques (including the use of analogical reasoning) is not a logically necessary part of scientific method. Geographers are therefore no nearer to being scientists simply because they employ models in their research. And if analogical reasoning can advance research it must be within a different theoretical framework to that of science. Further, the geographer must be sure to assert an analogy in the first place; ie. he must show that the two areas involved are truly analogical. Only then do we have the possibility of increasing our understanding of the social world by the use of models.

2. Theorising in science is an activity marked by several distinctive characteristics. These could not be shared by any study of human behaviour. The theory of pure science is universal description. There are no such universals in social science. (And those who seek to theorise in geography are commonly dissatisfied with mere description). Scientific theory could not, therefore, provide methodologically sound guidelines for the development of geographical theory.

3. Economics, itself one of the social sciences, has two branches, one practical and one academic. The practitioner uses the theoretical formulations of the academic in a practical context. And it is the practical context which allows the possibility of subjecting explanations of the principle to an informal test of validity. Without such a possibility statements of the principle would have no explanatory power since they could never be shown to be either true or false. Human geography has no practical counter-part and therefore no possibility of such a test. Explanation of the principle, therefore, is not a

mode of explanation which could meaningfully be employed in human geography.

These conclusions are largely negative. They tell us what human geography could not be and show us which methods would not increase our understanding of human locational behaviour. In doing this, however, their contribution to the methodological concerns of this thesis is a positive one, for the examination of many fundamental issues has helped to clarify the nature of the subject matter of human geography and this in itself takes us one step nearer to ascertaining the methods appropriate to it.

In the first part of this thesis many of the current approaches in human geography have been shown to have major weaknesses and to be methodologically confused in a particular way. This confusion arises from the mistaken belief that human geographers could and should be scientists. The lack of theory, the lack of a coherent body of knowledge, in human (and urban) geography can now be explained. Geographers have, in the past, attempted to employ a distinctive mode of understanding (science) in a sphere where understanding in this way is impossible. Human behaviour cannot and could never be understood scientifically - hence the conundrum with which we started. The methods of theoretical science may produce theories in human geography, but these have no explanatory power because the method itself is wrong.

The solution, of course, is to change the method. And this indeed must be done if we, as geographers, are to advance the understanding of the social world. The pervasiveness of scientism,¹ however, nurtured in geography by the quantitative revolution, makes this a difficult step to take, for the popular illusion, that the more scientific the study the more academically respectable and certain its conclusions,² is not easily cast aside. Nevertheless human geography, and therefore urban geography, is not a science and only by accepting

¹ Scientism is the (mistaken) belief that all knowledge must be established scientifically; ie. according to the methods of the natural sciences.

² It can be noted in passing that the phrase 'more scientific', though frequently used, cannot be made sense of. A valid piece of academic research either employs scientific reasoning or it does not. It is either scientific or non-scientific. There are no 'degrees' involved in either case.

this conclusion wholeheartedly can a real contribution to urban research be begun. The methodological mistakes apparent in the social sciences have been examined in a general manner. If anything is to be said about the modes of understanding which are appropriate, however, this can only be done by looking at particular areas of study. It is to the particular problems of urban geography that we turn in Part 2.

PART 2

URBAN GEOGRAPHY IN PARTICULAR

Let us turn our attention, for the moment, away from the more general methodological concerns of Part 1 and focus directly on the questions raised by urban geography. The principle interest of the geographer is in spatial configurations, in the distribution of phenomena over the surface of the earth. All geographers have this much in common. The sub-divisions found within the subject, then, result from variations in the kind of phenomena studied, in the 'what' of the distributions. For the urban geographer this interest in spatial locations is directed towards urban phenomena (either their pattern of distribution over an area of the earth's surface or the patterns created within cities). In the discussion so far we have considered the location of such human artefacts as the outcome of many individual locational choices and decisions and concentrated on the implications of the nature and characteristics of this subject matter for the way in which we can suitably study urban phenomena. Having identified several methodological cul-de-sacs, it is perhaps apposite at this juncture to embark upon a closer consideration of which patterns the urban geographer might wish to study and of the questions he could appropriately ask about the internal structure of urban space. In other words, we shall ask, 'What is urban geography?'. Carter has this to say:

Urban geography cannot claim to be a systematic study in the sense that it is concerned with those processes which, in the context of a culture, operate to create spatial patterns. These processes are economic, social and political and their study rightly generates the systematic themes within human geography. Urban geography, in contrast, considers all these processes in relation to one phenomenon, the city.¹

But what questions might the urban geographer wish to ask about the city? What might he seek to describe and what might he seek to

¹ H. Carter (1972) p.1.

explain? It is easy to answer such questions in a general way - geographers want to know about urban form or about the function of an urban centre. It is much more difficult, however, to be explicit and to pin-point particular interests and particular puzzles which demand explanation.

There is to date a whole range of questions which have been suggested in the literature, and the choice of 'perspectives' is legion. One persistent theme, taken up by Carter for example, is that concerning the distinction between form and process. This distinction itself is by no means limited to an urban context, but the popularity of phrases like 'urban form' and 'the process of urbanisation' mark its prominence within urban geography. The first chapter of this section, therefore, is devoted to a closer examination of urban spatial questions in a form/process framework. This will introduce some fresh considerations to the methodological discussions and help us to determine the proper scope of urban geography.

CHAPTER 5

SPATIAL FORM AND SOCIAL PROCESS

The aim of this chapter is to explore the relationship between social processes and the spatial structure of the city in order to discover whether the former can help in the explanation of the latter. It is frequently supposed that pattern (ie. any geographical pattern) can be explained by citing the processes which were its cause. Bearing in mind the arguments of Part 1, we now have reason to be cautious about talk of causes in human geography. Such caution need not necessarily involve forsaking the process/form framework of explanation, but it does require that such a framework be looked at more closely than before. The distinction between form and process does not immediately present any problems. The form, on one popular account, is what is there to be seen and mapped, whilst the processes are going on behind the scenes, moulding and shaping the landscape into a particular visible form. As we have already noted, many geographers have concentrated on the identification of pattern and the development of techniques to describe more succinctly these patterns. In other words their concern has been entirely with form or structure and hence with description rather than explanation. It is when one begins to think of how to explain a certain pattern of phenomena that the relationship between social processes and spatial form may recommend itself as a possible, or perhaps the only possible, line of enquiry. Robson highlights this point:

True the geographer starts out with the identification of patterns, but his analysis, if it is to be more than descriptive, must proceed from there to the study of the inter-relationships which are responsible for these patterns. Haggett's attempt to isolate a separate set of interests comprising the geometrical aspects of geography is thus mistaken in so far as the real interest in the existence of a pattern in, say, the distribution of central places is not the existence of the pattern itself, but the understanding of the movements and circulations which are responsible for the spatial pattern.to the urban geographer spatial patterns are thus a reflection of social processes which are at once highlighted and better understood by the identification of the spatial distributions and the spatial associations.¹

If, as urban geographers, we wish to explain or understand the form of an urban area what we must discover, according to Robson, are the social processes which have resulted in the spatial pattern. But how is this to be done? What are 'social processes' and where are we to discover them? Many would agree with Harvey, "that any general theory of the city must somehow relate the social processes that go on in the city to the spatial form which the city assumes".² But is it not a good deal more difficult to indicate how this can be accomplished?

I

THE IDEA OF FORM OR PATTERN IN GEOGRAPHY:

Before we address ourselves to these questions, however, the explanatory framework itself needs some clarification. Carter says when talking about a conceptual scheme related to metropolitan structure, "Here 'form' is taken to refer to the morphological or anatomical aspects and 'process' to functional or physiological aspects".³ The form, then, is the spatial dimension, but we are reminded that, "even though the geographer may wish to concentrate on the spatial characteristics of the city, and the characteristics of the city in space, he cannot simply

¹ B.T.Robson (1969) p.33

² D.Harvey (1970) p.47

³ H.Carter, op.cit., p.13

sever them from aspatial considerations of process."⁴ To understand form we need to know what processes were instrumental in its creation. An inquiry using this framework in the explanation of any particular urban pattern must start with a description of the urban form (ie. the pattern itself) and proceed to explanation by the discovery and elucidation of process. But how many problems would an inquirer who attempted to follow this recommendation meet along the way?

What is urban form?

Urban geographers have in the past rarely been disposed to reveal clearly and explicitly what they take urban 'form' or urban 'structure' to be. Most, it must be assumed, suppose such terms to be sufficiently familiar to require no further elucidation. Familiar they may be, but this does not exempt those who use them from the responsibility of making their use perfectly clear when requested to do so. And alternatives such as 'internal morphology of a city' are little help, for like the words 'form' and 'structure' themselves they make reference to some pattern within (in this context) the city. Frequently no further indication is given of what kind of pattern this is. Two impressions, however, are gained from the literature on urban structure. First, that the pattern is a general one rather than a detailed one, that it would feature areas rather than streets for example. And secondly that there is a pattern in any urban area which can be called the urban structure, form or internal morphology. In a methodological discussion such vague impressions are not adequate. The first thing we must be perfectly clear about in urban geography, then, is the meaning of the word 'form' (or 'structure').

Sometimes reference is made to the residential structure of the city. Here at least we have some idea of which pattern is being

⁴ Ibid., p.333

referred to, of which urban phenomena are relevant to it and which irrelevant. Residential structure is the pattern created by the distribution of residential areas, and those who seek to delineate this in the first stage of their enquiry can legitimately ignore factories, shops, offices, public works and any other non-residential features of the urban area. Whether this would be the urban form or only part of it is open to dispute. What is certain is that urban form, however understood, is not 'there to be seen'. One cannot simply go into a city and discover its spatial form. This must be abstracted from the wealth of detail which presents itself to any investigator. And in order to abstract a distributional pattern, the geographer must adopt a particular criterion which will single out one aspect of the complex whole. Maps can then be produced showing the distribution of places of residence or the distribution of industrial areas (or whatever other aspect of the city the geographer wishes to concentrate on). As Shevky demonstrates in his work on social area analysis,⁵ urban areas can have more than one axis of differentiation and this is largely a matter of taxonomy rather than phenomenology. It is not that these patterns have to be "put into" the city by the research worker however. Rather they have to be abstracted by a process of selection. The distribution of any category of phenomena thus selected, and being distributed in space, will be mappable. Not all such distributions will warrant intellectual enquiry into their nature;

⁵ E. Shevky and W. Bell (1955) and E. Shevky and M. Williams (1949)

some may, others certainly will not.⁶ The distribution itself, however, is no less real for being selected from all that is there to be seen. It is not, as is sometimes supposed, that such an abstraction results in a wholly artificial object of study. For the urban geographer concerned with the investigation of the form or structure of the city, to be selective is both necessary and unavoidable. But it is of considerable importance that he/state ^{should} clearly which aspect of the city, (the particular urban form) he wishes to examine. Only then will the scope of his study be evident and the confusion arising from the unqualified use of terms such as 'structure' and 'form' dispelled.

Urban form and Edinburgh:

Nor does the city of Edinburgh have one form or structure which is there to be found by anyone with the inclination to look. One of the first questions which presented itself to the present writer during the preliminary investigation of the Scottish capital was, "How does one discern a pattern within the city at all comparable to that suggested by Park, Burgess or any of the urban theorists?" What criteria, in other words, could be used to abstract distributional patterns from the jumble of human artefacts? It was decided that two related though not necessarily spatially coextensive aspects of the city were the most

⁶ The distribution of industrial establishments may pose academic questions. The distribution of chairs in a room will not. Not all questions about location demand an answer, and of those which do, not all will be of academic interest. To ask of the bird perched on the telegraph wire, 'Why is it sitting there, on that spot?' when it has to sit somewhere, is senseless. Such idle questions could never be properly academic. Academic problems and questions arise only within a particular discipline; they are prompted by a distinctive mode of understanding the world.

likely contenders for comparison with previous studies, as well as being of particular interest in Edinburgh. These are:

- (a) the distribution of house types
- (b) the residential distribution of social groups.

As axes of differentiation these two distributions appear to be similar in nature. Indeed in certain areas they might be expected to be spatially coextensive. And yet there is a fundamental difference between the two which, on a certain view of the nature of geography, would reveal (b) as unfit subject matter. Hartshorne mentions the construction and use of maps as one of the most distinctive characteristics of geography.⁷ Certainly ^{the map} / is one of the geographer's most basic tools. If we were to claim that the task of the geographer is to understand and explain mapped distributions (not an implausible claim), we would be forced to agree that the residential distribution of social groups must, therefore, lie outwith the scope of geography. This is because such a distribution cannot sensibly be put in map form. And this is what distinguishes it quite clearly from distributions of, for example, house types. Let us discover wherein the difference lies by looking again at the investigation of Edinburgh.

Initially, the two chosen axes of differentiation seemed sufficiently interrelated to be examined together. In Edinburgh, in the nineteenth century, the upper strata of society lived in the large spacious town houses of the equally large and spacious New Town thoroughfares, whilst the smaller, less well-built back mews houses were occupied by those of considerably lower status. The type of house and the social station or position of the occupier did seem to vary coextensively

⁷ See R. Hartshorne (1939), particularly pp.247-249.

in space and it was thought that to investigate the precise relationship for the whole of the city would be both worthwhile and of considerable interest. It was expected that this investigation as a whole would be interdisciplinary but that in the analysis of distributional patterns created by the actions of individual human beings, geographical skills would be dominant. It is not our present concern to locate the boundaries of geography.⁸ Suffice it to note that these original expectations were not fulfilled and this was possibly because the geographical conception of the investigation was mistaken. If we examine each axis of differentiation in turn this point can better be appreciated.

The first aspect of the city chosen for study was that of house types. Using the form/process framework outlined above the initial task is to create a diagram of the form. This is a relatively straightforward matter in this case because we are dealing with a finite set of human artefacts. The distribution of houses is reasonably stable and any disputes about particular cases can easily be resolved by looking to see. The likely problems are those involving the categories of 'house types' to be used. Does one have a single class for all flats? Or does one take size and/or amenities into consideration and have 'flats'

⁸ It is important to remember that the boundaries (or scope) of a discipline form a logical limit outside which the mode of understanding which distinguishes it as a separate discipline is necessarily inapplicable. The boundaries of a subject, however, are determined rather by tradition and convenience. Science is a discipline and physics and chemistry are subjects. Only the division between subjects could sensibly be called artificial.

divided into two, three or more type categories? The scale on which one is attempting to abstract such a pattern will have an obvious influence on the willingness of the individual researcher to accommodate a more detailed breakdown. Further, it is often pointed out (with considerable agitation) by human geographers that such a categorisation can never be anything but subjective.⁹ And by this they mean that the categories are not magically predetermined but have to be chosen by the researcher. At the one extreme all houses are in the same category (they are all houses). And at the other, there are as many categories as there are houses, for one can always find some basis on which to distinguish between one house and its neighbour. In between, there are many possible house-type divisions which could be chosen. The choice will be influenced by the types of housing apparent in the study area and the particular concerns of the research programme. Subjectivity can be overemphasised in this context. Indeed, in one sense, it is not entirely up to the individual researcher to decide his categories. Standards of common-sense, relevancy and appropriateness do not end with the declaration of subjectivity. We do not have to accept whatever categories the researcher himself offers us, for we are still at liberty to accuse him of talking nonsense. The work of the researcher, if it is to be considered a piece of academic research, must remain within the confines of logic (eg. he must not contradict himself), sense (he is not at

⁹ R. J. Johnston (1968, p.575), for example, remarks on the choice which governs the classification of units within any zone of transition (between classes), and declares, "Classification is thus basically a subjective process, despite the apparent objectivity of the methods employed." There can be no dispute about the necessity of exercising choice when classifying phenomena, but it is frequently forgotten that the choice itself can be judged good or bad, appropriate or inappropriate, and need not be downgraded to the merely subjective.

liberty to include an undivided town-house in his category of 'flats') and appropriateness (we could rightly condemn the inclusion of 'houses with blue doors' as a house-type category). It is the latter which gives rise to most disputes. The number and generality of categories is often contested on the grounds of inappropriateness to the particular case. This does not mean that no sensible decision can be made. The adoption of one scheme rather than another may be a matter of choice, but that does not further imply that one cannot have good grounds on which to base such a choice. This would not preclude debate but it does mean that such debate is quite different from the offering of opinions. It is properly academic and reasoned. The area for disagreement is considerably less than those who put forward a strong subjectivity thesis suppose.

When building up a pattern of house types in any urban area, then, the choice of type categories is clearly not arbitrary, but it does require careful consideration. The choice affects the final pattern and since the pattern is the 'object' to be understood, the choice of categories affects the whole investigation. The categories must be appropriate to the particular piece of work, the task in hand. This is an important point because it highlights the fruitlessness of deciding in advance, of choosing the criteria on which to base the breakdown of any axis of urban differentiation before examining the particular case. Once an appropriate breakdown has been decided upon, however, the plotting of the urban distribution is a relatively simple matter. The more general the categories, the easier the project. It would not be difficult, for example, to plot house types in three categories as follows:

- (i) houses with internal stair
- (ii) flats
- (iii) bungalows

With a slightly more detailed specification these could be three mutually

exclusive categories which together account for the entire housing stock. Providing enough information is available a distributional pattern could be abstracted from the urban mosaic. Given visual information from the present day, a detailed plan of the nineteenth century layout and census information concerning the number of households occupying one building, a diagram of the pattern of house types in Victorian Edinburgh could be constructed with comparative ease.

The problem of social groups:

The same could not be said of the second axis of differentiation outlined earlier. The problems encountered in any attempt to elicit the pattern of residential distribution of social groups are considerably more complex than those of simple taxonomy. This axis is different in kind to that of house-types and it cannot, therefore, be treated in the same way. We are dealing here not with human artefacts but with individual human beings, albeit as members of a group. This means that the decision of where to draw the boundaries of the social group is not the same kind of choice as that of deciding upon suitable house-types. It is frequently admitted that subject matter such as 'the social group' is complex and presents special difficulties. Zelinsky declares that, in relation to science, "the subject matter of social science is of a higher order of complexity and difficulty".¹⁰ And certainly the complexity cannot be denied. It is of primary importance, however, to appreciate that the subject matter of social science is not the same as that of natural science, only more complex; the difference is more fundamental. Failure to recognise this has, as we have seen in Part 1, led to all sorts of methodological confusions. In the same way the residential pattern of social groups is not a more complex version of the pattern of house types, for the two are quite different.

¹⁰ W. Zelinsky (1975) p.137

If we are to map the residential pattern of social groups, clearly we must first decide which social groups it is that we are going to map. Only then could we allocate any given family or person to a particular social group. In other words, the first thing we must know is what is to count as a 'social group'. But how is this to be determined? The literature on the subject, although not lacking in volume, is more confusing than helpful in relation to the problems of the human geographer. Much sociological writing on stratification, for example, is of too general a nature to be useful to the urban researcher. The major sociological theories, however, do provide some insight into talk of classes or groups within society and although we cannot be concerned here with their detail, two summary comments seem appropriate.

1. The determination of what is to be counted as a social group, or more correctly as a relevant social group, cannot be done in a void but must be in the context of some particular problem or study. There are many different social groups one can think of, identifiable in different ways and not necessarily mutually exclusive in their membership. (i.e. one individual may belong to more than one social group.) When we are concerned to explain the changing pattern of residential distribution, therefore, the relevant social groups will be those which have meaning in terms of residential decision making. Thus a football team, although a social group, is unlikely to be a meaningful one in terms of influence on the residential structure.

2. For the urban geographer concerned with changing residential patterns within the city interest must lie in the social norms of particular groups as reflected in individual attitudes towards methods of acquiring a home, expectations and preferred locations. We must be

careful, however, of the way in which we talk of social groups, for a social group is nothing other than a group of individual human beings. It has no extra causal efficacy. Rex and Moore, for example, state that, "...being a member of one or other of these classes (ie. social groups) is of first importance in determining a man's associations, his interests, his life style and his position in the urban social structure."¹¹ But surely this is to make a mistake about the relationship between the social group and the individual member of it. Indeed the mistake becomes evident if we think of how Rex and Moore might attempt to support such a bald statement. Could they, for example, cite any evidence in support of their claim, and if so what kind of evidence would this be? Consider the claim again. We are told, amongst other things, that being a member of a class determines a man's life style. So let us take some particular aspect of a 'life style', drinking with the boys at the local pub for example, and make the matter plainer. We now have a specific instance of Rex's claim, that being a member of a particular class will determine that Mr. A indulges, amongst other things, in the practice of 'drinking with the boys' at the local pub. Our problem now is to decide which class Mr. A might be said to be a member of. Suppose we have the choice of three - upper class, middle class, and working class - to which one could we assign Mr. A? We must, of course, know something about Mr. A before we can attach a class label to him. We could, for example, collect information on his income. But we should require more than this. We might also find out details of his employment, the location of his residence, the income and employment of his associates and the sorts of leisure activities he

¹¹ J.A.Rex and R.Moore (1967) p.36

indulges in. Indeed the more we could find out about his way of life the better placed we would be to allocate him to a particular social class. But now what has happened to Rex's claim? We see that to determine Mr. A as a member of, say, the working class we appeal, amongst other things, to his leisure activities. And so to translate, as it were, Rex and Moore, we are left with the rather peculiar claim that the fact that Mr. A indulges, amongst other things, in 'drinking with the boys' determines, amongst other things, that he indulges in 'drinking with the boys'. One can readily see that the element of truth in the original statement can be ascribed entirely to its tautological nature.

The mistake made by Rex and Moore was to suppose that they were involved in an investigation in which one thing could be said to determine the other. The relationship between the social group and the individual is not like this. In order to discover what sort of life a working class man might lead, we must first look at particular examples of the life style of what is generally known as the working class population. We would not then be finding out what might determine a man's actions, but rather what it is like to be working class. That a man acts in a particular way is simply what it is for him to be working class. The current body of sociological literature can tell us something about social class, but the language used is, on occasion, both confusing and misleading.

For the problem of intra-urban differentiation, we are now able to adopt a position similar to that of Gans¹² and suggest that, although the residential distribution of social groups is most certainly the

¹² H.J.Gans in R.E.Pahl (1968) pp.95-118

outcome of many individual aspirations and decisions, such choices and demands themselves do not develop independently or at random. That we can talk meaningfully of social groups at all implies that the members of such groups share certain opportunities, aspirations and experiences of life. What still requires to be illustrated is that certain residential opportunities, aspirations and related life experiences are part of what it is to be a member of a certain social group. Again it is important not to mistakenly suppose the relationship to be a causal one. Even Gans does not avoid this mistake, for although he emphasizes the shared character of residential choices and demands, he maintains that these "...are functions of the roles people play in the social system."¹³ The choices, he says, are related to the characteristics of the people, to their class (in all its economic, social and cultural ramifications) and life-cycle stage. On further examination, however, it is not at all clear what could be meant by this. Individual choices are said to be functions of the role people play, but how do we characterise these roles? Surely it could only be in terms of an individual's actions and choices. And Gans, therefore, makes the same sort of mistake as Rex and Moore for he supposes that he is dealing with a situation in which one thing can be said to be a function of the other. What we are interested in is social groups, and perhaps social roles and social norms, but these are not separate from people's actions. They cannot be used to explain people's actions, for they are merely a way of characterising such actions. This was what was meant by the 'social group' having no extra causal efficacy. It cannot be used as an explanation of individual characteristics for it is nothing other than an agglomeration

¹³ Ibid, p.111 (my emphasis)

of such characteristics.

Class as a social grouping:

We are still left with the problem of how, in the context of a particular study, we might identify relevant social groupings. One prominent notion which has been used by many of the great social theorists in their discussions of social divisions is that of 'class'. Marx and Weber, notably, had much to say on the subject of class as a group, class situations and class consciousness. Despite this, it is difficult, on a pragmatic level, to identify a 'class' in the same way as one might identify a football team. We are all familiar, in usage at least, with the tripartite division of society into upper, middle and working class, but even with considerable information on any particular individual we might well have difficulty in placing him decisively within one or other of these class groups. And if we were to use class as the basis of our residential groupings then any inability to allocate individuals to groups would indeed present a considerable problem.

Here it is the notion of 'class' which needs some clarification. What do we mean when we talk of class as a social group? Several sociologists have pointed out that 'class' is not simply a social taxonomy, ie. a way of classifying certain social phenomena. And this is to say that it is not simply a classification like the house-type categories we have already examined. The difference has been noted as one of kind, and we must now ask, "What is it that distinguishes a 'class' categorisation from a simple taxonomy?". E.P.Thompson in his famous volume on the English Working Classes discusses the nature of class divisions. As an illustration, he uses the analogy of a time machine. The sociologist, having stopped the machine, goes down into the engine room to have a look, but emerges saying that he has been totally unable to locate and classify

a class. All he can find is a multitude of different people. He was mistaken, Thompson declares, in ever supposing that he would find a class in this way since class is not this or that part of the machine but rather the way the machine works once it is set in motion.

Class is a social and cultural formation (often finding institutional expression) which cannot be defined abstractly or in isolation, but only in terms of relationship with other classes; and, ultimately, the definition can only be made in the medium of time - that is, action and reaction, change and conflict. When we speak of a class we are thinking of a very loosely defined body of people who share the same congeries of interests, social experiences, traditions and value system, who have a disposition to behave as a class, to define themselves in their actions and in their consciousness in relation to other groups of people in class ways.¹⁴

The main point Thompson is making here is that social class cannot be defined by reference to quantifiable characteristics of individual people, especially in the abstract (ie. outwith the context of a particular investigation). Further, it is not just that class has so far defied any attempts to define it in this way, but that the concept of class is not one which can be so defined. Its elucidation cannot be in terms of such concrete data, for it requires the consideration of the relationships involved.

Could class play a part in the investigation of Edinburgh's residential structure? If people could indeed be shown to have the disposition to behave as a social class in their residential choices and aspirations, what Weber calls class situation would become a key concept in any analysis of urban social structure. We cannot, however, follow Weber too closely, for he also talks of a class situation as being where class leads directly to certain sorts of experiences and 'life chances'.¹⁵ Here Weber makes the same mistake as we have seen in other writings when he supposes that one thing leads to another.

¹⁴ E.P.Thompson (1968) p.939

¹⁵ see M.Weber (1960)

It does not make sense to claim that being working class either determines or leads to a person choosing to live on a council estate. That a person does so choose is one aspect of a working class style of life and not something separate from it. It is part of being working class that certain residential opportunities present themselves and certain residential aspirations become prominent. One does not, therefore, use the fact that these people are working class to explain their occupation of a council estate as one might use cause and effect in a scientific hypothesis. Rather the explanation of a particular residential structure itself becomes a piece of socio-historical narrative concerning what it is or was like to be working class in a particular residential choice situation. Class is a dynamic notion involving ongoing relationships. It is not amenable to strict definition in terms of the characteristics of individuals and the necessarily general nature of class labels entails the impossibility of determining class limits. By the nature of a class categorisation there will always be individuals who cannot appropriately be allocated to one class or another no matter how much information we have about them. This is one thing which marks notions of social class or social group as quite different from any house-type groupings.

A second feature of the difference in kind between the two axes of differentiation suggested for the study of Edinburgh, is one touched on by some writers but seldom fully appreciated. Boulding sums this up well when he says,

Social sciences are dominated by the fact that the social scientist and the knowledge which he creates are themselves integral parts of the system which is being studied. Hence the system changes as it is studied and because it is studied, there can be no myth of an unchanging universe with the scientist acquiring abstract knowledge about it.¹⁶

¹⁶ K.E.Boulding (1967) p.12

We have already discussed at some length the relationship of the social scientist to the society which is his subject matter.¹⁷ He himself is essentially part of the system, for he speaks the language of the system. The understanding of any social system involves an understanding of the language of that system. In this way, the social scientist is not at liberty to define his terms. Here again we can contrast the social scientist and the natural scientist, for the latter can define his terms in as precise a manner as he wishes. In scientific language the meaning of a word may therefore vary from that of everyday usage. The common word 'mass', for example, meaning the bulk of an object, is given much greater precision within science. Further, the language of the scientist has no effect on his subject matter; the laws of motion may change but nothing follows for the movement of a billiard ball.¹⁸ 'The more precisely concepts can be defined, the more scientific (and therefore better) the research is likely to be', is a common doctrine. It is equally common, but misplaced, for social scientists to begin their studies with an attempt to 'define their terms'. The concepts we use in our study of society must be the concepts used in the society itself. We are bound by the limits of our language. The concept of 'social class' then, must be the same concept as that which has evolved in the English language. When we, as urban geographers, talk of the working class or of the middle class or of the upper class, we must use these terms as they are commonly understood. Only then would we have the possibility of advancing our understanding of class divisions. And if E.P.Thompson

¹⁷ see Chapter 3 above, especially pp.91-95

¹⁸ Whether the scientific law currently subscribed to is "All is stationary until it is moved" (Aristotelian physics) or "All is moving until it is held steady" (Newtonian physics), the actual movement of the billiard ball will remain the same.

is right, the concept of class is not of an entity the boundaries of which could ever be firmly elucidated or defined. Rather, 'class' is a vague congerie of people who are disposed to behave in a particular way or ways. Because the social scientist is not at liberty to lend any more precision to this imprecise notion than its ordinary use allows, he cannot provide neat class categories as he could with house-types.

The notion of class then, precludes the possibility of dividing the households of Edinburgh into exclusive social groupings, the pattern of which could be presented in map form. And this is not because of any difficulties the urban geographer might have in deciding upon the relevant divisions. The very nature of a social class makes a strict class categorisation impossible, and this in turn makes it impossible to delimit their spatial extent.¹⁹ A 'class' is not a thing which can be mapped. Whether such unmappable material is indeed fit subject matter for the geographer must remain a moot point. That the distribution of social groups and the distribution of house types are fundamentally different is undeniable. We cannot treat the former in the same way as we treat the latter. Their comparison, then, raises far greater problems than would be involved in overlaying one mapped pattern on another.

¹⁹ It is interesting to note that it is logically impossible to map the spatial extent of certain phenomena even though they may have some appearance of being distributed in space. The concept of a 'neighbourhood' is a good example here. The search for a standard definition must be a fruitless one for the notion is necessarily imprecise. We can certainly agree with Peter Mann (1965 p.155), therefore, that "It is more useful to consider social relationships themselves rather than to worry where neighbourhoods begin and end".

The question with which this chapter began is not as naïve a question as it might have first appeared. The meaning of the terms 'form' and 'structure' cannot be taken for granted. There is no pattern which can be called the urban structure, but only a wealth of detail within the urban area which can be so ordered as to highlight a particular aspect of the city. This aspect of interest may or may not be mappable. In either case its specification is likely to raise problems connected with the nature of the chosen set of features. Even after these problems are overcome, however, this is only the first step in any piece of research. To make the axis of differentiation, the particular urban structure, explicit is to describe a pattern. And to describe a pattern is to describe the object of study. Only after this can the study begin. It is in the context of any attempt to investigate or explain the pattern that the second element of the popular research framework is commonly invoked. To study form we look for process.

II

THE IDEA OF PROCESS IN GEOGRAPHY:

The idea that the aim of research is to 'get at the process behind the pattern' enjoys considerable currency in many branches of geography today. It is said to break down any barrier between physical and human geography and allow the subject to assume a new course united and unhampered by artificially imposed divisions. The discussions of Part I demonstrated that the division between human and physical geography is far from artificial. It is, rather, deep rooted and cannot sensibly be ignored. This is not to say that certain observations and techniques from one realm would not be of relevance in the other, but only that the two geographies demand fundamentally different methodologies. The form/

process framework, therefore, could never unite the subject of geography under one methodology, but the perspective which it recommends may indeed be useful to both the human and the physical geographer. Before this can be judged, however, we need to know a little more about 'process'.

The relationship assumed between 'pattern' and 'process' is frequently considered to coincide with that between description and explanation. We start with the pattern (the urban structure) as a description of what is there and proceed to explain this by citing the process, or processes, from which this pattern could be said to result. Since the relationship between explanation and description is by no means a simple one,²⁰ it would not be unreasonable to suppose that to relate process to pattern will also be a complex matter. The relationship itself may change with the subject matter. Merely by using similar words and phrases, researchers often appear to unite the various aspects of geography whilst all the time glossing over important distinctions.

²⁰ The relationship between explanation and description is a difficult one to outline, for many remarks which appear to be wholly descriptive nevertheless turn out to be explanatory when the context in which they are used is known. This is perhaps the key to the distinction. It is the context which identifies an explanation, whereas we do not need to know the context in order to identify a descriptive phrase. An explanation is an answer to a question, and the question itself will arise from a problem. In order to produce an explanation, therefore, we must have a genuine problem which requires an answer. If we have no problem (if questions of the form "Why did X come about?" are inappropriate) it may be that nevertheless the phenomenon warrants description. Further, to gather such descriptions may help to solve a problem, may in other words form part of an explanation, at a later date.

Process in physical geography:

First, let us turn to the heart of physical geography and examine the use of notions of 'process' there, for it is in this area that the most straightforward use of the term can be found. A prominent 'process' in geomorphology, for example, is that of weathering which, we are told, includes such things as expansion on unloading, thermal expansion, crystal growth, colloid plucking and organic process. There are also chemical 'processes' of weathering. In soil science, soil genesis has been outlined as "an aggregate of many individual physical, chemical and biological processes, all potential contributors to the development of every soil, their rates differing in different environments."²¹ But what makes all these processes? Take thermal expansion. The adjective thermal gives us a clue as to the cause of the expansion, any expansion which is due to the application of heat comes under this description. What actually happens in each case (ie. the source of the heat and the subsequent results of the expansion) may be expected to vary considerably. The description 'thermal expansion' merely pinpoints the common element; ie. the presence of a heat source. What does the word 'process' add to this description? Immediately, one thinks of 'process' as implying change over time but in our example such a notion is already contained in the word 'expansion'. If this is all that 'process' was intended to convey then surely it is rendered redundant, for can we not appreciate the dynamic aspect of weathering from the term 'expansion' alone? It is difficult to avoid this conclusion. We could argue that the word 'process' is not entirely superfluous since its function is one of emphasis. It reminds us of, or underlines, the nature of the phenomenon in question (in this case, thermal expansion) as a linked series of events which may proceed at different rates in different

²¹ B. T. Bunting (1965) p.88

cases. At the same time, however, we would have to admit that the term process is playing a secondary role in the general description of the weathering. It must, therefore, be unwise to lay too much store in the language of process alone and consequently in the form/process framework as a basis for unity even within physical geography itself.

How do physical geographers characterise the form/process relationship? Its importance as an influence on the conduct of current research is undeniable and it is because of this that some further examination of the relationship is necessary here. Take this short passage from a text-book on drainage basin geomorphology in which the authors discuss both process and form:

Perhaps the greatest difficulty confronting the geomorphological study of the drainage basin is the discrepancy between process and form. The form of the drainage basin is the product of the processes which have operated in the past on material locally available to produce a particular drainage basin form but these land-forming processes may not be the same in relative importance or, indeed, in kind as the ones which operate in the drainage basin at the present time.²²

Here we have the operation of certain processes leading to a certain drainage basin form. Of course the situation is never static, geomorphological 'processes' are always present and the physical landscape is constantly changing albeit, in many cases, imperceptibly. Two basic factors in the formation of a drainage basin are run-off and erosion; the latter can be broken down into the various types of erosion depending upon the particular agent involved (eg. glacial erosion, where the main abrasive element is the ice sheet). These erosive processes will result in differing drainage basin shapes depending upon the type of rock, the climate, etc. To follow Gregory and Walling, the form or shape of the

²² K. J. Gregory and D. E. Walling (1973) p.7

basin (eg. a basin with an elongated network having one main trunk and numerous short tributaries joining the trunk directly) may have originally been the result of ice action whereas, clearly, the original erosive force will no longer be active in moulding the stream pattern at the present time. This is straightforward enough. We can see that the glacial action, in the above example, did in some sense result in the elongated form of the drainage basin. But are the 'process' and the 'form' quite as distinct as the authors suppose? They claim that geographers have been faced with a dilemma - to study process or to study form? - and further conclude that,

...some of the most rewarding research will arise from the investigation of landform-process relationships because these provide results for understanding the past, for estimating the future and for application to other fields of geography.²³

It is the relationship between form and process which they consider important and we can assume that they would therefore claim that the 'dilemma' is no dilemma at all. Geographers do not need to choose between form and process for they should study both. With this we can agree, especially since it is difficult to see how 'processes' such as erosion could be studied without reference to any landform. Likewise it would be a very barren study indeed which merely observed that a drainage basin was elongated without considering its evolution. In research 'form' and 'process' must go hand in hand. What we must now ask is "Why is this so?" Is it a practical matter, this being the best way to advance our research efforts? Or is it a matter of necessity, with the notions of 'form' and 'process' being so interwoven that one cannot be looked at without the other?

In physical geography the term 'process', because of the frequency

²³ Ibid, p.9

of its use and the generality of its reference, is largely devoid of distinctive meaning and depends entirely upon the specific context in which it is used. Therefore, any methodological discussion of the form/process relationship must be rooted in particular examples. What has emerged so far is the suspicion that 'process' and 'form' cannot be divorced one from another in quite the way that Gregory's statement of the geographer's dilemma might lead us to believe. Use of phrases such as 'the product of' could easily prompt the uncritical expectation of a causal connection between the two. To illustrate this point, let us take a final concrete example from physical geography; namely, the 'process' of sedimentation. Sedimentation, like erosion, is one of the elementary notions which might be used in any discussion of river development. To raise such a notion to the status of a process would add nothing to an account of how the river has changed over time. The danger of doing so, however, can clearly be seen if one assumes any standard causal process/form relationship. That is if one attempts, for example, to explain stream braiding by reference to the process of sedimentation. The causal statement would be, sedimentation causes stream braiding. But this does not stand up to scrutiny, for what is sedimentation but the transportation and deposition of certain materials. Reference to stream braiding adds to the account simply by indicating the general pattern of deposition. If one really wanted to explain stream braiding (ie. the building up of certain deposits in small islands within the river course), this would require reference to such factors as the shape of the river course and the different water currents involved. The 'process' of sedimentation, then, doesn't lie behind stream braiding. Rather, a braided river course provides us with one example of the phenomenon of sedimentation. The relationship between form and process here is not a causal one.

Implications for human geography:

There are three conclusions of this discussion which may be of importance to human geography. First, even in the examples from physical geography examined above, the link between process and form is not a causal one. In other words, we could not explain the form by regarding it as the result of some underlying process. This gives us good reason not to expect a causal form/process relationship in human geography. It does not, however, rule out the possibility of there being one. Secondly, one should not put too much emphasis on talk of process, since such talk seems to add little to the terms it frequently precedes. And lastly, and most importantly, one should not expect a standard relationship between form and process, as the meaning of the latter depends upon the context in which it is used. The relationship between form and process depends entirely upon which process one is talking about.

Process in urban geography:

Unlike the literature of geomorphology which contains numerous references to many well-established physical and chemical processes, the literature of urban geography gives little indication of which processes we might be able to identify within the city. Indeed in human geography in general, references to 'process' tend to be vague rather than concrete. And a recent publication boldly entitled Processes in Physical and Human Geography²⁴ does nothing to reverse this tendency. Few contributors on the human side make direct mention of any 'process' and with no editorial comment on the matter one is forced to conclude that, despite the title, there is no peculiar or common concern which might be called 'process'. Such a general use of the term robs it of any meaning and gives no help at all to those who wish to discover what a 'process' in human geography might be.

²⁴ R. Peel, M. Chisholm and P. Haggett (1975)

So what is to count as a 'process' in urban geography? If the investigation of urban form necessarily involves the discovery of the processes in some way connected with this form, then, before the investigation can proceed, we must first know what it is we are looking for. The individual city is a human creation and as such is a feature of a particular society. Thus the processes which might explain its form will be social processes, rather than, say, physical processes. But can we be any more explicit? Can we name a social process? This is surprisingly difficult, but one candidate which does appear frequently in the urban literature is the process of urbanisation itself. Epstein, in an article on social change in Africa, refers to urbanisation as a "process of movement and change".²⁵ Its essence, we are told, is that it creates the possibility of discontinuity with some pre-existing set of conditions. Again the generality of such comments considerably limits their usefulness in the present context. Urbanisation does involve change, namely that from a non-urban to an urban society. As Marcus and Detwyler have it, "Urbanisation is the process of city establishment and growth."²⁶ But this is to do little more than to state the obvious. The interesting questions concern the kind of changes involved in the growth of a city based society. Is there, for example, anything distinctive about an urban way of life? Questions of this kind have fascinated several writers²⁷ and, since they involve peculiarly intangible notions, a considerable subtlety and imagination is required if they are to be answered satisfactorily. The recent popularity of defining one's terms

²⁵ see A. L. Epstein (1967)

²⁶ T. R. Detwyler and M. G. Marcus (1972) p.6

²⁷ Notably L. Wirth (1938)

at the outset has diverted attention away from such concerns, however, because of the inappropriateness, and indeed the impossibility, of definitional precision in discussions of, for example, a way of life. Whilst it is of paramount importance to be perfectly clear about what one wishes to investigate, this clarity rarely involves the necessity of stipulating precise spatial boundaries, or precise quantitative definitions. There is some truth in Miner's claim that, "Everyone knows what a city is except the expert".²⁸

Urbanisation, then, involves change: change in the whole organisation of society. If we are to study the urban form of Edinburgh, however, we must know the relationship between the general changes and the individual case. Lampard comments,

Individual cities for example can be treated as particular accommodations to a many-sided societal process: urbanisation. Interest lies in so reformulating the generalities of urbanisation that they can serve as principles for organising and evaluating the range of materials found in diverse, but rarely unique experiences of particular towns.²⁹

What would these generalities of urbanisation, as a social process, be? The most plausible answer to this question is provided by that group of geographers commonly referred to as Marxist. In particular, Harvey has addressed himself directly to urban geography and to the elaboration of a Marxist contribution to the "theory of residential differentiation".³⁰ He writes,

Residential differentiation is produced, in its broadest lineaments at least by forces emanating from the capitalist production process and it is not to be construed as the product of autonomously and spontaneously arising preferences of people.³¹

²⁸ H. Miner (1967) p.3

²⁹ E. E. Lampard (1963) p.233

³⁰ D. Harvey in R.Peel et al. (1975) pp.355-369

³¹ Ibid., p.368

According to Harvey, then, we have to examine capitalist production if we are to understand residential differentiation, although he specifically states that residential groupings are not class groups and serve to fragment rather than strengthen 'class consciousness'. So the forces which result in neighbourhoods or communities are not strictly Marxian, for they are an extension of, or addition to, Marx's original ideas of how society is divided. And Harvey himself leaves us with little idea of the exact nature of these forces. He does suppose them to be intimately connected with the process of urbanisation, for both are said to result from the capitalist system. "The accumulation of capital on a progressively increasing scale", Harvey declares, "has set in motion a distinctive and rapidly accelerating urbanization process."³² So the generalities of urbanisation, according to the Marxist geographers, are connected entirely with the operation of the capitalist system from which both city development and growth and the residential differentiation of the urban area result.

We cannot embark upon a critique of Marxism here, but two features of Harvey's analysis are worth discussing further, not only because they are typical of all Marxist approaches but also because the fundamental ideas are present in many non-Marxist writings. The first of these concerns the process of urbanisation itself. Harvey refers to this as a distinctive process. The fundamental idea here is that there is one identifiable and continuous process and various countries or societies

³² Ibid., p.362

will be at different stages on the same progression.³³ If this is a straightforward empirical claim then it is simply false. The cities of the world cannot be seen to stand in this sort of relation one to another. Indeed it makes little sense to ask if Sydney is in front of or behind Edinburgh on some urban continuum. Only on a very general level is it even plausible to suggest that one country might be ahead of another. And the suggestion would be based upon, for example, a general statistic about the percentage of the population living in urban areas. But we could not find empirical support for the claim that if one country is more urbanised than another (ie. has a higher percentage of its population living in urban areas) they are both nevertheless subject to the same progression, to a distinctive process. One only has to look at the different ways in which cities throughout the world have developed to appreciate this point.

³³ Marx thought in the same way about the development of capitalism itself, with different countries at different stages along the feudalism-capitalism-socialism continuum. The supposed historical inevitability of the progression is also a legacy from Marx. More recently the economist Rostow suggested a standard model of economic development with various stages through which all economies would pass before they became 'developed'. Again this was conceived of as a continuum on which individual units would be at different stages at any one time. The weight of empirical evidence is against Rostow, however, and his model enjoys little currency today.

It is worth noting further that there may be a more fundamental difficulty in such analyses which would allow us to discount them without empirical backing. We cannot explore this point in the present context, but suffice it to mention that the notions of time employed by Marx, Rostow and all those who envisage a social continuum, do seem to be incoherent. Our earlier discussion of two human actions being different because the time at which they took place was itself different, is pertinent here. And the incoherence in the work of Marx, Rostow, etc., lies precisely in the claim that two social states of affair are the same even though they occur at different times.

That there are urban features which are common to many cities, or even most cities, is not being denied. What is being suggested is that cities are not subject to some one basic process which is the same in every case. The trouble with supposing that they are is that this basic process cannot be seen in operation. This is the second point on which we can take the Marxists to task. For since the outcome of 'urbanisation' is cities in general, whatever their form, then there could be no case of a city in which the 'process' was not operative. Because of this, the thesis that urbanisation is a distinctive process is completely unsubstantiatable for there is nothing which would count against it. This^{is} merely a particular example of the problems, previously discussed, involved in any talk of basic or underlying forces.³⁴

If we examine the notion of 'urbanisation' further, the generality it appears to embrace will be seen to be superficial. First consider the physical process of weathering. The 'generalities' of weathering arise only because this is a term referring in a general way to the wearing down of material in the physical environment. There are no hidden generalities lurking in the background. If one wants to know more about a particular example of weathering then it is appropriate to ask what sort of weathering it is. Here the answer might be in terms of a general category (such as physical or chemical weathering), or might refer to the specific agent involved (such as thermal expansion, ice action etc.). The point about 'urbanisation' is that it is a reference term very like weathering where the only generality is the obvious one. It refers in a general way to the development and growth of cities. Unlike the case of weathering, however, it would not be appropriate to ask what sort of urbanisation we are dealing with. In human or social affairs we cannot neatly categorise 'agents' of change as we can in

³⁴ see Chapter 4, Explanation of the principle.

physical science. The physical and chemical reactions involved in the weathering of the landscape are well established in science and can be subject to controlled tests and laboratory experiments. This would not be so for any factor which might be suggested as an agent of urbanisation. The difference is a fundamental one, with weathering belonging to the physical world and urbanisation to the social world. The universal element in the former is, of necessity, absent in the latter. Urbanised societies are not produced by processes or forces of a universal nature and independent identity.

Social area analysis:

Despite the superficiality of any reference to urbanisation as a social process, some valid generalisations can be made about the changes involved in the development and growth of cities. In this context the work of Shevky and Bell is of considerable importance for it involves the attempt to argue deductively from basic postulates concerning the effects of the increasing scale of industrial (and hence urbanised) society. In their classic book on social area analysis they set out to devise a classificatory scheme designed to categorise census tract populations in terms of three basic constructs - social rank, urbanisation and segregation. Their fundamental question concerns the sort of differentiating factors one might find in modern society which would allow the identification of distinctive social groups. Their study is centred in Los Angeles but they believe that the social aspects of the city cannot be studied in isolation:

We conceive of the city as a product of the complex whole of modern society; thus the social forms of urban life are to be understood within the context of the changing character of the larger containing society.³⁵

³⁵ E. Shevky and W. Bell, op.cit., p.3

Their analysis proceeds from the fact of the increase in scale in industrial society which, they argue, is accompanied by the differentiation of function involving both changes in the structure of productive activity and changes in the way of living. This Shevky and Bell call 'urbanisation', "a social process which has impact on social interaction patterns."³⁶ In other words, these writers attempted to outline the general changes which accompanied the transition to an urban society.

In their book Social Area Analysis, however, Shevky and Bell give more space to the derivation of axes of differentiation from the information of the census than they do to the elucidation of the connection between the increasing scale of society and changes in ways of life. And many writers have criticised the social area analysts precisely because they leave this latter connection unexplained. Udry, for example, has suggested that Shevky and Bell do not present a single theory relating social process to residential differentiation, but two distinct and separate theories (the first concerned with increasing scale and the second with sub-area differentiation) connected by the single proposition that 'as society increases in scale, so its sub-areas are functionally differentiated'.³⁶ This is not what Shevky intended. The analysis was conceived, it seems, as a single piece of work with each step following deductively from the one before. The increasing scale of society alone led to the expectation of particular types of differentiation and the connection was thought to be a necessary one. Certainly some consequences of increased scale can be deduced in this way. For example, unlike those in a village, the majority of transactions in an urban centre will be of an impersonal nature. It is only on this very general level, however, that consequences can be said to follow necessarily and Shevky and Bell were simply mistaken in supposing that their entire analysis was a deductive

³⁶ see J. R. Udry (1964) pp.408-9

construction from the one basic fact of increased scale. In order to proceed beyond the entirely obvious (eg. that in a large group of people not everyone will know everyone else) we would need to consider the effect of increased scale on a particular society or cultural group. The type of economy would be important as well as considerations of the social significance of the exchange of goods and the owning of property.³⁷ It is knowledge of such factors which would lead to the expectation of particular forms of differentiation. If Shevky and Bell were convinced of the total generality of their work they must stand corrected, for clearly their knowledge of twentieth century American society influenced their conclusions and restricted their results. It is hardly surprising that Abu-Lughod found their axes of differentiation inappropriate when applied to Cairo, Egypt.³⁸ If, on the other hand, the social area analysts were concerned to demonstrate a method, a way of approaching social area differentiation, then the criticism of cultural and temporal intransitivity is a minor one. Whatever the intention, it is the approach which affords greatest interest here, although it is precisely concerning the approach that criticisms of vagueness are most telling. Shevky's book reveals a preoccupation with the statistics of the census and the practical problem of making use of the restricted data available.

³⁷ The significance of economic transactions and attitudes towards the ownership of certain goods can vary between cultural groups and, indeed, can change over time. In one South Sea island community, for example, the entire social organisation revolves around the exchange of a limited number of coral necklaces each with its associated social status. In contrast, the treasured possessions most frequently associated with social standing in Britain today are one's house and one's car.

³⁸ J. L. Abu-Lughod (1969)

We have seen that by their very nature social groups cannot be defined by census data and that social areas do not have boundaries which can be marked on a map. The preoccupation was therefore misplaced, and the contribution of Shevky and Bell to the understanding of social differentiation within the city lies in the novelty of their approach rather than in the mapped patterns which appear as the end-product of Social Area Analysis.

When considering the work of both Shevky and Bell we are again confronted with researchers whose conception of an ultimate goal is dependent upon a scientific model of theory and the expansion of knowledge. They suppose their work to be, at the very least, a large step towards the development of a universal account of the way in which social areas are differentiated through time, of the way in which societies change with the expansion of their population. But our discussions so far have led us to the conclusion that there can be no universal account of any social development. What Shevky and Bell do is provide an account of the effects of increased scale on American society, although they themselves only give momentary recognition to the necessary particularity of their researches. In the elaboration of the first major trend (changing distribution of skills) identified as a corollary of increasing scale they state,

The manner in which the workforce is distributed among the larger groupings of occupations, the proportion they bear to one another, is significantly related to the economic organization, the level of living of the society, and the class system of that society.³⁹

And this is an admission that in order to say anything about the way in which the distribution of skills will change, one first needs to know a considerable amount about the society one wishes to examine.

Generalisations about society are rarely informative. Substantial observations can only be made when investigating particular societies

³⁹ E. Shevky and W. Bell, op.cit., p.10

or social groups. It is the particular which lends substance to social research. And any research which considers particular traditions or social groups is inevitably more akin to history than science.

The discussions of Part 1 allowed us to appreciate the fundamental differences between physical geography and human geography, between science and the study of human affairs. Many geographers would nevertheless wish to claim that geography is a single subject with its two halves united by common interests and analytical techniques. In Chapter 5 we have examined one general framework which is frequently advanced as being appropriate to all geographical research. In both human and physical geography researchers conceive of their task as the explanation of, or accounting for, the pattern or form evident in the landscape. And this is to be done by discovering the processes which lie behind the pattern. The process/form perspective, however, can do nothing to unite the two halves of geography which belong to different intellectual disciplines and require different modes of understanding. The generality of the perspective is superficial. Even the relationship between form and process is not a constant one and depends upon which form and which process is being examined.

Within urban geography itself the process/form framework presents several difficulties. The greatest of these is answering the apparently simple question, "What is a social process?". Again the search for generality predominates in the literature and urban processes are taken to be processes operating in all urban areas. Urbanisation, or the urban process⁴⁰, has been construed as a progression with various stages through which all urbanising countries will pass. But either the stages,

⁴⁰ L. Reissman (1964)

when specified, are so general that they tell us nothing that we did not know already, or they are particular and refer only to one country or society. This is necessarily the case in any social study where generality could never be universality. Urbanisation is not, and could not be, a process of universal application.

Whilst, then, it is both desirable and necessary to dispense with all scientific notions of generality in urban geography (a sphere of interest undoubtedly on the human side of the geographical schism), to recognise this is not to suggest that cities have no features in common. Nor is it to deny that these common features may both be of interest and tell us something about the way in which other settlements can be expected to develop. It is the way in which we search for this generality which is important, however, and what is to be made of it. Briggs in his book on Victorian Cities⁴¹ does not use, nor need, a general framework of any kind to bring out the similarities between the great cities of the Victorian era or to convey the atmosphere of energy and civic purpose in which they were created. He neither concentrates on such common elements, nor does he overlook them. And perhaps the urban geographer can learn from the success of Briggs' enterprise. Urban geography has tended to concentrate exclusively on the features which cities have in common in an attempt to achieve generality, and general research frameworks have been evoked to aid the attempt. But the attempt itself is misplaced and is based upon a mistaken notion of what urban geography is. If we are to engage in substantive urban research we cannot disregard the uniqueness, the detail, of individual cities. Understanding in this sphere can only be of the particular. The future of urban geography, then, lies with history rather than science.

⁴¹ A. Briggs (1968)

CHAPTER 6URBAN GEOGRAPHY, QUANTIFICATIONAND PREDICTION

It is appropriate at this juncture to wonder whether the quantitative revolution - at least in urban and human geography - has all been in vain. If we are not involved in a scientific study, what use are the statistical techniques presently dominating many geographical research programmes? Does the collection of statistical data not suggest a search for generality which may itself be misplaced? In order to appreciate fully the consequences of the methodological conclusions so far presented in this thesis, these are questions which must be answered.

Statistical or quantitative techniques are not synonymous with scientific method although they are not infrequently taken to be so. Burton, in his article on the quantitative revolution, closely relates the two when he remarks that the revolution "was inspired by a genuine need to make geography more scientific."¹ That Burton is wrong is apparent, for human geography could not be made 'more scientific'.

¹ I. Burton (1963) p.156

It is also the case, however, that quantitative techniques may be both appropriate and valuable within areas of intellectual concern other than science. From the discussions of the nature of science in Part 1, it is clear that the scientist may or may not use statistical techniques in his research. This is a contingent matter and such techniques are not necessary to the activity of science. They may help the scientist to formulate laws but they are not a necessary part of such formulation. Rejecting a scientific mode of understanding because it is inappropriate to human geography does not entail rejecting statistical method. There would be no logical inconsistency in accepting the methodological conclusions of Part 1 whilst maintaining that quantitative techniques are invaluable to the urban researcher.

The question of the use of quantitative methods in urban and human geography, then, is quite separate from the question of the appropriateness of scientific method. And it is only to the former that this chapter is directed. In this context there is one substantial methodological claim which has not so far been considered in this thesis. Since it is both closely related to quantification and would, if substantiated, render much of the thesis irrelevant to proper geographical research, it has been taken as a major theme of the chapter. This is the claim that geographical research should not be directed towards explaining or understanding at all, but only towards predicting. The importance of geographical research, on this account, lies in its ability to predict, with the full weight of geographical expertise being put to use in providing a pre-view of the future and thus enabling corrective measures to be introduced in potential disaster areas. This view of the purpose of geography is not uncommon, and the quantitative revolution itself did much to promote it.

Prediction and forecasting:

If prediction is the main aim of many statistically orientated geographers then to question the aim we first need to know what they take 'prediction' to be. Again a certain conception of scientific method frequently informs such views. In this case, however, it is a mistaken view of the nature of science for, as Hartshorne points out,

While the success of any branch of science is often measured, in the popular mind, at least, by the reliability of its predictions, prediction is not the purpose of science.²

Prediction is not at the heart of scientific method, although one consequence of the formulation of any universal statement is indeed that prediction is simply a matter of predicting. If we know that all gases expand when heated then we know that this gas will expand when we heat it sometime in the future. It seems that this is the sort of prediction that Bunge has in mind when he declares, "If a theory cannot predict it has not discovered a rule of reality."³ In science it is the universality of the central propositions of any theory which allows prediction. There are no such universalities in the world of human affairs and thus prediction of this kind (ie. scientific prediction) is not possible in urban geography. Further, even in science prediction is a by-product rather than the central concern of the discipline.

There is another connection which is often supposed to hold between prediction and scientific study. In Chapter 3 we examined the nature of the empirical test in science and it is in the verification of scientific hypotheses that prediction is thought to play, on occasion,

² R. Hartshorne (1960) p.165

³ W. Bunge (1966) p.2

an important part. Astronomy is a good example here. Suppose we have a certain astronomical hypothesis which, when the mathematics has been worked through, entails that there must be a planet at a particular location in the heavens. When technological advances produce a more powerful telescope which reveals that there is indeed a planet where the hypothesis 'predicted' there would be, this is rightly taken as some support for the hypothesis itself. Prediction, therefore, is seen as a way of testing an hypothesis. But this is 'prediction' in a peculiar sense for it does not involve saying what will happen at some later date. The planet, though unknown, is in existence throughout the astronomical speculations. It is not that the scientist predicts that it will appear at some point in the future, but rather that his knowledge and understanding of other planetary movements allow him to state that, if he is right, there must be a planet in a particular position in the heavens here and now, although our instruments do not allow us to see it for ourselves. This is not prediction of some future event but is, rather, an hypothetical statement concerning what is there if only we could see it. It is a deduction from a set of hypotheses and not properly a prediction (ie. a statement of what will happen in the future).

Prediction is closely associated with forecasting. Indeed the words are sometimes used interchangeably. We can remove one source of potential confusion from the present discussion, however, if we take 'prediction' to be scientific prediction. To predict X, then, is to state categorically that X will happen at some future date. Forecasting, in contrast, is a more general anticipation of future events. The most familiar example here is weather forecasting and the problems encountered by those who attempt such forecasts are reflected in the degree to which they are considered reliable. There is no necessary

connection between forecasting and science, although forecasting may involve the use of scientific knowledge. Toulmin concludes a discussion of forecasting by elaborating this point:

Forecasting, then, is a craft or technology, an application of science rather than the kernel of science itself. If a technique of forecasting is successful, that is one more fact, which scientists must try to explain, and may succeed in explaining. Yet a novel and successful theory may lead to no increase in our forecasting skill, while, alternatively, a successful forecasting technique may remain for centuries without any scientific basis. In the first case the scientific theory will not necessarily be any worse; and, in the second, the forecasting technique will not necessarily become scientific, just because it works.⁴

Further, forecasting and prediction differ in the respective importance of historical specificity. Where prediction is based on a universal law of science, the importance of the actual time of occurrence to the event being predicted is minimal. What we know is that whenever the gas is heated it will expand. The prediction of any set events necessarily linked in a causal chain takes the same form. Whenever the first event occurs then the others will follow. Events which can properly be forecasted rather than predicted are not of this kind. These events are unique occurrences and the particular time (ie. the historical moment) at which they take place is of considerable importance. This distinction was also outlined in Chapter 3, in the discussions of notions of time in science and social science.

Prediction (in the strict sense in which it has been defined) is not a possibility for the urban geographer. The events which concern him are part of the social world and, if they can be foretold at all, it is only by the use of forecasting techniques. This is one of the greatest promises of the quantitative revolution, for statistical

⁴ S. Toulmin (1961) p.36

techniques are said to make reliable forecasts a real possibility.

Forecasting and understanding:

An ability to forecast future events and thereby plan for them would undoubtedly be a major asset to any society. If we knew what our urban problems would be ten years ahead then we could design present strategies to cope with them in the best way possible. In this time of serious economic problems and world recession it is of paramount importance that national resources are used to their full potential. This is why forecasting has/^{often}been held to be not only an important, but the most important aspect of research in the social sciences. It promises the possibility of super-efficient advanced planning, a massive saving of resources and an accompanying increase in wealth and stability. This view of the potential contribution of urban geography is popular. And it is easy to see how those who espouse it also come to endorse the claim that forecasting is the sole aim of urban geography.

What can we make of this claim? Would forecasting be a sensible aim for the urban geographer? And could we improve our present techniques in this field, sharpen our tools, and thus provide a firm base for government policy? How successful could the urban geographer ever expect to be in forecasts of future urban developments? The more cautious may wonder at this point whether, in addressing ourselves to these questions, we are not attempting the impossible task of legislating a priori on a purely empirical issue. After all, is not the test of any forecasting technique whether what is forecast does in fact happen or not? Success, on this account, can only be decided post festum. And if this is the case we can say nothing about the potential of forecasting techniques in general. We are obliged simply to wait and see if any particular

technique does prove successful. Not all forecasting techniques are of the same kind, however, and whilst for some the only possible measure of success is whether or not they work (ie. what they say will happen, does happen), for others, 'working' is certainly not enough.

If urban geographical research is to involve forecasting in any way, this forecasting must be part of an academic discipline. There are many forecasting techniques which enjoy or have enjoyed popularity in different parts of the world. Few, however, are academic. Quantitative techniques are important precisely because they promise academic (or what are sometimes called objective) forecasts. And these must be distinguished from forecasting techniques which have no part to play in an academic enterprise. A few examples will clarify this point. In astrology, certain events and dispositions are forecast with reference to planetary movements. This is a developed technique of forecasting and has many adherents. Again the prophecies of the witchdoctor may also 'come true' and his warnings of impending doom are taken seriously by those upon whom he practises his medicine. Yet neither the astrologer nor the witchdoctor is engaged in academic study. What then marks off these techniques from any forecasting technique which is properly academic?

In astrology, the only possible test for any particular forecast is to 'wait and see'. If events do unfold as forecast then the technique itself is usually declared successful. For the academic enquirer, however, the jump from 'it happened' to the declaration of success is one which naturally prompts several questions. To become academically respectable the jump itself must have factual support; ie. be demonstrably legitimate. After all, forecasted events may happen coincidentally and the technique used to arrive at the forecast be completely bogus. Astrology does not qualify as an academic subject precisely because the connections it

supposes in its techniques are undemonstrable. The relationship between the position of the planets and the disposition of a certain category of person or the occurrence of certain events cannot be elucidated. The astrologer merely announces a connection and cannot give an account of what the relationship is. It is the ability to provide such an account which distinguishes the academic from the non-academic in this sphere.

We can now appreciate the contradiction in the claim that the sole aim of geographical research should be the provision of forecasts (or predictions), and that explanation and understanding are either unnecessary or come a poor second. In order to guarantee the academic nature of forecasting techniques we would have to give a full account of the connections upon which the techniques were based. And this account would contribute to our understanding of the world. It is this understanding (and the accompanying ability to explain) which allows the formulation of the forecasting techniques in the first place. Academic techniques must be based on our current knowledge of the world. Thus we could not have forecasts (or predictions) in urban geography without an accompanying understanding of the social world. Where forecasting is the sole aim (to the exclusion of understanding) the techniques developed necessarily lie outside academic inquiry and are no different in kind to the craft of the witchdoctor or the astrologer.

Quantification and understanding:

Increasing our knowledge and understanding of the world is what academic study is all about. And if statistical forecasting techniques, or indeed any statistical techniques, are to be legitimately designated academic, they must be rooted in our knowledge and our understanding.

This is a point sometimes forgotten by the more mathematically minded geographers. We are not statisticians, and our concern is therefore not with the perfectly legitimate pursuit of examining the statistical relationships in numerical data for their own sake. As urban geographers we do want to say something about the world as it is, or was, or will be. The discovery of statistical relationships is not enough. It is in the relationship between the statistics and an understanding of the world that our interest must lie, and it is this that we must now investigate.

Since statistical methods are currently in vogue in all branches of geography it may seem surprising that they have not been considered until this late stage in the development of the present discussions. As techniques, however, (outside the discipline of mathematics) they do not form a logically necessary part of any distinctive discipline of thought. Neither science nor history can claim them as a necessary part of research although they may have their uses in both. Most of the thesis so far has been directed towards establishing the non-scientific nature of human geography. In this debate the question of the appropriateness or otherwise of quantitative methods is irrelevant. The continuing popularity of such methods, however, justifies, if not demands, their independent consideration.

The use of statistical method is hardly new in geography. Since the 1840s census data has been presented at various stages of aggregation, trends identified and forecasts made. The quantitative revolution of the early 1950s, however, considerably increased the variety and sophistication of the statistical techniques employed. Could these techniques, then, not provide us with a legitimate way of investigating the urban structure of Victorian Edinburgh? Think again of our two axes of differentiation (ie. the distribution of house types and the residential distribution of social groups). What we wanted to investigate was the relationship between the two. And amongst the new tools for data

handling we find statistical methods of correlation which, it is claimed, measure the strength of the relationship between any two variables or sets of variables. If, then, we were to measure the spatial correlation between the two distributions would this provide us with the answers for which we have been looking? The short reply here is no. Since the residential distribution of social groups cannot be represented on a street plan, it cannot provide a quantitative data set with spatial reference. And without two comparable sets of data any measure of correlation would be meaningless. This is a difficulty connected with the particular choice of subject matter within Edinburgh, but there are also problematic issues raised by the correlation calculations themselves.

We have already recorded the pessimistic remarks of Amedeo and Golledge when they conclude a discussion of scientific reasoning and statistical method in geography by pointing out that even our most complex methods have contributed little to our general understanding of phenomena.⁵ And since understanding and the ability to explain are central to academic research, this is indeed a serious state of affairs. If Amedeo and Golledge are right, the quantitative methods and statistical manipulations of the 'new' geography have not succeeded in advancing the subject or in increasing our body of knowledge of geographical phenomena to any great extent. Why the revolution (which did so much to change the face of geography and give the subject new life) should, in several major geographical fields, have failed in this way is an interesting question. By considering the potential contribution of correlation analysis to the investigation of urban structure we can, perhaps, provide an answer.

⁵ see D. Amedeo and R. G. Golledge (1975) p.420 (and Chapter 2, p.30 above)

Measures of correlation alone cannot increase our understanding of phenomena. This fact is frequently overlooked by the statistically minded geographer whose research is sometimes more concerned with the manipulation of data than with whatever the data set represents. As with some model builders, they make the mistake of regarding the statistical measures (like the model) as the end-product rather than the preliminary stage of research. For if we do not go further than the statistical calculations we have said little about the phenomena themselves. Eliot Hurst makes precisely this point when, in indicating the possible inaccuracies of predictions based on current statistics, he declares, "The main criticism of this method is that it does not attempt to explain the facts, but merely correlates them in an apparently successful manner."⁶ What he himself wishes to do in his study of household travel behaviour is to gain some insight into the motivations of individual trip makers in order to understand why the behaviour occurred. This distinction between 'mere correlation' and understanding the phenomena is important, for seldom are its implications fully realised. In the study of human behaviour, the most any measure of correlation can do is to suggest a relationship.⁷ It cannot provide any understanding of how that relationship works. Winch highlights this point when he says,

The difference is precisely analogous to that between being able to formulate statistical laws about the likely occurrences of words in a language and being able to understand what was being said by someone who spoke the language.⁸

⁶ M. E. Eliot Hurst (1969) p.72

⁷ The relationship revealed by correlating the occurrences of any two variables is, of course, only a statistical one. It is possible for two such variables to share similar distributions but to be quite unrelated in any other way.

⁸ P. Winch (1958) p.115

Suppose, for example, that we found a statistically significant correlation between the number of children under ten years of age per family unit and the distance (of place of residence) from the centre of an urban area. This merely suggests a relationship between the two and provides no understanding of what that relationship is. An explanation of the situation would require a far wider knowledge of such things as the distribution of types of housing and amenities and the differential availability of mortgages. There are many factors which might play a part in the residential decisions of couples with young children, and in order to understand the distribution of such households we would have to render these decisions intelligible. The 'strength' of statistical measures of spatial co-variance tells us nothing about the manner in which the variables are related. And it is the latter, not the former, which must be the major concern of geographical research.

We can, therefore, put measures of correlation into their proper perspective as indicators or prompters, for they may prompt us to look for more substantial relationships. They can do no more than this, and indeed a familiarity with the subject matter under investigation may even render such precise indicators superfluous. Statistical techniques may, on occasion, be useful for focussing attention, but in the study of human behaviour it is only after the statistics end that the study begins. The place of quantitative methods in human geographical research needs to be reappraised and geographers would do well to heed the warnings of the French physiologist Claude Bernard. His remarks, although directed at his own sphere of study, have a much wider relevance today:

In every science we must recognise two classes of phenomena, those whose cause is already defined; next those whose cause is still undefined. With phenomena

whose cause is defined statistics have nothing to do; they would even be absurd. As soon as the circumstances of an experiment are well known we stop gathering statistics.....only when a phenomenon includes conditions as yet undefined can we compile statistics; we must learn therefore that we compile statistics only when we cannot possibly help it; for in my opinion statistics can never yield scientific truth and therefore cannot establish any final scientific method.⁹

Social prediction and its limits:

Statistical analysis cannot increase our understanding of the world, and, in itself, explains nothing. Only in the sphere of prediction could its contribution possibly be a major one. But can we foretell the future at all in human geography? And if so, what are the logical limits to such an enterprise? How far could we go in making statements about the human landscape of the future whilst avoiding both conceptual confusion and contradiction? The answer to this last question depends upon what sort of 'prediction' one has in mind. There are three possibilities:

1. The most we could possibly ask of a forecast of, say, intra-urban residential changes is a categorical statement concerning who will migrate and from where to where they will move. The form of such categorical statements is - ((since (if P then Q) and P, therefore Q)). And this is precisely the form of the scientific prediction examined earlier.¹⁰ Further, it is logically impossible to make such statement about human behaviour. It is not just that human beings sometimes behave in unexpected (ie. unpredictable) ways. In order to make a categorical statement about the future occurrence of any event in the social world

⁹ Quoted in M. O'c. Drury (1973) p.9

¹⁰ ((since (if a gas is heated then it will expand) and a gas is heated, therefore it will expand))

we would also be required to predict the relevant future social conditions prevailing at a specific time. But to attempt the latter surrounds us in considerable conceptual confusion, for the prediction of prevailing social conditions would involve making statements about, for example, the time and content of future scientific discoveries. And, of course, if we could make such statements we ourselves would also have made the discoveries and would, therefore, in no sense be predicting them. Likewise it is logically impossible to predict the emergence and substantive detail of future intellectual inquiries. As Popper remarks, "The idea, in short, of an exact and detailed calendar of social events is self-contradictory; and exact and detailed scientific social predictions are therefore impossible."¹¹ Categorical statements concerning future events are the province of the scientist and not of the social scientist. As Torrance points out,

....once the full implications of the distinction between the social and the natural sciences are appreciated, the demand that long-term categorical prediction be made the aim of the social sciences reveals itself as a demand that the sciences of society pursue a goal that cannot even be spelled out without conceptual incoherence.¹²

2. Many geographers search for more general forecasts. Instead of attempting to discover the 'who' and the 'where' of intra-urban migration they content themselves with calculations of the future growth rate of the urban area, composition of its population and, perhaps, employment structure. The methods used to arrive at such forecasts can aptly be called traditional, for they have been in use for many decades. They involve the analysis of statistical data (primarily census material),

¹¹ K. Popper (1961) pp. 13-14

¹² T. S. Torrance (1973) p.150

the detection of trends, and the projection of such trends into the future. In recent years the detection and analysis of such trends has become far more precise with the application of more complex statistical methods. The basic approach, however, remains the same and no matter how sensitive the analysis becomes one major fault remains. This is the underlying presupposition that the influences affecting urban growth and the structure of the urban population are constant over time, or at least change slowly. It is upon the accuracy of this that the accuracy of the forecast depends. The extrapolation of growth curves is not, and could not be, sensitive to new influences, for these are not quantifiable. And all too often there is no good reason for assuming that past trends will continue into the future.¹³

To base one's forecasts of future population structure and growth on past statistical trends is, therefore, a potentially highly inaccurate method of anticipating the state of any urban population five or ten years hence. Unforeseen events do occur and their influences upon urban growth can be considerable. The 1976 Guatemalan earthquake, for example, had a devastating effect on the volume, composition and spatial location of the population of that country, and yet this sudden and far-reaching change could certainly not have been anticipated by looking at past population data alone. The inaccuracies of many past attempts at forecasting by the projection of past statistical trends into the future is testimony enough to the shortcomings of the method.

3. The third and last possibility is that forecasts in human geography are necessarily more imprecise than is frequently allowed. If logic forces us to concede that we cannot sensibly make categorical statements

¹³ Forecasts of future birthrates are a good example here. Considerable fluctuations in the past suggest that long-term forecasts are impossible, and any advanced planning based on the 1964 birthrate will certainly have resulted in a surplus since the actual number of births has been much lower than 1964 projections suggested.

about future social events and the statistical precision of traditional forecasting methods is no guarantee of accuracy then we have little choice but to abandon both and sacrifice precision for reliability. The only alternative would be to claim that forecasting human behaviour is an impossibility. But clearly we do, in our everyday lives, forecast the future behaviour of our relations, colleagues or friends and it would be unreasonable to deny that this were either possible or sensible. It is the way in which such forecasts are arrived at that interests us here. Forecasting, in this sense, is more an art than a technique.

Forecasting human behaviour:

In order to forecast any piece of human behaviour, no matter how trivial, a knowledge of the agent or group of agents involved is essential. This familiarity is what makes forecasting possible. The more familiar we are with a person, the more certain we can be of his reactions in a particular situation. Of course, a friend may surprise us by acting in a way we would never have expected, but such eventualities are in no way problematic for we are quite familiar with the notion of an 'uncharacteristic reaction'. Characteristic behaviour being, by definition, more usual than uncharacteristic behaviour, we can forecast the reaction of those familiar to us with a tolerable degree of certainty. The possibility of knowing all we could know and still being wrong is, however, always present. Take, for example, one's own behaviour. Here the agent and the forecaster are synonymous. This is surely the most advantaged forecasting position since it is possible for the forecaster to know all that there is to know before the event. He can base his forecasts on his own intentions. If he intends to do X tomorrow, he can state with reasonable certainty that he will do X tomorrow. Nevertheless this forecast is not like the prediction of

an event in a causal sequence. The uncertainty arises from the nature of 'an intention' and not from the possibility that something might intervene to stop X happening. Winch elaborates this point:

Suppose that N, a university lecturer, says that he is going to cancel his next week's lectures because he intends to travel to London: here we have a statement of intention for which a reason is given. Now N does not infer his intention of cancelling his lectures from his desire to go to London, as the imminent shattering of glass might be inferred, either from the fact that someone had thrown a stone or from the brittleness of the glass. N does not offer his reason as evidence for the soundness of his prediction about his future behaviour.Rather, he is justifying his intention. His statement is not of the form: 'Such and such causal factors are present, therefore this will result'; nor yet of the form: 'I have such and such a disposition, which will result in my doing this'; it is of the form: 'In view of such and such considerations this will be a reasonable thing to do'.¹⁴

What is clear is that a different range of vocabulary is necessary when predicting an event in a causal sequence and when forecasting a piece of human behaviour. Stones do not have intentions, and it makes no sense to suppose that a stone might change its mind at the last moment. Again we come upon the fundamental difference between the meaningful action of a human agent and the automatic behaviour of a physical object. These demand different modes of prediction or forecasting no less than different modes of explanation.

The forecasting of the flux of events in the social world, of the growth of an urban area and its future demands for housing and employment for example, must be done in the same way as we might forecast the reactions of our friends. A knowledge of, and familiarity with, a particular urban centre is what allows us to suggest what may reasonably be expected to happen to that city in the future. We can never know in

¹⁴ P. Winch, op.cit., p.81

advance, but we can make reasoned and informed guesses. There can be no exactness here or sharpening of tools, for it is in the nature of things that forecasts of human behaviour are more matters of observation and judgement than calculation or measurement. Further, the skill involved in making such judgements is practical rather than academic; that is to say that it is something more akin to business sense than to the learning of the principles of economics. Certainly, familiarity does not consist in the mere collection of a host of facts. For any forecast of human behaviour there is always the possibility that it is wrong and yet also what could most reasonably have been expected to happen; it is always possible that no previous state of affairs gives us any clue as to the future. People do behave in unexpected ways which could not reasonably be anticipated beforehand. Nevertheless, the practitioner who has his finger on the pulse of the area with which he is concerned is as well equipped as it is possible to be for his task as advanced planner.

Forecasting for the urban planner, then, is a practical skill rather than an academic one; a skill learnt through practice rather than in the course of academic research. Further the urban geographer is not in a position to provide such forecasts. The only role he could play in advanced planning is that of providing information for the planners. This would undoubtedly involve the analysis of statistical trends, but these, in order to become useful forecasts, would have to be tempered by the practical knowledge and skill of the planner. Even the most complex simulation models such as those discussed by Morrill in his work on Migration and the Spread and Growth of Urban Settlement rely, at least partially, on probability calculations such as "... for example the likelihood that a twenty-nine year old will cross a state boundary

or not....., (which) will have been determined from appropriate statistical analysis."¹⁵ They cannot, therefore, avoid the major flaw of the traditional approach. And although any projection of past trends into the future may be informative, we should be aware of the limitations and not be surprised or dismayed if our numerical estimates are wide of the mark.

Chapter 6 has been a digression from rather than part of the main argument of this thesis. The necessity of including such a lengthy digression arises from the prominence given to quantitative methods in both teaching and research in geography today. The indiscriminate use of such methods not only in urban geography but in all branches of human geography can only be a waste of both time and resources. The detection of statistical regularities cannot enhance our understanding of the urban world. If it is significant at all, a statistical regularity is merely another fact to be understood and explained. Few geographers have taken these words of Robson's to heart:

As a means of analyzing an array of city sizes the notion that the set of places comprises a system is an attractive one, but until the objects themselves can be defined in toto and until the linkages which determine the relationships between them can be specified one must accept the conclusion that the existence of regularities in such data suggest relatively little about the substantive phenomena themselves.¹⁶

We cannot rely on statistics to do our work for us. As Stewart and Warntz point out, "Mathematical statistics can be a good servant; but only a weak social science, intent on becoming weaker, will welcome it as a master."¹⁷ Neither the use of statistical method nor the development of forecasting techniques is sufficient to bestow upon

¹⁵ R. L. Morrill (1965) p.42

¹⁶ B. T. Robson (1973) p.36

¹⁷ J. Q. Stewart and W. Warntz (1958) p.119

urban geography the frequently sought after status of a science.

As Toulmin points out,

The central aims of science are, rather, concerned with a search for understanding - a desire to make the course of Nature not just predictable but intelligible - and this has meant looking for rational patterns of connections in terms of which we can make sense of the flux of events.¹⁸

Statistical techniques are neither essential to nor should they be the preoccupation of the urban geographer. They may be useful, but they have no bearing upon the fundamental character of urban geography. We can now return to the central task of specifying what this character is.

¹⁸ S. Toulmin, *op.cit.*, p.99

CHAPTER 7URBAN GEOGRAPHY AND HISTORICAL METHOD

In the concluding chapter of Part 2 we can replace negative recommendations with positive ones, warnings of methodological nonsense with indicators of methodological good sense. It has several times been hinted that urban geography would do well to look to the discipline of history for the resolution of its methodological problems and the aim of this chapter is to do so explicitly.

History as the study of the past:

If we ask, 'What is history?', the most common answer would be, 'The study of the past'. Historians study past events and personalities and, unlike scientists, are concerned to place these in their social and historical contexts. An historian provides an account of what happened in the past by using the historical evidence existing at the present time. In this he will encounter two logical constraints or limits which are:

1. The historical account can only be an account of the presently existing evidence. This evidence can take many different forms (eg. official documents, diary entries, newspaper reports or books written at the time and evidence still directly visible in the landscape itself) and, although cross-checking is both possible and indeed essential, there

is ultimately no way of knowing whether what the evidence suggests happened did in fact happen. We cannot be sure that the writer of the diary, the newspaper article or the book did not distort his story, add colour where it was lacking, or deliberately lie as to the happenings of the time.

2. The historical evidence itself will necessarily be incomplete. Not all past events will have been documented and of all the evidence ever in existence much will fail to survive to take its place as 'present evidence'. Since the giving of an historical account entails the piecing together of present evidence, the account cannot, logically, extend beyond the scope of the present evidence itself.

Because the historian has no grounds upon which to question the validity of 'present evidence' in general (although he can sensibly question the validity of a specific piece of evidence), and because the evidence is limited, he may be said, more correctly, to give an account of the present evidence for what happened in the past rather than of the past itself. This is a point elucidated by Oakeshott in his stimulating essay on the 'Activity of being an Historian'. He says,

In short, ... 'the past' is a consequence of understanding the present world in a particular manner.¹

The activity of the historian is pre-eminently that of understanding present events - the things that are before him - as evidence for past happenings.²

The historian as a non-practical man:

The historian is concerned to understand the world about him,

¹ M. Oakeshott (1962) p.146

² Ibid., p.150

but the significance he finds in present events is not a practical one. History, like science, is not a practical activity. Any statement made about the world is made in a certain idiom and it is this idiom which reveals the manner in which the speaker is attending to the world and understanding it. It is Oakeshott who clarifies this point and the following examples are his.

If a man says, 'I am hot', he is recognisably speaking in the idiom of practice for he is making a statement about the world in relation to himself and in so doing conveys either satisfaction or dissatisfaction with his present state. In contrast to this we have statements like 'The thermometer on the roof of the Air Ministry stood at 90⁰F at 12 noon', which are capable of being treated as information, not about the world in relation to a human agent, but about the world in respect of its independence of the human agent. Finally, to make a statement such as, 'The boiling point of water is 100⁰C', achieves the detachment of science, for the situation described is hypothetical and the observation is not about the world in relation to the describer.

The historian may, to this extent, be likened to the scientist. He does not wish to describe the present in relation to himself, but merely to treat the present as evidence for the past. And in his statements about the past he conveys neither satisfaction nor dissatisfaction. Nothing is approved or disapproved, for there is no desired condition of things in relation to which approval can operate. As Oakeshott puts it, "This past is without the moral, the political or the social structure which the practical man transfers from his present to his past."³ The historian is interested in the past for its own sake. He does not claim that the beheading of Mary Queen of Scots

³ Ibid., p.154

changed the course of events in Scotland at that time, for of course this was the course of events. The historian may be said to be emancipated from a practical interest in the past. It is this which makes history a distinct universe of discourse and which marks it off from the world of practice. The historian is essentially a non-practical man.

The historian as non-scientist:

Nor is the historian a scientist; that is to say, a scientific mode of understanding is inapplicable to the subject matter of history. There could be no such thing as a scientific understanding of historical events. We do not need to repeat the arguments here. Suffice it to note that the earlier discussions of the nature of science and of human behaviour brought out the essential differences between the natural world and the social world which make them logically distinct. Scientific method is inappropriate to urban geography, and history, because it is also concerned with the world of human affairs, is not a science. The atemporality of scientific hypotheses can easily be contrasted with the character of history. Despite the ease of this contrast, scientific accounts of history are not unknown and even some philosophers argue that the practice of history involves recourse to general 'historical laws'.⁴ The details of the debate are beyond the scope of this thesis. But on the account of history so far given, it is easy to see that those who attempt to formulate general 'laws' (however that is to be understood) are not operating within the idiom of history for they are attempting to make the past relevant to the present in a certain way. And as Oakeshott has it,

⁴ see, for example, C. G. Hempel (1965) pp.231-243

.... the enterprise of distinguishing general causes in respect of past events is now to be recognised as an attempt to assimilate the past to the present and the future, an attempt to make the past speak to the present, and consequently as a relapse in the direction of practice.⁵

Further, from earlier discussions, it is evident that there are other good reasons for supposing the concept of a 'general law' to be incompatible with the notion of human behaviour and thus inappropriate in historical research.⁶

Science and history do have one major feature in common. They are both ways of thinking, modes of understanding the world, albeit separate and distinct ones. History is unlike urban geography in this respect for it has a distinctive internal logic centred upon the way in which the present is viewed only as evidence for past happenings. History is a discipline whereas urban geography and even human geography are subjects. The question 'What is urban geography?' is to be understood as the question, 'Which discipline of thought is appropriate to the study of urban phenomena?'. If the answer is indeed, 'History', then the relationship between history and urban geography is the same as that between science and physics, between a discipline and a subject.

The objectivity of the historical account:

The ultimate product of the historian is an historical account, a narrative constructed around the presently existing evidence. Where there is no evidence, no history can be written. Where there is evidence, however, the writing of an historical account is by no means a simple matter. The historian has to 'make something' of the evidence; this is his particular skill. The evidence guides his account rather than

⁵ M. Oakeshott, op.cit., p.157

⁶ see Chapter 3, section II above.

dictates it to him and it is because two historians can be guided in slightly different directions by the same body of evidence (ie. can produce conflicting historical accounts) that historical research in general has been denounced as unscientific and subjective. This denunciation calls into question the very possibility of objectivity in historical research and is a serious challenge in the present context for it presumes an account of history radically different to that presented here. Amongst those who promote this alternative account are those who view the world from a self-professed Marxist standpoint.⁷ Since this standpoint is an easily identifiable one, we shall take it as representative of all those who advance the claim that historical writing is influenced by the ideological beliefs of the writer and as such is necessarily subjective. The crux of the matter is the question whether historical enquiry can be truly objective or not.

The Marxist would claim that the ideological orientation of the individual historian necessarily permeates his historical research; the research itself must have an ideological bias and could not, therefore, be objective. If we were to accept this claim we would be forced to

⁷ The label 'Marxist' may be misleading here if it is taken to mean derived directly from the writings of Karl Marx. In fact, in his talk of ideology, Marx was interested in the contrast between absolute and relative truths and not in the conflict between different political prejudices. Since, however, the term 'Marxist' is not applied with any great accuracy, not least by Marxists themselves, the view presently under discussion can be called Marxist without serious misrepresentation. When discussing the possibility of a comprehensive urban theory, D. Harvey says, for example, "Theories, like definitions, have their roots in metaphysical speculation and in ideology..... There are, it seems, far too many ideological positions to be defended....for a general theory of urbanism to emerge easily." (1973, pp.195-6). Clearly here, the ideological orientations of the investigator are thought to have a considerable influence on the investigation.

reject the account of history we have so far outlined, for the two are logically incompatible. We have already specified the non-practical nature of historical enquiry and to deny that history can be objective (ie. to claim that an historical account is necessarily related to the personal views and preferences of the historian - a relapse into the idiom of practice) is a simple contradiction. If we are to defend the Oakeshottian account of the nature of history against the Marxist challenge, then, we must demonstrate that the objective study of history is indeed possible.

The subjective and the objective:

The popularity of the view that ultimately everything is subjective save, perhaps, mathematics and pure science, cannot escape the notice of anyone browsing through the general and methodological literature of the social sciences. In geography it is evident in most talk of differential perception, although some geographers do suppose themselves to be capable of objectivity. Since the 1950s, however, this objectivity has been related almost entirely to the ability to quantify or measure. Only a numerical standard can, according to many geographers, guarantee complete objectivity. Pinder and Witherick, for example, in an article on nearest-neighbour analysis emphasise that,

Each student will have his own interpretation of the situation and each interpretation is highly likely to differ from the remainder. Subjective impressions are an obvious problem and it is clear that an objective yardstick is required to reduce them to a minimum.⁸

And Johnson relates objectivity to measurement when he states, "Classification is a subjective process. Although the actual methodology employed may be based on objective, numerical techniques."⁹ Again and

⁸ D. A. Pinder and M. E. Witherick (1972) p.277

⁹ R. J. Johnston (1968) p.588

again geographers have expressed the idea that objectivity arises only in cases of exact measurement where, however many researchers make the measurement for themselves, if they are accurate they will all obtain the same answer. In contrast, if we ask the same group to describe a particular distribution or point pattern, no two of them will come up with exactly the same description. For they will convey subjective impressions expressed in the imprecise medium of prose.

But is this really a satisfactory account of the distinction between objectivity and subjectivity? If I describe a settlement pattern in prose rather than by the means of a nearest neighbour statistic am I always to be accused of subjectivity? Surely not, for we cannot distinguish between the objective and the subjective in quite the manner suggested. To suppose that only in numeracy can we escape accusations of subjectivity is to limit the scope of the word 'objective', or conversely to extend the scope of the word 'subjective', to such an extent that the latter becomes meaningless. Geography would be a barren subject if its research entailed only the presentation and manipulation of numerical data.¹⁰ Further, Johnston, although he himself is guilty of interpreting 'objective' as 'strictly numerical', draws attention to what he calls the subjectivity (but what might be better termed judgement or choice) involved even in statistical methods. This point is illustrated well by nearest-neighbour analysis. For any areal distribution there is only one R_n value (nearest neighbour statistic) which will fall between 0 (a completely clustered distribution) and 2.15 (a perfectly regular distribution) on a numerical scale. If the particular distances involved

¹⁰ see Chapter 6 above

are measured accurately and no slip is made in the calculations, the answer will always be the same, whoever the researcher. Nevertheless, the actual value arrived at will depend upon the spatial extent of the study area chosen, amongst other things. The numerical calculations themselves do guarantee a standard result given the data to be processed. The choice of what that data is to be (both in content and coverage), however, ultimately dictates the numerical results. Thus even quantitative methods are dependent upon the judgement and choice of the individual researcher. Are we then to declare all geographical research subjective?

It is the act of judging or choosing which is frequently associated with the notion of subjectivity. Where there is a possibility of differing judgements or of opposing claims about what is the case, those who make this association readily declare the judgements and the claims subjective. Further, it is usually their aim either to eradicate such subjectivity from their researches or, where this proves impossible, to regret the fact and to make every attempt to reduce the subjective element to a minimum. But are all judgements and choices necessarily subjective? Can we never have an objective judgement? In other words, is the notion of 'subjectivity' contained in the notion of a 'judgement'? And by subjective here we mean related to the personal likes and dislikes, contentment or discontentment of the particular human agent making the judgement. The nature of the distinction between objectivity and subjectivity can itself be made clearer by relating it, briefly, to the wider philosophical issue of the dichotomy between fact and value. The popular conception of the nature of this dichotomy is that facts are facts (and thus both objective and something upon which everyone can agree), and that values are personal or idiosyncratic assessments of the facts

(and thus subjective and capable of wide variations over a population). We all have our own values, which amount to personal opinions of the world around us, the world of facts. That this is a misconception is demonstrable and indeed has been demonstrated by several philosophers.¹¹ To examine the philosophical arguments in full would take us too far from the path of the present discussion, but there are three points of particular pertinence which can usefully be mentioned:

1. The division between statements of the facts and statements about the facts (values) is not what those who advance a strict fact/value dichotomy suggest. At the very least, the world of facts is much larger than they commonly suppose. They base their claim on particularly straightforward and simple statements in relation to which the suggested dichotomy is, admittedly, plausible. If we take only the statements, 'This is a chair' and 'This is a room', for example, and contrast them with the statements, 'This is a comfortable chair' and 'This is a spacious room', it is easy to make the mistake of supposing the former to be factual and the latter to be expressions of personal values revealing the likes and dislikes of the speaker. But what makes the latter statements of values? Even if we accept this account for the moment, it is clear that the simple presence of an adjective before the noun does not reveal a value judgement. If we said, 'This is a blue chair' or, 'This is a square room' we could not be accused of making value judgements. Is this not also the case with the other examples given above? Spaciousness, just as much as squareness, is a property of the **room**. If the room is spacious then it is a fact that it is spacious. Again consider the statements, 'He is a murderer',

¹¹ see, for instance, J. Kovesi (1967)

'That building is derelict' and 'The majority of the inhabitants of Victorian Edinburgh lived in unsanitary conditions'. These too, if they are true, are statements of facts. We may dispute their truth by claiming that, 'He never killed at all', 'The building is simply in need of modernisation' and 'Only a minority of Victorian Edinburghians lived in unsanitary conditions'. In each case we would have to cite evidence to support our counter-claims. We argue, then, over what the facts are. Most descriptive phrases are of this kind; ie. they can, in principle, be shown to be either true or false. Statements of personal preference or opinion are not amenable to such verification. And it is the exception rather than the rule that statements in the form of descriptions of the world can legitimately be translated into statements of personal preferences, opinions or values.¹²

2. Where disputes do arise over the use of words such as 'spacious', 'derelict', 'affluent' etc., they will not always be resolveable. The dispute itself, however, has logical limits set by, in this case, the English language. There will be some houses which clearly are derelict, and some which just as clearly are not derelict. In between, there is likely to be a small number of houses to which this description is not

¹² The statement, 'This is a derelict building' can be changed to the statement, 'This building seems derelict to me' or 'I think this building is derelict'. But this is not a legitimate translation of an apparently factual statement into its proper form as a statement of value. To add 'I think' or 'it seems to me' may underline my uncertainty as to the facts but it does not constitute a change in the kind of statement I am making. As far as the form of the statement is concerned to add 'I think' is just as uninteresting as to start with the phrase 'I am saying that'. The only examples of legitimate translation that readily come to mind are those concerned with personal tastes and preferences. If I say that eggs are preferable to bacon, this may simply be a way of saying that I prefer eggs to bacon. Clearly the historian need never feel tempted to make this sort of statement in the course of writing an historical account.

obviously appropriate nor yet obviously inappropriate. This is the area of potential disagreement. Its existence and extent is not a reflection of the different values which people have, but of the imprecision of the notion of dereliction in the English language. Because there are no exact specifications for what a derelict house must have (or rather not have) and because this imprecision is in the very nature of the word, there will always be a restricted area of potential disagreement. Exactly the same is true of descriptions, not normally associated with disputed claims, such as those specifying colour. We may not be able to decide whether a particular door is properly to be described as 'blue' or 'turquoise'. Again the area of dispute is restricted. We know, for example, that the door is not black and is not green. In tracing the nature of what is under dispute in any of these cases, we are concerned only with the use of language and the limits it imposes on the verification of factual statements.

3. Every statement involves some kind of judgement by the agent making the statement. Judgement and subjectivity cannot, therefore, be synonymous, for if they were no statement could be objective.¹³ The distinction between the subjective and the objective cannot, then, rest on the presence or absence of a judgement. Even the most simple factual

¹³ Someone might claim that no statement could be objective (ie. that every statement must be subjective). This claim, however, is not an interesting one, for it is only in so far as the suggested subjectivity of history can be contrasted with the objectivity of another discipline such as mathematics, that the charge of subjectivity itself becomes important. Further, I am not sure that the claim is a sensible one. If every statement must be subjective and we can give no illustration of what a non-subjective statement would be (because the claim itself excludes the possibility of doing so), then the word 'subjective' becomes meaningless. In a similar way, the notion of 'least effort' was found to be meaningless when applied to all possible paths. (see Chapter 4, Section III above).

statement requires an act of identification. The declaration, 'This is a table', requires the identification of an object as a table in just the same way as the declaration, 'This is a derelict house' requires the identification of an object as both 'a house' and as 'derelict'. Although the identification of everyday objects will rarely give rise to disputes - at least where the human agents involved are competent speakers of the same language - this is a contingent matter and not related to the nature of the identification itself. Words, such as 'derelict' and 'affluent' which some would claim to be value-laden are no less part of the English language and therefore require the same kind of identification by the speaker as the words 'chair', 'table' etc. And this act of identification requires some judgement on the part of the identifier. Value statements, then, cannot be distinguished by the fact that they involve some kind of judgement.

Objective judgements in history:

Despite the brevity with which the distinctions between fact and value and between objectivity and subjectivity have been outlined, the conclusions are both substantial and lend considerable support to the account of history already advanced. All we needed to establish in order to counter the Marxist challenge was that it is possible to make objective statements about the world which are not at the same time statistical or numerical. This much is now evident. When we talk about events in the world we do not need to talk about them in relation to ourselves (ie. in the practical idiom) or in relation to our particular likes and dislikes (ie. subjectively). We can make judgements about what is happening or what has happened which are not necessarily subjective. If

we are to assess whether a particular killing was a murder or a particular property derelict, these assessments themselves can be objective for it is a matter of arriving at the correct description. Disputes are about the meaning of the words in the language rather than clashes of personal values. This is not to claim that no statements are subjective, nor that historians never make subjective statements, but only that an objective historical account is a logical possibility. And there is, therefore, no contradiction in characterising the historian as a non-practical man.

The historical account:

The historical account is an objective account, but in what relation does it stand to the world of present evidence? Is the giving of an historical account an act of describing or an act of explaining? The answer is important in the context of the thesis as a whole, for if the adoption of an historical mode of understanding produces only a description of Edinburgh's residential patterns, the search for a way of explaining these patterns must end with an admission of defeat. If an historical account is merely-descriptive then we must conclude that the urban geographer can never furnish an explanation of the locational patterns of human artefacts. And it is open to anyone to point out that the geographer does not need the historian's help in order to describe the settlement features of interest to him. If we examine the nature of the historical account, however, it is evident that it is not a mere description of past events, and it does explain something.

The historical account or narrative is the product of historical thinking about the present. The logical limits of the historians work

are set by the content and scope of the evidence which presently exists.¹⁴ The discovery of new evidence (from the set of existing but previously unknown evidence) is of supreme importance to the historian. It gives him grounds upon which to question the received or established account and, if the new evidence warrants it, to provide a new account. This new account will then compete for recognition within the community of historians. Thus the historical account has this much in common with the theories of natural science. The scientist also questions established scientific theories in the light of newly discovered evidence. He can offer an hypothesis of his own which takes account of this new evidence and which has to compete with the old theory for recognition by the scientific community. And, like the scientist, it is the historian's task to question every detail of the established account in relation to the evidence he himself has amassed. History, like science, is a cumulative discipline with researchers building upon the accepted body of knowledge and constantly endeavouring to improve upon it in order to come closer and closer to the truth. A large part of learning to think historically (or scientifically) is learning how to assess the importance of any piece of evidence in relation to the established account (or theory). This is a skill learnt only within the appropriate community of scholars. It depends upon a wide knowledge of the subject matter of the discipline, but also on a feeling for that subject. As with other skills there are a number of technical rules which must be followed in the assessment of

¹⁴ The limits to any actual account will be set by the evidence known to the individual historian. The logical limits of all historical study, however, are determined by the existing evidence whether known or unknown.

evidence (to check authenticity, for example), but technical competence alone does not produce a good historian. Learning to do history, like learning to speak a language, is to follow certain rules which have evolved within the community and are rarely specified. The historian must judge or assess the import of newly discovered evidence but in doing so he makes an historical judgement; ie. a judgement which involves following the rules of historical practice. This is the particular skill of the historian. The account he presents is based upon such judgements and, since both the account and the judgements are essentially historical, this is what marks history as a separate discipline and the historical account as entirely objective.¹⁵

The compilation of an historical narrative involves 'making something' of the heterogeneous evidence in existence at the present time. Therefore, although the narrative may be said to be a description of events in the past, it is not simply a description of the present evidence. It is an interpretation of that evidence which provides an understanding of the events for which the evidence is evidence. And since the historical account is interpretative, since it makes use of the evidence in a particular way, it is very like the scientific theory. The account is offered as an hypothesis, a suggested interpretation of the evidence. Like the scientific hypothesis, it is then subject to scrutiny according to the appropriate academic criteria before becoming

¹⁵ Objectivity in any sphere is concerned with the following of certain rules or the adoption of certain criteria. The scientist as well as the historian can be objective, for, in learning to think scientifically, he will also have learnt how properly to assess the evidence. And the objectivity derives from the way in which the evidence is assessed. Even in the use of statistical method and simple measurement (commonly assumed to be objective) standard rules must be followed if the proper results are to be obtained.

established (or failing to become established) as part of a body of knowledge. The historical account is the theory of the historian and the discipline of history is every bit as theoretical as the discipline of science. The essential uniqueness of historical events does not preclude theoretical study it simple precludes scientifically theoretical study. Urban geography, if it adopts historical method, can certainly build up a body of theory. But this wealth of received accounts would be concerned entirely with unique events. There could be no universal formula into which any similar event could be plugged. Historical theories are not general or universal in nature. They deal only with the particular. Indeed this is what distinguishes them from the theories of natural science.

Historical explanation:

So the urban geographer can offer an account which is both theoretical and interpretative. He can, by thinking historically, advance the understanding of urban events and the distribution of human artefacts. But can he provide an explanation of these events and these distributions? Explanation itself is concerned with the solving of a problem or puzzle.¹⁶ As Toulmin points out, "...the idea of explanation is tied up with our prior patterns of expectation...".¹⁷ It is the unexpected which presents a problem and which therefore requires an explanation. 'Explanation' can be thought of as 'accounting for the unexpected'. And prior expectations in both history and science will be set by the appropriate established body of knowledge. It is the received account in history and established theory in science against

¹⁶ see footnote, p.185 above

¹⁷ S. Toulmin (1961) p.56

which any newly discovered piece of evidence can be judged 'expected' or 'unexpected'. Historical explanations are properly given only when there is an historical puzzle; ie. only when a piece of evidence does not fit in with the received account. And it is the puzzle which is explained in offering a new account of the events, and not the events themselves. The existence of that piece of apparently contradictory evidence (ie. evidence not fitting in with the received account) is, by changing the account, rendered unproblematic. Historical explanation, then, concerns relating the known evidence to the historical account in a way such that the existence of any piece of that evidence is neither puzzling nor problematic.

There is, however, another sense of the unexpected in history, and therefore another way in which the historian can be said to explain. This is where the present evidence itself suggests a series of past events one or more of which appear as completely unexpected in relation to the rest. For example, if we have evidence of a country waging a bitter war against its neighbour over a period of years and slowly building up its reserves of trained soldiers and sophisticated weapons until it is in a position of dominance, then further evidence which suggests that it then made a very unfavourable peace settlement would certainly be puzzling and unexpected. That such a peace settlement followed a strong military position and victories on the battle front requires an explanation because it is problematic.¹⁸ Explanation here too involves dispelling puzzles. Since the puzzles and problems are not distinctively historical (ie. they do not rely on there being pieces

¹⁸ It should not be inferred from this, that historians explain the past. Rather, the historical narrative describes the course of past events. The historian could not give a general account of why what happened, happened at all. What he can do, however, is to take a particular event, the occurrence of which appears as problematic in the general course of events at that time, and render its occurrence intelligible.

of evidence which do not fit in with the received account), however, nor is the mode of explanation. This sense of the unexpected is not peculiar to history, and it is the content rather than the mode which marks these explanations as historical. The task of the historian is to provide a narrative which renders the course of past events intelligible.

It is important to note here, that making any series of historical events intelligible does not involve establishing causal connections between the events. The primary concern of the historian is with human agency and he must construct an account which reveals the actions of specific human agents as intelligible in their particular context. Since actions are not caused (in the strict sense), they cannot be made intelligible by detailing the necessary and sufficient conditions (ie. the cause) for their occurrence. Actions are intelligible if the actors can be seen to have some reason for so acting. And past events are intelligible when they are shown not to be totally unexpected or surprising in relation to the whole series of events of which they are a part. As Oakeshott says,

In the 'historian's' understanding of events, just as none is 'accidental', so none is 'necessary' or 'inevitable'. What we can observe him doing in his characteristic inquiries and utterances is, not extricating general causes or necessary and sufficient conditions, but setting before us the events (in so far as they can be ascertained) which mediate one circumstance to another.'the historian', although he sometimes writes of the outbreak of war as a 'conflagration', nevertheless leaves us in no doubt that he knows of no set of conditions which may properly be called the necessary and sufficient conditions of war. He knows only of a set of happenings which, when fully set out, make the outbreak of this war seem neither an 'accident', nor a 'miracle', nor a necessary event, but merely an intelligible occurrence.¹⁹

All historical events are contingent for they could have been otherwise. The Archduke Ferdinand was shot and died at Serajevo in Bosnia on June

¹⁹ M. Oakeshott, op.cit., p.157

24, 1914, but it need not have been so. In the same way, the location of a particular factory, house, castle or palace is what it is, although it could have been built elsewhere. The act of locating it at a particular spot can be made intelligible by detailing the historical circumstance which led to its founding. There is no necessity involved and those who have attempted general theories of location often refer to the 'historic accident' which led to an industrial concern occupying a particular site (with the implication that these are inexplicable and can be ignored). It is precisely the 'historic accident' which interests the historian, however. And it is his task to demonstrate that it was no 'accident' at all. History is one way of thinking about the past and a way open to the urban geographer for his subject matter is amenable to historical treatment. Oakeshott best sums up the nature of this past, the past of the historian:

It is a complicated world, without unity of feeling or a clear outline: in it events have no over-all pattern or purpose, lead nowhere, point to no favoured condition of the world and support no practical conclusions. It is a world composed wholly of contingencies and in which contingencies are intelligible, not because they have been resolved, but on account of the circumstantial relations which have been established between them: the historian's concern is not with causes but with occasions.²⁰

An historical mode of understanding the world is a distinctive way of thinking which can provide an understanding of the locational pattern and distributions found in and among urban places. It is theoretical in nature, but necessarily involves a consideration of the particular, the unique. The historical account is of the particular event and not of a class of events. Briggs, in his introduction to Victorian Cities,

²⁰ Ibid., pp.166-7

confirms the historian's preoccupation with the unique when he remarks,

The first effect of early industrialization was to differentiate English communities rather than to standardize them. However much the historian talks of common urban problems, he will find that one of his most interesting tasks is to show in what respects cities differed from each other.nineteenth century cities not only had markedly different topography, different economic and social structures, and quite different degrees of interest in their surrounding regions, but they responded differently to the urban problems which they shared in common. A study of English Victorian cities, in particular, must necessarily be concerned with individual cases.²¹

The urban geographer can only provide a theoretical base for his study if he too considers any city as individual. By adopting historical method we can construct an account, using the presently existing evidence (diaries, newspaper accounts, census returns, the present street pattern and fabric of the city etc.), of the movement of various sections of the population within the city and the nature of the areas and accommodation in which they took up residence. In this way, and only in this way, can the residential locations of the various social groups in late nineteenth century Edinburgh be made intelligible. To make their location intelligible is to remove any puzzle there might have been about the intra-urban movements and configurations of the population. And to remove a puzzle is to explain.

²¹ A. Briggs (1968) pp.33-4

To have concluded the methodological discussions of Parts 1 and 2 in favour of employing historical method in the study of geographical subject matter is hardly to have introduced a new idea to the community of geographers. Indeed historical geography is a well recognised branch of the subject and many geographers could legitimately claim that they have for some time been thinking historically about the geographical phenomena of interest to them. The major thesis being advanced here, however, is not that urban geographers can if they wish treat their subject matter historically but that they must do so if they are to engage in valid, profitable and theoretical academic research. There is no other way of increasing our knowledge and understanding of patterns and distributions to be found within the city. And understanding the world is the point of intellectual inquiry. We asked, "What is urban geography?" , "Which distinctive mode of understanding the world, or form of reasoning, must the geographer employ if he is to provide an understanding of urban locations?" An extensive scrutiny of the nature of the subject matter has led to the conclusion that urban geography is urban history, or at least a branch of it. Like science, history as a discipline of thought is a distinctive way of looking at the world. Amongst other intellectual inquiries to which man has turned his attention only mathematics, theology and philosophy offer equally distinctive forms of reasoning. Of these, philosophy has a special status being thought about thought, but mathematics, theology and science have in their turn dominated man's thinking about the problems of knowledge. Only in the eighteenth century did people begin to think critically about history. It was realised that the object of historical thought, the past, consisting of particular events in space and time which are

no longer happening, cannot be apprehended by mathematical thinking (the object of which has no special location in space and time), nor by theological thinking (the object of which is infinite rather than finite), nor even by scientific thinking (the past not being open to observation and experiment). It is, of course, logically possible for there to be other distinctive forms of reasoning but so far in the history of man's critical thinking about the nature of the world none is evident. Having rejected science as being an inappropriate way of thinking about the essentially temporal subject matter of urban geography, history then seemed the discipline of thought most likely to furnish an understanding of urban phenomena. Chapter 7 was devoted to exhibiting the way in which the historical mode is an appropriate vehicle for explanation and understanding in urban geography.

Despite the recent revival of interest in historical geography it would be misleading to suggest that urban geographers readily employ historical method in their urban research. Most do not. It would be equally misleading to suggest that what is presently being advocated is the treatment of urban geography as a sub-division of a narrowly defined historical geography. 'History' as it has been discussed so far in this thesis is not a synonym for 'the past', but rather a way of thinking which can result in the understanding of a wide range of subject matter. It is only when the subject matter is urban and geographical that we have urban geography. If it is the case, as Darby suggests, that "The term 'historical geography' has come to be increasingly identified with an approach in which the data are historical but in which the method is geographical"¹, then such an historical

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H.C. Darby (1953) p.3

geography is fundamentally at odds with the conception of history being advanced here. Darby uses 'historical' merely to refer to 'the past' and the method he talks of must be a technique rather than a distinctive mode of thought for only the former could be said to be geographical. A piece of research in geography is only properly historical if it entails historical thinking. Thus Moodie and Lehr are right when they criticise Darby's view that, "All geography is historical geography, either actual or potential"², for contemporary geography written in the light of the practical problems of today could never reveal such thinking however out of date it became. As Guelke comments, "Historical geography is an academic field par excellence. It owes its existence to intellectual enquiry about the past."³ This distinguishes it from any contemporary writing with essentially pragmatic objectives.

To accept the arguments so far presented is to accept that only by constructing an historical narrative can we gain a knowledge and understanding of urban phenomena which would allow us to explain the location or pattern of urban artefacts. As a corollary to this it must also be accepted that there can be no other way of studying such phenomena which exhibits disciplined thinking and is, therefore, purely academic. To be sure, there may be many practical problems facing contemporary urban communities to which individual geographers turn their attention. There, however, the objective is one of solving the problems and does not necessarily involve an understanding of the actual urban patterns or locations concerned, but only an

² see D.W. Moodie and J.C. Lehr (1976) pp. 132-133

³ L. Guelke (1975) p. 136

awareness of what would count as a solution. Further, in so far as some understanding of the particular pattern or location is required, historical thinking must be employed. It is the case that "... any consideration of location in a temporal context will seek explanations through examining past events"⁴, and urban geography, concerned as it is with human artefacts (the specific outcome of human behaviour), cannot avoid temporal contexts. To have established this is to have pointed a way forward for human geography which could avoid much of the methodological confusion associated with the predominance of scientism in the social sciences. In so saying it has not been assumed that the path is either straight or narrow. The continuing influence of scientific method and the many practical problems faced by any historian combine to ensure that writing an historical narrative of urban events requires considerable application. The recent methodological writings of historical geographers provide a good illustration of the difficulties involved.

The practical problems which may confront any geographer attempting to construct an historical narrative are many and varied. Baker, Hamshere and Langton⁵ discuss a few of the most common of these in some detail and anyone who has examined historical documents will be aware of the frustration involved in attempting to read illegible handwriting, trying to ascertain exactly to which areal unit a document refers (in the absence of maps), discovering the standardised equivalents of unstandardised weights and measures, and not infrequently finding that a document which evidence suggests must have existed can no longer be traced. But it is not with the

⁴ A.R.H. Baker, R.A. Butlin, A.D.M. Phillips and H.C. Prince (1969) p.48

⁵ see A.R.H. Baker, J.D. Hamshere and J. Langton (1970) introduction

practical problems of the scholar that a methodological treatise is concerned. Whilst no one could deny that in the course of historical scholarship such problems do arise, these problems are neither distinctively nor exclusively historical. Even the indisputable fact that historical evidence is rarely complete does not constitute a methodological problem although it may result in a narrative which only partially covers the events in question. As we have seen, the logical limit to the historical narrative is determined by the presently existing evidence. Where there is no evidence there can be no history. This is an important point, but a point which requires some elaboration not least because it is sometimes overlooked.

For the historian, "Facts drawn from the records of the past dictate his conclusions - they are the touchstones of the validity of his interpretations."⁶ Without the facts⁷ of the present evidence there would be no way of 'testing' an historical narrative. The narrative itself, in order to pass such a test, must account for all known pieces of evidence and be contradicted by no known evidence.⁸ To suppose, therefore, that there could be such a thing as counterfactual history is to misunderstand the nature of history. Even the phrase 'counterfactual

⁶ A.R.H. Baker et al, (1969) p. 47

⁷ And it is as much a fact that Mr. A. felt so depressed as to contemplate committing suicide, if indeed this was his state of mind, as it is that the bullet shattered his rib cage and penetrated his heart.

⁸ It is worth noting that, for any particular piece of historical research, 'evidence' originally thought to be relevant may be shown not to be so; i.e. not to be evidence for the events in question at all.

history' is a misnomer for it cannot be made sense of.⁹ Whilst, then, we can agree with Baker that, "... it would be illogical to argue that the observed states are representative of all possible states"¹⁰, it is logically impossible to (and therefore illogical to attempt to) treat "other possible states" historically. Clearly what did happen might not have happened, and this is precisely what was meant by characterising historical events as contingent. But it is not the historian's task to examine the possible, only to attempt to establish the actual. Present evidence suggests only what did happen in the past and any concern with what might have been must be entirely an exercise in speculation which, at best, reveals a powerful imagination but which is not and never could be either historical scholarship or academic study.¹¹

To acknowledge the vital connection between evidence and narrative is not to avoid all the methodological pitfalls which may waylay the urban geographer who attempts to think historically. As Collingwood points out, all history is inferential knowledge

⁹ Like the phrase 'married batchelor', the phrase 'counterfactual history' is contradictory in that once one realises the nature of history as knowledge inferred from the evidence, it becomes obvious that history could never be counterfactual just as certainly as a batchelor must be unmarried.

¹⁰ A.R.H. Baker in B.S. Osborne (1976) p. 176

¹¹ The same mistake is evident in the writings of H. Prince (1971 p. 52) who whilst recommending counterfactual methods states, "The historian who firmly rejects the propriety of studying historical 'might-have-beens' and adheres to the principle that the only possible course for history is the one that was actually taken is fundamentally at odds with the model builder." Prince's main point is, it would seem, correct. Like Baker, however, he wrongly assumes that the historian who dismisses counterfactual speculation as non-historical is also committed to claiming that the course of events could not have been other than they were. It should now be evident that the historian claims, rather, that past events were as they were (although they could have been otherwise) but that their contingency does not alter the fact that only a narrative of these events can be constructed from the present evidence.

since it is inferred from evidence about the past. Any historian must, therefore, be aware of what is to count as a legitimate inference. Inferences can be more or less acceptable, more or less convincing, and there will always be those which remain debateable. Baker has examined the limits of inference in historical geography and suggests several ways in which such limits might be extended.¹² It is important to note that historical inferences depend upon historical evidence, and at least some of Baker's suggestions are strategies for discovering new evidence.¹³ There are many stages in the construction of an historical narrative and many ways in which inferences might be drawn and supported.¹⁴ As Mandlebaum has recently observed, "... what is evident in the first instance may be supplemented by the use of hypotheses drawn from the historian's knowledge of human nature and from his acquaintance with other cases".¹⁵ Such hypotheses lead him to look for other evidence not at first obvious to him. Whether such hypotheses

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A.R.H. Baker in B.S. Osborne (1976)

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Statistical extrapolations, for example, provide reasons for looking for evidence to support them. They themselves are a special kind of inference from actual numerical data but make only a weak historical hypothesis when there is no other shred of evidence for or against them. Further, the statistical extrapolations alone could never form an historical narrative since they could never be an account of events. Technical advances may also allow new sorts of evidence to be taken into consideration; pollen analysis, for example, provides a new kind of evidence for the historian.

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An excellent example of the way in which many different inferences can be drawn from the same basic set of evidence, be supported by various kinds of supplementary evidence but still be judged in terms of that evidence is given by a work of fiction. A. Berkeley (1929)

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M. Mandlebaum(1977) p. 127

are based on economic laws, psychological generalisations or knowledge of similar geographical conditions, they can only be incorporated in an historical account if supported by the evidence. It is also important to note the relationship between any such generalisation and the account of the particular.

As Collingwood puts it,

If by historical thinking we already understand how and why Napoleon established his ascendancy in revolutionary France, nothing is added to our understanding of that process by the statement (however true) that similar things have happened elsewhere. It is only when the particular fact cannot be understood by itself that such statements are of value¹⁶

The drawing of inferences is a necessary part of historical thinking the purpose of which is to provide as complete an account as possible of events "as they occurred and in their relationship to one another".¹⁷ The events themselves are specific in time and place and hence unique. It is in the writings of those who have denied or ignored the ideographic nature of history that the methodological difficulties which accompany the continued influence of scientism in historical research are most evident.

Arising perhaps from the feeling that there is a 'lack of aesthetic satisfaction' about historical accounts, some historical geographers have concerned themselves with the elucidation of alternative ways of viewing the past. In particular, several writers cite as problematic the question of how we can relate structures and the processes which produce them; this is not thought to be a question which can be answered by a narrative

¹⁶ R.G. Collingwood (1970), p. 223

¹⁷ Ibid. p. 114

of past events. Olsson has called it 'the geographical inference problem',¹⁸ and no generally excepted solution to it has yet been found. As Prince says, "... our knowledge of the nature of processes shaping spatial patterns through time is no better than rudimentary".¹⁹ We have already seen in chapter 5 that the connection between form and process depends entirely upon which process one is talking about and that on many occasions process cannot be divorced from form nor characterised as an independent force of change operating upon particular forms or structures. And to talk of processes in history as if they were such independent forces is to talk in a scientific idiom entirely inappropriate to the subject matter. When Darby discusses vegetation change on the East Anglian Breckland he quite rightly points out that what he is dealing with is "... not a static picture but a process that is continuing and seemingly never ending".²⁰ The process here, however, consists in the actual changes 'as they occurred and in their relationship to one another'. There is no other 'process' which could be taken out of the particular context and discussed on its own. Neither vegetation change nor the development of an urban area reveal processes, like oxidisation for example, for which the details of particular instances are irrelevant. In the pursuit of such generality in historical geography today can be seen the continuing influence of scientific (and therefore inappropriate) thinking.

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G. Olsson (1969)

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H. Prince, op. cit., p.22

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H.C. Darby, op. cit., p.7

A final example of the pervasiveness of science as a mode of thought is provided by the structuralist approach, an approach recently recommended as offering great promise for historical geography. Indeed at first glance structuralism does appear to be more historical than scientific, since it involves examining particular societies or social groups. However, given that the study is of the particular, the structuralist may be thought of as pursuing what Baker calls 'limited generalisations', and whilst some of these may be genuine historical (if general) hypotheses, the status of others raises many questions. Baker claims,

... the new technology (computerised investigation) now makes it possible for us to discover much more about some aspects of a past society than individuals within that society knew about it themselves.²¹

And it is some kind of fundamental underlying structure which, we are told, the computer can reveal to us but of which the individual members of the society in question would not have been aware. A moment's reflection reveals that what the structuralist is doing is either denying or ignoring the meaningful nature of human action. If individuals are not aware of the structures then the structures themselves could not be a reason for acting, ie. could not be an influence upon meaningful behaviour.²² The structuralist approach could, therefore, never aid the geographer concerned to understand and explain urban patterns or locations, for these just are the outcome of meaningful behaviour. This is not to say that there are no regularities or norms in social behaviour. Chapter 3 considers these explicitly

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A.R.H. Baker in B.S. Osbourne, op. cit., p. 175

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If, on the other hand, the structures are seen as the creations of human behaviour (ie. as produced by the behaviour rather than vice versa) then, since it is the behaviour and its spatial and visible outcome which the geographer must understand, the structures themselves are quite irrelevant to geographical research.

and characterises such commonly shared responses as rule-following. But rule-following behaviour remains meaningful behaviour. Any attempt to elucidate what are conceived of as more fundamental influences on behaviour must surely involve a move away from history and towards science (insofar as the behaviour in question is treated like a nervous twitch, an automatic response) or theology (insofar as some ultimate purpose or justification of human conduct is sought).

Bernstein in his recent book on The Restructuring of Social and Political Theory recognises this, but argues that we do not have to make the choice; that, in other words, the social sciences are genuinely interdisciplinary. He states,

I have argued that we are not forced to choose between an either/or: either the social and political disciplines are similar in all respects to the natural sciences, or they are so logically distinct as to involve wholly different concepts, methods and aims. On the contrary, I have tried to show that if we work through what is involved in the naturalistic self-understanding of the social sciences, we are ineluctably led to recognise how the world is a meaningful one for human beings, how such meanings arise, what sustains and challenges these meanings, and how they shape what we do. Further, a more robust understanding of social and political reality, and of the ways in which this reality is value-constituted, does not discredit or undermine the application of scientific techniques to the study of men in society.²³

It is certainly not being denied here that techniques of study may be applied within more than one discipline of thought. The quantitative techniques of pure science may be useful in the discovery and ordering of general historical facts. Any piece of research, however, in order to be a genuine advance in knowledge and understanding, must reveal some distinctive mode of understanding. And techniques themselves do not constitute distinctive disciplines. Whatever the techniques, I have argued that research in urban geography must be historical for it could not be scientific; and by this I mean that the discipline of thought necessary to the understanding of urban phenomena is that of history and not that of science. The subject of geography may span these disciplines, but within

it any research must reveal some particular discipline of thought if it is to be more than a miscellaneous collection of facts. Some research may involve reasoning from more than one mode of understanding. It could be argued that the study of geomorphology, for example, requires the use of both historical and scientific reasoning.²⁴ This is not the case in human geography where scientific reasoning is inappropriate although scientific techniques may not be. As Bernstein also notes,

One could write the history of much of social science during the past hundred years in terms of declarations that it has just become, or is just about to become, a genuine scientific enterprise.²⁵

The fact that there is still considerable debate about the methodology of the social sciences - subjects which show so little advance as sciences - should surely prompt caution. It is being suggested here that the possibility of advancing our knowledge and understanding of urban phenomena lies in rejecting scientific method and espousing the method of history. The theoretical hypotheses of urban geography would then be historical in nature.

History as a mode of understanding derives its distinctiveness from its method of examining the present as evidence for what happened in the past. Thus, "the historical scholar's picture of the past is a hypothetical construct"²⁶ As such it is open to

²⁴ Even in geomorphology the two modes of understanding are distinct and distinguishable. Any hypothesis will necessarily belong to one or the other and be judged accordingly.

²⁵ R.J. Bernstein, op. cit., p.52

²⁶ D.W. Moodie and J.C. Lehr, op. cit., p.133

criticism in the light of the evidence and, like a scientific hypothesis, if it stands the test of time it becomes established as an historical theory. The events with which it deals are seen as following intelligibly one from another, but never necessarily, always contingently. Unlike the scientist, the historian is not concerned to establish general laws. Collingwood has this to say,

..... the things about which an historian reasons are not abstract but concrete, not universal but individual, not indifferent to space and time but having a where and a when of their own, though the where need not be here and the when cannot be now.²⁷

Most urban geographers recognise a time dimension in their urban research, though few go as far as Robson in concluding that there is little in the spatial pattern of urban growth which could be interpreted better by the geographer than by the descriptive expertise of the historian.²⁸ The arguments of chapter 7 were designed to show that only by thinking historically can the urban geographer expect to gain an understanding of such spatial patterns. The peculiar task of Part 3 of this thesis is to demonstrate that the geographer can himself develop the same expertise as the historian and yet remain a geographer.

²⁷ R.G. Collingwood, op. cit., p.234

²⁸ B. Robson (1973)

PART 3

EDINBURGH

AS A SPECIFIC URBAN PHENOMENON

In this third and last part of the thesis we leave the general methodological discussions and concentrate attention on a specific urban place, Edinburgh. The methodological conclusions must not be forgotten, however, for they have forced the radical alteration of the original conception of how Edinburgh's urban structure might be investigated. And we must start again at the beginning by stipulating which features of the urban pattern are to be studied.

My initial intention, as outlined in the introduction, was to take two distributional patterns which could be found within the city of Edinburgh and to examine the way in which these are related. The first - the distribution of house types - raises few problems of specification, but it also is the least interesting. Indeed house type is only one feature, although an important one, of any residential location. The second distributional pattern - the residential distribution of social groups - was always intended as the primary concern of the investigation. The major questions related to this distribution. Why are certain social groups confined to particular and restricted areas of the city? The answer was thought to lie in the nature of these areas, one feature of which is the type of house to be found there. The mistake was not only in this general conception of the questions to be answered, but ^{also} in the methods which were supposed to produce the answers. The residential distribution of social groups cannot be given strict spatial boundaries, and cannot be given a strict definition. Quantitative techniques based upon discrete area statistics are consequently inappropriate, and the data-set which could legitimately be provided could not yield sensible measures of correlation, even if the interpretation of such measures was tempered with a recognition of their restricted significance. Statistics only provide answers for statisticians and statistical

formulations, however complicated, cannot alone provide the understanding the geographer seeks. In short, the methods and modes of analysis prevalent in the current literature of urban geography presented methodological problems so numerous that a radical rethinking of many issues was seen as a pressing necessity.

So we began with a careful examination of both methods and subject matter and have found history to be the mode of understanding applicable to urban locational patterns. The modern conception of history is, in Collingwood's words,

.....a study at once critical and constructive whose field is the human past in its entirety, and whose method is the reconstruction of that past from documents written and unwritten, critically analysed and interpreted.¹

Any individual historian, then, can only make a small contribution to such a vast field. Most become specialists in one or two very restricted periods of the past, and indeed this is necessary if they are to make any substantial contribution at all. One man cannot deal with the entire spread, both temporal and spatial, of human history. Although we can agree, therefore, that, "The whole perceptible world, then, is potentially and in principle evidence to the historian"², understanding a document or whatever as evidence for a particular event requires some prior historical knowledge and thus an individual historian will only recognise 'evidence' relating to his own specialities. Part of being an historian is developing these special interests (often in particular personalities, their life and times), for the more concentrated one's research, the more sensitive one becomes in detecting new evidence and in assessing its proper contribution to the historical account.

¹ R. G. Collingwood (1970) p.209

² Ibid., p.247

In adopting an historical approach, then, we do not break with the practice of historians if we start by confining our study to a particular time period. And here I have chosen Edinburgh in the late nineteenth century, the years between 1851 and 1891. The choice is to be explained rather than justified.³ No historical study has a raison d'être other than that it provides an understanding of the past for its own sake. The late nineteenth century, particularly in the cities of Scotland, saw the advent of social reforms. The contrast between the rich and the poor was still very great, but the appalling conditions under which a large section of the population miraculously managed to survive was only for the first time being widely publicised. Social divisions were more pronounced than they are now and this was particularly so in Edinburgh. There was no town planning⁴ legislation to mould the city structure with policies of land zonation or social mixing. Private enterprise and the practice of laissez faire, particularly in the housing market, were dominant. Thus the influences on the social structure of the nineteenth century city were not complicated by extensive local government legislation as they are today. Finally, Victoria's reign, as the age of great cities, has an obvious appeal to anyone interested in the city as an object of study.

³ The choice of specific dates was largely pragmatic, being influenced by the availability of the original census returns at ten year intervals between and including 1851 and 1891. A census was taken in 1841, but the Scottish returns are both chaotic and less than comprehensive. Thus, for Edinburgh, the census of 1851 was the first reliable one and that of 1891 the last available one. Originally these detailed returns were to provide the basis of an objective division of social groups and social areas. This they cannot do, but they are the source of a great wealth of information and can be treated by the urban geographer as evidence for the spatial configurations of the past.

⁴ 'Town planning' here is intended to refer to the twentieth century legislation. In fact by 1851, Edinburgh's built environment had for some time been controlled by the statutory powers of the Dean of Guild Court.

These are my reasons for choosing the second half of the nineteenth century. But what about the choice of Edinburgh itself? It is often said that history is about time, and geography about space. Although this is a gross and potentially misleading simplification, there is a grain/^{of}truth in it which saves it from being pure nonsense. History is a discipline, a way of looking at the world. Within history, therefore, it is possible to have several specialisations just as we have the specialisations of physics and chemistry within science. Sometimes the division of the discipline of history is a temporal one; we have, for example, modern history, medieval history or ancient history. And sometimes the division is a spatial one; here we have Scottish history, Indian history, European history etc. Any individual piece of historical research will have both temporal and spacial boundaries, for no single historian can cover the whole of human history. Further, since all events occur in space the historian will necessarily make specific spatial references in the course of his historical writing.⁵ Urban geography, as an historical subject, can also make legitimate use of both temporal and spatial specifications in the designation of individual research interests. For urban geography, however, the spatial considerations will always be the primary ones; the 'place' is chosen first and suitable temporal co-ordinates are decided upon in relation to the particularities of this place. But it is not only this shift from the primacy of period to the primacy of place which distinguishes urban geography as a separate subject and as peculiarly geographical. In geography, place is not merely more important than period but is, rather, all important. It is the place which is of interest and not simply the general run of

⁵ Just as geographers, concerned with the changing landscape, must include temporal references in their geographical writings.

historical events which have happened there. The urban geographer wants to know what the place was like and how it developed. He is therefore concerned only with a certain set of historical events, and these are the events which have had some effect on the urban environment, on the place he studies. It is only such events which are relevant to his research. Edinburgh was chosen as an historical arena worthy of investigation because of its fascination as a place. The concern is geographical, although the method must be historical. This is urban geography. And if we are to illustrate the way in which the geographical subject matter is to be understood historically, it is to actual events and happenings in late nineteenth century Edinburgh that we must now turn.

CHAPTER 8EDINBURGH, AN HISTORICAL ARENA

To talk of the history of Edinburgh can be misleading. A city cannot act and, therefore, has no actions to be made intelligible. Things happen to it, to its fabric; the built area is extended, the centre decays or new roads and railways change the urban pattern. The agency is a human one. The 'events' of the city are the actions of its inhabitants in their private or public capacities. It is these actions which may be puzzling and demand an explanation, and it is these actions which the historical account can make intelligible. Urban geography, then, is also human history.¹ The urban geographer is concerned with human behaviour, albeit only with that behaviour which has relevant spatial repercussions. Importantly, Edinburgh is not to

¹ Collingwood (1970 p.215) points to the difference between the sequence of 'mere events' in the natural world and the sequence of (human) actions in the historical world. This leads him to make the interesting claim that, "All history is the history of thought". The question of whether Collingwood is right or not must be left open. It is worth noting, however, that on this basis he distinguishes geology (a natural sequence of events) from archaeology (a sequence of events concerning human actions). Only the latter is said to be an historical sequence. Having identified the necessity of examining the behaviour of human agents in the study of human geography the latter is firmly on the archaeological side of the divide and, therefore, even on Collingwood's account, essentially an historical subject.

be regarded as a place with a history so much as an historical arena in which to view the collective behaviour of hosts of individuals and the effects of this behaviour on the physical form and the character of the city itself. The place and the period have been chosen, and the method has been decided. The particularities of Edinburgh are to form the content of the historical account. Generalities are of no interest, for to generalise is to lose Edinburgh, to forsake the very details which give the city its colour and fire the curiosity of the explorer of its wynds and closes, its gracious crescents and its squares. The details, in short, make it Edinburgh, a distinctive and distinguished urban form. It is these idiosyncratic features which are historically interesting and upon which any historical account will inevitably concentrate. We can start here by setting the scene, by describing the arena before we take up the narrative in the middle years of the nineteenth century.

Edinburgh and the eighteenth century achievements:

In the hundred years before 1850 the inhabitants of Edinburgh saw the proposal, building, and ultimate completion of one of the most ambitious planning projects ever carried out by the governing body of any individual city. Certainly no other city corporation in Britain could lay claim to changing the character of its central area so completely and in such a short time. Until the turn of the eighteenth century the layout of the Scottish capital, the plan view, was skeletal in form with a long backbone following the crest of the dip slope eastwards from the castle rock.² At right angles to this main route-

² Hugh Douglas (1969) uses the description, 'herringbone city on the hill'.

way, narrow wynds and closes, sometimes stepped to cope with the steep gradients, dipped away to both north and south. The physical restrictions of the site were considerable. The Nor' Loch to the north and the marshy lands to the south proved to be very effective barriers to the expansion of the city area and by 1647 almost every part of the long narrow "closours", or cultivated plots, stretching down behind the older houses had been built on. (See Fig.2) Although the closely spaced tenements rose to the considerable height of four and five storeys above street level, overcrowding was already a problem. Edinburgh could not expand outwards, so it expanded upwards. The housing stock of the early 1700s was remarkably homogeneous, being almost entirely composed of tall, stone-built tenements some of which reached a tremendous ten storeys above street level on their north-facing sides. (See Fig.3) The peculiarities of this situation resulted in the unusual absence of marked areal social divisions. Over a century later a local journalist said of the High Street (the main routeway), "Its tenements have at different times housed princes, nobles, labourers and loafers."³ More remarkable still, however, it housed a most unlikely combination of characters at the same time and often under the same roof:

The multifariousness of avocation in one building gave rise to the following lines from a stranger, who was struck by this peculiarity in the Scottish metropolis:-

'You may call on a friend of note, and discover him
 With a shoemaker under, a staymaker over him.
 My dwelling begins with a periwig-maker;
 I'm under a corn-cutter, over a baker;
 Above the chiropodist; cookery too;
 O'er that is a laundress - o'er her is a Jew;
 A painter and tailor divide the eighth flat,
 And a dancing academy thrives over that!'⁴

³ W. McPhail (1911) p.1

⁴ J. Heiton (1860) p.241

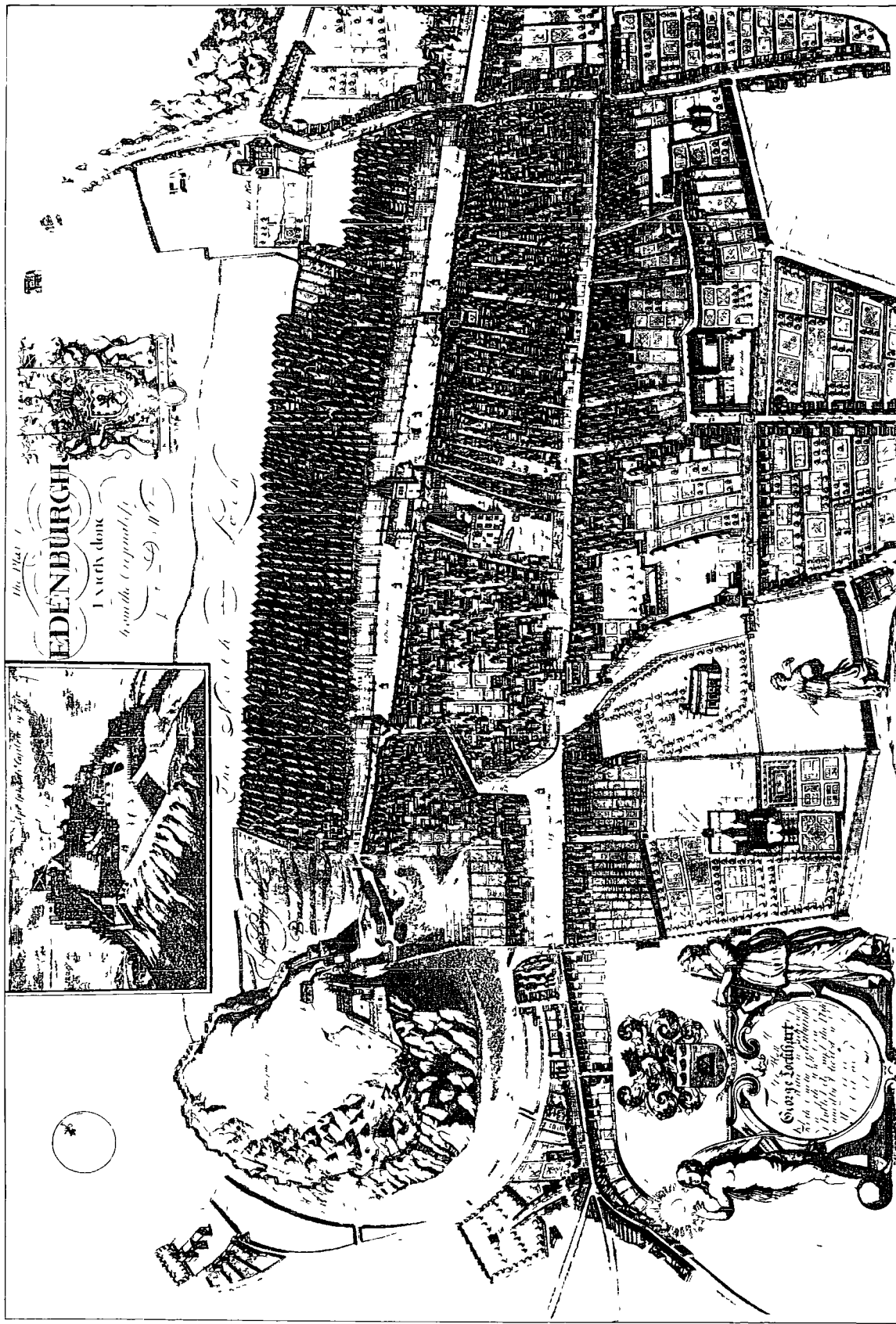


Fig.2 GORDON OF ROTHLEWAY'S PLAN OF EDINBURGH, 1647

This is the western half of the plan, covering the Ancient Royalty. The very high density of building within the restricted area of the walled city is immediately apparent.

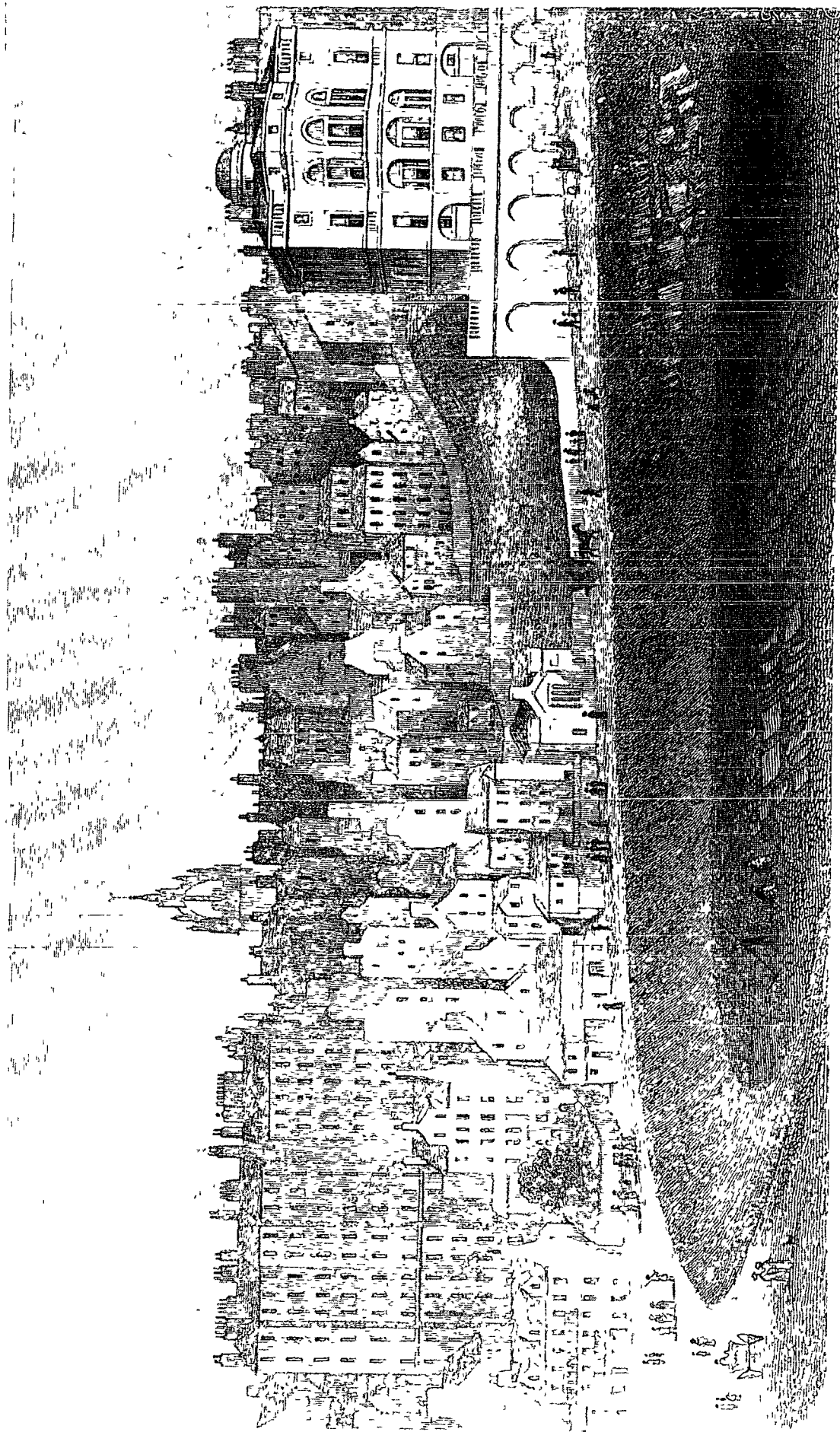


Fig. 3 THE TENEMENTS OF THE OLD TOWN OF EDINBURGH, c. 1829

This view, looking south from Princes Street, was drawn by Thomas H. Shepherd and published as part of a collection of Edinburgh sketches in 1829. It gives a good impression of the height of these buildings and of the steepness of the slope, with the crown of St. Giles visible beyond the ridge of houses. (The hollow in the foreground subsequently became East Princes Street Gardens).

With no marked areal differentiations, residential social stratification was vertical within each tenement building. Those of the aristocracy⁵ who did wish to savour life in the Scottish capital, established themselves in the middle floors of the tenements and left the lower floors, basements and cramped attics to any of the more common souls who could afford the rent. This, then, is the background against which the achievements of the eighteenth century can be seen in true perspective. The restrictions of the site, the nature of social divisions within Scottish society at that time,⁶ and the homogeneity of Edinburgh's housing, led to the peculiar distribution of social groups. The basements and the attics became more and more cramped as the population expanded. The narrow alleyways, permanently darkened by the sheer tenement walls on either side and more often than not filled with rotting garbage, were less than inviting. Above all, the city had extended vertically as far as it was able, and, with a growing population, overcrowding had become a serious problem. So serious was it, that by 1740 some of the aristocracy had ceased to maintain town houses in the capital at all. The population increase, from about 40,000 in 1722 to 57,000 in 1755, exacerbated an already desperate situation. In the century since 1647 the city area had increased little, as the plan of 1742 shows. (Fig.4) Edinburgh was

⁵ Scotland had, in the eighteenth century, a relatively large aristocratic class with about one hundred and fifty peerage families.

⁶ D. Young et al., (1967 p.8) state, "The Scottish nation of the eighteenth century was simultaneously a more aristocratic and a more democratic community than could be found at that time in either France or England.something of this no doubt derives from the peculiar social structure which achieved its physical expression in the tall tenements of the Old Town. Scotland had a relatively large aristocratic class, ...peerage families ramifying into large clans, with hundreds or thousands of persons in the middle or lower income groups able to claim cousinship with the noble lords at the top."

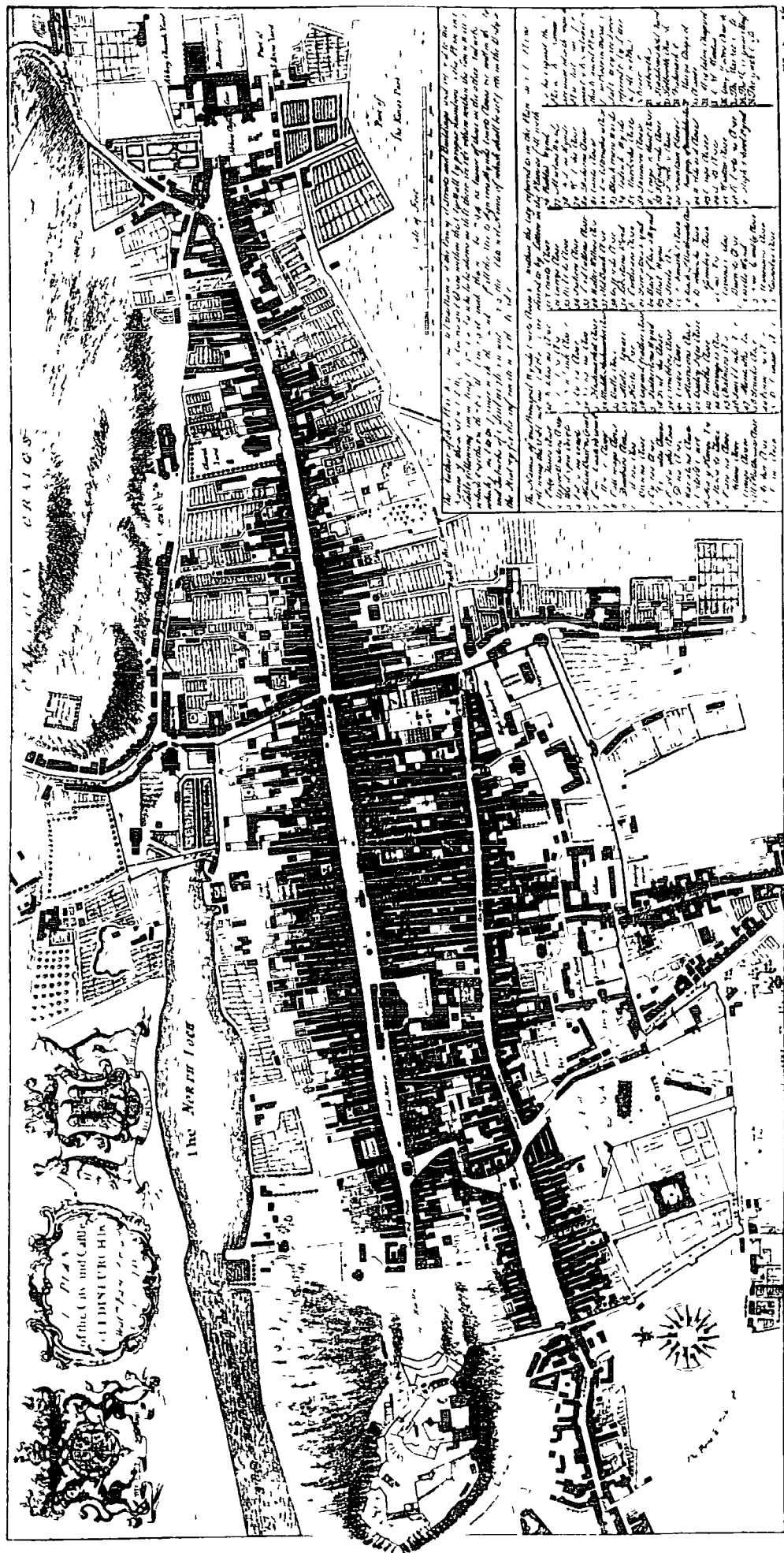


Fig.4 PLAN OF EDINBURGH, 1742

This is the first real plan of the City. It was commissioned by the Town Council and drawn by William Edgar. Despite a considerable increase in population, the area of the City had remained practically unchanged for a century. As a result the terrible overcrowding became a pressing problem.

cramped, dark, squalid and grossly over-populated.

We do not require here to tell, or rather re-tell (for it has been well documented), the whole story of how the New Town of Edinburgh came about, of how it ever came to be conceived and built. Much must be credited to the farsightedness of the City Council and in particular to the Lord Provost of the time, George Drummond, for whom the adoption of the scheme was the fulfillment of a long-nurtured ambition. What prompted the Town Council to promote such an ambitious and costly scheme? This is a difficult question to answer, for it is not enough to suppose that those in charge of Edinburgh's affairs were, like the councils of many other large cities in the late eighteenth and early nineteenth centuries, caught up in that swell of civic pride which has left to posterity some fine, if elaborate, monuments and public buildings. What George Drummond proposed was not simply a monument, nor the construction of several grand public buildings to impress the visitor and local inhabitant alike. His project was, rather, the creation of a new Edinburgh, the deliberate construction of an extensive residential area over the water on the south-facing slopes of the northern shores of the North Loch. This whole area was to be planned in advance and built, under the guidance of the municipal authorities, in as grand a style as might be found at that time in any other town in Europe. In the words of the proposers who issued a pamphlet advocating the extension of Edinburgh into a 'new town', the aim was to create a city which "should naturally become the centre of trade and commerce, of learning and arts, of politeness and of refinement of every kind."⁷ Not only was such a

⁷ This pamphlet, entitled Proposals for carrying on certain Public Works in the City of Edinburgh, was published in 1752. It is thought to have been written by Sir Gilbert Elliot, an Edinburgh lawyer, but clearly owes much to George Drummond, then Lord Provost for the third time. It is not signed, but a list of persons named by the several societies to execute the foregoing proposals is appended. This list is composed of:- three lords of Session, two Barons of Exchequer, twelve Town Councillors (including Drummond), three from the Faculty of Advocates (including Elliot) and three Clerks to the Signet.

project proposed, however, but it won the support of the whole council as well as that of many influential citizens, and was carried through in almost every detail.

By the 1740s it was already imperative that some extension of the city take place. This is beyond doubt. It is not the fact that the city was extended at all which raises questions, but the grandness of the extension in conception. The site, the scale and the character of the extension are sufficiently remarkable to prompt the historian to examine the initiation of the project in more detail. Edinburgh was not notably a rich city and yet many thousands of pounds in public subscriptions were collected for the New Town project. Nor were these particularly prosperous times in Scotland. During the first half of the eighteenth century the Scottish people suffered many poor harvests with the accompanying shortages, high prices, poverty and distress.⁸ In 1740, for example, after the 'seven ill years' of the turn of the century and the catastrophic famine of 1709, the weather was once again extremely unaccommodating to agriculture. The ground did not thaw until April, and a late frost in July dashed any remaining hopes of an adequate harvest. The shortage was all the worse coming, as it did, after the poor harvest of the previous year. In October 1740 there were riots in the capital in which the granaries were raided. The magistrates intervened and, in a bid to keep grain prices down, authorised the import of grain to Leith. The Scots Magazine of January the following year reported,

⁸ Many died, especially in the Highland areas, because they could not afford the high price of the country's staple food, oats. The price of oats at Haddington (near Edinburgh), for example, rose from 6s.2d. per boll in 1738 to 13s.4d. in 1740.

...by the dearth of provisions so many poor people in the city were reduced to beggary ... that the clamours and importunities of these miserable objects made it very disagreeable to walk the streets.⁹

It is not surprising that those whose incomes allowed them to winter in London found the foul air and dirty streets of Edinburgh so objectionable. It was such people, the gentlemen of the city, who were most keenly aware of Edinburgh's defects. It was such people who could afford large donations to any extension project. If they had been looking for a worthy cause, however, there were many destitute and starving souls whom sixpence might have saved from an early grave. But something must have persuaded them to give to the Edinburgh improvement fund, for give they did.

The arguments of the promoters were subtle and persuasive. They appealed both to self-interest¹⁰ and to civic pride. By the 1750s Edinburgh had lost favour amongst the Scottish aristocracy, many of whom, preferring the English capital or the cities of Europe, no longer availed themselves of even the best of the city's residential accommodation. More than one prominent citizen of the time realised that this decline in patronage could have a devastating effect on the whole economy and prestige of the city. Moreover, Glasgow was growing both in population and reputation in response to the rapid expansion of industry and the increasing importance of contact with America. (The tobacco trade and the development of a fine linen industry were two major sources of Glasgow's wealth). Little could have been more galling to many Edinburghians than to see Glasgow enjoying what Edinburgh lacked. In the pamphlet of 1752, George Drummond and Gilbert Elliot challenged the populace to create a capital city of which to be proud,

⁹ Scots Magazine (1741), Vol.3, p.45

¹⁰ The northerly extension of the town promised considerable advantages to certain industrialists not only in the increased market, but also in the easier access to the port at Leith.

a city which would be the first city of Scotland. And undoubtedly many saw financial advantages in doing just this. Their donations accounted for the major part of the finance of public building in the New Town.¹¹

In April 1766 the Town Council issued a formal invitation to interested parties to submit plans for the extension of the city. In May of the following year Royal assent was given to the Bill for 'An Act for Extending the Royalty of the City of Edinburgh over certain adjoining lands', which Bill had passed the House of Commons the month before.¹² Meanwhile the Town Council had not been idle. The construction of a bridge (the North Bridge) over the eastern end of the Nor' Loch was well under way, and the plans of James Craig (Fig.5) had been officially adopted. On 26 October 1767 the foundation stone of the first house of the New Town of Edinburgh was laid by the architect himself, and building followed apace. During the closing years of the eighteenth century the character and layout of the city of Edinburgh underwent a spectacular transformation which made the new centre of the Scottish capital both delightful and unique amongst the cities of Europe.

So much is well known. Historians have for many years concerned themselves with the remarkable achievement of the Town Council and citizens of Edinburgh in the 1760s. The account given here is merely an outline of the received account of the period which has been pieced together by many

¹¹ Donations were made not only by the citizens of Edinburgh, but also by those in other parts of Scotland who had equal interest in the future of the capital. Before the end of 1752 almost £6,000 had been promised. (There was no government aid involved except in the case of Register House, which large and impressive building was completed in 1788 at the vast cost of £30,000).

¹² Details of this are given in F. C. Mears and J. Russell (1938) and (1940).

individual historians. It is both the skeleton of the narrative of what happened in and to Edinburgh in this period, and an illustration of how these happenings might be accounted for where they arouse curiosity by being out of the ordinary or remarkable. By this method, the ambitious proposals, their acceptance and the final completion of the plans are all seen as intelligible within the particular circumstances of their occurrence. This does not make them any the less remarkable. It merely fixes for them a comfortable niche in a continuing narrative where they appear as neither accidental nor inevitable. The unprecedented scale of these early town planning achievements changed the face of Edinburgh. Not only was the acreage of the Royalty extended, variety introduced into the housing stock and a new air of prosperity engendered, but the building of the New Town resulted in a shift of the commercial centre of the city. And today it is the New Town and not the original city which houses the central business district. The 'core area' is not the oldest part of the city surrounded by a twilight zone of ancient and decrepit properties. Some of the most desirable residential accommodation within the city limits is still to be found in the central area. These are the particularities and the peculiarities of Edinburgh and, whatever the level of analysis, it is with these that the general urban models examined in Chapter 1 cannot cope. To study the urban form of Edinburgh we must appreciate the uniqueness and concern ourselves with the details of the actions which have produced it.

Victorian Edinburgh:

There is more that can be done to prepare the ground, as it were, for the examination of the character of residential areas and their inhabitants which is to form the theme of the next chapter. If, by 1851, Edinburgh's built environment was unique within Britain, the lifestyles of her citizens were not. Edinburgh was a Victorian City and there are many

things which distinguish this age in Britain's history. Victorian Britain has been called 'the world's first urbanized society'.¹³ Certainly, for nigh on a century the cities had been attracting people from the surrounding and more distant countryside. In 1851 the census, for the first time, reported an aggregate urban population which exceeded the rural population in size. This was the age of industrialisation, of factories, steam-powered machinery, domestic smoke and long working hours for the industrial labourer. But the cities were fashionable.¹⁴ The ladies of the realm promenaded there in the extravagant crinoline and the bicycle was still a great novelty. During Victoria's reign public executions were stopped,¹⁵ and public libraries were built. The concentration of people in urban areas provided, for the first time, the scale of readership required to support the newspapers and magazines which were launched in their thousands.¹⁶ Advances in printing technology and the spread of literacy resulted in a broadening of horizons for a wide section of the population. The newspapers carried national and even international news items, and here too the earliest printed advertising is to be found.¹⁷

¹³ see E. Lampard in H. J. Dyos and M. Wolff (1973) pp.3-57

¹⁴ The cities attracted both the rich and the poor, even though the penalties of city life for the poorer classes appear to have been so high.

¹⁵ In Edinburgh, the last public execution (of George Bryce, the Ratho murderer) took place on 21 June 1864.

¹⁶ The number of newspapers started at this time was greatly influenced by the total abolition, in 1855, of the stamp duty on newspapers. (Previously in 1836 this had been reduced from 4d. to 1d. and in 1853 the duty on advertisements had been abolished). The resultant decrease in the price of a newspaper undoubtedly did much to encourage the public to buy them and the publishers to produce them.

¹⁷ Popular amongst such advertisements were those for quasi-medical preparations. In 1850 several Edinburgh newspapers, for example, carried the following exhortation: 'Throw physic to the dogs, I'll none of it' Medicine superseded, Life prolonged and Health preserved by that Universal Preparation, Roper's Royal Bath Plaster.

On a different front, the railways had begun their own process of widening horizons. "I perceive", wrote Carlyle in 1850, "railways have set all the Towns of Britain a-dancing".¹⁸ The journey from Edinburgh to London in 1850 could be completed in the relative comfort of a railway carriage in only thirteen hours.¹⁹ Before the end of the nineteenth century the railway had made it possible to reach London from the Scottish capital in under eight hours. The newly urbanised populations experienced a sudden and considerable increase in mobility which, in itself, had a marked effect on their patterns of life. Not only were the citizens of Edinburgh now able to travel with comparative swiftness and ease to the great industrial and commercial centres of England, as well as to the industrial centre of Scotland (Glasgow), but travel within the expanding city also became easier, less time consuming, and therefore more popular. 'The Bill for the Introduction of Street Tramways into Edinburgh' was passed in June 1871, and by November tramways were opened between the Bridges and Haymarket. This was in addition to the fleet of open double-decked cars which had been in existence for some time.²⁰ Towards the end of 1874 the Edinburgh suburban railway, which had cost £225,000 to build, was opened. Finally, by 1891, the tramways had been extended north of Princes Street (using cable haulage to negotiate the steep incline), the fleet of open cars had been considerably expanded, and the rail link to the north secured by the

¹⁸ T. Carlyle (1850) 'Hudson's Statue', p.15. This state of affairs did not, apparently, entirely please Carlyle for he characterises the towns as 'confusedly waltzing, in a state of progressive dissolution, towards the four winds'.

¹⁹ The rail link between Edinburgh and London was finally completed in September 1846. What this represented in terms of a transport improvement can be appreciated by comparing the duration of the rail journey to that of the Wellington Stage coach which, in 1825, reached London three days (or 74 hours) after leaving Edinburgh. In 1700, the same journey by mail coach had taken five and a half days.

²⁰ Most cars in the city were horse-drawn, but as early as 1828 a steam coach travelling between 4 m.p.h. and 7 m.p.h. appeared on the streets of Edinburgh.

opening of the Forth Railway Bridge.²¹ The Capital was now more accessible from the rest of Scotland than it had ever been before. Equally, the citizens of Edinburgh were able to enjoy the unhampered crossing of the Forth at a point so near to their city.

The railways played their part, too, in the shaping and changing of the form or layout of the urban areas. They were greedy for land. Houses were demolished and many thousands of people displaced as the railway companies, often paying handsomely, bought up tracts of land which swept through to the centres of even the largest cities. Edinburgh was no exception. Its townscape had been equally threatened by the rapacious railway companies. In 1841 the residents of Canal Street (Haymarket) and its immediate neighbourhood were dislodged and the street removed to make way for a railway station, the Edinburgh and Glasgow Railway Company having acquired the land from the Dalry Estate at the rate of £700 per acre. And between 1838 and 1842 a considerable battle was waged to prevent this railway company from extending its line from Haymarket to the North Bridge through Princes Street Gardens.²²

²¹ On 4 March 1890, the Prince of Wales drove the last rivet into the Forth Bridge and declared the bridge open.

²² These gardens had been created on the site of the Nor'Loch after it had been drained. (Previously, in 1774, an interdict had been granted by the Court of Session against the erection of buildings on the south side of Princes Street, although one block had already been built at the east end.) At first they were kept as private gardens for the use of the residents of Princes Street itself. Around 1850, however, sections of the public were taking the view that the gardens ought to serve a wider purpose, and by 1855 they were open to the public at large on special occasions (such as Christmas and New Year) when band performances were given. It was over twenty years later in 1876 that the Town Council finally took over control of the West Gardens.

Princes Street gardens are one of the most distinctive features of the urban structure of present day Edinburgh. They are in the very heart of the city, running almost the entire length of Princes Street which is the major shopping street of the twentieth century capital. The story of their preservation as gardens (despite the very high commercial value of the land) would play an important part in 'accounting for' the present urban form of the city.

The outcome was a compromise. The railway company obtained the powers it sought, but its opponents succeeded in their demand that the new line be disguised in a deep cutting topped off by a high wall and thus hidden from the residents of Princes Street. The wall was to be made seemly by 'a profuse use of ivy, evergreens and trees'.²³

Undoubtedly the railway lines within the city limits of Edinburgh resulted in less displacement and demolition of housing than in other large cities (most notably London).²⁴ Nevertheless, their impact on the built form of the capital is both considerable and enduring, for in the Victorian age the city developed around its railway network.

Edinburgh, as much as any other large centre of population in Britain, served its time as a Victorian city. Many of the features and problems of these cities were common to all of them. They were all products of the Victorian age. Their inhabitants witnessed revolutions in transport and in sources of power which in turn brought about general changes in styles of life (in, to use popular jargon, social interaction patterns). These, however, provide only a background against which we can examine the particular problems of Edinburgh and those actions of Edinburgh's citizens which influenced the development of this one particular and unique urban form.

The Scottish Victorian City:

If Edinburgh in the second half of the nineteenth century was a Victorian city, it was also a Scottish city. And this is to say that it was (and is) distinctively Scottish, for there were many influences on its built form which were not shared by its counterparts south of the border.²⁵

²³ see D. Robertson (1935) pp.37-46

²⁴ Illustrations of the effects of the railways on the urban population are given by J.Simmons in H.J.Dyos and M.Wolff, op.cit. For example, the sixty-nine railway construction schemes put forward between 1853 and 1901 in London, required the displacement of 76,000 persons.

²⁵ G. Best (1968) explores this idea.

The major of these influences was (and remains) the separate legal systems under which Scottish and English cities have developed. For example, in the matter of public health, the Scottish Acts were introduced quite independently of the English legislation. As Best points out,

...only in the 1860s did the general government of Scotland attain, in respect of public health, the state which England had been in since 1848, and only in the 1890s did the Scottish laws of public health really catch up with the English.²⁶

Best's central theme, however, concerns the distinctiveness of the Scottish civic tradition and urban outlook. He advances the thesis, at once interesting and persuasive, that by Victoria's reign Scottish cities were already accustomed to a much firmer and more positive civic government than were the cities of England. Certainly, by 1851, the century which had elapsed since the launching of the ambitious New Town project had not only proved the success of such civil initiative but also accustomed the citizens of Edinburgh to a town council active in the shaping of its area of jurisdiction. In many contemporary English cities such 'interference' would not have been tolerated had it ever been contemplated. It was, perhaps, this well-established intervention by a public body which allowed Edinburgh (following close on the heels of Glasgow) to lead the way in the matter of slum clearance. The Edinburgh Improvement Act of 1867 gave the Town Council the powers to purchase, clear and redevelop central slum areas. Such early planning powers were not made generally available elsewhere until the Cross Acts of 1875 onwards.

The Scots, however, had every reason for promoting slum clearance. In the 1850s both Glasgow and Edinburgh contained some of the worst slums in Britain, and indeed in Europe. Even after the New Town was built and

²⁶ Ibid. p.333

its residences inhabited, overcrowding in the old town remained a serious problem and a threat to public health. And in many cases, the towering tenements (a form of architecture peculiar to the northern part of the British Isles) were at the centre of the problem. In Edinburgh, the tenements of the High Street and its adjoining closes formed the main area of low-class housing within the city. Decades of "making-down" had turned the never spacious flats into a tightly packed maze of one and two roomed dwellings, some of which never saw daylight. As George Bell noted during his tour of the wynds and closes of the Old Town in 1849, "By curious and clumsy contrivance, rooms have been converted into dens and sepulchres for living men."²⁷ There was nothing in England at that time to equal the density of persons per ground area found in these towering warrens. Within Britain, Scotland alone had the common stair with its fetid air and its filth which increasingly concerned the sanitary reformers. That Scotland by the 1850s had, over many centuries, developed a distinctive form of architecture is undeniable²⁸ and the tiered dwelling-houses, themselves ill-adapted to such intensive usage, in turn displayed a distinctive 'overcrowded and uncomfortable state'.

Lastly, in any account of peculiarly Scottish influences on the built form of urban areas, we cannot omit mention both of the system of feuing land and of the regulatory powers of the Dean of Guild Court over the adaptation or extension of the existing building stock. The Edinburgh Property Review of 1880 explains what it is to 'feu' land:

There have been various modes of conveying land from superior to vassal; but a feu is the usual title upon which land in Scotland is given off for building purposes. And once given off, and the conditions adhered to, the feuar is as absolute owner of the portion of land which he has feued

²⁷ G.Bell (1850) p.21. George Bell was a medical practitioner in Edinburgh.

²⁸ This is referred to in the Report of a Committee of the Working Classes of Edinburgh on the Present Overcrowded and Uncomfortable State of their Dwellinghouses (Edinburgh, 1860) as, "the Scotch method of building flats".

as the superior himself. It is his in perpetuity; and it is to the security thus enjoyed by the feuars in Scotland generally that we owe the substantial, and in many cases highly ornate and expensive buildings which have been erected in our principal towns and cities. Leases are not unknown in Scotland, but they are unusual and unpopular; and a lease even for ninety-nine years is justly regarded as of greatly inferior value to an ordinary feu.²⁹

The feuing system, however, is not in every detail as favourable as this might suggest. Best refers to it as "a sort of compromise" between the two normal English methods of transferring land - sale of freehold and ground-lease. In the nineteenth century the Scottish landowner could, if he wished and if his bargaining position was a strong one, write into the feuing contract a claim to triplicate feus for any change of ownership. Thus on 31 January 1880, for example, the second floor flat of No.6 Great Stuart Street in the New Town was sold with a feu of £8 (per annum) and "Entry of heirs and singular successors taxed at a duplicand over and above the feu".³⁰ Further, the original landowner could control the kind of development which would take place on his land once sold by including stipulations of height or building material, for example, in the feuing contract. The Heriot Trust, which owned much of the land north of Queen Street and out towards Inverleith, took considerable interest in the way its feued land was developed and often took steps to ensure that no 'undesirable' buildings were erected.³¹ If we are to understand the

29 The Edinburgh Property Review (1879-80) Vol.1, p.403

30 Ibid., p.714

31 The Trust went to some trouble to see that the land to be feued was divided into suitable lots, the layout of which (as well as the character of the subsequent buildings) would be in-keeping with the surrounding land use. This had the desired effect of creating an overall planned development even when the lots were sold individually. The practice in general, however, militated against certain prospective buyers and the difficulties experienced by the early co-operative building societies in obtaining suitably located land were, in some measure, due to the laying down of prohibitive conditions by certain superiors.

developing structure of any Scottish city, then, we must know what it is to 'feu' land and appreciate the kind of control the superior had over the built environment.

One popular characterisation of the nineteenth century is as an age of free-enterprise capitalism and individual freedom, where governmental interference was kept to a minimum. The picture of haphazard urban development which this suggests, however, is far from the truth in the case of Edinburgh. As we have seen, by the time of Victoria's ascension to the throne the authorities of the Scottish capital, by the strategic employ of public funds, already had considerable planning achievements behind them. And the Town Council were not, even in the 1800s, the only statutory body concerned with the regulation of the city's built form. The Dean of Guild Court, established in common law, had "the sole jurisdiction in regulating buildings within burghs, whether in repairing or taking down and rebuilding old buildings or erecting new ones."³² Indeed, in Scotland, the Dean of Guild Court preceded the Town Council as the legislative body of each Royal Burgh. The Court developed from the mediaeval Merchant Guilds, and until 1469 the Provost and Council were simply an elected committee of the Merchant Guild.³³ The minutes of the present Edinburgh Dean of Guild Court date back to the year 1529 and it is the oldest judicial court still in existence in Scotland. Its traditional role can be appreciated by looking at the kind of decisions typically made. In 1529, for example, the Court was involved in the regulation of 'dykes' or boundary walls

³² R. Miller (1896) p.39. A detailed account of the function of the Dean of Guild Court is given in this work.

³³ The Dean of Guild Court was (and is) headed by an elected officer, the Dean of Guild. The jurisdiction of the Dean himself, when at its greatest, has been said to correspond in many respects to the Curule Aedileship of the Romans. The Roman Aediles were magistrates who, among other duties, were responsible for the superintendence of the buildings, the streets and the markets, and had jurisdiction to decide questions and differences arising out of market transactions. (see R. Miller, 1891)

and with rights of passage through neighbouring back-lands. And in 1578, sitting at Leith, it found the east end of a newly built stair to be an encroachment on a neighbour's ground and ordered it to be removed. By an Act of Council in 1674, Dean of Guild powers were extended specifically to cover building regulations.³⁴ Thus, although throughout the eighteenth century the claims of the Guild as a public body lay dormant, when it did reconvene in 1817 (prompted to do so by the financial mismanagement in local government around the turn of the century) it already had a long-standing tradition to appeal to. Nevertheless, its position and the rights of the Guildry remained uncertain until the Municipal Reform Act of 1833 which restored the members' right to elect their own Dean who, ex officio, became a member of the Town Council. By 1850 the eight members of the Dean of Guild Court were active in the regulation of buildings and streets in the City of Edinburgh. An act of parliament of 1879 reconstituted the Edinburgh Court and consolidated its position, increasing its membership to eleven (ten plus the Dean of Guild). And during the following decade the powers and jurisdiction of this body were extended beyond the original Royalty to cover most of the City area and its suburbs. By 1888 the Court had powers to impose a penalty on those who failed to inform it of any proposed new building or alterations and/or to comply with its regulations. This took the form of a standard fine of £5 plus the removal of the building if necessary.³⁵ Finally, in 1891 the Edinburgh Police Amendment Act gave the Court, for the first time, jurisdiction over

³⁴ The particular concern at this time was with the High Street since, not long before, many of the wooden houses there had been gutted by fire and the new regulations were set down to control the rebuilding in stone.

³⁵ see Dean of Guild Court: Memoranda, Edinburgh 1888

internal alterations or additions to a building not involving structural change.³⁶

Throughout the nineteenth century, then, the Dean of Guild Court played an increasingly important part in the regulation of buildings and in the maintenance of building standards. By the specification of building materials and, frequently, the judicial upholding of restrictions and conditions imposed on feuars, it did much to preserve the character and amenity of a district. The effect of its powers on the built form of Edinburgh (as in all Scottish cities) has been considerable and any full account of how that built form came about would necessarily include a detailed account of the operation of this Court. In 1896, Edinburgh's Lord Dean of Guild, Robert Miller, saw the most important function of his court as that of improving public health. This benefit, he claimed,

....arises from the judicious application of the powers conferred upon it by the various Acts of Parliament. The Court acts in this way under its present regulations - positively by increasing the amount of air and sunlight that are at the disposal of each individual within its jurisdiction; and negatively by restricting the number of individuals that may occupy any given space.³⁷

The role of the Dean of Guild Court in Edinburgh in the latter part of the nineteenth century is an important one, particularly if we are considering the changing distribution of the population. Its decisions effected many aspect of the built form, but above all it functioned as "one great guardian of public health".³⁸ It is another feature of

³⁶ This particular extension of the Dean of Guild's powers was an important one, for it guaranteed that the sort of "making down" (ie. sub-dividing and sub-dividing again) popular amongst the landlords of the High Street area for over a century, would not in the future be permitted. No 'house' could, legally, be created without an external window or with only cardboard walls. This contributed something to the solution of the great problem of overcrowding.

³⁷ R. Miller (1896) p.77

³⁸ Ibid., p.78

Victorian Edinburgh which makes the city itself distinctively Scottish.

And so the stage is set for a closer look at Edinburgh between the years 1851 and 1891. Again interest lies in the changing form of the urban area and the decisions and actions of the city's public bodies and inhabitants which resulted in these changes. It has been said that Edinburgh is not one city, but two - the Old Town and the New Town. And as Young puts it, "The Old Edinburgh of the Middle Ages grew; the new Edinburgh of Scott's age was planned".³⁹ The urban structure of Edinburgh in 1851 revealed these two very distinct parts; the one of ancient foundation centred on the High Street had been inhabited and shaped by many a generation; the other had been created almost at once only a century before and had little history except that of its creation. To show the built form of the whole city as an understandable outcome of past human agency, then, there are two separate tasks involved. The first is to construct an account of how Old Edinburgh grew and the various factors which influenced this growth, the personalities and the events, the particularities and the peculiarities of Edinburgh's past. The collapse of part of an old six-storey tenement block in the High Street and the unsightly piles of rubble left after the demolition of other unsafe properties both helped Provost Drummond's campaign for a New Town. The decay of the tenements was not itself contrived (ie. by any human agency), but merely happened. Yet undoubtedly its timing furthered Drummond's cause, a cause which was to have such a dramatic effect on the face of Edinburgh. It is this sort of detail which allows the historical appreciation of how Edinburgh came to be as it was in 1851.

³⁹ D. Young (1965) p.31 (the reference is to Sir Walter Scott.)

The second task is to account for the built form of the New Town and this is distinct from the first simply because it is a story of creation and not of evolution. By 1851 the populace had seen the completion of the fourth phase of New Town building, on the Earl of Moray's property. (This linked the western and eastern extensions of Craig's plan). But the original layout was only added to, not altered. The New Town was still in its infancy and to understand this part of the urban structure, its conception and birth are what must be made intelligible.

The Edinburgh of the late nineteenth century was Victorian; it shared with other cities the problems and the fashions of the Victorian age. Its people were Victorians; similar social divisions and lifestyles were to be found throughout Britain. But Edinburgh was also a Scottish city, the capital of a country with an independent legal system and its own traditions. The urban structure had emerged from a past in which contact with England and abroad was intermittent and involved journeys of considerable duration. And this relative isolation is revealed in, for example, the distinctive architecture of the 'Herringbone City'.⁴⁰ Above all, however, Edinburgh was Edinburgh, a unique urban form of variety and interest. And it is this Edinburgh which is to be the object of study, the historical arena wherein the events of particular concern here took place and left their imprint on the urban landscape.

⁴⁰ It would be misleading to suggest that Scotland had no, or even little, contact with the rest of the world. The "Auld Alliance" with France, prominent in the reign of Mary Queen of Scots, did lead to exchanges of skilled craftsmen. Nevertheless these craftsmen came from different traditions of building and design and, if one traces the development of architectural styles in Scotland, whilst the French influence can be detected it is an influence upon an already existing and distinctive architectural tradition. This would hardly be the case with the 'international design' prominent today.

CHAPTER 9THE SPATIAL STRUCTURE OF VICTORIAN EDINBURGH1851 TO 1891

The purpose of this chapter is to provide some answer to the original questions concerning the urban form of the capital of Scotland in the later part of the nineteenth century. This task is a vast one and the piecing together of a complete historical account would itself be a life's work. The methodological issues around which the discussions of this thesis are centred can, however, be amply illustrated by an outline of such an account and how it is to be compiled. Two general questions come to mind in this context: What sort of material can the urban geographer make use of in the construction of an historical account? And, how is this account to be presented? In practice, any individual research project will have its temporal and spatial limits in order to reduce the quantity of potentially relevant historical material to manageable proportions. Any individual researcher will only be able to piece together a small section of the overall historical narrative. The boundaries of this section may be more or less appropriate, but the ultimate worth of the research must be judged by its contribution to the whole. Our present concern is to provide an illustration. The place and the period have already been specified, but a further selection

is necessary if we are to limit the scale (though not the scope) of this chapter. To this end I have chosen three distinctive areas of the Victorian capital from which to draw examples for the outline account. These areas, in chronological order of development, are:

- (a) the closes of the High Street, Cowgate and Grassmarket;
- (b) the most recent extension of the New Town from the Earl of Moray's estate to the banks of the Water of Leith;
- (c) the newer industrial area of Fountainbridge.

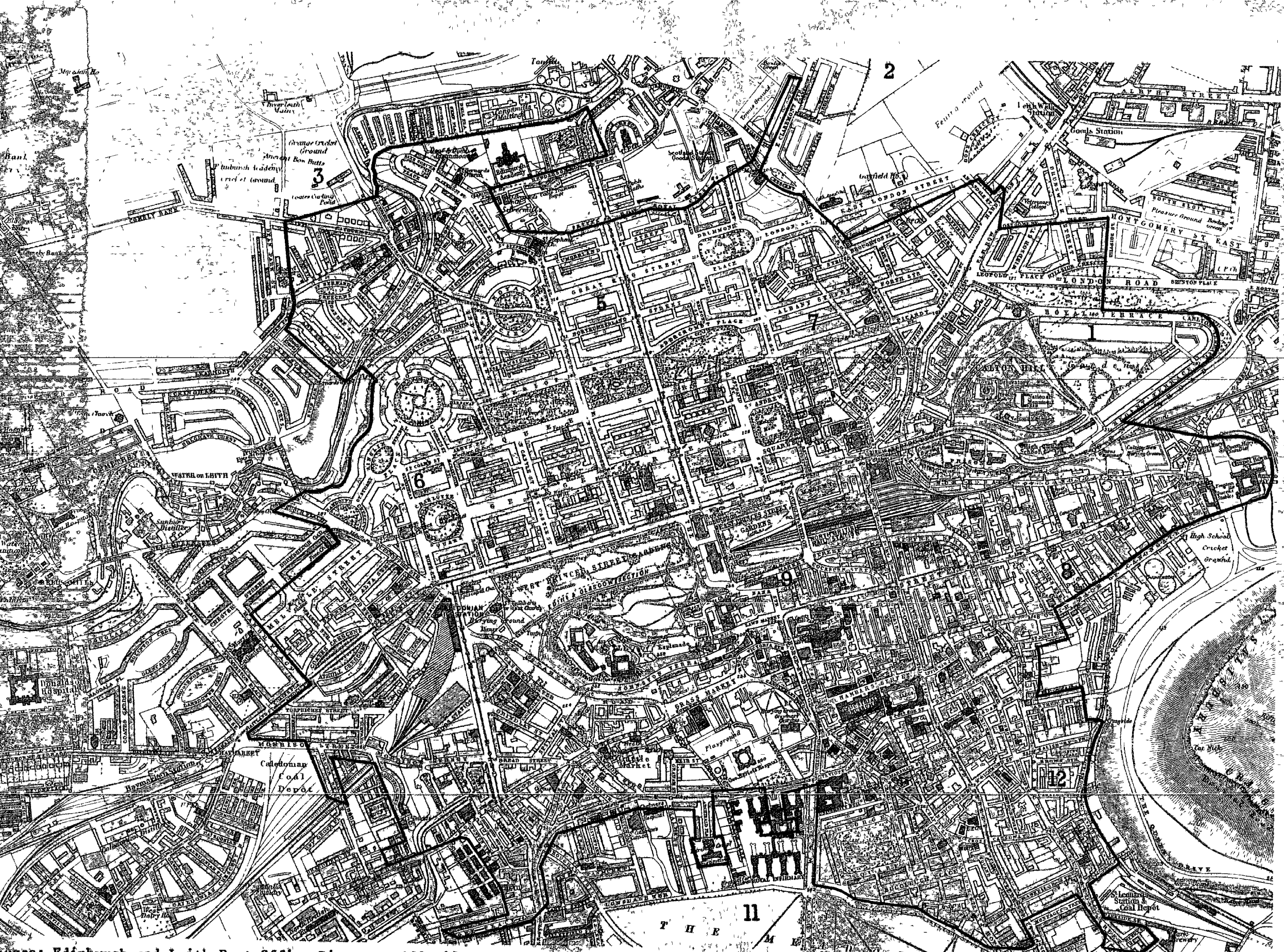
In the first and the last the relative homogeneity of both house type and the social standing of the inhabitants is remarkable. Together they provide a fair cross-section of the areas of Edinburgh at that time. Precise specification of the boundaries of these areas, if it were possible, would have little point. To talk of the 'character' of an area is necessarily to talk in a general manner (although about a particular area). This imprecision, whether in talk of social areas or social groups, can itself be both informative and interesting. The geographer, if he is to embrace wholeheartedly the historian's method, must recognise the necessity of investigating something (eg. the character of an area) which cannot, logically, be broken down into a certain number of specifiable components. Some of the information used by the urban research will refer to bounded areas. Census data, for example, is listed by Parish, and when examining this data it is necessary to bear in mind the location of the Parish boundaries. Much historical material, however, relates to particular houses, people or events, for which the delimitation of city 'areas' is quite beside the point. The only spatial guide required is that given by a general indication of the whereabouts of named streets, both in relation to each other and within the city as a whole. And this can be gleaned

from the six inch map of Edinburgh reproduced in Fig. 6, and from the more detailed plans below. Further, Fig. 6 indicates the extent to which the Scottish capital expanded in the period 1851 to 1891.

By 1851, the City of Edinburgh was already socially differentiated. With the building of the New Town status areas had emerged as both the rich and those of moderate means left the cramped High Street closes for the light and air of the northerly extension.¹ To the south of the Old Town a small but select development had attracted the monied intelligentsia. By mid-century architecturally distinguishable areas were well established. Nor were the lifestyles of the inhabitants homogeneous. Indeed a greater contrast could hardly be imagined than that between the customary daily routine of a New Town lady and the daily chores of those wretches whom destiny had condemned to the rabbit warrens of the High Street. Between these two extremes there lay a multitude of identifiable social groups whose life chances and spheres of contact were, in some way, distinctive. Certain occupationally based social divisions can easily be identified. The industrial artisan, for example, held a special position within the working population, for in his trade he was in charge of a small complement of semi-skilled boys, apprentices and women. To these under-labourers the artisan was master, a member of the 'respectable' working class and a man whose wages allowed him to reside in a 'decent' neighbourhood.² One could suggest many different schemes by which to classify a population socially.

¹ For an analysis of status areas within Edinburgh based on information from valuation roles, see G. Gordon (1971)

² For an interesting discussion of the lifestyles of this "Labour Aristocracy" see R. Q. Gray (1973)



Source: Edinburgh and Leith Post Office Directory 1891-92

Scale: six inches to one statute mile

Fig.6 THE OLD AND NEW TOWNS OF EDINBURGH, 1891

— extent of the built-up area in 1851

Anthony Keith, for example, wrote in 1908,

Edinburgh society may be divided into four classes, these being composed of - (1) people who count in the social scale; (2) people who think they count in the social scale; (3) people who hope to count in the same; and (4) people who don't care a brass farthing whether they count or not, so long as they are happy.³

Since our present concern is with residential districts, however, it would merely be distracting to continue the list. The point of talking about social groups at all is in order to make easy reference to 'types' of people. Further, certain groups will be relevant and other irrelevant to the research topic. The name one gives to such a group is of little importance for it is the shared characteristics which are of interest. In the present study of Edinburgh we require to identify those social groups which have residential aspirations and opportunities in common; ie. to describe these particular characteristics. And there is no better way of doing this than to explore the urban districts in question and examine the characteristics of their inhabitants. To describe the social situation of any group of persons is more informative than even the most careful attempt at categorisation.

~~There are two main questions to be answered. Generally expressed~~ these are: first, 'Why did this type of housing develop in this part of the city?'⁴; secondly, 'Why does this group of people (with these particular social characteristics) reside in this area (with these particular architectural and spatial characteristics)?' Before these questions can be answered details of the 'particular characteristics' would have to be provided. In each case, there will be limits to the answers which can be given. It may be that a residential property

³ A. Keith (1908) p.204

⁴ 'type of housing' here should be taken as referring not only to the architectural features of the building, but to the amenities to be found within it and the density of buildings in the area as a whole.

was converted to a commercial one (and that this is an important 'event' in the historical account) but that the present evidence gives us no clue about why this was done. We must simply accept the fact of the building's transformation and attempt to make any subsequent development in the area intelligible in the light of this fact. We cannot explain why the owner effected the change if the documents give us no clue as to possible reasons. This does not invalidate the historical account, it only marks its limits. Louch says of the historians' method,

Understanding the past in these terms comes down to ordering events and personalities in such a way as to bring a person or an episode into central focus, and to see in that mode of description the way in which other happenings flow from the actions of the central character or the climatic episode.⁵

These happenings themselves, however, can be examined in more or less detail, and at each stage in the analysis more puzzles are solved, more 'details' are made intelligible. The next section of this chapter is intended to illustrate the method, but taken to its logical extreme (ie. the limits imposed by the present evidence) the historical account thus produced would answer all the questions which could be answered by an historical researcher.

I

EDINBURGH IN THE MID-NINETEENTH CENTURY:

We can now look at the three selected areas of Edinburgh in turn. The historical account here will involve painting a picture of the character of these areas and the lives of their inhabitants. Contrast will be an important part of this account for the poor are poor in relation

⁵ A. R. Louch (1969) p.58

to the riches of the rich; areas become undesirable when there is something to be desired. The aim is to make the residential locations of various groups neither unbelievable nor inevitable, but simply intelligible.

The closes of the High Street area around 1851:

Amongst the many areas of Edinburgh in 1851 that of the High Street, Cowgate and Grassmarket is perhaps the most interesting and enticing to the urban geographer. This is not only because the area itself was clearly separate from the rest of the city, both in its character and the pattern of its buildings and street, but also because the present evidence is sufficient in quantity to persuade the researcher that the investigation could be a fruitful one. Inevitably, then, the present outline will concentrate on this area and make use of the many accounts of residential conditions and social circumstances which have been preserved.

The very existence of historical documents relating to the High Street area in the mid-nineteenth century may itself seem curious, for a decade earlier (and indeed into the 1850s and 1860s) the more genteel inhabitants of the New Town and the southern extensions of the City were largely ignorant of the conditions and goings on in the High Street closes. Certainly they never ventured there save out of necessity, and then solely to the business establishments of the main thoroughfares. As late as 1866 an article in one of Edinburgh's evening papers boldly stated,

Much less is known, we venture to say, of the abodes of the poor in the closes of Edinburgh than of many parts of the interior of Africa.⁶

And there is little reason to disbelieve the journalists. After the City had been extended to both north and south, the High Street declined

⁶ Edinburgh Evening Courant, Friday 26 October 1866. The article is the first in a series entitled 'The Poor of Edinburgh and their Homes'.

from its already decaying state to become the reserve of poverty and pestilence. The Old Town was the most densely populated area of the city, but few of its inhabitants were literate. The closes and wynds were the centres of vice, of drunkenness and debauchery, and a venue ^{entirely} unsuitable for an idle stroll. No sane gentleman would have ventured alone into these dungeons after dark. In the first half of the nineteenth century few were concerned with the plight of the unfortunate inhabitants, and of those who were, most were missionaries bringing the joint message of Christianity and temperance. Even in 1851, ignorance of the nature of everyday existence in a High Street close was widespread. Yet over the next decade this was to become one of the most frequently 'investigated' areas in the City.

Why this sudden interest by the population at large in the misery of the High Street dweller it is difficult to say. But the exploration of the state of the wynds and closes of the Old Town made popular reading in the 1850s and 1860s. Sympathy as well as repugnance was aroused and, most important of all, people started to express the opinion that something ought to be done about the conditions found there. Journalists and medical doctors, closely escorted by the police, went in to view the scene and then wrote articles and pamphlets conveying the horror of what they saw to anyone willing and able to read. Perhaps it was, as a journalist at the time suggested, that "...the evil (of unmixed wretchedness and filth) became so intolerable that the whole press of Edinburgh directed its attention to the subject."⁷ At any rate, the publicity given to the High Street area by these 'long communications from experienced correspondents' ensured that the general ignorance would not long remain.

⁷ Committee of the Working-Classes of Edinburgh (1860) p.13 (Alexander Macpherson, secretary to this committee, wrote a series of articles on this area of the City for the Edinburgh News.)

Another factor which influenced the spread of information about the Old Town was the official census of 1851. This is the first reliable and comprehensive census of the City of Edinburgh and it allowed comparisons to be made between the Old Town and the New Town. On 30 March 1851 the official enumerators, covering every part of the urban area, attempted to note down details of every man, woman and child, their names and their whereabouts. Questions were also asked about age, occupation and place of birth.⁸ Before the end of the year Thomas Thorburn published a statistical analysis of the Edinburgh census in which he separated the numerical data for the Old Town from that for the New Town.⁹ The citizens were, for the first time, presented with

⁸ The 1851 census differed from the 1841 census in several respects. Experience had been gained by the 1841 enumerators (this was the first attempt at a complete census of Scotland). The instructions given to 1851 officials were clearer and less liable to cause confusion both in those who wrote out the returns and in those who later abstracted the aggregate statistics. The resultant increase in the competence of the 1851 enumerators is evident when examining the handwritten census books. Also the date chosen in 1851, namely 30 March, itself suggests that the returns are a more reliable reflection of the usual population of the city than were the 1841 returns. For on 6 June 1841 (the date of the census that year) it was found that a considerable number of people had, by that date, retired to sea-bathing or other country quarters.

Nevertheless the accuracy is indeed questionable, especially in an area such as the High Street. Some 'human error' is inevitable and in any census there will be those who, for one reason or another, fail to impart the correct information. When the 'houses' in question are mainly of one room, with no clear address and a proportion of the inhabitants are members of the criminal classes, it would not be unreasonable to assume some inaccuracy. That the census provides adequate general information on Edinburgh in 1851, however, is undeniable and to this extent the numerical data found therein is of great value to the historian.

⁹ T. Thorburn (1851)

a comprehensive statistical account of population distributions within the City. The Victorians appear to have delighted in statistics. For the historian statistics must be incorporated in the wider historical account. Even Thorburn appreciated that some background detail was required to make the bare numbers intelligible. The statistics tell us that the population of Edinburgh (the Royalty plus St. Cuthberts and Canongate) increased by around 17% (from 133,496 to 160,627) between 1841 and 1851, but this 'happening' cannot be made intelligible by repeating the numbers alone.

The urban geographer has to use the census return along with the rest of the present evidence when constructing his account of the character of urban districts and the changes which occurred. Presented with the original enumerators' books, however, some selection has to be made. For the purposes of this thesis, a 10% sample of the entries for selected parishes was taken.¹⁰ The parishes chosen are three of the oldest parishes in the City - St. John's, New North (or West St. Giles) and the Tron. All stretch from the south side of the High Street down the steep south-facing incline to the Cowgate. They include many of the typical narrow High Street closes and, in 1851, had few buildings under four storeys high. Their position within Edinburgh can be seen from Fig.6,¹¹ and the details of their street pattern appear in Figs.7-9.

If we wish to know something of the character of an area one of the most obvious statistics with which to start is the number of persons in

¹⁰ This was considered perfectly adequate given the restricted use to which the statistics were going to be put. A random 10% of households does give us some idea of the character of the area particularly if, as in the High Street, it is densely populated. Further, the sample was taken in a consistent manner according to certain standard rules (see Appendix A).

¹¹ p.290 above

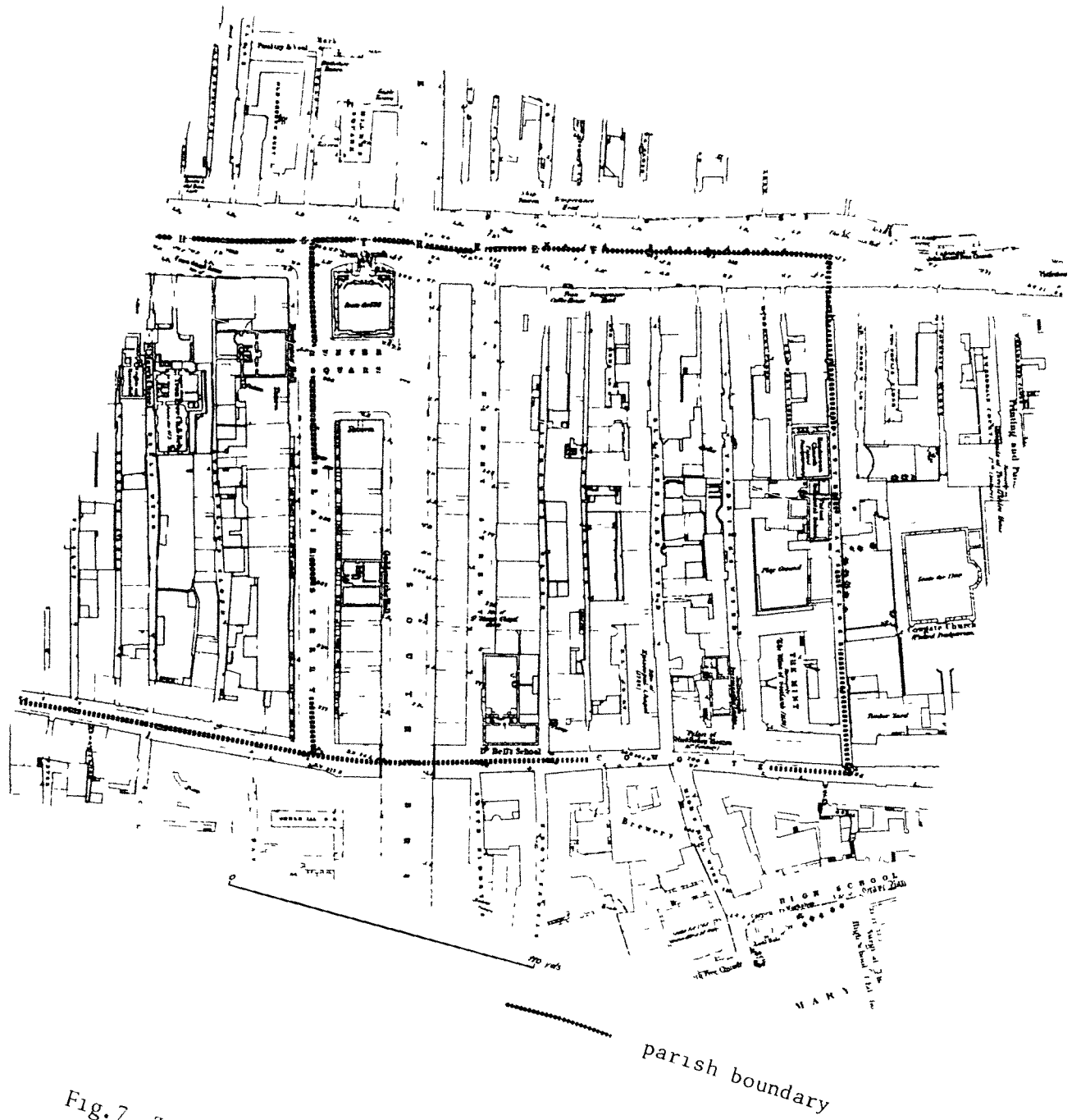


Fig.7 IRON PARISH, EDINBURGH, 1853

Source: Ordnance Survey Plan of Edinburgh 1853
(five feet to one statute mile)

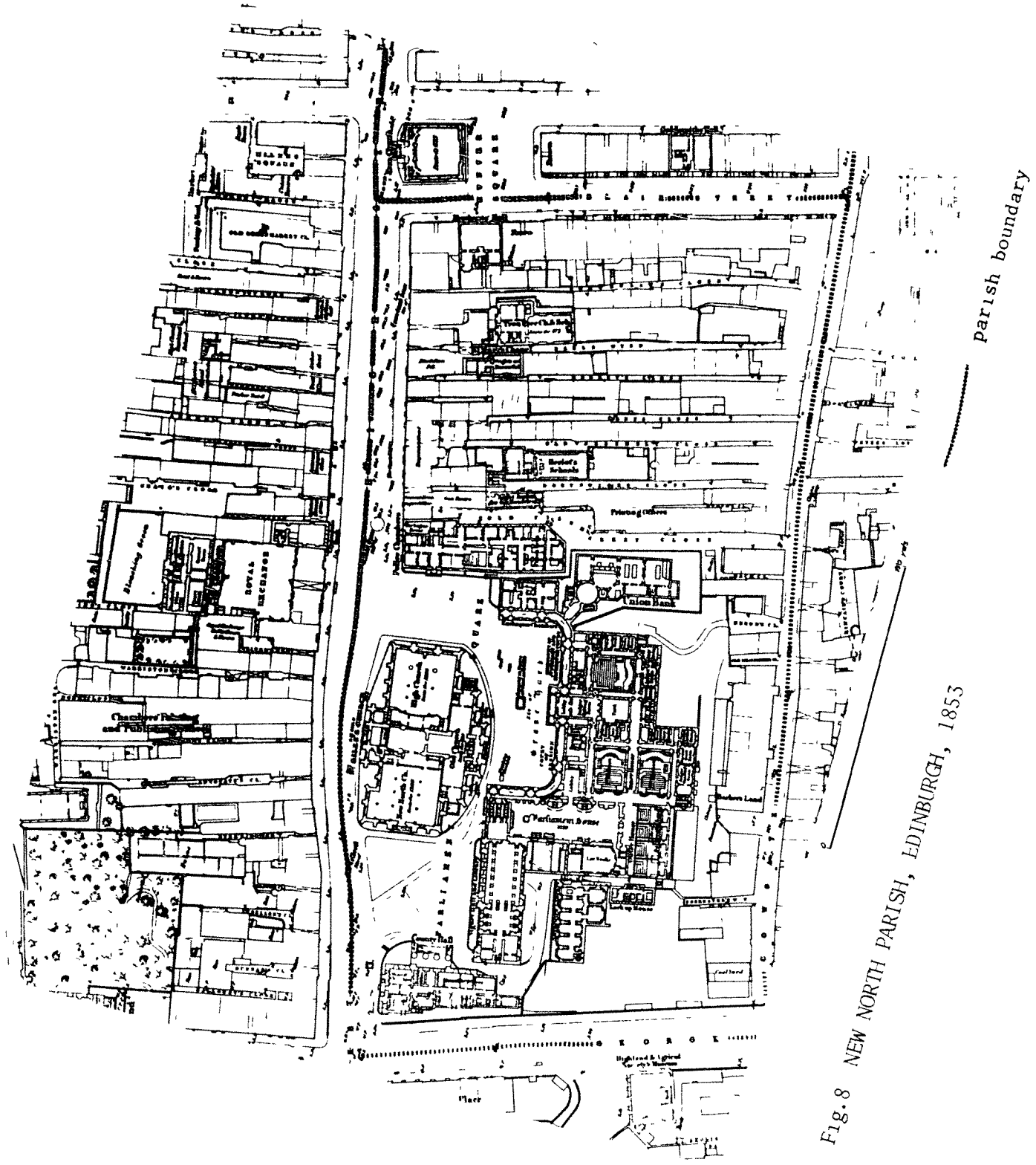


Fig. 8 NEW NORTH PARISH, EDINBURGH, 1853

Source: O.S. Plan, 1853

the area. There are several computations which can be made. In 1851 the Old Town of Edinburgh was certainly in an overcrowded state and the census testifies to this:

<u>PARISHES</u>	<u>Total Population</u>	<u>Area of Parish (in acres)</u>	<u>Density (Persons per acre)</u>	<u>(sq.yards per person)</u>
TRON	3,602	6.62	544	8.9
NEW NORTH	3,190	10.58	301	16.05
ST.JOHN'S	3,068	7.32	419	11.54

Fig.10 POPULATION DENSITIES FOR THREE HIGH STREET PARISHES, 1851 ¹²

Much of the significance of these figures, however, can only be appreciated in relation to similar figures for other areas of Edinburgh at that time. Nevertheless the average density of 544 persons per ground acre in the Tron Parish is strikingly high.¹³ And the other two parishes are not far behind. A glance at the street plan of New North suggests that the figure of 301 may give a false impression since, with the presence of a large number of non-residential buildings (eg. the law courts and St. Giles Cathedral), the total population must have been accommodated in an area considerably less than that of the parish as a whole. To understand what these figures meant in human terms, a much closer look at the nature of life in the tenements is necessary. Only by selecting particular households and examining accounts of their existence can we bring to light the character of this area in 1851, a character which the average census statistics can only hint at.

The residential densities of the population of the Old Town, then, can be contrasted with the spaciousness of the New Town. The very

¹² Computed from the original 1851 census returns. All figures are either to the nearest person or correct to two decimal places.

¹³ This is especially so in comparison to present day densities. One of the boasts of the 20th century New Towns, for example, is an average density of 15 persons per acre.

comparison of the layout of the High Street parishes (Figs. 7-9) with Craig's plan for the extension of Edinburgh (Fig.5 p.263) suggests this to be the case, and in the decade before 1851 the Old Town's population grew at a faster rate than that of the New Town. The composition of this population is of some importance.

	<u>Old Town</u>	<u>New Town</u>	<u>Total Burgh</u>
<u>Nos. 16-60 yrs.incl.</u>	16,464	18,067	34,531
<u>Born in Parliamentary Burgh</u>	6,512 (39.4%)	6,737 (37.2%)	13,249 (38.4%)
<u>Born in remainder of Mid-Lothian</u>	871 (5.2%)	1,403 (7.8%)	2,274 (6.8%)
<u>Born in remaining counties of Scotland</u>	4,420 (26.7%)	9,632 (53.3%)	14,052 (40.7%)
<u>Born in Ireland</u>	4,711 (28.7%)	295 (1.6%)	5,006 (14.5%)

Fig.11 CLASSIFICATION OF ADULT POPULATION AS TO PLACE OF BIRTH, 1851 ¹⁴

From Fig.11 it is clear that the highest percentage of Irish born persons lived, in 1851, in the Old Town. Further, in St. John's and New North parishes over 40% of the total adult population had been born in Ireland. Many of these Irish folk had, in the early years of the century, fled from the famines in their own country and come to Scotland. The gangs of Irish labourers engaged first in the canal construction and then in the railway construction were infamous, and their presence frequently resented. Thus certain of the High Street closes became Irish ghettos being the only places in the city where the 'uncouth Irish' could obtain accommodation. The condition, both material and physical, of these people was pitiful. Like many of the other inhabitants of the wynds and closes few were other than destitute. But the Irish had to bear the additional burden of being set apart and mistrusted by the rest. This anti-Irish feeling was widespread and shared even by Dr. George Bell whose sympathy with the sufferings of the High Street's inhabitants is obvious from many of his

¹⁴ taken from T. Thorburn (1851)
The detailed table is reproduced in Appendix B

writings.¹⁵ Witness the following, taken from a pamphlet published by him in 1849:

We learn from the Report of the Royal Infirmary for 1847-8, that, on 19 September 1847 there were 511 fever patients in the house, and that 379 of these were Irish. The number of Irish admitted to the Royal Infirmary this year, for "all diseases", was 2,563. Each patient, on average, costs £1.10/-; and thus the low Irish, who have nothing to do in Edinburgh, cost the infirmary about £3,800 in the year 1847-48. The migratory Irish are a pestilence as well as a pest. This country both desires and deserves to be protected from them.¹⁶

And this passage was written by another medical doctor in 1852:

There can be little doubt that this increase (in population, 1841-51) is, in a great measure, to be ascribed to the influx of Irish. Year after year, the receding tide of harvest labourers leaves on our shores a large residuum of Irish rags and poverty. It is this class who will be driven into the holes and corners of our city, perhaps even driven out, by remodelling and cleansing the old houses; nor are there many of the inhabitants who would regret such a result. Assuredly the benefit received from this addition to our population, is not of such a kind as to induce anyone to encourage their stay by offering comfortable accommodation We affirm, and that advisedly, that these people are not fit to live in ordinary houses.¹⁷

Clearly there were many who thought the Irish a tremendous burden on the City, for the state of health of this section of the population, exacerbated by the conditions in which they lived, was substantially poorer than that of the rest. We know from the census of 1851 that the adult working population (ie. those between 16 and 60 years of age) in the Royal Burgh as a whole was, at that date, 34,531 of which 5,006 or 14.5% were Irish born. Assuming that the proportion of Irish persons had either remained

¹⁵ For example, at a time when many supposed that the inability of a member of the male population in these closes to secure employment was due to idleness, intemperance or both, Dr. Bell states forcefully that "It is a mockery to tell men to be industrious when there is nothing for them to do." He also reveals a considerable sympathy for the Highland paupers in Edinburgh of whom, he points out, seven-eighths were victims of eviction.

¹⁶ G. Bell (1849) p.15

¹⁷ R. Foulis (1852) p.31

stationary or else risen since 1847¹⁸, it can be seen that the Irish were disproportionally represented amongst the infirmiry patients. In the year 1847-8, approximately 51.7% of all patients were Irish and on the night of 19 September 1847 an astonishing 74.2% of this hospital's fever patients were from Irish families. It is not, then, surprising that Dr. Bell and others saw the Irish as a burden on the City, for they were a drain on the City purses. The general climate of mistrust and resentment which surrounded these foreigners had implications for the location of their living quarters. Not only did economic necessity narrow their choices to areas where rents were low and to be paid weekly, but the poor Irish were also dependent upon the goodwill of the landlord, for many discriminated against them. And Irish tended to sub-let to Irish, so that by 1851 several small ghettos had developed within the High Street area. Certain closes became associated with the Irish and for this reason attracted other families of that nationality. Even the 10% sample of the census provides a useful illustration of this pattern of residential location. In Burnet's Close, New North Parish, for instance, three of the four sample families had Irish-born heads, two of these being widows who described their occupation as 'costermonger' and the third being a general labourer. And in Borthwick's Close, Conn's Close and Old Fishmarket Close all the households selected (three, two and six respectively) were Irish in origin. Of the heads of these households, those living in Borthwick's Close gave their occupations as journeymen (hatter, tailor and weaver), those in Conn's Close as mason's labourers, and in Fishmarket Close, two labourers, two dealers in old clothes, one shop porter and one hair teaser

¹⁸ This is a reasonable assumption, since the potato famine of 1846 had driven thousands of Irish people from their own country across the water to the British mainland. Certainly many of these came to Scotland to seek employment and save themselves from starvation. And Thorburn (1851) suggests that the 27% increase in the population of the Old Town over the decade 1841 to 1851 can be ascribed to the growth of the railway system which induced Irish labourers into the city.

were to be found. Yet again, in that part of the Cowgate falling within New North, eight of the twelve households examined had Irish-born heads - two field labourers, a bricklayer's labourer, a grocer's porter, a costermonger, a journeyman cotton spinner, a journeyman tailor and a dealer in old clothes. Elsewhere in the same parish there were closes in which few, if any, persons of Irish origin resided.

The pattern is similar in both St. John's parish (where, in one stretch of the Cowgate, six of the seven sample households had Irish-born heads, yet of the seven selected households living in the West Bow none was Irish) and in the Tron parish (where in a section of Blackfriar's Wynd all six heads of the households noted had come from Ireland whilst in Dickson's Close the sample of seven revealed not one Irishman). No other group of people identifiable by their place or country of birth formed such residential concentrations in these wynds and closes in the middle years of the nineteenth century. Nor had the Irish gathered elsewhere within the City. Their presence in the High Street area is, therefore, particularly noteworthy.

If the Irish, deliberately or otherwise, congregated in small pockets within the total residential pattern, it was not because they had nothing in common with the other residents of the Old Town. By 1851, the High Street and Cowgate had been virtually stripped of all members of the professional classes. Master craftsmen were few and far between and the populace, whether of Irish origin or no, consisted mainly of journeymen (of various trades), labourers, street porters, old clothes dealers, costermongers, scavengers and paupers. Moreover, many gave their occupation as 'keeping lodgers' where the premises were clearly not a

lodging house.¹⁹ Only 8% of the sampled households of all three parishes kept servants; of these less than 2% (ie. 3 out of 163 sample households) kept more than one servant,²⁰ and none kept more than two. The three households with two servants (as it happens, one in each parish) stand out as exceptional within the area. They are:

- (1) St. John's Parish - residing at 100 Grassmarket, a husband and wife both in their middle forties. The former's occupation is given as a self-employed stabler and innkeeper. They have three children, a daughter, 13, and two sons, 8 and 5. The two servants, it may reasonably be assumed, help run the inn.
- (2) New North Parish - residing in Parliament Square, we find the teller of the Union Bank who occupies premises within the bank building. This man, a bachelor of 51 years, lives with another unmarried and elderly relation. He keeps two servants (ages, 57 and 13). This is a household of good standing and it is likely that the servants take care of all domestic duties there being no 'lady of the house'.
- (3) Tron Parish - residing at 102 South Bridge, a household headed by a widower of 77 years, whose occupation is described as 'a gentleman'. With him lives his son (38), himself a clothes draper employing 150 men. Again the servants would be needed for domestic duties.

Why these households had not left the Old Town for the more fashionable parts of Edinburgh can only be guessed at. The innkeeper had to stay to make his livelihood, the bank teller was provided with lodgings by the Bank, and the gentleman who lived on one of the main thoroughfares, was perhaps not discontent with the house he had inhabited for many years. It is not these people, however, who give us a clue as to the general

¹⁹ The 1851 census gives no indication of the size of the household's accommodation. This can, however, be estimated from the number of families sharing the same address and the size of the tenement inhabited by them. Undoubtedly some families and their lodgers shared one room with a window plus a dark bed-closet.

²⁰ Some Irish families are noted as having one servant. This, however, would often be a young girl brought over from Ireland whose 'employment' only saved her from starvation. Not infrequently such girls were related to some member of the household with which they lived.

character of the area, and the contrast between their lifestyle and that of the more typical 'low Irish' can easily be imagined.

We have described the area and the people as well as can be done from the information of the census. But how far has this gone to answering the question about why these people should, in 1851, reside in this area? Amongst the residents were the paupers, the beggars, the destitute and the street urchins of the Royal Burgh. Of those who did find employment most received the weekly wage of the common labourer. The employment itself was frequently temporary, being subject to seasonal variations in demand, and the necessities of life (food and rent) had to be paid for as and when money could be scraped together. These people inhabited some of the worst slums in Europe. To make this state of affairs intelligible, to understand the situation in the mid-nineteenth century capital, there is no better source of information than the reports published in the Edinburgh press between 1849 and 1870. These were written by the journalists whose explorations not only opened their own eyes, but brought the horrifying conditions of the wynds and closes to the attention of a reading public whose ignorance in this matter had been complete. A selection of the contents will suffice to illustrate the point.

In 1850, George Bell declared of Blackfriar's Wynd in the Tron parish "...the locality is from year's end to year's end a diffused dunghill".²¹ The only drop of water in the wynd at that time was in one 'land', of a comparatively new tenement, at the top. There was no drain in the wynd with the result that all the filth of the place remained on the surface. The absence of drainage and the provision of

²¹ G. Bell (1850) p.7

water is commented on by all who undertook explorations of the area, many of whom were nearly overcome by the stench. As one comments,

At none of the places we visited is there a receptacle for filth outside and the result is that the closes, stairs, passages and houses are full of abomination. Sometimes the ordure is kept in pails on different landings when there is room, but more frequently the accumulations of filth, ashes and so forth are placed under the bed, when there is one, and in other circumstances behind the door, or in a corner of the room until the dustcarts come round.²²

And on viewing two notorious dens in the lower part of what had been Cardinal Beaton's Palace (see Fig.12), in Blackfriar's Wynd, these journalists declared:

Nothing can, we think, give a better description of the scenes enacted here than the following lines from the "Inferno":-

Various tongues,
Horrible languages and cries of woe;
Accents of anger, voices deep and hoarse.²³

All are agreed that the horror of what they saw in some cases defies description, for it is almost unbelievable that human beings could be thus degraded.

The ground floor rooms resemble cellars in so far that they have to be descended to by a step and are therefore about a foot below the level of the ground. They are mostly occupied by the worst and lowest class, and average, I believe, one shilling per week. Here it is no uncommon thing to see the grate torn out and the place destitute of all semblance of furnishing, except an old sack for a bed.Yet these are still above the very worst tenants of the close.²⁴

²² Edinburgh Evening Courant, Friday 26 October 1866

²³ Ibid. Wednesday 28 November, 1866. Blackfriars Wynd was, for over 500 years, one of the most aristocratic districts of the capital. Here lived many a nobleman including the Earls of Morton, St. Clair Earl of Orkney (whose lady is reputed to have been waited upon by seventy-five gentlewomen all clothed in velvets and silks), the Lords Home and Archbishop Beaton. Even in the early years of the eighteenth century it housed two fashionable boarding schools. By 1850, however, its decline was complete.

²⁴ A District Visitor (1867) p.15

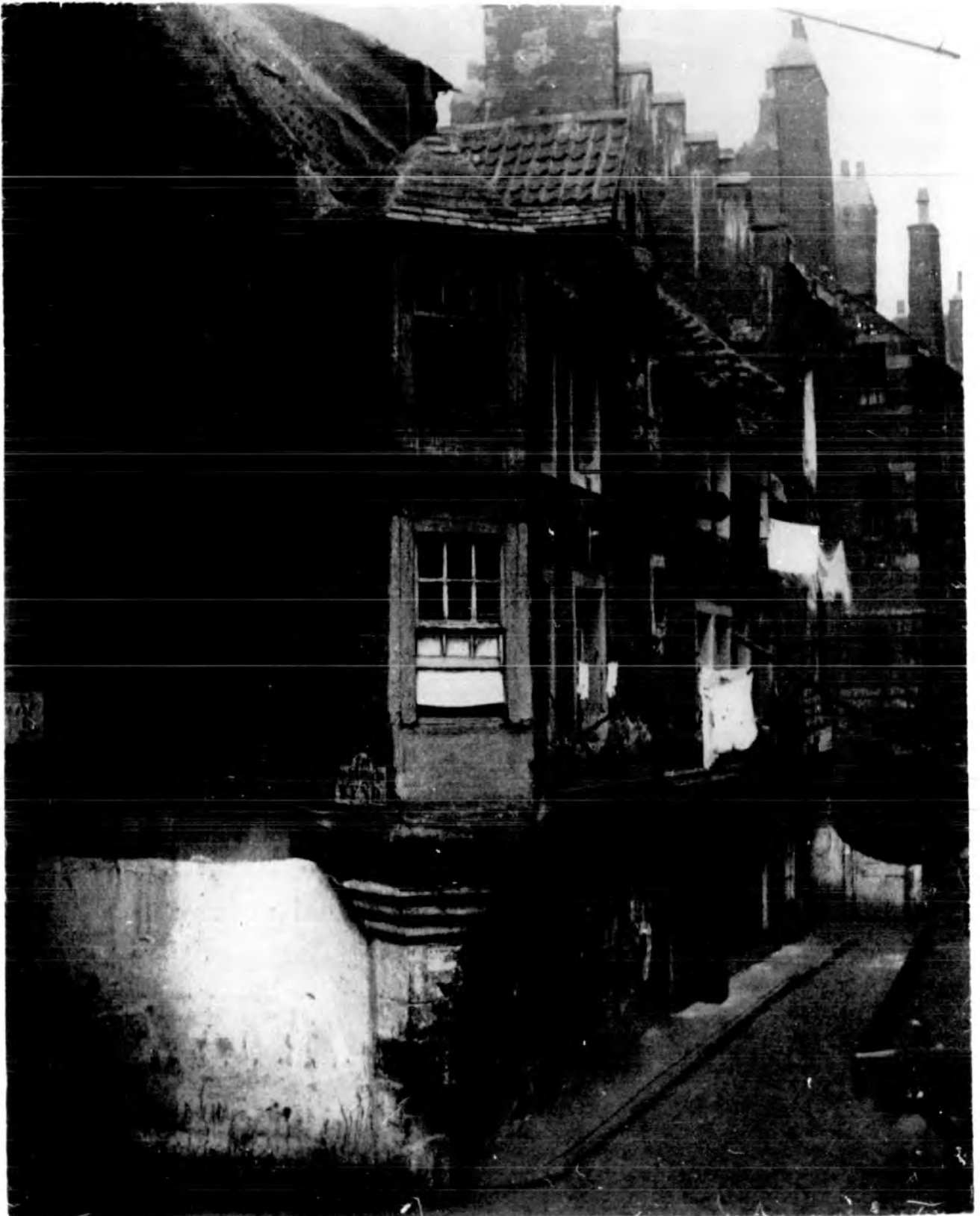


Fig.12 CARDINAL BEATON'S PALACE, COWGATE, c.1855

This early photograph was taken by the amateur photographer Thomas Keith. It shows the building which was once the Cardinal's palace in an advanced state of decay.

The incidence of disease and death in these areas was much higher than in other parts of Edinburgh. There were two great evils of the built environment; the first was the extremely filthy state of the closes; and the second, the over-hanging wooden house fronts which in some cases filled up the narrow thoroughfares so completely that it was impossible for light and air to penetrate. Cant's close (Tron Parish), for example, running from the High Street right down to the Cowgate, was a mere $3\frac{1}{2}$ feet broad with houses of six or seven storeys high on either side. The restrictions this imposed on the free flow of air certainly aggravated the unhealthy state of these narrow streets. One of the most pitiful families inhabiting the area in 1850 consisted of a man, his wife and their three children, living in a room on the garret flat of a tall tenement:

We were wrong in calling it a room; it was merely a small, dark, miserable hole, with nothing but bare walls. The wife was sitting at the fireplace with an infant child, five weeks old, on her knee, while the other children were playing together on the floor. One of the latter has a white-swelling on her knee. The only article we saw in the house was a ragged piece of carpeting, which seemed to serve as a bed. The husband was out; he is a coal-heaver, but has been in ill-health for some time. On Wednesday all he made was 4d, and his earnings never exceeded 6d a day. The smell in this house was almost suffocating. It baffles us to describe it. It was a miscellaneous compound of many poisons, loaded with disease and death. Rent of house 7d per week.²⁵

Such conditions and human misery and suffering were usual, not unusual. It is this family rather than the gentleman, the innkeeper or the bank teller who were typical in this area at this time.

To the two evils of the built environment, the physical layout and the lack of sanitary amenities, must be added a third - overcrowding. The census figures show this to be an area with a high density of population.

²⁵ from the Scottish Press newspaper, Edinburgh 1850

By taking a closer look at the statistics and selecting particular examples of overcrowding, it is easily seen how this, combined with the near ruinous state of the buildings, produced an area all too like Dante's Inferno. In April 1850, Dr. George Bell counted 1,025 individuals inhabiting Blackfriar's Wynd. Since the 142 buildings in the wynd contained 193 chambers (and allowing 1000 cubic feet as the average cubic content of each chamber), each inhabitant must have had around 188.5 cubic feet as his share of the space. And the doctor himself pointed out that,

Even the felon's cells, for separate confinement, in modern prisons, contain not less than 800 cubic feet each, and these are provided with a perfect ventilating apparatus. What a contrast this is with the provision for the poor.²⁶

The following extracts from articles written in the 1850s and 60s serve to elaborate upon a condition evident even from the bare statistics:

Almost all the dwellings we visited were single apartments. In some of these there was no room for an ordinary-sized person to stand upright; in others, the walls were soaking with damp; in all the floors were more or less broken - some of them being so dilapidated that the boards sunk beneath our feet; in scarcely any was there sufficient light; and in none was there sufficient ventilation. ...

In some of these rooms the accommodation was less than is afforded by an ordinary pig-stye, and the breathing air much less savoury. In two or three instances we found families - numbering four persons in one case, at least - living in attic rooms, the average breadth of which was about 4 ft., the length 12 ft., and the height varied from 3-6 ft.²⁷

These people were living in long, low, narrow, dark and stinking tunnels.

The adjoining attic - a place about 12 ft. by 10 ft. - contained a family of fourteen - ie. father, mother, grand mother and eleven children. Three of these belonged to the man who rented the place; eight were the children of a brother lately deceased, who had been a slater, and was killed by a fall from the roof of a house. His wife, a sad drinker, was then alive very soon she ended her days - literally drank herself to death.²⁸

²⁶ G. Bell (1850) p.15, footnote.

²⁷ Edinburgh Evening Courant Friday 26 October, 1866

²⁸ A District Visitor (1867) p.7

Intemperance was a great problem in the area and drunkenness a common offence.²⁹ The jails of the High Street were rarely devoid of such offenders. And a drunken street brawl was a much more frequent sight than the dust-cart. For some, alcohol must have been an escape from the misery of their surroundings and their daily lives. For others it had been their downfall and the reason for their present reduced circumstances. It was not uncommon for a husband, who took to drink, to sell all his family's possessions. And with no weekly wage the household found itself condemned to scavengery and beggary. Women too, succumbed to the evils of alcohol:

The next chamber is inhabited by a cinder-woman. She was a member of a respectable family; but she eloped with a sweet-heart, who deserted her. She subsequently married a shopkeeper in Edinburgh. Her husband died, and she immediately took to drinking. As her business left her she drank the harder: her furniture was pawned, and then her clothes - her all was converted to whisky. She was obliged to leave her house, and moving from one place to another, she ultimately settled in the wretched abode which she presently inhabits. What an abode! It is hardly six feet square, has no fireplace, and is lighted by a small skylight. The floor is full of holes, and the walls are creviced; and altogether it is such a place as an owl might inhabit for the sake of the mice and other prey which have domiciliary interest in the tenement. There is not a stick of furniture in this chamber; but in one of the corners we observe some stones arranged so as to enclose a space, which was filled with straw and covered with an old mat.³⁰

It is of no surprise then that, in Edinburgh, the cholera epidemics of the mid-nineteenth century (in 1848 and 1866) both started in the Old Town and resulted in more dead there than in any other part of the City. Indeed the hazards of living in these wynds and closes claimed many lives. On one Sunday night in November 1861 a tall tenement between Bailie Fyfe's Close and Paisley's Close, High Street, collapsed, killing thirty-five

²⁹ As one journalist commented at the time - from the toothless infant to the toothless old man, the population of the wynds drink whisky. Four out of every five prisoners were drunk.

³⁰ G. Bell (1850) pp. 7-8

people and injuring many more. And four years later, part of another tenement (Bishop's Land) at 129 High Street fell dislodging sixty-six people. The tenements were in an appalling state of delapidation. These 'lands' were in the proprietorship of " a strange fraternity of lairds whose business is to let out rooms".³¹ These were rapacious men, for they charged exorbitant rents and more often than not refused to do anything in the way of repairing the property. Crombie's land, situated in the middle of the West Port, for example, was, in the 1850s, in a shocking state. Notorious for the high incidence of cholera deaths, its cramped cells were let out for rents of around 1/6d a week. In 1866 it was found to be "one of the most degraded places in town".³² And yet the greater part of the tenement had been built within the last twenty years. The proprietor purchased the tenement, which was then in a ruinous state and used as a dog-kennel, for the sum of £38. He then added two storeys (most of which he built with his own hands) and ensured an annual income of nearly twice that for his troubles. Throughout the area landlords erected flimsy partitions and increased their own takings.

In one dwelling we had the curiosity to examine the material of which one of the partitions was composed and we found that it was simply made of canvas covered with paper, and so thin that a gentleman who accompanied us, while testing the firmness of the wall, inadvertently put his walking-stick through it!³³

³¹ J. Heiton (1860) p.247

³² Edinburgh Evening Courant, Saturday 10 November, 1866
The area to the west of the Grassmarket was the worst in Edinburgh in terms of infectious diseases. Hatter's Land, a tenement at the end of Burt's Close, was famous amongst the medical profession, for more fever and cholera had been taken to the Infirmary from that one building than from another other building of its size in the city.

³³ Edinburgh Evening Courant, Wednesday 26 December 1866

In another tenement, Crawford's Land in the Grassmarket, the roof was practically in ruin. The inhabitants had patched it in various places with paper towels and anything else that could be stuffed into the holes to keep out the wind and rain. In the bed recess, the roof, which was no more than a foot above the pillow, was in such bad condition that, notwithstanding patching and stuffing, the wind blew in strongly and rain often soaked the meagre bedding. No doubt the landlord did not worry as long as the rent of 1/- per week was paid regularly and in advance. In properties such as these families were having to find rents of between 1/- and 2/- a week for one room with no amenities whatsoever. These were shamefully high, for they meant that the poor were paying, in proportion, far more for their houses than any other section of the community.

The most prominent features of the built environment of the Tron parish, New North parish and St. John's parish in 1851 were the narrowness of the streets, the cramped living conditions, the filth and the stench.³⁴ The inhabitants were almost uniformly poor, scraping together what living they could. Few saw any prospect of bettering themselves. Here lived the widows, the ailing, the idle, the drunkards and the criminals of Edinburgh whom fortune had not treated kindly or who, through their own folly, had been forced to take up residence in the only district where social standards meant nothing. In short, the situation in the Old Town in 1851 was almost as grim as could be imagined. Nevertheless, the seeds of change had already been planted. As much as eleven years previously a City minister had managed to persuade a group

³⁴ Dr. Robert Foulis (1852) reported, "The air in these unwholesome places is very unsafe, and produced retching and vomiting in the officers who entered them in search of notorious offenders."

of public figures to form the Lodging House Association with the aim of providing 'model lodging houses' for the working classes and thus improving both their physical and spiritual well-being. The Association was not entirely philanthropic and the idea promoted, astutely, was that good homes could be provided for the working classes whilst still allowing ample remuneration for the proprietor. By 1851 only one major project had been completed; namely a model lodging house in the Westport which had been opened in 1844. Although another and larger project was planned,³⁵ progress was slow and support wanting. Thus the character and the condition of the High Street and its inhabitants remained largely unchanged over the next decade.

Other areas of the mid-century city:

The more that is known about the residential conditions of the inhabitants of Edinburgh in all districts, the better the picture of the wynds and closes of the Old Town can be understood. Here we can outline some of the contrasts which existed in 1851. The examination of other areas of the city will provide something against which the experiences of the High Street dwellers can be set, and the other areas can, in turn, be seen in their proper perspective in relation to the district we have already explored. Two areas have been selected for special mention.

1. The latest extension of the New Town:

One does not need to know much about the Georgian extension of Edinburgh to appreciate that the New Town and the Old Town were worlds apart, both

³⁵ This was the renovation of the notorious Hatter's Land and the creation of a 'Model Close'. Here respectable mechanics were to be accommodated in superior working-class houses with water, gas, water-closet and bleaching green. A grocer's shop (where no spirits were sold) and a commodious coffeehouse and reading room were also to be provided (with those who bought refreshments having free use of newspapers and a small library).

in architectural style and layout and in the life experiences of their inhabitants. To begin with many of the New Town houses had cost as much as £2,000 each to build - a very considerable sum at that time. In January 1851 the large tenement, 100 Princes Street, was being offered for sale at the upset price of £2,600.³⁶ And in the same year, an 'excellent and commodious family house' at 34 Great King Street was expected to fetch over £1,300³⁷, whilst a very superior dwelling at 31 Heriot Row had an upset price of £3,300.³⁸ The contrast with the High Street area is easily made. Whole tenements there were changing hands for well under £400. For example, a tenement of four storeys and attics, situated at the King's stables, Grassmarket and occupied by various tenants was, in 1851, being offered for sale at an upset price of £250.³⁹ In the mid-nineteenth century it was the New Town which housed the aristocrats, the lawyers, the doctors and the academics of the City. John Stuart Blackie, a scholar of considerable standing, held the Chair of Greek at the University around this time. In the summer of 1860 he changed his place of residence from Castle Street to Hill Street. His wife kept three maids to ensure the smooth running of the household and to wait upon their frequent guests, for "the spare rooms were seldom empty, and dinner-party followed dinner-party during the winter."⁴⁰

The dining-room was lined with books, for a large sum was yearly spent upon their acquisition, and they overflowed into corridors and bedrooms. This room served a double use, and was study as well as dining-room. It opened into Mrs. Blackie's domain, whose walls were panelled in ivory and gold, with Greek mottoes for its cornice, and with dark crimson hangings and couches - a long, low room, full of associations to all who knew it and its treasures.⁴¹

³⁶ see The Scotsman, Wednesday 15 January, 1851

³⁷ see The Scotsman, Wednesday 2 April, 1851

³⁸ see The Scotsman, Saturday 15 March, 1851

³⁹ Ibid. The annual rent collected from this tenement was £46.19/-

⁴⁰ A. M. Stoddart (1896) p.223

⁴¹ Ibid., p.222

Many of the New Town houses were beautifully furnished inside to match their elegant exteriors. The layout and design of these buildings alone guaranteed their high residential status which was, and is, threatened only by a takeover by business concerns. Even in the 1850s shops had appeared in Princes Street and many offices had been created in the ground levels of houses in the other New Town thoroughfares. The lawyer who combined both dwelling house and office in his property in Charlotte Square was certainly not an exception.⁴² But in the main this was still a residential area and a highly desirable one, with pleasure gardens laid out for the exclusive enjoyment of the inhabitants. Ladies went visiting in private coaches and nursery maids could be seen pushing perambulators or negotiating the cobbled roadways with their diminutive but well-dressed charges.

Yet the New Town was by no means completely homogeneous in social character.⁴³ Behind the elegance, the wealth and the spaciousness of the main streets lay the back alleyways. These were narrow and dark in comparison to the main thoroughfares. The buildings were inferior in quality and design, had fewer amenities, and housed the servants and the tradesmen whose livelihood depended upon the front-street dwellers. Some basements were also laid aside for the use of household staff. This mix of population, determined to a large extent by the original layout of the streets and their function as conceived by the architect (see, for example, Craig's plan, p.263 above), is an important feature

⁴² Details of the lawyer's family are given in "A Victorian Looks Back", The Weekly Scotsman, June-September 1939

⁴³ Gordon (1971) divides the housing stock of the city into five grades according to value. (Grade I being the residences of highest value.) He finds that, in 1855-6, 68.8% of the grade I residences in Edinburgh was accounted for by twenty-four of the main streets of the New Town, but that this part of Edinburgh also contained 19% of all grade IV dwellings and 6.7% of the grade V houses in the City.

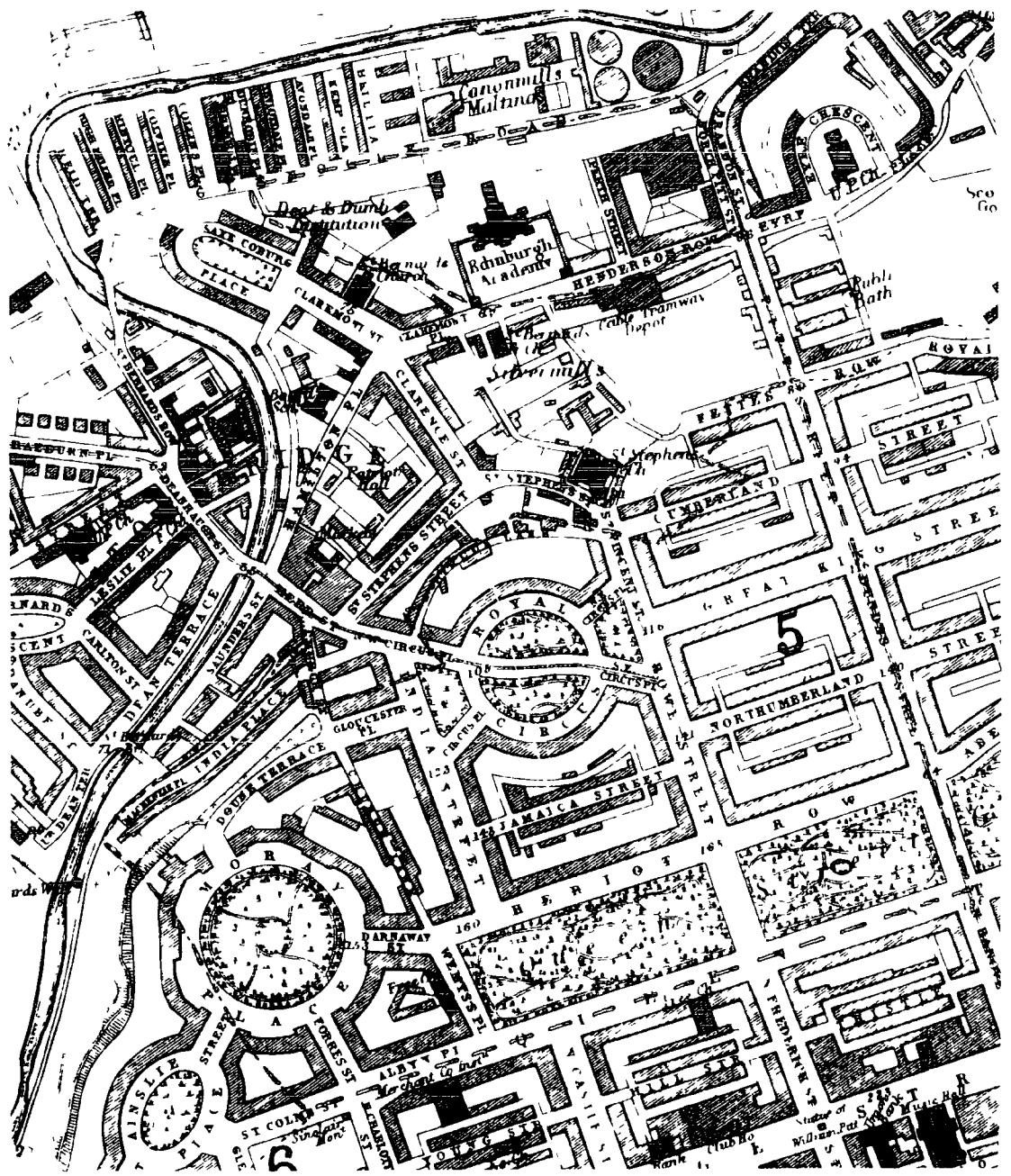
of the Edinburgh mosaic. The pattern set in the last half of the eighteenth century still endured in the 1850s. Further, the New Town had grown considerably since 1800. The Earl of Moray's estate had been built upon and residential accommodation stretched down the northfacing slope as far as the Water of Leith. Stockbridge was developed around the middle of the century. Here dwellinghouses were provided for artisans, and workshops appeared in some of the lanes. A few streets, such as St. James Street at the east end of the New Town and Jamaica Street behind Heriot Row, were already in a state reminiscent of the High Street area. Even the best of the New Town houses suffered from less than perfect drainage, a situation remedied only slowly. And as Youngson points out,

Most surprising of all, they were also liable to overcrowding, because sleeping accommodation was limited by the undue amount of space taken up by dining-rooms and drawing-rooms, and the servants, of course, were crowded together in odd rooms and closets, with the man-servant frequently huddled under the staircase.⁴⁴

For a few of the inhabitants, then, life in the New Town of Edinburgh in 1850 was not so much different from that of their compatriots in the 'herringbone city on the hill'.

The strange contrasts which existed within the New Town itself are evident in the census data of 1851. Nevertheless, the area as a whole was characterised by splendid architecture and occupied by wealthy people. Again the mid-century census is a useful source of information. The 59.62 acres of St. Stephens parish cover much of the land of the New Town which, in the 1850s, had most recently been built upon. There are three separate areas to this parish, as can be seen in Fig.13. Within the parish boundary, however, are some of the finest streets and houses

⁴⁴ A. J. Youngson (1966) p.271



0 200 yds

----- Parish boundary

Fig.13 ST. STEPHENS PARISH, EDINBURGH, 1891

St. Stephens Church stands on its own surrounded by the lands of the older St. Cuthberts parish.

in Edinburgh. Certain aggregate statistics computed from the census allow comparison to be made with the three High Street parishes previously examined. In 1851 there were 7,809 men, women and children living in St. Stephens parish and, if the parish had been divided up equally amongst them, they would have enjoyed some 36.95 sq.yards each. The density of population, therefore, was 131 persons per acre, or less than a quarter of the population density then to be found in the Tron parish. The very layout of the streets did much to ensure these relatively low densities, for the main thoroughfares at least were of considerable breadth. Further, the layout of the area south of St. Stephens Church included several ornamental gardens for the recreation of the residents. Since the parish as a whole is fairly extensive, a few selected examples will be quite sufficient in the present context to illustrate its character. The elegance of Moray Place is obvious even from the map extract of Fig.14 and it is not surprising that in 1851 there was not a family there who did not keep servants. In a 10% census sample, three of the selected households each had four servants living in, one (a husband and wife on their own) had one servant, and the family residing at No. 2 Moray Place kept seven servants. The heads of these households included an annuitant, two civil engineers and a master grocer. The story was much the same in Royal Circus where the majority of households kept three or four servants and where the census sample reveals a landed proprietor, a master confectioner and two Writers-to-the-Signet. Such streets were popular with the legal profession which was nowhere in Edinburgh better represented than in Heriot Row with its south facing houses overlooking Queen Street gardens (see Fig.15 below). Here, in 1851, lived the family of one of the judges of the Supreme Court of Reform as well as

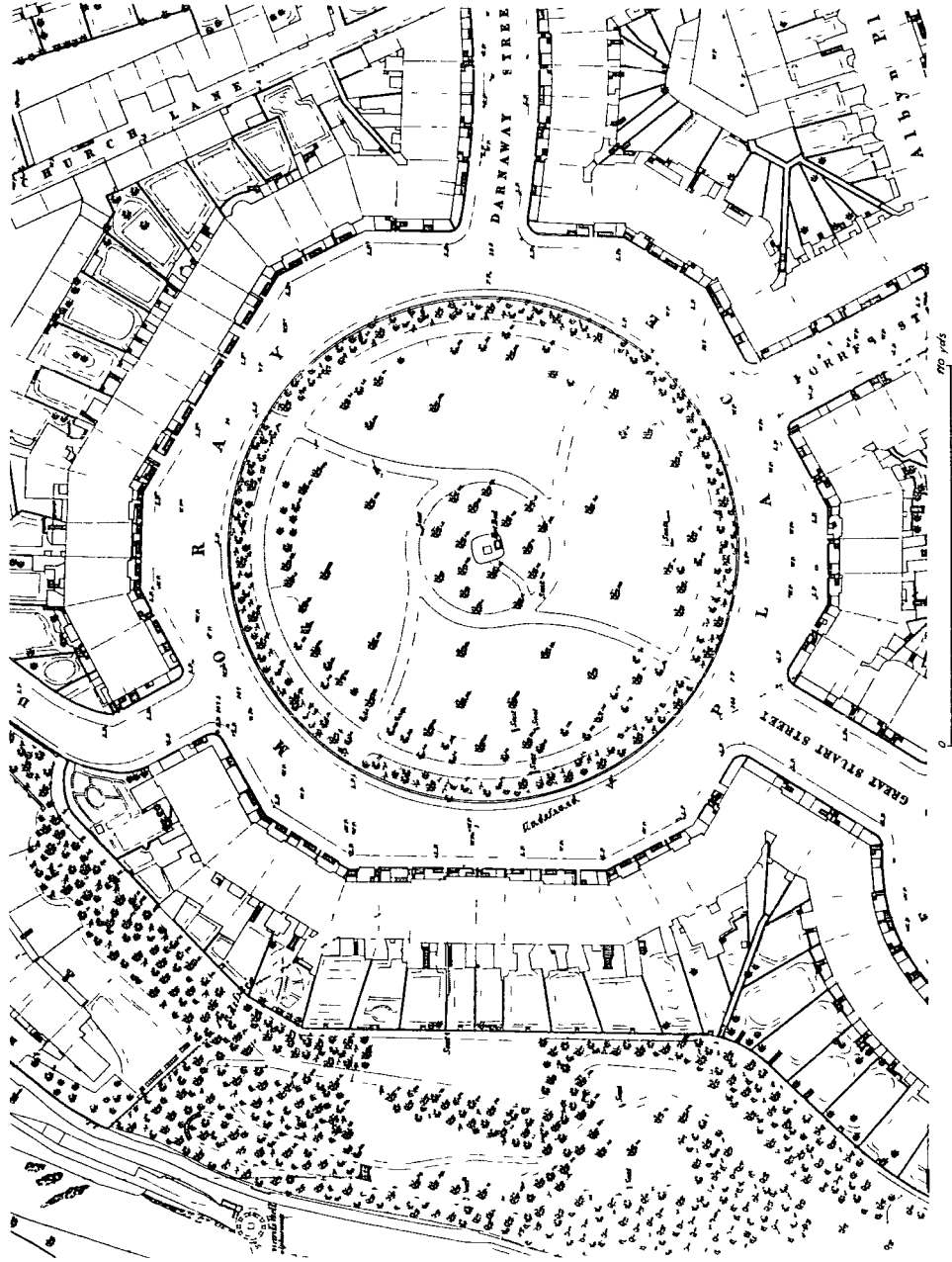


Fig.14 MORAY PLACE, ST. STEPHENS PARISH, 1853

Most of this grand circle lies in the parish of St. Stephens. The south-west portion, however, is in St. Cuthberts parish. (The boundary is marked 'undefined')

several Writers-to-the-Signet. The sample from the census also includes a medical doctor, a teacher of music, and an annuitant. In nearby Northumberland Street, two more advocates, an accountant and a landed proprietor were to be found, and in Great King Street another Writer-to-the-Signet, a solicitor, a property and fund holder, an accountant and a teacher of book-keeping were amongst the residents of 1851. Most of these were monied people who could afford to purchase such desirable accommodation and whose way of life was very far removed from the misery and wretchedness of the Old Town.

Hidden away behind the elegant facades were the back streets such as Jamaica Street which a century later was to be condemned as the worst slum in Europe. The position of Jamaica Street can be seen in Fig.15. In 1851 this street housed the 'better working classes'. The buildings, however, were inferior both in quality and design to those of the front streets and the population density was one of the highest in the New Town. In this street and in the lanes immediately behind it a total of 1,270 people resided, with the average density approaching 500 persons per acre. Twenty-one families were selected in the 10% sample and none of these kept servants. Indeed several were themselves members of the household staff of the lawyers, the doctors and the aristocrats, for they included five coachmen, a nurse and a house servant ('in a gentleman's family'). Of the other breadwinners all were in respectable employment, but only two (a master baker and a master shoemaker) could have been expected to earn more than a modest wage; the porters, the messenger and the journeyman cabinet-maker were the more typical residents of Jamaica Street. The rents of their houses varied from £10 to £20 per year and most of the property was rented rather than owner occupied. Some families had to

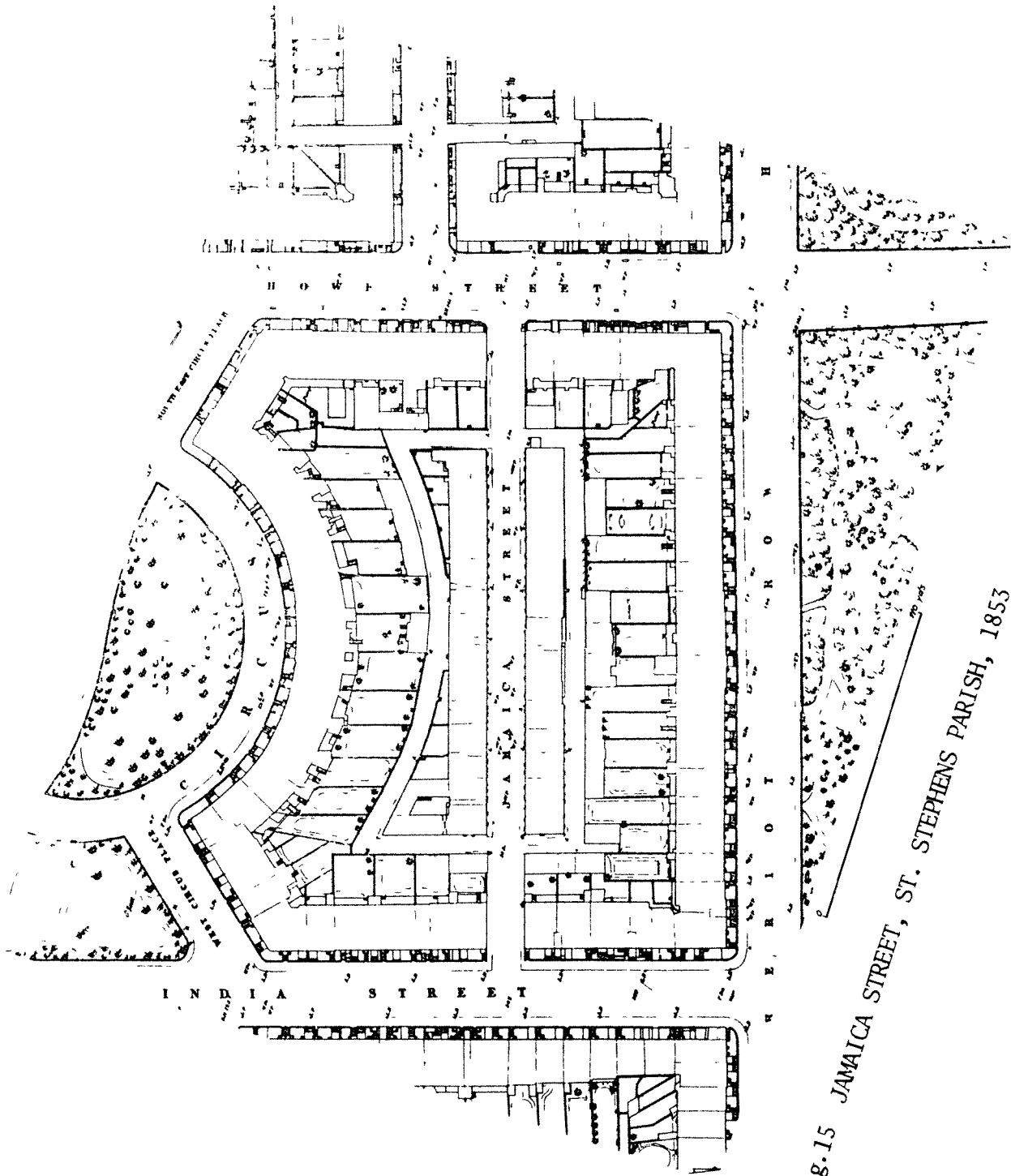


Fig. 15 JAMAICA STREET, ST. STEPHENS PARISH, 1853

Source: O.S. Plan, 1853

take lodgers in order to pay these rents, and this, combined with several households who had four or more children, meant a high area population density. According to the census of 1851, Jamaica Street contained forty-four flats in which resided 326 separate occupiers (ie. persons not of the same family). From these statistics one can gain some idea of just how densely populated this street was.

So the New Town of Edinburgh had its pockets of working class population. For their livelihood these people were heavily dependent upon their social superiors. They lived where the architect intended that they should live. Time had not yet changed his designs. Whatever the way in which fortune had led the majority to their present employment as servants of the upper classes, the location of their housing and the character of the area in which they lived were a direct result of such employment. For the employers themselves the New Town had many attractions, not least when compared with the old centre of the City. The amenities it offered, its gardens and its beautiful public rooms where guests could be entertained in grand style, and the reputation it had gained all over Europe as a superb architectural achievement made it the most desirable area of the City in which to reside.⁴⁵ There is, then, no historical puzzle in why the wealthy gentlemen of the Scottish capital purchased houses in the New Town. The historical narrative of this period and this area would involve giving as full an account as the evidence allows of how the inhabitants

⁴⁵ Its nearest rival was the small development of George Square about half a mile south of St. Giles Cathedral. Houses in this square were certainly much sought after in the mid-nineteenth century but, perhaps because of its size and the nature of the surrounding area, it lacked the prestige associated with the grander styles of streets like Moray Place and Royal Circus.

of 1851 arrived at their present residential locations. In itself it would be descriptive, for even the barest outline above provides some answer to the question why certain groups were in certain areas of the New Town around 1851. In this part of the continuing narrative there appear to be no puzzles and therefore no explanations to be given.

2. The newer industrial areas of Fountainbridge:

The area around Fountainbridge formed an important part of Edinburgh's urban pattern in the last half of the nineteenth century. In 1851 it was a new residential area. Building had just begun. The previous century had seen the enormous expansion of the City, and whilst this was especially noticeable to the north and south, by the 1820s the movement of the population began to make itself felt to the west, in Fountainbridge and later in the lands of Dalry. In 1851 Dalry House was within the City limits (as defined by the Reform Bill of 1832). Nevertheless, its situation was entirely rural and it was reckoned a country house. "The mansion stood in extensive and well-wooded grounds which extended southwards to Fountainbridge, from which there was an entrance."⁴⁶ The proximity of this estate to the City centre, however, made it an object of commercial exploitation and by the 1850s a considerable amount of land around its eastern extent had already been sold, most notably to the Edinburgh and Glasgow railway company. From the beginning of its development, the area around Fountainbridge was industrial in character. Fountainbridge itself was a long established routeway and the construction of Port Hamilton and Port Hopetoun (the

⁴⁶ J. Smith (1935) p.27

This is an interesting account of Dalry House, its lands and its owners in the later part of the nineteenth century.

terminii of the Union Canal⁴⁷) further encouraged many industrial concerns to locate here. These ports were surrounded by coal yards and timber yards, since coal and timber were both transported by barge. Also in this area were the Edinburgh Slaughter Houses, the Hopetoun Iron Foundry, the shunting yards, goods sheds and passenger station of the Caledonian Railway, the Royal Horse Bazaar, St. Cuthbert's Poor House and a heterogeneous collection of residential accommodation for the employees of these establishments. The inter-mix of housing and workshops of one kind or another can be clearly seen in Figs. 16 and 17 selected from the 1853 plan of Edinburgh. At this time there was little building west of Grove Street.

The Fountainbridge area was a distinctive unit within the urban structure of Edinburgh, an industrial area with industrial housing. In 1851 it marked the south-west extent of the built area of the City. Its houses had none of the elegance of the New Town houses. In design they resembled the tenements of the Old Town, but they were sturdily built and functional. As one journalist pointed out, "Fountainbridge is a street which does nothing to enhance the beauty of Edinburgh. But it has very formidable claims to utility."⁴⁸ Most of the working classes were here because this is where they had found employment, and ends were invariably made to meet. This was also an area with a good deal of work for women and girls. Its tenements were crowded, but poverty was not specially oppressive. With such mixed land use, overall population densities reveal little about the character of the

⁴⁷ The Union Canal, connecting Edinburgh with the more industrial west of Scotland, was opened in May 1822 at the cost of £400,000. It was a major factor in forwarding the prosperity of Fountainbridge and in bringing into being some of the more pleasant streets of the area, such as Gardners Crescent. In the mid-nineteenth century there was even a ship-building industry here.

⁴⁸ W. McPhail (1911) p.185
These articles originally appeared in the Edinburgh Evening News during the winter and spring of 1910-11.

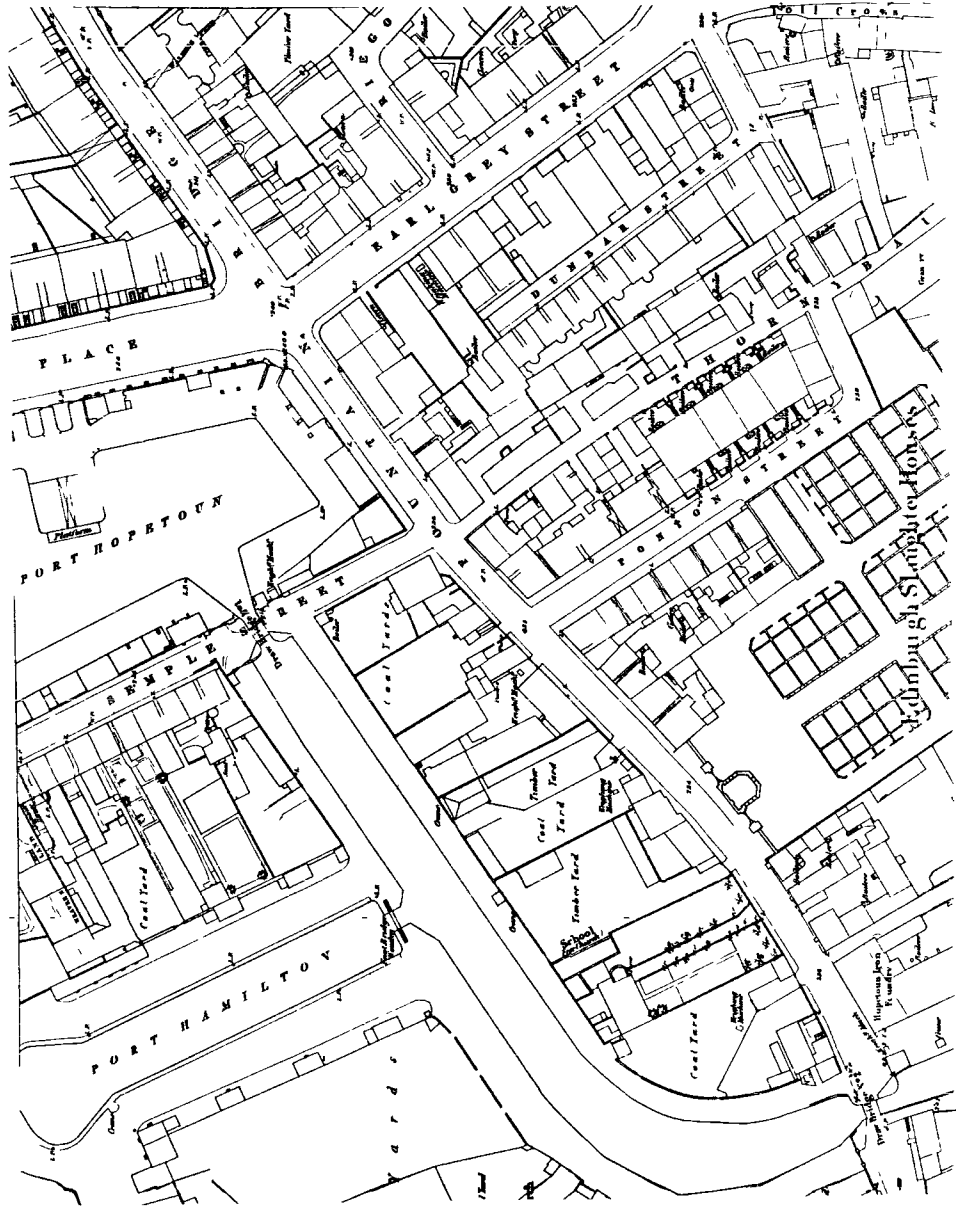


Fig.16 FOUNTAINBRIDGE, ST. CUTHBERTS PARISH, 1853

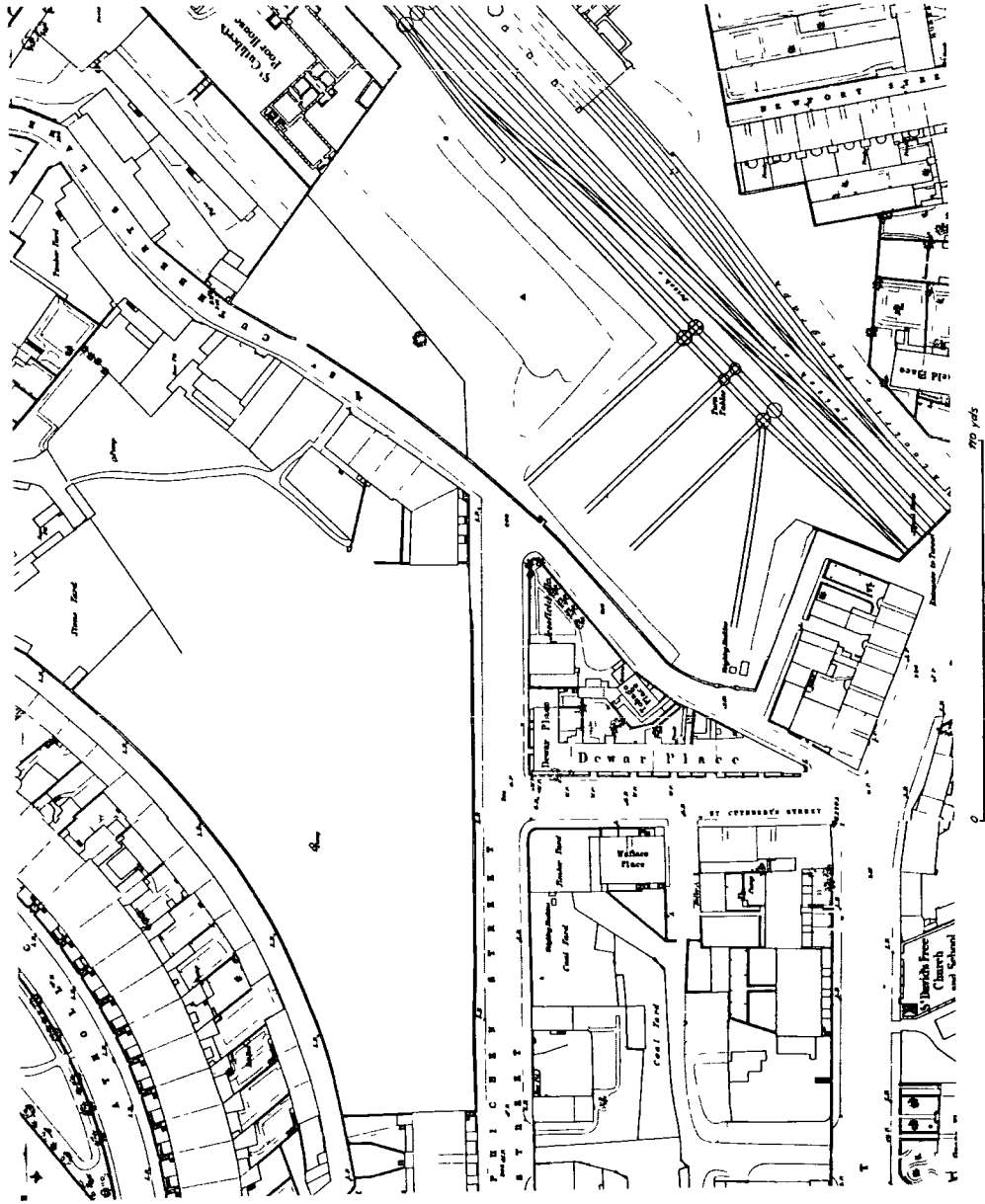


Fig. 17 THE NORTH SIDE OF MORRISON STREET, ST. CUTHBERTS PARISH, 1853

residential districts. The 1851 census returns, however, do give some indication of who lived there and of the spatial extent of their residential territory. If we take St. Cuthbert's parish enumeration district 50, for example, which is 'Castle Barns from St. Anthony Place to Newport Street, including that street and Robb's Court', we find a total population of 452 with 99 separate occupiers living in the 18 individual houses or tenement blocks. In this small residential enclave, then, the overall population density was 282 persons per acre, or about twice that of St. Stephens parish in the New Town and just over half that of the Tron Parish in the Old Town. In the neighbouring enumeration district, 51 ('from Newport Street to Dewar Place inclusive, comprehending therein Orchardfield Court, Ladyfield Place, Wellington Lane and Tobago Street'), were 26 individual houses inhabited by 356 persons. The census sample of these two districts shows that heads of household included a distillery labourer, a mason's labourer, a blacksmith, a coal weigher, a coal merchant's clerk, a joiner, a railway pointsman, a house servant, a journeyman plumber and a carter. Nearby in Anthony Street a coachman, a victual dealer and a boat builder were amongst those selected. Few of the residents in the area kept servants and of those in the sample who did none kept more than two. The contrast between this area and Rutland Square and Maitland Street just to the north can be appreciated even from a glance at these census returns, for in the latter were to be found, for example, a retired civil servant of the East India Company and a surgeon, who both had five servants under their roofs. And the Sherriff of Aberdeenshire resided at No.24 Rutland Square where he had seven servants living-in. In the mid-nineteenth century, the Fountainbridge area housed the more fortunate working classes, but none of these families had the fortunes of the gentlemen of Rutland Square

or Maitland Street or any other of the prominent New Town thoroughfares. Its residential streets and its industrial concerns grew up around the transport arteries, particularly the canal and the railway. The story of how it was established and expanded, of how the district became the happy hunting ground for a certain type of speculative builder, would be an important element in any account of the urban structure of the City of Edinburgh - another piece in the historical narrative.

II

METHODOLOGICAL IMPLICATIONS:

Enough has been said about Edinburgh in the 1850s to give some impression of the character of three separate districts, or parts of the urban pattern. To build up a picture of what it was like to live in an area such as the High Street at this time is to provide some answer to the more problematic of the two questions which prompted the methodological investigation of this thesis. The question itself is rendered redundant by the acquisition of historical knowledge, for it is not an historical question. It arose from historical ignorance rather than historical puzzlement. This distinction between historical puzzles and non-puzzles is an important one. What I wish to argue is that a familiarity with the social circumstances of a group of people will itself prompt certain questions and dispel others. 'Why' questions only properly arise in the context of a particular problem for, as Toulmin says, they are tied up with our prior pattern of expectation.⁴⁹ If we are ignorant of the residential situation and social characteristics of a certain group of

⁴⁹ The ways in which an historian can explain are discussed in Ch.7 above.

individuals we can have no prior expectations of where they might live. To ask "where?" and "why?", then, merely prompts a general historical investigation and is a demand for information rather than explanation. For example, we might ask if there were any Irish colonies in mid-nineteenth century Edinburgh and, if so, where they were located. We might even ask why the High Street area was apparently favoured by the Irish. To know something of the economic condition of the Irish immigrants and of the character of the Old Town tenements and streets, however, immediately makes the Irish presence there intelligible; to keep on asking "why?" would be senseless. There are other questions which could be asked, but once we know that this was the only area of the city where a few pennies could secure some semblance of accommodation for a week at a time and that this was as much as the penurious Irish could afford, the location of this group of people within the city is not at all puzzling. We might go on to ask more detailed questions about the concentration of this ethnic group in certain of the closes. The historical evidence may or may not allow us to answer these. Such 'why' questions, it should be noted, require a considerable background of historical knowledge before they can even be formulated.

Other questions could be asked about the character of the urban area. For example, "Why, by 1851, had the wynds and closes of the Old Town been reduced to such decadence?" Here the 'why' question is really an appeal for information, is, in other words, a 'how did it come about?' question. Such a question is necessarily asked from a position of ignorance for it is not prompted by prior expectations or puzzlement. It is answered directly by an historical account, an account of what happened in the past. The historical puzzle only arises during the attempt to provide such an account.

The historical puzzle:

There are two sorts of occurrence which may puzzle the historian - first, where a piece of evidence appears to be in conflict with the received account, and secondly, where an event in the past appears out of place in the general flow of events. The former is a puzzle about what actually happened (the new piece of evidence may cast some doubt on the accuracy of the received account), whereas in the latter case the evidence is not in dispute and the puzzle concerns the very occurrence of the event and the circumstances which surrounded it. (The puzzle here prompts the question "How?" or the question "Why?"⁵⁰) Both these puzzles require an explanation. In the first case it is the existence of certain evidence which must be explained. The problematic piece of evidence must either be shown to be other than genuine, or the received account must be appropriately amended to take account of the content of this new evidence. Scientists amend scientific theories in much the same way in the light of results of scientific experiments and observations. Where there is no received account there is, of course, nothing to be amended. In the case of Victorian Edinburgh, for example, there is no accepted account of the urban pattern. There are, of course, many histories of the City, but none which concentrates on the urban pattern per se. Nevertheless it is possible even in such a situation for one piece of evidence to be apparently in conflict with the rest. If we found, for example, a document which stated that some local philanthropist gave £50 per annum to each Irish family in the Old Town of Edinburgh, and at the same time other sources suggested that the Irish lived in extreme poverty, we should naturally be puzzled. Immediately we would question the authenticity of the document. Whatever the solution, however, the urban geographer researching into the urban patterns of Victorian Edinburgh

⁵⁰ It must be noted that it would not be sensible for the historian to ask this of all events.

would have to address himself to this problem before he could construct an historical narrative.

To ask how or why an event occurred is similar in one important respect to discovering what actually happened, for the question arises during the attempt to think historically about some unique concatenation of events. It is a question which arises naturally in the course of an individual's historical research. We might ask, "Why, during the 1850s and 1860s did the press of Edinburgh turn their attention to the condition of the Old Town tenements and their inhabitants?" Before we can formulate this question we must know that the Edinburgh press of the time did in fact publish articles about the conditions to be found in the wynds and closes. In other words, some historical knowledge is a prerequisite for asking the question. Nevertheless a puzzle about an accepted occurrence is logically distinct from a puzzle about the evidence even if the two are not infrequently associated.⁵¹ And it is the former which is methodologically the more problematic. Several points require to be made:

1. Not all questions which can be asked legitimately in the course of historical research are genuine puzzles. The question about the Edinburgh press, for example, is not a puzzle for there are no prior expectations which it disappoints. If on the other hand, we discovered that the popular press of many other cities had embarked upon such investigations a full twenty years before the Edinburgh publications, the very lateness of the latter in relation to the rest would be puzzling and require explanation.
2. When we are puzzled by an event which does not appear to fit in with

⁵¹ The historian, puzzled by why a certain event should have happened as or when it did, may begin to question whether indeed it happened at all and proceed to examine the reliability of the evidence. This in itself, however, is logically distinct from the original puzzle, for one necessarily questions the evidence whereas the other does not.

the general scheme of things this puzzlement can only be dispelled by a more detailed historical account. The puzzle arises because the occurrence of X is not entirely intelligible. If Lord Provost Drummond had resigned at the height of his success in local government thus endangering his cherished New Town plans, we should naturally ask why. The historical account which simply recorded this as a fact would not be complete for it would not have answered the 'why' question. A more detailed account which made clear Drummond's reasons for resigning would provide an explanation of the Provost's action, answer the historical question, and solve the historical puzzle. An historical puzzle, then, can arise when the historical account is incomplete.

3. An historical account may be incomplete in one or more of three ways. First, there may be no evidence as yet discovered which can render the problematic event entirely intelligible. Since the limits of the historical account are set by the existing evidence and those of the present historical account by the presently known evidence, the historian cannot be criticised for restricting the scope of his account accordingly. If, to continue the hypothetical example above, there is no existing evidence to show why Lord Provost Drummond resigned, then we are left with a genuine historical puzzle which nevertheless cannot, logically, be solved. The second way in which an account may be incomplete is when the historian fails to consider a relevant piece of known evidence. This is a straightforward error on the part of the researcher who can be justly criticised for his oversight. Thirdly, the incompleteness can be due to shortcomings in the way in which the historical account is constructed from the evidence. Part of the skill of the historian lies in assessing the relevance and importance of individual pieces of evidence. The detective provides a useful analogy here for, like him, the historian has

to piece together the evidence. Sometimes, the significance of a certain clue is not appreciated and, until it is, the reconstruction of what happened is, at the very least, not as detailed as it might be. Some historians, like some detectives, have a remarkable flare for spotting the missing piece. The more skilful the historian the fewer historical puzzles will be left unsolved after he has examined the evidence and, therefore, the more complete the historical account will be.

The historical account is an account of what happened in the past, but an account which is so arranged as to make the course of events intelligible and, where necessary, to dispel any puzzlement there might have been about the actions of a particular human agent or the occurrence of a particular event.

Puzzles in urban geography:

The geographer with an interest in urban places is no less an historian. The fundamental nature and limits of his task are the same as those for any subject within the discipline of history. The puzzles and problems of urban geography, then, must also arise in the course of research into a particular place at a particular time. The general question, "Why did these people live there in mid-nineteenth century Edinburgh?" was misconceived for it is not a genuine historical question. It could not be, since it could plausibly be asked only by those who are ignorant of Victorian Edinburgh's residential patterns. It may prompt historical enquiry, but historical knowledge reveals it to be a non-question. We can legitimately ask questions about the residential location of a specific group of citizens, but unless these are a direct appeal for information they cannot be posed at the start of an urban research project.

To have asked at the outset if there was any relationship between the distribution of social groups and the distribution of house types has certainly influenced the direction of the subsequent historical research. It is not a question, however, which requires an explanation and only once we have detailed knowledge of the character of an area and its inhabitants can we formulate the appropriate 'why' questions which do. The urban geographer must then provide an answer from his knowledge of the evidence and construct an account of the urban pattern which incorporates it.⁵² Only in this way and on these occasions can the urban geographer be said to provide an explanation of the urban pattern.

III

THE CHANGING FACE OF EDINBURGH:

Cities change over time; their residential patterns change, the locations of their industries change and fashions change. Between 1851 and 1891 there were many changes in Edinburgh which affected the City's built form and the character of its residential districts. Some areas were altered, others were annexed; industry and population expanded. The 1891 urban structure is to be understood in the light of these changes. The presence of a certain group of inhabitants in a particular

⁵² Inevitably varying degrees of difficulty will be experienced in such an enterprise. In some cases the evidence will be considerable, in others, sadly lacking. In many cases the intricacies of human motivation will complicate the geographer's task. Nevertheless, whatever the extent of the evidence the urban geographer must make what he can of it.

area becomes intelligible once we know what has gone before. The task of this section of Chapter 9, then, is to provide an outline account of the changing face of late Victorian Edinburgh and in so doing to demonstrate the way in which the residential pattern of 1891 is to be made intelligible. Once some detailed knowledge of Edinburgh's past is acquired certain questions will naturally suggest themselves; most of these will merely prompt the next step in the narrative, a few may present genuine puzzles. The nature of such questions and the way in which they arise is noteworthy.

A sign of the times:

On 6 April 1853, Henry Cockburn wrote:

For the first time since the creation of the world, a Lord Advocate has delivered a popular lecture to a popular audience.And a very good discourse it seems to have been, consisting of a comparison, or rather contrast, of the first with the last half of the current century, politics and religion excluded.

The lecturing of the upper ranks to the lower is entirely of modern, and indeed of very recent, growth, and is a very useful novelty.⁵³

No doubt several distinguished Edinburghians shook their heads in dismay at such an innovation for it marked a change in social relationships which, although gradual, was also remarkable. The upper ranks were, for the first time, disposed to impart some of their worldly knowledge to those of lower standing and, it seems, some of the lower ranks were well disposed to listen. Communication one with the other had begun. But, if the Lord Advocate considered his audience to be generally lacking in education, we may be sure that his own was not yet complete for, in 1853, the upper classes were still generally ignorant of the everyday lives led by ordinary working men. The increased interest, not only in the education of the working classes but also in their living and working

⁵³ H. Cockburn (1874), entry for 6 April 1853.

conditions, was characteristic of the late Victorian age. Further, the working classes themselves began to organise and effect improvements in their own conditions. The ambition of many an artisan was to own his own house. During the 1860s, the possibility of doing so became a real one.

On 31 December 1859 an article appeared in The Builder which pointed out,

House accommodation of all kinds is at present scarce and dear enough in Edinburgh, but none is, we believe, more in demand than such as is suited for the families of the superior class of workmen.⁵⁴

And the good sense of supplying this deficiency was the theme of the introduction to a lengthy report presented in the following year by a Committee of the Working-Classes of Edinburgh.⁵⁵ 'The most enlightened and practical statesman' of the day, Lord Palmerston, had only a few months before, in a public address, contended that the first and most important step to the social improvement of the working classes is to let them enjoy the comfort and happiness of a home. The Committee endorsing this view went on to declare,

The effect of even the smallest improvement in this direction is indeed marvellous; and it is now a well-understood principle in social economy, that unless our working classes possess comfortable habitations, it is in vain to endeavour to root out intemperance or extinguish crime.⁵⁶

Since the 1820s, many of the ancient tenements of the City had been pulled down to make way for the railways or to be replaced by manufactories, public works, warehouses and workshops. The population grew but the housing stock did not. Indeed those houses whose rents were within the means of the working class population were greatly decreased in

⁵⁴ see The Builder, 31 December 1859, Vol.XVII, p.861

⁵⁵ Committee of the Working-Classes of Edinburgh (1860)

⁵⁶ Ibid., p.3

in number, until the effect came to be "overcrowding of the most undeniable and demoralising description"⁵⁷. And as we have seen the evil became so intolerable that during the 1850s and 1860s, the whole press of Edinburgh directed its attention to the subject. This was an important step for the public interest was aroused, the condition of the poor became a popular topic of discussion and debate, and individual private citizens such as Dr. Robert Foulis and Mr. Peter Scott (both financed a model-close) no longer stood alone in expressing the opinion that something had to be done.

At the Masons' Hall, Lyon's Close, 215 High Street on 17 April 1861, a general meeting of masons resolved to form a Cooperative Building Company to be registered under the Limited Liability Company's Act. The capital was later fixed at £10,000 in £1 shares, but the amount actually subscribed at the first conference of the Edinburgh Cooperators was only £25. People were very cautious about the new venture and progress was slow. Nor did the Town Council take an active part in this project. Indeed one journalist, appealing for the alleviation of the miserable condition of the Edinburgh poor, roundly criticised the Council for their indolence in this respect, concluding,

It has been impossible for us not to see that Edinburgh suffers a good deal from the constitution of its municipal government. Much of the time of the Town Council is taken up with noisy discussions upon theological subjects: in the meantime the population is perishing around them.⁵⁸

Such criticism was not wholly justified, for several individual members of the Council were in the forefront of the effort to provide improved dwellings for the working classes. Francis Douglas Brown, for example,

⁵⁷ Ibid., p.12

⁵⁸ see The Builder, 22 June 1861, Vol XIX, p.422

(Lord Provost from 1859 to 1862) was one of an association of gentlemen who financed the Pilrig Model Buildings, near Leith Walk. This scheme, completed in the 1850s, was a considerable success with demand for the houses being at least six times greater than supply.

In the light of the early model building projects which had revealed such a demand for decent low rent housing it may seem surprising that the Edinburgh Cooperative Building Society did not receive more immediate support. To many of the High Street inhabitants the prospect of owning a home for little more per week than they had been paying in rent (probably for only one room) must have been attractive. But people had first to be persuaded to take up the shares and suitable building land had to be procured. Despite difficulties on both counts, the first street of co-operative dwellings, Reid Terrace in Stockbridge, was completed by 1853. This group of forty self-contained houses, each having "a good supply of water, a sink and soil-pipe, and a water-closet",⁵⁹ was sold at prices ranging from £130 to £150. A £5 deposit and a loan from the Property Investment companies meant that the working man could now become his own landlord. Repayment was over fourteen years at £13 per annum (for a £130 house). This was only £2 more than the annual rent of these properties. By April of that year all forty houses had been sold and the foundation stone laid for another street, parallel to the first, to be called Hugh Miller Place. In the next two years the Cooperative Building Company continued to be active and by October 1865 had completed

⁵⁹ Committee of the Working-Classes of Edinburgh (1860) p.29

In a sub-committee report these modern conveniences were said to be "the first and most indispensable feature of the houses" to be designed for working men.

159 houses in six streets valued at £34,710. This was an important step in the movement to provide good houses for the working classes.

In itself, however, the achievements of the Edinburgh Cooperators in the early 1860s did little to change the situation of the Edinburgh working man. Homes were provided for 159 families, but many thousands still suffered the miseries of the crumbling High Street tenements. Moreover the families who did take up residence in the cooperative houses were certainly not from the lowest orders for whom regular payments were impossible. Indeed those who bought such property must have been amongst the best paid artisans of the City. In 1860 the working man's weekly wage varied from around 15/- (for firemen, guards, porters and signalmen on the railway, general labourers, carters and other unskilled workers) to around 35/- (earned, for example, by skilled workers in heavy industry, printers and drivers on the railway). Clearly the labourer with an annual income of £38 (if he were not ill in the course of the year) could not afford to pay out £13 of that on a house alone.⁶⁰ Further, not only were there few good class artisans residing in the High Street area in mid-nineteenth century, but the proportion of bread-winners earning even 15/- per week regularly was also small. Most of those who were in employment earned between 12/- and 15/- per week. Others (eg. cobblers and cheap boot and shoe makers) received between 9/- and 14/- for a working week of eighty or ninety hours. The rest were able to obtain only a precarious and irregular subsistence. The majority, in all probability, knew nothing better and hoped for nothing better. It was not with these people in mind that the Edinburgh Cooperators had launched their venture. Unfortunately those whose finances allowed them to take advantage of the cooperative scheme were a very small minority, even of the working classes. A survey of local

⁶⁰ On top of this a perpetual ground rent had to be paid. In Reid Terrace this feu was 11/- per annum.

workforces was carried out by the Committee of the Working-Classes of Edinburgh to discover what was considered a fair annual rent. In their findings the Committee endorsed the plasterers' conclusion that, "The general impression is, that L.6 or so, including taxes, is enough for any working-man with average wages."⁶¹ The cheapest of the cooperative houses was more than double that. And by 1885 the Edinburgh Cooperative Building Society was no longer a purely working class organisation for, with a dividend of 15%, it was attracting money solely as a good investment proposition.

Nevertheless, those who appealed for money for such cooperative ventures did much to promote the more general cause of housing and sanitary improvements, for they argued, persuasively enough, that the enormous benefit to society as a whole of good cheap accommodation for the working man would require little or no sacrifice on the part of the investor. A Mr. George Lawson, for example, one of the leaders of the skilled Edinburgh artisans, wrote in 1865,

You will find a Cooperative Building Company a capital monetary investment; and it will bring you a return, I am persuaded, that is not to be put down in figures, or entered in bank books - sobriety, earnestness, self-help, mutual confidence, honesty. Having these to add to your deposits you need not fear. Success would be certain, and the return extraordinary.⁶²

Public opinion was swayed in favour of helping those who wished to help themselves. Not that such oratory alone could have been so efficacious but it was one of a whole host of influences which characterised this decade. Undoubtedly the publication of the 1861 census of Scotland aggregate statistics was another. That census revealed that nearly

⁶¹ Quoted in Committee of the Working-Classes (1860) p.38

⁶² see The League Journal, 11 March 1865, Glasgow

one million Scottish people (ie. nearly one third of the country's entire population) were living in so called houses either without any windows or of only one apartment. And Edinburgh did not have an exemplary record in this respect for nearly 40% of her total population in 1861 lived in one-roomed houses. 13,209 families (some 66,000 individuals) lived in single apartments, 1,530 of which had between six and fifteen occupants. And 121 families in the capital were found inhabiting single rooms each without a window. The infamy as well as the health risk which threatened a section of the community vital to the City's economy, and therefore prosperity, worried more than a few of Edinburgh's more prominent citizens.

The first effective official step towards improving the condition of the Edinburgh working classes was taken in 1862 when the Lindsay Act was passed. Under this Act Sir Henry Littlejohn was appointed first Medical Officer of Health and became a leading figure in the campaign for improved lighting, cleansing, drainage, paving and water supply, particularly for the Old Town.. In August 1865 he presented to the Town Council a Report on the Sanitary Condition of the City of Edinburgh.

The death-rate in the Old Town he stated as:

per 1,000 people	-	Abbey district	37.1
		Canongate	31.15
		Tron	34.46
		St. Giles	28.8
		Grassmarket	32.52

This (an average death-rate of 32.64), he contended, could be reduced to 25.0 per 1,000 people.⁶³ National and local concern grew and two years later, in 1867, the first Public Health (Scotland) Act was passed. It

⁶³ The average death-rate for the City as a whole three years before the Littlejohn Report (ie. when the Lindsay Act was passed) was 23.1 per thousand. And the death-rate for the New Town at this period was less than half that of the Old Town.

added to the provisions of the Lindsay Act by giving the Council powers to appoint sanitary inspectors, but it was also concerned with regulations for the provision of hospitals, the removal of infected persons for suitable treatment and the burial of the dead. In the same year the Edinburgh Improvement Bill received Royal assent. Under this Act an Improvement Trust was constituted to effect the redevelopment of central slum areas. Powers to purchase derelict property were given to the Town Council and plans were set in motion to widen, by strategic demolition, some of the existing High Street Wynds. On this and other improvements (the creation of Jeffrey Street and Chamber's Street, for example) some half a million sterling was subsequently expended. The effect of these improvements was to open up some of the closes to light and air and, by dislodging a certain number of the inhabitants, to reduce overall densities. The Sanitary Reform Movement had gathered momentum and over the next three decades a considerable body of legislation (culminating in the Housing the Working Classes Act of 1890) was brought into being in the attempt to make the cities of Scotland pleasant and healthy places to live in even for the lower classes. The powers and regulations embodied in acts such as the Artisans and Labourers Dwellings Improvement (Scotland) Act, 1875 or the Edinburgh Municipal Police Act of 1879, were designed to ensure certain minimum standards of sanitary provision. These restrictions were added to the City's bye-laws, and because of this much of the legislation was local in effect. In Edinburgh, the Dean of Guild Court was responsible for enforcing such regulations. The power and authority of this court was greatly increased during this period, for not only was machinery established whereby detailed plans of any intended building had first to be submitted for

approval but the 1879 Act increased the areal extent of its jurisdiction.⁶⁴ Much of the industrial housing in the Fountainbridge area, for example, was built at this time and its dreary uniformity can be partly accredited to the imposition of these minimum standards. A house design was adopted which combined economy with some attention to the City's bye-laws and to which the builders adhered with unimaginative persistence.⁶⁵

Other public health legislation followed the 1867 Act. In 1870, Edinburgh led the way by paying fees to medical men for the notification of cases of infectious disease, such notification eventually being made compulsory under an Act of 1889. The provision of hospitals was also improved. A new Infirmary was opened in October 1879 and six years later the Old Infirmary was taken over by the Municipality and occupied as a fever hospital. (Up until 1885 the accommodation set aside for the isolation and treatment of fever patients had been more or less makeshift.) The City had begun the battle against the epidemics which, throughout the century, had periodically swept through the packed tenements of the Old Town leaving many hundreds dead.⁶⁶ Indeed the whole body of legislation passed during the latter half of the nineteenth

⁶⁴ Previously, jurisdiction had not extended beyond the relatively restricted area of the old Royalty plus Canongate, West Port, Potterow and the Pleasance. In 1879 the Dean of Guild Court was given jurisdiction over the whole of the City area inside the parliamentary boundary.

⁶⁵ The industrial housing^{of} the Fountainbridge area continues the Scottish tradition of flatted tenements. A typical tenement floor, with four flats or houses sharing a central staircase, is illustrated in the Report of a Committee of the Working-Classes of Edinburgh (1860). This plan was one drawn up by the Committee as a recommendation of the type of housing badly needed in the City. Subsequently, it became something of a blueprint.

⁶⁶ The battle was far from won, however, and even with the addition of the new fever hospital accommodation for fever patients was limited. During the smallpox outbreak of the 1890s, a temporary hospital had to be erected in the Queens Park.

century was designed to solve the pressing problems of this part of the City - the decay of the buildings, the lack of the most elementary sanitary provisions and the terrible overcrowding. In short, it was a conscious, if protracted, attempt to change the face of Edinburgh.

Edinburgh around 1891:

We have reached a point in the account of Edinburgh's past where certain questions naturally present themselves. These are historical questions for they are prompted by a piece of historical research. In 1851 the Old Town of Edinburgh was in a terrible state. The next forty years saw a concerted effort on the part of several groups of citizens (the artisan Cooperators, the elected representatives and the associations of gentlemen) to improve the condition of the area itself and the lives of its inhabitants. We can now ask: Did this concern and activity indeed lead to the desired improvements? Did the face of Edinburgh change and, if so, in what way? These questions give direction to the continuing narrative which must in turn be so constructed as to both make the relevant events intelligible and satisfy the questioner.

Perhaps the most marked change in the Scottish capital between 1851 and 1891 was the vast increase in population and the expansion of the Parliamentary Burgh to accommodate the influx. During this time the City experienced a net immigration of nearly 100,000 persons, making the 1891 population 261,225. In 1883, 1885 and again ⁱⁿ 1890 the areal extent of the Burgh was increased by Act of Parliament. Edinburgh was growing rapidly. Transport improvements allowed easy commuting from the suburbs and thus fostered suburban growth. (The suburban railway had been opened in October 1884 at a cost of £225,000). Previously outlying villages, such as Morningside, now became incorporated in the built-up area of the City. Industrial expansion mirrored areal expansion. Some

of the traditional industries moved out of their cramped premises in the Old Town to modern manufactories in more peripheral locations. And the commercial invasion of certain streets in the New Town was well under way. The actual built form of the Old Town had been altered in places with the formation of several new streets to replace the narrow wynds of 1851. And whole new areas of housing and industry at Fountainbridge, Stockbridge and London Road added to the urban pattern. Indeed the 1880s could be characterised as a decade of growth and progress in Edinburgh. The telephone was introduced into the City in February 1880, the following year Princes Street and the North Bridge were lighted with electricity as an experiment initiated by the Town Council, St. Giles was restored as were the old Parliament House, the Argyle Tower and other buildings at the Castle, the gas companies' undertaking was purchased by the Town Council, the Braid Hills Park was formally opened to the public, and by the close of the decade the construction of the first Public Library in the City, on George IV Bridge, was proceeding apace. Some of these schemes were paid for through the munificence of private individuals, others from the public coffers. The intention in each case, however, was to enhance the City itself and the lives of its citizens.

Yet these changes meant more to some than to others; they affected various groups of inhabitants in different ways. Edinburgh in 1891 was still a city of contrasts. Houses in the New Town, such as the "large, superior and commodious self-contained house" at 27 Queen Street,⁶⁷ were being sold for upwards of £4,000 whilst for the same amount of money a substantial tenement forming nos. 20, 22, 24 and 26 Bread Street could

⁶⁷ This house, including the stable and coach house fronting the meuse lane behind, was advertised for sale in the Scotsman of Saturday 4 January 1890.

have been acquired and let to yield £428 per annum to the fortunate proprietor⁶⁸. In 1890, 33 Moray Place was offered for sale at the upset price of £5,500. This must have been amongst the most expensive family residences in the City. At the same time, 149 Morrison Street - a house more suited to those with relatively insubstantial resources - could have been purchased for around £250. Both were to be occupied as family residences, but the differences in the lives of the occupiers must have been considerable. If we slide further down the economic scale we find 11 houses on the second and third floors of a tenement in the Lawnmarket selling for around £575, the cost of one house being on average £52. Such property was let out to the poorest of Edinburgh's inhabitants, though the landlord could still expect an annual income of nearly £70 which is a good 12% return on the original investment. The City's housing stock displayed great variety both in the size, style and quality of the buildings themselves and in the price which the houses could fetch on the open market. It may reasonably be supposed that in the last decade of the century the contrast between the lives of the rich and the poor, the fortunate and the unfortunate, was still as marked as that between the stately New Town houses and the cramped tenement flats of the Old Town.

Not that the evidence might have led us to suppose otherwise. The local and national legislation of the latter half of the nineteenth century which was directed towards improving the lot of the working classes and the poorer strata of society was certainly great in volume. Its aims, however, were limited from the outset. It reflects the general concern of the time for the atrocious conditions in which the urban working classes were condemned to live, but was in no way an attempt to provide a radical alternative. Some of the provisions of this legislation

⁶⁸ This tenement was also offered for sale in the Scotsman of Saturday 4 January 1890. It consisted of two shops, sixteen houses, and stable accommodation. Included in the sale was 'sufficient ground to build a large hall'.

were revolutionary - the compulsory purchase powers given to the Edinburgh Town Council, for example, meant that for the first time the authorities could act directly to ensure the clearance of slum properties - most provisions were not. The specification of minimum standards in the City's bye-laws could never have been expected to change the face of Edinburgh overnight. But what effect did forty years of active reform and widespread concern have on the Scottish capital? A brief look at the 1891 census returns may give us a clue.

In 1851 the slum property of Edinburgh was, with few exceptions, within a stone's throw of the High Street. In 1891, the same was true. The few model close schemes had not changed the character of the district as a whole. More charitable missions had congregated in the Grassmarket, with nightly lodging houses providing basic shelter for those who had none. A large colony of Italians, a smaller Jewish community, and an increased number of 'wild Irish' had, through poverty and prejudice, also been condemned to this slough in the social and physical landscape of the City. In the High Street area there were still those who had reached the depths of human deprivation. Nevertheless, four decades with their accompanying legislation and expansion had not left the area untouched. The first major change which can be detected from the 1891 census is the decrease in population densities. (Fig.18 below can be compared with Fig.10, p.290 above.)

<u>PARISHES</u>	<u>TOTAL POPULATION</u>	<u>AREA OF PARISH</u> (in acres)	<u>DENSITY</u> (Persons per acre)(sq.yards per person)
TRON	1,394	6.62	211
NEW NORTH	1,952	10.58	185
ST.JOHN'S	1,987	7.32	271

Fig.18 POPULATION DENSITIES FOR THREE HIGH STREET PARISHES, 1891 ⁶⁹

⁶⁹ Computed from the original 1891 census returns. All figures are either to the nearest person or correct to two decimal places. Special difficulties were involved in drawing up a table which was directly comparable to Fig.10 for enumeration boundaries had been changed since 1851. See Appendix A.

It is notable that by this time the Tron parish was not as densely populated as that of St. John's. In the middle years of the century the Tron had been widely known as the most overcrowded parish in Edinburgh. The Lord Provost made reference to it in his speeches on City improvements:

The most densely-peopled district is that between Niddry Street and St. Mary's Wynd, chiefly belonging to the Tron Church parish; here the proportion of population to each acre is 646, which is alleged to be scarcely paralleled in any town in Europe.⁷⁰

This was the area in which sanitary reform was most needed and, perhaps because of this, the attention of the reformers was focused on it. Blackfriar's Wynd was widened to form Blackfriar's Street and several dilapidated tenements were demolished, displacing scores of people. The result was an absolute decline in the number of inhabitants of the parish. As the official enumerator pointed out in a note attached to his census returns, the east side of South Bridge contained, in 1891, only two stairs where persons resided, the rest all being business premises. Niddry Street was full of leather warehouses with one or two shops and, again, only two stairs occupied as dwelling houses. Halls Court, Cowgate, was nearly isolated with only one stair occupied, the rest having been closed by order of the authorities. Whilst, then, conditions for those who remained in the parish had changed little in half a century, fewer souls now suffered the hardships of these wynds and closes.

Nor were the small concentrations of Irish such a striking feature of the 1891 residential pattern. With the notable exception of the Grassmarket, it was by this time single tenements rather than whole closes or part of them which were given over to Irish occupants. The Irish were still amongst the very poorest of the area's inhabitants, however, frequently having large families and uncertain employment. A

⁷⁰ W.Chambers (1866) p.13. This address was given to the Architectural Institute of Scotland by the then Lord Provost of Edinburgh, William Chambers.

10% sample of the 1891 census returns for the three High Street parishes revealed no Irish-born heads of household in skilled employment. Most described themselves as labourers, but there were also several porters, a fish hawk, a gardener, a slipper maker, a wireworker and a washer-woman. Some admitted to being unemployed. Only one of these families occupied more than two windowed rooms; several lived in only one room. A single apartment at 17 Borthwick Close, New North Parish, for example, was occupied by a widow, her daughter and son-in-law, two other daughters and two grandchildren; and in St. John's Parish, at the West Bow, a labourer, his wife and five children lived in one room with a window. Overcrowding was still a tremendous problem and a hazard to health, but by 1891 most of the Irish-occupied 'houses' gave some access to both light and air. For the City as a whole, the 1891 census records 13,694 one-roomed dwelling houses with a total population of 33,378 individuals. (This was just over half the number recorded in the 1861 census). In thirty years the proportion of Edinburgh's population occupying single-apartment dwellings had been reduced from 40% to just under 13%.

We know that in the 1860s and 1870s there was a large and steady increase in the population of the Scottish capital, as in other Scottish cities.⁷¹ Yet during this time the population of the High Street area actually declined. Those who were dislodged by the improvement schemes must have taken up residence in other parts of the City and the next step in the account of late Victorian Edinburgh would be to answer the question, "Where did they move to?" By looking briefly at the other two districts of Edinburgh with which we have been concerned, an indication

⁷¹ The industrial cities of Glasgow and Dundee experienced an even more marked rise in their populations.

of how the account is to proceed can be given.

By 1891, St. Stephen's parish was almost completely built-up. Not that this represented a substantial change from forty years earlier, but with the creation of Perth Street the largest plot of land vacant in 1851 had been built upon. The extent of this development in the most northerly section of the parish can be seen in Fig.6 above. The population of the parish, however, decreased minimally over the four decades with the increase engendered by Perth Street being counter-balanced by a noticeable decrease in the main thoroughfare of Dundas Street/Pitt Street and in Heriot Row. (A few shops had replaced dwelling-houses in the former streets and office premises had started to appear in the latter). Might those who left the High Street area have chosen to take up residence in this New Town parish? Well, if they did we can be sure that they did not move into the fashionable Moray Place, Heriot Row or Royal Circus, unless by the back entrance as one of the servants. The Glasgow widow who lived on 'private means' in a twenty-four roomed residence in Moray Place certainly had not recently removed from a cramped Old Town tenement, although one of her three servants may have. St. Stephen's parish still contained some of the most desirable and substantial residences in the City and it was only ladies and gentlemen of means, writers-to-the-signet, general medical practitioners, dentists, retired leather merchants and the like who could afford to occupy them. The contrasts to be found within the parish, however, had ^{not} lessened in these forty years. Jamaica Street remained the most overcrowded street and its character was unchanged. The population of the street and its back lanes had fractionally decreased but the average density remained close to 500 persons per acre. Very few households enjoyed the comforts of even three rooms each with a window.

Many more lived in single apartments, though the majority of Jamaica Street's inhabitants occupied two-roomed 'flats' or shared houses. Not one of the families selected in the 10% census sample kept servants, though three kept lodgers. The heads of these households included coachmen, shoemakers, tailors, a woolknitter, a vanman and a shop porter. One or two of those displaced from the wynds and closes may have found a job and a house here, but Jamaica Street was already so crowded that it could not possibly have accommodated a larger influx. Nor are there any other areas of St. Stephen's parish which might have been a possible residential option to the unskilled working-man on an unskilled working-man's wage. If we want to know where the High Street population went we need to look not at the well-established Edinburgh New Town, but at a more rapidly expanding area and an industrial area which could provide both work and accommodation for the migrant.

The Fountainbridge district, in the 1870s, had experienced the full vigour of the general building boom. Heavy industry had become established here and the demand for labour and housing was then at its peak. In the years up to 1891 many working-men were persuaded of the advantages of living on the western outskirts of the City where reasonably secure and reasonably paid employment could be obtained. Of those who moved in, a good proportion came from the wynds and closes of the Old Town. This was an expanding area of the City, but the expansion did not change the character of the area as a whole. Monotonous rows of working class tenements were to be found cheek by jowl with industrial concerns, warehouses and workshops. Accommodation was still cramped but most of the inhabitants had access to the basic amenities (water-closet, soil-pipe and running water.) It was also an area in which the unskilled could obtain work. Coachmen, railway workers (guards, porters and clerks), general labourers, lorrymen, tailors, coal carters, wood

carters and shoemakers were all still to be found in this area.⁷² In addition, the 1891 census reveals a number of brewery workers and rubber workers employed by two industries which had established themselves in the district since 1851 and both of which had large workforces. Throughout Fountainbridge there were very few households whose living accommodation was greater than three rooms; the norm was two, but the sample recorded three concentrations of single-apartment dwellings (in Freer Street, St. Cuthberts Lane and Morrison Street) as well as other one-roomed 'houses' scattered throughout the area. Fountainbridge had remained a distinctive piece in the urban pattern, though by 1891 similar districts had grown up in other parts of the extended City. The urban mosaic was becoming steadily more complex as other pieces were being added to the pattern.

The historical account which has been outlined above tells us about Edinburgh. It deals with the specific and the unique, not the universal. The account itself would provide answers to the many questions which arise as the research progresses and which give direction to the efforts of the researcher. Inevitably some questions will remain unanswered for, even if the evidence is not lacking, the answer may lie outside the period chosen for study. History is continuous and one period in the past leads into another. Nevertheless, to describe the way things were (the character of the residential areas

⁷² These occupations are taken from the 10% sample of the 1891 census and are remarkably similar to those selected in the sample of the 1851 returns.

and the economic and social condition of the inhabitants), the ways in which they changed, and how these changes came about (through the actions of individuals, new legislation or social 'movements') is to provide an understanding of the urban structure of Edinburgh at that time. It is in this way, and only in this way, that the residential patterning of the late Victorian capital of Scotland is to be rendered intelligible.

So have we answered the question which gave impetus to the historical research, the question why the inhabitants of Edinburgh lived where they lived in the later part of the nineteenth century? It must be admitted that here we failed, but that the failure lies not in the absence of an answer but in the uncritical acceptance of the question in the first place. The information we have gleaned about Edinburgh and its inhabitants may have prompted several questions, but we are not left wondering why on earth these people lived where they did. There is no such general puzzle. The question with which we started was misconceived, a non-question. The presence of the Irish in the closes of the High Street or the lawyers in Heriot Row is perfectly-intelligible and can be seen to be neither necessary nor accidental. We can understand these residential choices without seeing them as part of an overall design or as some inexplicable accident. We are left with no feeling of puzzlement; there is no problem to be solved.

In the exploration of the changing structure of late Victorian Edinburgh there are, indeed, few genuine historical puzzles in need of resolution. To be sure, the influences upon the developments and changes within the urban area were many and varied but none appear as extraordinary. Nor was there one influential person whose contribution

to moulding the City's form was so great as to require particular and careful consideration. Much did happen in and to Edinburgh in the late nineteenth century. These were the years of the great Improvement Schemes throughout Britain. As Briggs says, 'improvement' is a word "which can fittingly be applied as a label to a whole age".⁷³ The spirit of improvement also visited Edinburgh and new standards were introduced which took into consideration both private comfort and public accommodation. The energies and time of many citizens were directed towards improving Edinburgh and we have seen, briefly, the effect of these efforts in the High Street area. In this we touched on a genuine historical puzzle, although the evidence relevant to its solution lies outside the chosen period. Despite four decades of active reform which had changed the face of several Old Town closes, the overcrowded areas of the New Town remained untouched. This fact is especially surprising when one considers that it was in the New Town that most of the Town Councillors themselves resided, and their apparent blindness to overcrowded streets (such as Jamaica Street) within a stone's throw of their own homes certainly calls for explanation. The oversight is unexpected because we know that the character of Jamaica Street, for example, was similar to that of parts of the Old Town, and there is no immediately apparent reason why one should have been overlooked and not the other. Therefore, being unexpected given what we know of Edinburgh at this time, this is an historical puzzle. If we were to continue the historical narrative beyond 1891 it would provide a possible theme with research directed towards solving the puzzle. It may be that we could only provide a partial explanation, for the evidence may be fragmentary and suggestive rather than conclusive. Indeed the story of Jamaica Street as a forgotten street continues until its demolition

⁷³ A. Briggs (1968) p.226

in the 1960s and documents written at that time give us an insight into why it had remained so long in an overcrowded state. Such an historical puzzle presents a special challenge to the urban geographer, but there are far fewer genuine puzzles, or problems, than is commonly supposed.

If evidence from the twentieth century can help the urban geographer in his task of providing an historical account of nineteenth century residential patterns, then the opposite is also true. The present day form of the city has inherited much from the Victorian age. The tremendous increase in the population of the British Isles between 1851 and 1891 was accompanied by the creation of new suburbs in all the major cities of the country and it was these developments which set the residential patterns of the 1900s. The legacy of the late nineteenth century is important to the understanding of the urban structure of today. And it is the details, the uniqueness, of site and situation which must be explored if we are to understand the urban patterns of a particular city. As Dyos and Wolff put it,

The configuration of the ground, the prevailing wind, the means of locomotion, the location of the gas-works, the precise whereabouts of cemeteries, golf-courses, schools, hospitals, parks, sewage works, factories, railway sidings, and shopping centres - all amenities whose distribution tended to be settled at an early stage of urban growth - are ineradicable influences on subsequent patterns of urban life.⁷⁴

Edinburgh was no exception. The character of each of the three City areas examined in this chapter has changed since 1891, but the changes themselves are perfectly intelligible in the light of what we know about Edinburgh's nineteenth century. The Fountainbridge area is still industrial with several larger industries having expanded and others

⁷⁴ H. J. Dyos and M. Wolff (1973) p.894

having disappeared since the closure of the Union canal. The tenement flats are showing the signs of a century of constant use and less than thorough maintenance. Most are occupied by the families of unskilled and semi-skilled working men. Fig.18 shows part of Murdoch Terrace today. This street, at the western end of Fountainbridge, is typical of the area as a whole. Some streets nearer the City centre have already been demolished. Most of the buildings in the parish of St. Stephens, as might have been expected, reveal no such signs of decay. The changes there have rather been connected with proximity to the commercial and business centre of the capital. Shops, offices and hotels have taken over many of the stately houses, although this is still an exclusive residential area. A glance at the part of Royal Circus pictured in Fig.19 gives some idea of the enduring character and grandeur of these streets. Lastly, and possibly the most changed of the three city areas, the High Street today contains forgotten slums, a tremendous variety (both in kind and quality) of commercial concerns and a number of buildings the architectural merit of which has only recently been recognised and which, having been carefully renovated, now appear in the City guide-books. A few of the latter which have not been converted to museums or monuments are still occupied as dwelling houses, but as period pieces with twentieth century amenities, these have once again become fashionable. As for the rest of the narrow closes, the decay and the poverty remain. The population has greatly declined and continues to decline as tenements become unsafe and have to be pulled down. Some closes are thus accidentally widened, but piles of rubble add to ^{the} general appearance of delapidation, (see Fig.20). Disadvantaged by physical layout, streets such as the Cowgate are now being given over to car parks, warehousing and the like.



Fig.18 MURDOCH TERRACE, FOUNTAINBRIDGE, in the 1970s



Fig.19 ROYAL CIRCUS, ST. STEPHENS PARISH, in the 1970s

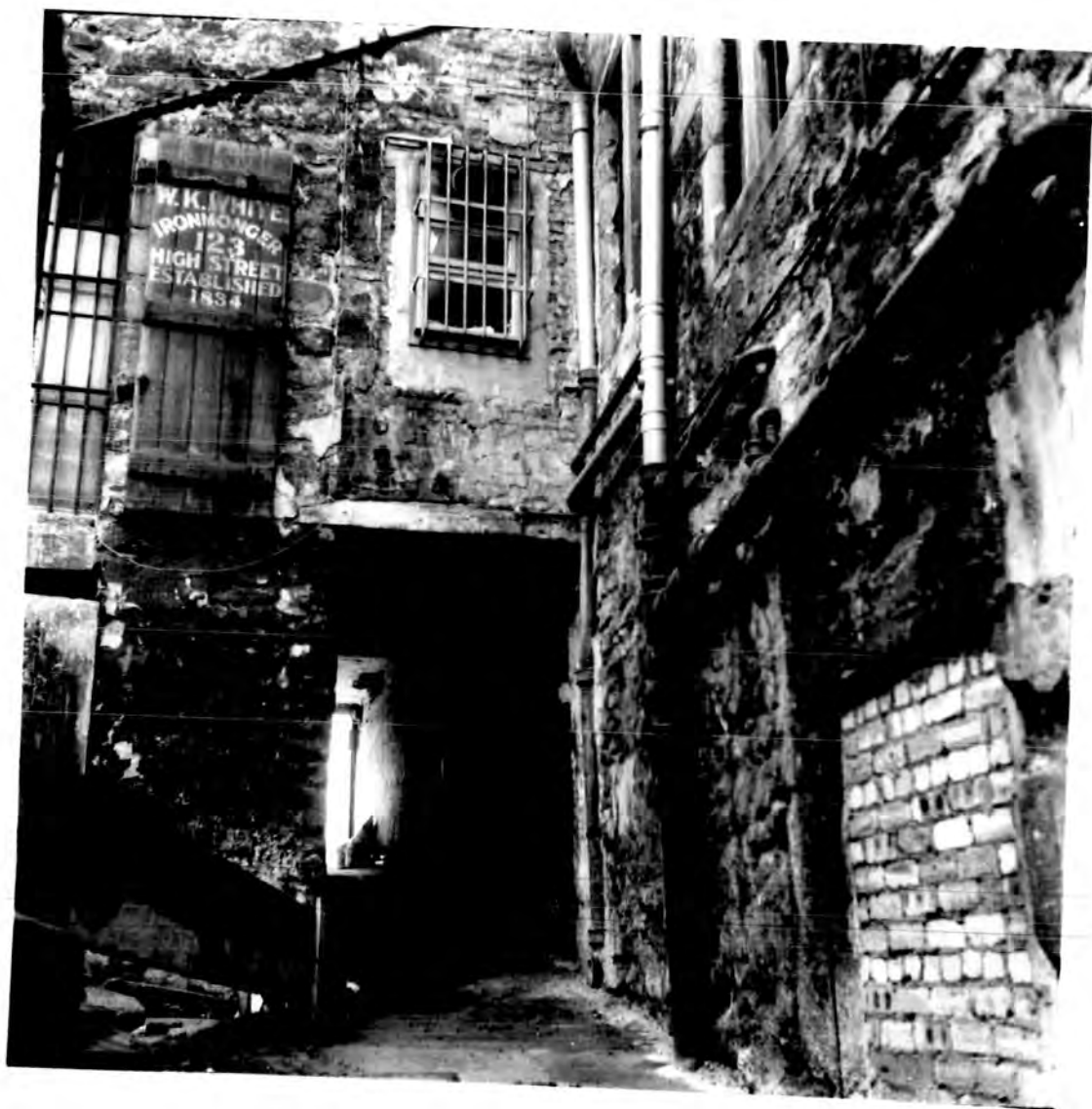


Fig.20 BISHOPS CLOSE, HIGH STREET, in the 1970s



Fig.21 THE COWGATE and GEORGE IV BRIDGE in the 1970s

Fig.21 shows the split-level roads common in central Edinburgh. Most of the bridges were built in the late eighteenth and early nineteenth centuries and had an important effect on the subsequent development of the lower level streets which they overshadowed.

In all this there is nothing astonishing. These changes in the Scottish capital are neither unintelligible nor problematic and, although more detailed information might be sought, the facts themselves do not demand explanation for there is nothing unexpected about them. Nor does the character of these three areas of Edinburgh today appear as an inevitable result of their past histories. In each case things could have been otherwise. The Edinburgh Town Council might have kept to its original intention of making Dr. Littlejohn's appointment as first Medical Officer of Health a temporary one, but it did not. More by Council inaction than positive policy Dr. Littlejohn in fact held this appointment for forty-six years and did much during that time to further the cause of sanitary reform. Neither predetermined nor completely out of the blue, the flow of events forms the subject of a continuous narrative which makes the events themselves - the past of the City of Edinburgh - understandable. This is urban geography.

In part 3 of the thesis we have examined some of the historical material or present evidence relevant to the events of the latter half of the nineteenth century in the capital of Scotland. The purpose of so doing was to provide an illustration of the way in which research is directed at each stage by the historical narrative itself, with historical problems or puzzles arising from historical thinking rather than giving rise to such thinking. The above account of Edinburgh is built upon what Collingwood calls the 'dry bones' of history which, arranged in a certain way, provide the framework or outline for the historical narrative. It is this which gives content and context to the pursuit of the methodological arguments. Dry bones may become history according to Collingwood, "when someone is able to clothe them with the flesh and blood of a thought which is both his own and theirs"¹. It is only the attention to detail and, in particular, the elucidation of the meaningfulness of actions and events in the human world which involves the disciplined thinking necessary to produce an historical narrative. In the account presented in chapter 9 three areas of Edinburgh were considered, and some idea of what it was like to live in each of them given. This was done by ordering the existing evidence to bring out the contrast which existed in the built form, the more general environment, and the social characteristics and life-styles of the inhabitants. Only when this is done can the meaningful act of moving into (or out of) one of these areas be made completely intelligible. The account is not an account of all the available evidence and is not therefore a complete historical narrative. Its purpose is not so much to relate what happened as to illustrate the kinds of evidence which the urban geographer would have to take into consideration and what is to be made of it. Many different types of evidence were considered. The census statistics of 1851 and 1891 provided

¹ R.G. Collingwood (1970) p.305

valuable numerical data and allowed both the calculation of area densities and the detection of changes in the areal distribution of the population. The original census returns give information on the occupation and place of birth of individuals' which allows the identification of social groups and social areas. The detailed street plans are another source of evidence which can be used to identify areas within the City, and information about the layout of streets, houses and gardens adds to the description and appreciation of the character of these areas. In 1851 photography was still in its infancy; nevertheless the photographers of Edinburgh left a valuable record of houses and streets throughout the City. This provides important visual evidence for the account of what these streets were like. The delapidation of Cardinal Beaton's palace, for example, is evident at a glance. The technical advances which made indoor photography possible had not then been achieved. Thus for evidence of conditions inside the houses it is necessary to turn to other sources. The newspaper accounts of the life-styles and living conditions of the high Street dwellers were published throughout the period and provided another store of information for the historical sketch of chapter 9. Other memoirs provide details of life in the New Town. All this sort of evidence can be used to determine the nature or character of the areas of Edinburgh, and to ascertain how they changed over four decades. A complete narrative must also account for changes in the built form, and to do this other evidence is needed. Deeds of ownership, feuing contracts, details of buying and selling prices, 'model close' and other speculative building schemes, the actions and regulations of the Dean of Guild Court, government legislation and the actions of the Town Council, were all briefly considered above. A full historical account would require a more lengthy consideration of such evidence, for it provides information about the meaningful actions of individuals or groups which have an effect on the built spatial structure of the city. It is such actions alongside and in their relation to the changing residential locations of the inhabitants which must be the central concerns of the urban geographer. To note the changes and to describe the areas is to provide some account of why, and to where, people

moved at that particular time. And to understand this is to understand the changes in the spatial patterning of social areas within the City.

It is from the evidence that the changes of importance to the urban geographer can be inferred, and it is the continuing historical narrative which can be said to explain the changes. The narrative itself, although it must be detailed enough to present some explanation of the events it covers, can be more or less detailed. We could, for example, have traced the residential shifts of particular individuals. Instead of answering the question "Where did those who left the High Street area go?" in a general manner, we could have attempted to trace the movements of particular people by using the census returns. This is not an easy task, but it is a possible one.² It would result in a more detailed account of intra-urban migrations. As Mandlebaum points out, historical accounts can be presented at many different scales. Like the cartographer and the geographical territory he represents on a map, "...the series of events with which the historian deals is an infinitely dense series"³, and the scale of the account will determine the amount and nature of the detail to be included. Historical accounts at different scales but of the same series of events will be related to each other as maps of the same area at different scales are related. All can be seen as contributions to a whole - the narrative of what happened in the past constructed from present evidence.

Historians must be selective for, being mortal, they can only hope to contribute a small piece to the whole. In order to choose what to study, the individual researcher must have some criterion on which to base his choice.

² E.A.Wrigley, ed. (1973) contains detailed discussions of many of the problems encountered when attempting to trace family connections or identify individuals in the Victorian census returns.

³ M.Mandlebaum (1977) p.15

The criteria themselves will not, however, be distinctively or uniquely historical. Any subject matter that may be treated historically will allow the exercise of historical thought. The thought itself will not be any more or less historical whether the subject be the Napoleonic Wars or a boundary feud over a garden wall.⁴ The former is certainly more important than the latter but this importance is one we ascribe to the events themselves independently of how they are to be studied. The events of history are the events of the history of mankind, and it is by viewing them thus that we can judge the import or significance of individual happenings. To be sure, there will always be room for dispute. Not all events will be obviously trivial or obviously important. Further, some apparently trivial event may be part of a series of events itself of great significance. Only after an event can be viewed in its full context and alongside its consequences or repercussions can its importance be properly judged. This is one of several reasons for supposing that history must be of the past rather than of the present, for, if the historian is inclined to the study of the important rather than of the trivial, enough time must have elapsed since the event for him to judge its proper significance.

A distinctive feature of the historical mode of understanding is that the knowledge acquired is inferred from the presently existing evidence. Thus history is different from first-hand accounts such as are found in newspapers. These may be used by historians as evidence but must be placed with the other evidence. The worth of any individual account can only be judged against this other evidence which may or may not corroborate it. Writing from the memory of events could never be history not because the memory is frequently unreliable, but because this could not be knowledge inferred from the evidence. An historical account is an account of events which took place in the past and it is often said that there must, therefore,

⁴ It would be possible to understand the location or pattern of chairs in a room by thinking historically and constructing an account from the present evidence of how they came to be where they are. The account, however, would not be generally interesting or important.

be a temporal distance between the scholar and his subject, that "the observer and the observed are never contemporaneous in historical geography".⁵ Certainly enough time must have elapsed since the event for there to be evidence of the event available to the researcher. This is a minimal requirement. Undoubtedly the more evidence there is the more complete the historical account will be. Indeed, it is frequently the lack of evidence that makes the study of the more distant past impossible. The study of the most recent past can, however, be equally problematic. Where the historian himself remembers the events in question he must guard against the memories prejudicing the inferences he draws from the evidence. The memory of what happened must be treated only as another piece of evidence, and not be taken to be, a priori, any more reliable than the first-hand accounts of others.⁶ This said, as long as the minimal requirement is fulfilled historical knowledge of contemporary events (i.e. events within living memory) is possible. The advantages of greater temporal distance would be absent, but if the account exhibits historical thinking then it is a piece of history.

In urban geography the object of study is the pattern or distribution of certain urban phenomena. Cities are created by human agents and their distributions result from meaningful human action. To understand the object the geographer will require to explore such actions, but it is always the distribution and not the actions themselves which is his primary concern. Consequently, the geographer starts with a state of affairs (a distribution) and then examines the events of which it is the outcome. There can be no geographical study before the outcome is known, for the object of study must be chosen before the study can begin. The historical account must then

⁵ D.W. Moodie and J.C. Lehr (1976) p.133

⁶ It is only in this way that the historian can achieve the objectivity necessary to historical understanding. Personal involvement in the events being studied makes the task of ensuring objectivity that much more difficult.

render this state of affairs (the chosen object of study) intelligible as the outcome of a certain set of past events. The changing nature of this object is a potential source of methodological confusion.

In any academic study which adds to human knowledge by increasing our understanding and hence our ability to explain, there must necessarily be some object of study to be understood. In the third part of this thesis we took Edinburgh as the object of study, and it is evident that Edinburgh, whilst remaining Edinburgh, also changed over time. Between 1851 and 1891 new streets were built, old tenements were demolished, and patterns of social occupation changed. Our knowledge of these changes comes from examining the same areas of the city at different times or dates. This underlines an important aspect of the notion of change, namely that it requires the comparison of two states of affairs which comprise the same object at two different times. Thus change, although dynamic in the sense that it involves the passing of time, logically entails the comparison of two static pictures. This is the only way that change can be apprehended. If we find Johnny's bicycle in the kitchen we can only know that its location has changed if we know that it was not there when we looked before, or if we know that it was somewhere else. To ask questions about location is, and must be, to ask questions about a state of affairs at a particular point in time, and this does not imply a static view of something which is in reality dynamic. In writing history and therefore urban geography, it is the selection of static pictures for comparison that is important, for some comparisons will lead only to the detection of trivial changes. Inevitably also, as appreciated by Darby, "... the different elements that make up the landscape do not change at the same rate nor at the same time"⁷. Many changes will continue after the period chosen for study. Urban centres are never complete but rather constantly changing in many different ways.⁸ Much

⁷ H.C.Darby (1953) pp.5-6

⁸ Darby suggests isolating individual elements of the landscape for study as 'vertical themes'. Even this does not avoid the comparison of static cross-sections, albeit highly selective ones.

of the debate between those who advocate the dynamic study of change and those who favour a 'series-of-static-pictures' approach has arisen, it seems, because of a mistaken notion of the nature of such changes, ie. of the nature of historical processes⁹. When Darby entreats us "... not to study a static picture, but a process that is continuing and, seemingly, never ending"¹⁰, he assumes that we do indeed have an option in the matter. But, as Baker, Hamshere and Langton point out, the distinction between the static and the dynamic is an artificial one.¹¹ As soon as we embark on a study of a particular landscape pattern (ie. as soon as we attempt to gain a knowledge and understanding of it) we are involved in examining the way in which it came into being (ie. in looking at change over time). Conversely, we cannot study 'change' in a void, but only particular changes inferred from the comparison of the same pattern at two different dates. The only processes of change in urban geography are the actual changes as and when they occurred and in their relations one to another.

The description of a pattern or distribution at one point in time is not a piece of history, for nothing is understood. "A single cross-section does not enable us to understand the course of change"¹². It is, however, a necessary part of any subsequent account of that distribution. To examine the census returns for 1851 and compare these with the returns for 1891 is not to write history, but it is to contribute to a necessary description of an object of study and the changes which are evident in it. The two dates provide the temporal limits for the selection of evidence, evidence which must fill out the limited statistical description and

⁹ This point was discussed in Part 2. See pp. 190-196 above.

¹⁰ H.C.Darby, op. cit., p.7

¹¹ see A.R.H.Baker, J.D.Hamshere and J.Langton (1970) p. 13

¹² H.Prince (1971) p.9

render the changes themselves intelligible, evidence of, for example, the activities of those who sought sanitary reform in Edinburgh, innovations in transport, the state of the building industry, the growth and decline of other industries and the actions of the Town Council. In the human world the connection between events is frequently in the thought of the agent alone; one event leads to another only insofar as it provides the human agent with a reason for acting in a particular way. For example, the state of the Old Town of Edinburgh (the overcrowding and the collapse of several tenements) in the first half of the eighteenth century can be connected with the building of the New Town just because it provided the Town Council with a good, indeed pressing, reason for expanding the areal extent of the City. In his research the geographer must discover the most important of such connections in order to provide an historical understanding of urban phenomena. Whatever his theme and whatever the scale of study, this is the distinctive discipline of thought or mode of understanding he must employ.¹³ There is no other way in which we could be said to gain a knowledge and understanding of the spatial structure of Victorian Edinburgh.

¹³ The theme originally chosen for research was that of social groups and their changing spatial distributions. Industrial locations or the changing distribution of retail outlets might equally well have been chosen. The theme itself may dictate the scale at which the enquiry is conducted. It is the individual researcher who must judge the relevance, importance and significance of pieces of evidence to his theme, studied at a particular scale. And it is he who must pinpoint questions worthy of discussion. He may, of course, be misguided in what he considers important, just as he may give too much weight to a single piece of evidence. These would be proper grounds on which to criticise his writings, and it is precisely in this way that historical accounts are subject to the scrutiny of fellow historians before they become established or accepted as history. This, however, is the concern of historical practice rather than of historical method.

C O N C L U S I O N

That geography is a field of knowledge which is concerned to know and understand individual cases follows directly from its function as the study of places. The concept of place, like that of person or event, is in its essence a concept of the specific.

R. Hartshorne (1960) p.157

The skill which the urban geographer must develop if he is to study urban places is the skill of the historian. It is history as a distinctive discipline or mode of thought which is appropriate to the investigation of the internal form of a city. Kirk asks, "Do we think and work geographically, rather than think and work on geographical materials?"¹ The answer must be no. The urban geographer is required to think historically for it is only in this way that he can understand the changing patterns of any urban area. There is no distinctively geographical mode of thought. Urban geography is a subject and is, therefore, distinguished by the object of study. As Hartshorne says (about what he calls 'historical geography'), "...the test of geographic quality is in the purpose and focus of interest."² Urban geography is urban history with the focus of interest being on the 'place', on the set of events which have moulded its physical form and influenced its character. This is the methodological conclusion of the thesis.

In accepting such a conclusion one must forsake several methods of analysis which are prominent in the urban literature. It has been the task of the methodological discussions above to demonstrate the erroneous nature of the models and theories produced by such methods. If the arguments are correct, they lead irrevocably to the stated conclusion and to five subsidiary methodological principles which are as follows:

1. Urban geography is concerned with the individual, the unique. Understanding is sought at the level of particular cities, particular events and even, on occasion, particular people. The patterns found

¹ W. Kirk (1963) p.361

² R. Hartshorne (1960) p.103

within the city are the outcome of the decisions or choices of many thousands of individual human beings and, although it is only in exceptional circumstances that the actions of a single person will affect this pattern (itself abstracted from the city mosaic), any attempt to understand the changing urban structure must recognise the agency as a human one. In this context the character of city areas and the behaviour of relevant social groups is important. Any approach which fails to appreciate the nature of human agency and the form of understanding and explanation appropriate to it cannot, logically, produce valid theory or meaningful observations.

2. Scientific method is inappropriate to the study of human behaviour and, therefore, to urban geography. The sorts of question the scientist might ask about the behaviour of gases or electrons and the vocabulary he would use are quite different to the questions we might ask about human behaviour and the language we would use to describe and explain such behaviour. Gases do not have reasons, motives or intentions, and it would be nonsensical to express moral condemnation of a gas which had just exploded. Further, historical time is important to the understanding of human actions and, because of this, there can be no universal (and timeless) description in the social sciences. We cannot understand human behaviour scientifically. This highlights the contrast which can be made between science and social science.

3. In urban geography the search for general propositions of any great substance must be abandoned. The search itself was initiated and encouraged by the inappropriate scientific paradigm which became prominent at the time of the quantitative revolution. There are no universals in the human world. General statements can be made but the most general are also the most trivially true. If we are to understand a particular human action or set of actions we must look at the particular

circumstances in which it took place. We may be helped in this by some general understanding of actions of this sort gained, for example, through familiarity with others who have acted in a similar way. The scientist can explain the individual case by reference to the universal description of a scientific law. The relationship between the general and the particular in social science is quite different. A knowledge of the range of actions which might come under the description 'attempted suicide' may help in the understanding of a particular individual's attempt to kill himself - on the other hand it may not. Social situations may be similar but they are never the same, and it is because of this that the search for such general models and theories as are found in the sciences is misplaced.

4. The structure or form of an urban area cannot be explained by appealing to the operation of 'underlying forces'. In most cases an appeal of this sort involves the gross methodological error of denying the essential characteristics of the subject matter. People do not act like iron filings (however similar the "attraction rates" of various cities are to those of magnetic poles) for, of course, iron filings do not act; they have no understanding of their movements. And even where the character of human action is recognised but explanation is sought in terms of the 'principles' involved, the study of patterns in the human landscape could be no more fruitful. Leaving aside the implausibility of the suggestion that everyone, in everything they do, acts from a desire to reduce the effort they expend to a minimum, we have no way of testing such a claim. If all acts are, by definition, examples of the least effort principle then the principle itself could never be established since it is unfalsifiable. And, if it could never be shown to be either true or false, it must be vacuous. The same may be said of the marxist

analyses which attribute residential differentiation to the 'forces of capitalism'.³

5. Urban geography is not a practical subject. The realm of history can be contrasted with the realm of practice, for the historian is not concerned to relate the past to the present. There is no favoured state of affairs in relation to which the historian judges the past as does the practical man. In Oakeshott's words, the past of the historian "is without the moral, political or the social structure which the practical man transfers from his present to his past."⁴ The historical narrative is essentially descriptive. Its function is to make past events intelligible, not to justify them or criticise them. The historian does not make the past speak to the present. And the urban geographer has no message to give to, no lesson to teach, the planner of today. Urban geography is not applied geography. Together these five principles sketch the major features of urban geography as a subject within the discipline of history.

Inevitably any individual attempt to reconstruct the past of a particular city will be more piecemeal than systematic. Nevertheless, the historical account is neither undisciplined nor untheoretical. History

³ D. Harvey in R. Peel et al (1975) p.368 claims that, "Residential differentiation is produced, in its broadest lineaments at least by forces emanating from the capitalist production process and is not to be construed as the product of the autonomously and spontaneously arising preferences of people." It is not people's preferences which create the actual residential patterns in a city, of course, but the choices they make about where to live. Such choices are constrained in a way that preferences are not. One constraint on the choice of where to live is an economic one. A working man's wage will not buy a palace. To recognise this is in no way to be committed to a marxist analysis in which talk of 'forces' raises more questions than it answers.

⁴ M. Oakeshott (1962) p.154

is a distinctive discipline of thought and it does involve the construction of theories even though these are quite unlike the theories of science. The historical theories of urban geography have no universal content but are, rather, attempts to reconstruct a unique past from evidence existing at the present time. The account thus constructed is an hypothesis which can, according to standard criteria of validity, be accepted or rejected. Its acceptance would establish it as a theory. Only in this way could we build up a body of urban theory which could then be amended or improved upon. Such theory would have neither practical application nor general reference outside the particular place and period of its concern. The evidence on which urban theory must be based is evidence of the unique. This evidence may be found in documents, in the present day structure of the particular city, in photographs of its past, or in statistical material from the census and other surveys. Whatever the form of the evidence, however, its identification as evidence is merely a first step in the historical research, for the urban geographer is required to 'make something' of the evidence. This is frequently forgotten by those with an interest in statistical patterns. Census data, as much as any other evidence, is a source of information. The emphasis throughout geography in the last twenty years has been on quantification and a warning against single-mindedness in this respect is perhaps timely. Dyos and Baker put statistics in their proper place:

After even the most elaborate programming of data through a computer its output will simply be a re-arrangement of the raw data into a more intelligible pattern and cannot be regarded in any sense as the end of the line of research. It is indeed only the end of the beginning.⁵

⁵ H. J. Dyos and A. B. M. Baker in H. J. Dyos (1968) p.88. It should be noted that not in every case does such a re-arrangement prove more intelligible than the raw data.

The skill of the urban geographer must lie in the interpretation of the evidence and not in statistical manipulations.

The arguments of the thesis lead us to these conclusions. We do not set out to explain in urban geography, though puzzles may arise in the course of research which do require an explanation. In each case there will be logical limits to the completeness of the answer and these may or may not allow a satisfactory explanation to be given. Urban research involves describing how present urban patterns came about, how they evolved. Genuine puzzles are prompted by this research and must be solved before the historical narrative can be continued. Such puzzles do present a problem to the urban researcher, but his main concern is still the provision of an historical account. The purpose of urban geography is not to explain, but to make the course of events intelligible.

The enterprise of this thesis has been a critical analysis of the way we think about the phenomenon of urban geography - the city. Throughout, I have tried to illustrate the way in which the ideas of other geographers have contributed to the conception of urban geography I advance, and to point out how certain prominent methodological ideas fit in and why others must be rejected. The conclusion, baldly stated, is hardly new. Historical method, though for some time unpopular, has and continues to have its protagonists within geography. The singular contribution of this thesis to the subject of geography, then, lies not so much in the advocacy of historical method in the study of urban places, but in the arguments advanced in support of this conclusion and in the spelling out of what exactly they imply for the study of urban and human geography. Further, by dwelling upon the many methodological issues raised during the discussion, we can perhaps go some way towards answering other methodological questions. The now entrenched division

between physical and human geography which Hartshorne condemns as detrimental to the purpose of geography, can be seen, in the light of the distinction between the world of human affairs and the natural world, as necessary to the advancement of the subject. The division itself, however, would not be quite as it is so frequently conceived.⁶ We must understand what geography is and how it is properly to be studied before we can engage in profitable research. In this, the methodological arguments of this thesis have, I hope, contributed to the clarification of problems of mutual concern.

⁶ Geomorphology, for example, would seem to fall partly into the discipline of history and partly into the discipline of science. We could not, therefore, have a neat physical/human division coinciding with the use of scientific/historical method. The divisions within geography are more complex than this.

APPENDIX A

Census Data and Sampling

10% Sample of the Census Enumerators' Handbooks for Central Edinburgh,
1851 and 1891

The sample was taken in a systematic manner as follows:

Every 10th household was selected.

ie. industrial, commercial and half-built properties were ignored.

Each fully ruled off schedule was regarded as a household, and -

- (a) where two (or more) schedules had been used, but the household had been divided properly by intermediate shorter lines between each enumeration schedule, concluding with a longer line, all the inhabitants were regarded as members of one household.
- (b) where a household had not been ruled off at the bottom of a page, the next unit starting at the top of a new page was, nevertheless, regarded as a separate household provided it had a separate schedule number. (Except where the address was precisely the same.)

Persons on the second or third schedules within a household were treated as lodgers of the family on the first schedule,

unless

Where there was at least one other identifiable family unit (either a married couple or an adult with at least one child of his or her own), regardless of whether or not they had been listed on a separate enumeration schedule from that of the 'head of household's' family, then the households were regarded as sharing. (Except where such a family unit was directly related to the head of household or listed as servants.)

Only persons actually listed as servants were taken to be such.

Visitors were ignored in the calculation of population numbers and area densities.

Note on the Comparability of the 1851 and 1891 Enumerators' Returns
for Central Edinburgh

In 1851, enumeration districts were sub-divisions of parishes. By 1891 this had been changed and enumeration districts had been reorganised as sub-divisions of parliamentary wards.

The collection of parish based data for 1891 is, therefore, the more complicated. Two related difficulties arise:

- (a) Since parish boundaries do not coincide with ward boundaries and since any one parish may be divided between as many as three different wards, the collection of parish data for 1891 involves the selection of enumeration district material from individual enumeration books which are not in sequence in the arrangement of census returns for the city as a whole.
- (b) Since the boundaries of some of the enumeration districts themselves were altered between 1851 and 1891, it is only by the use of accurate boundary maps and the collection of data for each household within the 1851 boundary that parish based statistics for 1891 can be obtained. Where such boundary maps are not sufficiently detailed there are frequently no guidelines for determining whether some new building, for example, does or does not lie within the parish.

Some error is likely, therefore, in the 1891 parish data. This, however, will be minimal in the context of a 10% sample.

The extra information contained in the 1891 census (eg. the number of windowed rooms per household) has, of course, no counterpart in the more basic 1851 returns.

APPENDIX B

Statistical Table and Diagram from
T. Thorburn (1851)

Table & Diagram, being a Classification of the Adult (16 to 60 both inclusive) Population as to Place of Birth, with the Ratio of each Class to the Total Number of Adults.

I. OLD TOWN

Parishes	Nos. 16-60 inclusive	Born in Parliamentary Burgh		Born in remainder of Mid-Lothian		Remaining counties of Scotland		Born in Ireland	
		a.	b.	a.	b.	a.	b.	a.	b.
Greyfriars (Old)	1,464	549	37.5	122	8.8	411	28.0	382	26.1
" (New)	1,658	572	34.0	86	5.2	410	24.7	590	36.7
High Church	1,798	946	52.5	113	6.2	657	36.4	82	4.5
Lady Yester's	1,175	432	36.7	40	3.4	255	21.7	448	38.0
New North	1,713	566	33.0	64	3.5	297	16.7	786	45.8
Old Church	2,157	950	44.0	124	5.7	612	28.4	471	21.0
St. John's	1,615	462	28.6	66	4.1	335	20.7	752	46.6
Tolbooth	1,227	537	43.6	54	4.3	513	42.6	123	10.0
Trinity College	1,693	758	44.8	113	6.6	500	29.8	322	19.0
Tron	1,964	740	38.2	89	4.6	380	19.4	755	38.4

II. NEW TOWN

Greenside	1,739	747	43.0	140	8.0	816	47.0	36	2.1
St. Andrew's	2,722	1,055	38.8	260	9.6	1,366	50.2	41	1.5
St. George's	5,051	1,865	36.9	373	7.6	2,724	53.9	89	1.7
St. Margaret's	4,430	1,699	38.4	297	6.7	2,367	53.5	67	1.5
St. Stephen's	4,125	1,371	32.8	333	8.4	2,359	57.1	62	1.5

a = actual nos. b = Ratio to total adult pop.

B I B L I O G R A P H Y

The bibliography is divided into two sections:

Bibliography A contains all works referred to in Parts 1 and 2, together with a selection of those works relevant to the methodological topics of the thesis as a whole.

Bibliography B contains all works referred to in Part 3, together with material relating specifically to the study of Victorian Edinburgh. — —

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B.

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