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RURAL ACCESSIBILITY: WOMEN IN SOUTH WEST TYNEDALE

by

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RURAL ACCESSIBILITY: WOMEN IN SOUTH WLST TYNEDALE

Abstract

S.W. Tynedale, a remoter rural area of the UK with a history of agricultural and industrial activity, is the location for the analysis of womens' accessibility to rural services and cultural/educational opportunities.

Increasing car ownership and the decline in rural services have created difficulties for some rural women in gaining access to opportunities. Changes, through time, in the role of rural women and the space they occupy are analysed in terms of gender relations and the division of labour. Women's access to, and use of, power in S.W. Tynedale reveals a reluctance to seek political office.

A survey conducted in 1981, and the 1981 Census data are used to explore the relationship between physical accessibility and the socio-economic, mobility and behavioural characteristics of women. Two indices are constructed to measure private and public transport accessibility, respectively. Although, socio-economic variables relate more to private transport accessibility, mobility and behavioural variables can be better explained in terms of public transport accessibility.

A space-time approach is used in which the dimensions of the potential space-time prism in S.W. Tynedale is described and compared with the experiential prisms for three

different groups of women.

Using case study material an analysis of the behaviour of rural women points to the importance of the constraining and enabling mechanisms of the family support system in explaining womens' accessibility behaviour at different stages in the lifecycle.

Through the application of Principal Component Analysis the underlying structure of accessibility is investigated. Nine axes of differentiation are identified including life style, life cycle, community involvement and education. Remoteness and mobility summarise the surveyed womens' location in space and ability to overcome distance. Measures of knowledge of facilities are summarised by three components _ local, town and city orientation from which space-time prisms are constructed. Distinct regional variations are apparent in the use of the resources of space and time.

Finally, future possibilities for the accessibility of the two groups of rural women, the carless and the family dependent, are considered in relation to the wider stage of the political economy.

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Organisations

Agricultural Development and Advisory Service
British Rail
Church of England
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Northumberland Community Arts Council
Northumberland Community Health Council
Northumberland County Council
Northumberland County Library (Hexham Branch)
Northumberland National Park
Northumberland Record Office
Northumberland Rural Community Council
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Abbreviations

ADAS	Agricultural Development and Advisory Service
AONB	Area of Outstanding Natural Beauty
CoSIRA	Council for Small Industries in Rural Areas
CURDS	Centre for Urban and Regional Development Studies
DOE	Department of the Environment
EEC	European Economic Community
EIEC	English Industrial Estates Corporation
FIS	Family Income Supplement
MAFF	Ministry of Agriculture Fisheries and Food
NCB	National Coal Board
NCC	Northumberland County Council
NFU	National Farmers Union
NRO	Northumberland Record Office
NUM	National Union of Mineworkers
OECD	Organisation for Economic Co-operation and Development
OPCS	Office of Population and Censuses and Surveys
PCA	Principal Component Analysis
RUTEX	Rural Transport Experiments
WI	Women's Institute

CHAPTER ONE - ACCESSIBILITY AND WOMEN: A LITERATURE REVIEW

It was a warm July afternoon when the woman in her mid-fifties clambered down from the Newcastle/Carlisle bus. Clutching a full shopping bag in each hand she turned eastwards and began the climb up the hill out of Greenhead. The Military Road ascends steeply for a mile or so before levelling out along the line of the Roman Wall. At the summit a lane leads off to the north past the Military Museum where the car park was busy with tourists. The woman left the tourists behind walking slowly along the now narrow track across the moor. Remembering the snows of winter and the days when the road was impassable she trudged on a mile or more to the eighteenth century farmhouse that was her home. At least today, she had managed both her job as a Home Help and her shopping. Perhaps next week her old scooter would be repaired and the journey home would be easier.

Introduction

This manifestation of one aspect of the rural problem of accessibility can be observed daily in the countryside of Britain. The above anecdote is in itself one story of personal hardship, yet it raises many questions including the one central to the welfare approach to human geography of "Who gets what, where and how?" (Smith 1977). Furthermore, it draws attention to the problems of accessibility experienced by women living in the countryside and the role of gender in understanding the economic and social relationships which are fundamental to the organisation of rural society.

In the thirty years prior to 1981, the declining rural population led to changes in the economic and social structure of rural society. For example, the reduction in work opportunities, both on and off the farm, changed the structure of the workforce. While employment in

agriculture was halved in the period 1955-77 both manufacturing and services were under represented in rural areas (Packman 1979). Part-time and seasonal jobs for women in urban centres increased while full-time jobs for men and women in the remoter areas were lost. This downward employment spiral also led to a decline in services such as schools, health facilities, sub post offices, general stores and garages (Packman et al 1982). Reductions in transport services in turn lowered the level of accessibility of some rural residents to both economic and social opportunities.

Pacione (1984) defined the concept of accessibility as

"...the ease with which people can obtain necessary goods and services."

Accessibility, is also a scarce resource allocated, in part, through the planning process. Planners through their influence on the provision of services, including employment, housing and transport are not only able to change levels of accessibility for rural inhabitants, but also the organisation of rural society. Chadwick (1978) stated, "Planning is done for human beings, by human beings.", it follows that planners must take account of the relationships between human beings in the preparation of plans. The basis of the most fundamental relationship between human beings is here considered to be that of gender. Thus returning to the introductory anecdote, in order to understand the difficulties experienced by the Northumbrian woman in gaining access to the necessary goods and services, it is necessary to explore the ways in which both the gender role and rural environment place economic, social and physical constraints on her time, and the space in which she operates.

The above discussion places this research at the interface of the new sub discipline of gender geography and the well established study of rural geography. The latter has contributed the greater part of the theoretical approach, however, before turning to the literature of rural geography the contribution of gender geography will be discussed.

GEOGRAPHY AND GENDER

My research topic - rural accessibility problems and women - was selected in 1981 when the work of Moseley (1977 et al and 1979a) had focussed the attention of rural geographers on the problems of accessibility for specific groups in society including women.

A search of the literature reveals, prior to 1974, very few papers pertaining to women in the spatial context. The first major theoretical article by Hayford (1974) was an historical introduction to the changes in the role of women in which she discussed their role as changing from a pivotal position in the pre industrial household where they had "...central importance in the organization of political and economic spatial systems." to a peripheral one in the present day. She saw this shift in women's roles concomitant with the spatial separation of production and reproduction under capitalism. Other research in the seventies explored problems of inequality of access to resources (Palm and Pred 1974), mobility among the elderly (Holcomb 1976), sex discrimination (Madden 1977), and female activity rates (Moseley and Darby 1978).

Moseley et al analysed the determinants of female activity rates in 286 Norfolk parishes. The central question was whether low activity rates in rural areas can be explained by lack of opportunity, or lack of the desire to work. Two groups of factors were indentified. The first group - opportunity factors - included industrial and occupational structure together with physical accessibility. The second group described as - desire factors - contained the social, cultural and familial variables. They concluded that opportunity factors together with age were significant in explaining low female activity rates. Interestingly, they reported that conventional public transport seemed "to be of little relevance" to working rural women, but that creche facilities may enable more women with young children to find work. Their final recommendation was that perhaps a solution lay in a policy of taking work to the workers'. Their research pointed to the problem of creating the opportunity for women to work in a rural society where primary industry dominated the employment structure and where female mobility levels were low, and accessibility to work was further constrained by the lack of supporting services. Gasson (1984) noted that two of the obstacles to women gaining employment off the farm were low levels of accessibility and the poor provision of supporting social services in rural areas.

It would, therefore, seem to be the case that the organisation of rural society provides the framework within which opportunities are created for the inhabitants of the countryside. More recent research has focussed on the role of gender and class in seeking to explain the present allocation of resources in terms of the power structures in

rural society.

Little (1986) published the first theoretical article to examine the relationships of gender and gender role to the functioning and organisation of rural society. Writing from a socialist feminist standpoint, she argued that aspects of the rural ideology exert strong pressures on women, restricting them to a domestic role. This is supported by Stebbing's (1985) research into women's roles in two parishes of East Kent. When interviewed, many rural women described themselves as "countrywomen". A concept which was difficult to define, yet which appeared to encapsulate the essence of the rural and domestic idylls in which women saw themselves as the lynch-pin of the home. In the small scale village society where the divisions of class, length of residence and type of property could easily create disunity, they appeared to fulfill a harmonising role by creating what she considers to be the illusion of unity. As mentioned, earlier Hayford, using historical sources, described this perception of a central role for women, but she associated it with the pre-industrial era. In the late twentieth century, the concept appears to survive in many rural areas, and fulfilling that role means, for many women, accepting that husband, children, parents and others all place constraints on their time, and hence the opportunities available to them.

Stebbing saw role perceptions and behaviour as arising from the social structure which in turn arose from the individual's perception of reality. Social institutions such as the Women's Institute with their motto of "For Home and Country" tend to reinforce the rural and domestic

idylls. Stebbing, like Little presents the rural woman as being "locked into " a domestic role whereby status becomes a function of her husband's position within the community.

Turning to the literature of sociology, Hesse-Biber and Williamson (1984) argued that power relationships in the family reflect the position of men and women in society. The inequality in the family in their view, persists because at present women do not have the equal access to valued economic, educational, political and legal positions. Furthermore, that relationships between husbands and wives as they age are based on past definitions of roles. As the woman's power base decreases with the children growing up, so the husband's status and resources tend to increase through job advancement. Therefore, with age there can be an increasing inequality in the power base between husband and wife.

The domestic role also confines a woman in space. Foord, Mackenzie and McDowell (1980) explored the relationship between the domestic role and the space in which a woman performs her daily tasks. Research by Middleton (1983) differentiated between public and private space in a study of men's space and women's space in a Yorkshire village. Middleton suggested that while men were at ease in, and frequented public space such as the public house, sports field, and village hall, women feel 'out of place' in public space. Generally, women only used public space when carrying out a domestic related task such as shopping or caring for children. Women were found to occupy mainly the private sphere of 'home' in which they carried out their domestic tasks whereas, men enjoyed a distinct

physical separation between 'work' and 'home'. This difference was thought, in part, to account for the undervaluation of domestic work in respect to waged work.—

Little, Stebbing Hesse-Biber et al and Middleton all point to the importance of attitude towards domestic work in relation to the role of women in the organisation of society. Little (1986), quoted research by Symes and Marsden which showed that men are more likely to become involved in the Parish Council, and their wives in local or national voluntary work. The woman's role outside the home, as within it, is frequently supportive rather than competitive. It is, then, axiomatic that the direct power over decision making lies in the hands of men rather than women. Changes in accessibility levels whether through a reduction in the provision of public transport, social or commercial services are decisions over which women appear to have little direct influence, and yet, it is they who are most affected by policies of resource distribution in the countryside.

RURAL GEOGRAPHY

In 1972, Clout observed that by the 1970's rural geography had been relegated to an inferior position. He commented on the decline in interest in the countryside as researchers turned their attention to the problems of the urban area. A decade later Wood and Smith (1982) reported that rural geography was no longer the poor relation of urban geography. Why then had the countryside once more become a focus of attention?

In England and Wales, it was government that focussed

attention on the urban areas and hence almost by omission on their rural counterparts. In part, the increase in the importance of planning by government and quasi-governmental agencies renewed interest in rural areas not only as a source of food, but also as a source of leisure opportunities for the urban population. Furthermore, under the 1974 Local Government Act some shire counties had large urban areas incorporated into their 'areas of jurisdiction. In these counties e.g. Nottinghamshire, Leicestershire, the need for an urban policy stimulated a parallel consideration of rural planning policies. The welfare approach to the analysis of the distribution of resources highlighted the family of single and multi-dimensional problems known as deprivations. Accessibility was identified by Shaw (1979) as a multi-dimensional problem under the umbrella of deprivation.

In this section, the literature pertaining to the classification of rural areas provides an appreciation of the theoretical tools necessary to explore the welfare approach to rural geography. The concept of accessibility will be discussed within the framework of deprivation and the relationship between geography and public policy explored in terms of the organisation of power within rural society. But first, the administrative solution to the debate of "What is rural?" must be addressed.

What is rural?

The local authority boundary revision of 1974 was preceded by much public debate centred on the proposals of the Redcliffe Maud Report and the minority report of Derek Senior. This raised the whole issue of what was and was not

urban. The objectives of the exercise were largely administrative, and yet, they posed the essential task for rural geographers - the definition of the term rural in the United Kingdom context.

In 1971, the Town and Country Planning Act was passed and under the amendment of 1972 each county was legally required to prepare a County Structure Plan in which they set out their planning policies and proposals for change over a period of fifteen years. This statutory duty of County Councils had far reaching implications for applied rural geography. Who builds the roads, closes the schools, subsidizes the bus services, rezones the farmland, approves sewerage and mains water schemes, and makes recommendations for, or against, new industrial enterprises? There are few aspects of rural life that are not either directly, or indirectly affected by local authority planning decisions. Hence, the 1971 and 1972 Acts which applied to metropolitan and shire counties alike, brought to the fore, the need, not only for definition, but also measurement of the degree of rurality, and thus, the recognition of deprivation in rural areas.

From the academic standpoint with any new area of research, such as rural geography one of the initial problems is that of definition. The term - rural- was discussed by sociologists in the 1930's when Wirth (1938) presented his now classic paper "Urbanism as a Way of Life". Although, widely criticised (Gans 1968), it nevertheless provided a basis for the discussion of the differences between the urban and rural life styles. The debate continued into the sixties; R.E. Pahl (1966) writing in

Sociologia Ruralis discussed the transformation of the character and appearance of some previously identifiable agricultural villages by incomers with an urban lifestyle. The notion of a polarisation of rural and urban lifestyles led to the proposition of a rural-urban continuum along which communities could be placed. This was rejected by Pahl (1968) who commented, "...that it was a fruitless exercise to try and tie particular patterns of social relationships to specific geographic milieux."

The character of rural villages and their response to changing population structure was the subject of a fourfold social typology (Jones 1973). He used the criteria of open-closed and integrated - disintegrating communities to describe the social and economic stability, as well as, the ability of some villages to adapt to change. For the geographer, this underlines the importance of the relationship between social and economic structures, population size and the landscape.

For administrative purposes, until 1974, the local authority urban and rural district boundaries were used to delineate rural areas until, yet they were becoming increasingly obsolete as suburbia 'gobbled up' farmland adjacent to the urban area. The Department of Environment (1971) in response to the Report of the Royal Commission of Local Government in England devised an index by which to measure the degree of rurality of specific localities. Three variables were identified namely, population density; the percentage of the male population resident in the area and working in primary industry; the percentage of the resident economically active population

working in another local authority area. Although, an improvement on the earlier methods which had relied on measures of population size and density, it did not consider a number of socially important variables relating to the behaviour of the rural population in the spatial context.

In the same year, an intuitive approach to defining rurality by Green (1971) listed five regions in England and Wales as being rural in character. These included South West England and the North Pennines. Wibberley (1972) used land use criteria when he defined the term rural as

"...those parts of a country which show unmistakeable signs of being dominated by extensive uses of land, either at the present time or in the immediate past."

The publication of the 1971 Census gave rise to a number of statistical approaches based on that data. Webber and Craig (1976) applied multi-variate analysis to forty census variables to produce rural clusters for the new, post 1974 local authority areas. Using the same method, Coates, Johnston and Knox (1977) analysed twenty-nine variables for the pre-1974 local authority areas, and presented a level of living index for 1971. This, despite the variations in the areal basis upon which the 1961 and 1971 Census data was collected, was comparable with the level of living index devised by Knox (1974) from the 1961 Census data. Both of these indices made use of social and economic data, and therefore, were most useful in defining rurality for planning purposes. From the point of view of the geographer, neither of these indices discriminated between rural areas on the basis of remoteness in other words they ignored the spatial dimension.

Basing his work on the Department of Environment index of 1971, Cloke (1977) identified sixteen variables, including, remoteness from an urban area, and used these to compile an Index of Rurality for 1961 and 1971. The remoteness variable in terms of rural areas, was the most statistically significant. This underlines the importance of the distance dimension in defining rurality. The purpose of Cloke's initial work was to provide a measure for social and economic planning and through the inclusion of such variables as age structure, population change, household amenities and remoteness, he was able to incorporate a measure of deprivation. The index measured the degree to which an area inclined towards the rural pole and again, as with Green's intuitive approach South West England, Wales and the North Pennines were identified as including extreme and intermediate rural areas. The same three areas were also shown by Coates, Johnston and Knox to have a low level of living index.

Cloke's article in Regional Studies in 1977 comparing his Indices of Rurality for 1961 and 1971 was concerned with the measurement of change and the problems which analysis of a dynamic situation presented. He noted that over time the nature of rurality was changing as the household amenities improved to urban standards. In physical terms, the planners were having some impact on the built environment. As the networks of transmission lines, mains water and sewers extended to the furthest corners of the Great Britain there was visual evidence of the material improvement of the conditions in which the rural population lived. Yet, rurality as measured by Cloke's index increased in some

areas during the decade 1961 to 1971. On the scale of -12 to +15, with -12 being intensely rural and +15 intensely urban, counties in the North Pennines had become more, rather than less rural. Northumberland county had increased in rurality from -2.49 in 1961 to -3.84 in 1971 (Cloke 1977).

Landscape, population density and employment are three of the four factors listed by Volgyes (1980) for which change may be visually apparent. The fourth factor, traditional attitudes and lifestyle which Stebbing found to be important in East Kent was invisible and therefore less easily detected. Yet, empirical evidence suggests that it also can be used as an axis of differentiation for rural areas.

From this discussion of the term rurality, several strands emerge. Rural areas do not exist in isolation, their economic, political and social institutions are inextricably intertwined with urban and national organisations, yet land use, employment, population density, lifestyle and attitudes, as well as remoteness can all be used to differentiate what is rural, from what is not. Rurality is not some time honoured notion steeped in static tradition. The countryside "...is a complex and dynamic environment" (Pacione 1984) responding to pressures from the urban (e.g. second homes), national (e.g. Transport Act 1986) and international (e.g. Common Agricultural Policy), therefore, most areas classified as rural will include urban elements such as second home owners, commuters, and tourist facilities. The definition of Rural Geography proposed by Clout (1972) facilitates the analysis of the dynamic and

complex nature of the countryside.

"...the study of recent social, economic, land use and spatial changes that have taken place in less densely populated areas which are commonly recognised by virtue of their common components as 'countryside'..."

For 65% of Stebbing's sample in East Kent, both attitudes and lifestyle were identified as differing from those of urban women. These women were proud of being "country women" expressing a certain feeling of superiority about their way of life. Stebbing reported that they had difficulty in articulating what being a country woman meant in words. Possibly, they were struggling to express the idea that the way of life in the countryside satisfied a greater proportion of their needs than the perceived city life. This introduces a whole area of geography known as the welfare approach.

The Welfare Approach

Harvey (1973) introduced the welfare approach with his book "Social Justice and the City" in which he explored the spatial distribution of those services essential to people's welfare - services such as quality of housing, social and health care facilities etc. Fundamental to the welfare approach is the inequality in the distribution of resources among the population. Inequalities in the distribution of resources are manifest in the "quality of life" enjoyed by different groups in society.

Smith (1977) posed the question referred to in the introduction "Who gets what, where and how?" A question which focuses attention on the importance of locational

decisions in the spatial allocation of resources so essential to the distribution of the quality of life. Although, the welfare approach and concepts such as the quality of life were initially applied to the urban environment where the consequences were not only visually, but also economically and socially very apparent, the concept is equally valid in rural research.

"Quality of life, often described as a nebulous concept and difficult to both describe and measure was defined in 1965 by Wolpert as in part, a function of place utility i.e.

"...the net composite of utilities which are derived from the individual's integration at some point in space."

Another way of defining quality of life is as a qualitative measure of the environment in which people live, together with personal attributes such as health and education. The Delphi technique was used by Koelle (1974) as a means of identifying four categories of quality of life: material, physical, mental and spiritual. Empirical work in the field enabled a weighted index to be derived for different social groups. A second concept similar to that of quality of life is "level of living" which places a greater emphasis upon the conditions of life of people with different incomes. Knox (1974) devised a level of living index to measure the actual conditions of life among the people. He proposed that the increasing marginal utility of consumer goods in the western world had resulted in a greater emphasis being given to non-material factors such as health and welfare. He postulated a direct relationship between the physical environment, health and leisure, and suggested that the age

and life cycle characteristics of a population were more closely related to the aspirations of the society and its ability to satisfy them. Local government he perceived as playing a key role in influencing the level of living of the communities within its jurisdiction. In Britain, the definition of level of living included housing, health, education, social status, employment, affluence, leisure social security and social stability, all of which are influenced by the demographic structure, physical environment and existing social institutions.

An alternative approach was that of Pacione (1980) who based his definition of quality of life on empirical evidence of a survey of the aspects of life which concerned people. He called these "life concerns" and listed them as health, standard of living, housing, education, leisure, mobility, availability of services, and the social and physical environment. Together they encapsulate the quality of life, but the weight attached to each component, in reality, will vary from person to person. Therefore, a residential location which affords one individual considerable place utility may afford another very little. Hägerstrand (1974) explored the impact of transport technology on the quality of life. As all members of the same household do not necessarily have access to the same mode of transport then the quality of life may vary considerably between members of the same household. Smith (1977) in comparing rural and urban settlements concluded that a scattered rural population with poor road links is served less effectively than urban communities with the same resources. The variation in quality of life between one individual and another living in similar locations

highlights the problem of deprivation. When comparisons are drawn between communities, then again attention is drawn to the concept of deprivation.

Deprivation

When Clout wrote "Rural Geography: An Introductory Survey" he discussed the problems of depopulation, settlement rationalization and passenger transportation. Rose et al (1979) recognised these as elements of rural deprivation, but argued that the domination of local government by farmers and landowners ensured that their interests were furthered to the detriment of those less powerful or prosperous. Moseley et al saw the causes of rural deprivation to be rooted in local, national and international economic organisation. Employment opportunities reflect local, national and to some extent international demand, therefore agencies such as British Telecommunications and the GPO exert considerable influence over the deployment of resources in the rural areas. Decisions to locate telephone kiosks, post boxes, sub-post offices and designate particular routes for post buses all influence the services and hence the employment opportunities available.

Deprivation implies that a measure of inequality exists, and that this is detrimental to the well being of those social groups who suffer from it. Deprived social groups are those whose "needs" are not being satisfied. Therefore, to understand deprivation it is necessary first to discuss the term "needs". Bradshaw (1972) identified four types of need - normative, felt, expressed and comparative. Shaw (1979) applied these four types of need to the rural

context. Felt need is synonymous with want, whereas expressed need is the articulation of felt need. For example, if villagers are asked whether they feel that they need a mobile library service, the response will be a felt need. When the villagers demand the service through a petition or other means, it becomes an expressed need. In so doing, they may have compared their library service provision with that of an urban area and have concluded that their needs are not being satisfied i.e. comparative need. However, when a national criterion is given for the provision of a service and the villagers are told what they need, then it is described as a normative need. In reality, it is difficult to separate out the four needs because all four may be involved in a rural issue. Similarly, an individual seldom suffers from just one form of deprivation. In a study of deprivation Nottinghamshire County Council (1977) defined deprivation as

"... social groups or areas which experience consistently worse conditions relative to other groups or areas, and have relatively less opportunity in relation to such social markets as housing, employment, education, leisure facilities..."

Implicit in this definition are those concepts of need and quality of life discussed earlier. But, in the rural context, how does one ascertain whether or not a given deprivation or group of deprivations exist when as Moseley (1981) states they affect

"...the inconspicuous and inarticulate rural minority".

It has been argued that rural deprivation is quite distinctive (Phillips and Williams, 1984) because of the

problems of inaccessibility and isolation which make the "rural environment" itself distinctive. Moseley (1980b), acknowledges that rural and urban areas share a common core of problems associated with deprivation, but maintains that specific problems resulting from their spatial location and place-specific features differentiate them from urban areas. He lists problems of access, demographic imbalance and infrastructural costs as being specific to rural areas.

Deprivation, is then, a multiple and complex problem. Single deprivations of low income, employment, education, health and housing can all be identified, but it is the way in which these deprivations all act together which creates the multiple problem. Furthermore, there is the all embracing deprivation of accessibility. Accessibility is closely related to place utility, and is the basic premise on which Smith based his argument concerning the inequality in the distribution of resources.

The literature of rural deprivation in the late seventies and early eighties has covered the single deprivation and multiple deprivation problems. Low incomes, employment, housing, education, health, retail services and information provision have all been the subject of research projects.

Low Incomes

Historically, low incomes in rural areas are not a new phenomena, but if the discussion is confined to this century, Rowntree et al as early as 1913 described the problem. During the 1930's rural poverty was widespread and yet, until recently, it has received scant attention.

Traditionally, the farm labourer has worked excessively long hours for low pay, but low incomes are also endured by the farmers on many of the marginal hill farms, so that the small surpluses can be reinvested in more land or equipment.

This competition for resources, together with the cultural emphasis on the importance of land ownership or tenancy, leads many farming families to the poverty line. Studies to date have concentrated on the employees rather than the self-employed as data on the latter, with regard to income, are virtually impossible to obtain.

The recognition of the existence of poverty in the inner city, and the belief that the solution lay in the investment of resources led the government of the mid 1970's, to reassess the distribution of resources in the form of the Rate Support Grant and to reallocate in favour of the metropolitan counties. The already inequitable distribution of resources to satisfy the needs of the metropolitan and shire counties was inevitably exacerbated. Urban poverty is easily seen and creates problems for other city dwellers. Rural poverty is hidden behind neat hedges, rustic gates and in quaint cottages with leaking roofs, rising damp and stone flagged floors which are more responsive to a regular spraying of weedkiller than any household cleaner!

Brown and Winyard (1975) of the Low Pay Unit highlight the problem of the poverty trap in relation to agricultural workers. In the 1950's, the taxation threshold was high enough to exclude many of the low paid from paying tax, but as the threshold, in real terms, fell, then a solution to the problem was introduced in the form of means tested

benefit. The poverty trap was created by the overlap of taxation and Family Income Supplement (FIS). For some families a rise in wages results in a loss of benefit greater than the increase in wages. In 1976, 20% of the male heads of all households receiving FIS worked in agriculture, yet only 1.7% of the population were employed in the industry (DoE 1975) which illustrates the size of the low income problem in agriculture.

However, the percentage receiving FIS relates as much to an individual's personal circumstances as to his wage, therefore, if studies into low income groups are to be meaningful a definition is required. Jill Sullivan in the Low Pay Report (1977) adopted a minimum threshold figure of £50-00 per week gross for that year, when the prevailing average weekly wage in agriculture and horticulture was £54-70 compared with £71-50 average for all industries. The figure of £54-70 was a national average and therefore concealed the spatial variations in incomes. Incomes are exceedingly difficult to gain reliable data for, not only because of the problems of net and gross pay/wages/salaries varying according to personal circumstances, but also the problem of assessing perks such as housing at reduced rents, provision of transport, and food staples like milk and potatoes. On small family farms, the actual money taken from the business is often housekeeping only, and therefore, rates, electricity and fuel are all subsumed under business costs, and so it is very difficult to assess the actual income taken.

Thomas and Winyard (1979) used the surrogate variable

of benefits in their study of rural incomes in Wales. Using Inland Revenue statistics they found considerable variation in the composition of personal incomes in the different Welsh counties. In Powys, retirement pensions were a significant component, whereas in Dyfed the wife's income was more important than in any other Welsh county, but still below the average percentage of wife's income for U.K. The wife's income as a proportion of total family income ranged from 6.9% in Powys to 10.2% in Dyfed, whereas in U.K. the wife's income amounted to 10.2%. Therefore, in rural Wales the wife's income was a smaller proportion of the total family income than in the U.K., generally. In 1977, in all Welsh counties, the total net income was below that of the average for the U.K. This confirms the indices of rurality and level of living index which also identifies Wales, as an area inclining strongly towards the rural pole. The North Pennines were also shown to be a low income area by the Family Income Supplement (FIS) benefits received per 1 000 population. Like Wales, the North Pennines received 74 per 1 000 when the average for Great Britain was 60. In contrast, the third area identified by all four indices, South West England, received 56 per 1 000 which was well below the national average. This suggests that the problem in the West Country in terms of income was somewhat different.

Using 1971 Census Data, Thomas and Winyard (1979) further explored the issue of low incomes in Wales. Using principal components analysis, seven components were identified: life cycle, urban/rural, class, growth/decay, housing tenure, social class, female activity/Welsh. The first three were found to explain 45.4% of the variance with

life cycle giving the greatest percentage of explanation. The inclusion of the final component relates to its importance in Inland Revenue statistics as an indicator of the more rural counties of Wales. A low income reduces the opportunities available to a family, and hence the satisfaction of needs and the quality of life.

Employment

Income is partly a function of the availability of employment. When unemployment is high the range of job opportunities available in the rural area is limited for both men and women. Both Packman (1979) and Dower (1980) pointed out that the effect of contraction of the labour market fell most heavily on school leavers, women, the elderly and unskilled. In the urban area, a woman may find a shop, office or factory job to boost the family income, but in the rural environment these opportunities frequently do not exist within a convenient distance of "home". Daughters growing up on the farm must leave or travel long distances to the urban area, if they are to find employment.

Sons may be able to stay, but only if they wish to take up farming. In England and Wales, from 1955-77, there was a 52% decline in the size of the agricultural labour force and furthermore a 64% drop in the number of full-time workers (MAFF 1977). In 1983, Gilg estimated that the agricultural labour force in U.K. was still declining at a rate of 3.0% per annum. Increasingly, farming on the smaller family farms is becoming a part-time occupation. Mechanisation and rationalisation account for this steady decline which has been offset in some areas of the country by the growth of employment in food processing, agricultural machinery, engineering and transport services.

In 1919, the Forestry Commission was formed, today it owns nearly half of the U.K.'s two million hectares of forest. Demand for labour peaks at planting and felling, so that the number of jobs in a given forest depends to a large extent on the age structure of the plantings within the forest, as well as prices and the demand for timber. Wood processing plants are 'end on' rural industry, but like the foresters they are dependent upon the Forestry Commission planting strategy for future years.

Mining and quarrying have provided jobs in many rural areas such as S.W. England, Wales, Lake District and the Pennines. However, the industry is entirely dependent upon the distribution of non-renewable natural resources. Therefore, employment fluctuates over time and space but may dominate the rural economy at a specific period as for example, lead mining in nineteenth century Allendale in the North Pennines.

As the primary job market contracts, then the solution may be to expand secondary and tertiary industries. Food processing is perhaps the most likely secondary industry. The popularity of convenience foods has increased the number and type of food processing industries, but as Pacione (1984) commented, the capital investment required is such that unless it can be kept in operation throughout the year, the setting up of food processing plants in remote rural areas is not a viable proposition.

A similar point is made by Packman (1979) who reported that despite many inducements firms were reluctant to locate

in the remoter rural areas because of the peripheral location of many areas and the poor external communications. He quoted statistics from the Cornwall County Conference on Unemployment in 1977, where out of 113 firms moving into the county between 1961 and 1975, 48 were new branches of local firms providing mainly female jobs and accounting for two-thirds of the additional labour.

The situation in the tertiary employment market is very similar, in that, although it is technically feasible to locate services such as insurance, where face to face contacts are not required, in rural areas, it is unlikely that they will locate in the remoter areas (Hodge and Whitby 1981). The general tendency is for part-time and seasonal jobs to be created in the urban centres while full-time agricultural jobs are being lost in the remoter areas. This conclusion is supported by Pacione (1984) who commented that the interdependence of agriculture with the chemical industry, engineering, transport and other professional services was not benefitting the remoter rural areas in terms of the creation of jobs.

One solution to rural unemployment is to develop tourism and recreation. The employment created through tourism is difficult to measure consisting, as it does, of seasonal and part-time work with the added complication that some facilities serve tourists and local needs alike. Despite these problems of measurement Dower (1980) estimated that tourism in S.W.England supported 9.0% of the civilian workforce. Previously, Archer (1974) reported that the single highest income multiplier of the different types of tourist accommodation was bed and breakfast. Therefore, the

best return per unit of income expenditure was likely to occur where small scale, labour intensive facilities were provided. However, as Hodge et al (1981) emphasized, the regional economic impact of farmhouse bed and breakfast will be negligible unless such facilities are widely available.

Government, through two bodies the Council for Small Industries in Rural Areas (CoSIRA) and the English Industrial Estates Corporation (EIEC) operating under the auspices of the Development Commission, are involved in the creation of job opportunities in rural areas. With the completion of projects started prior to 1980 the Development Commission estimates that some 7 800 jobs have been provided in rural areas (Development Commission 1980). A holistic approach to planning more characteristic of the Inner City Projects is noticeably absent from the rural scene. The Rural Development Boards, proposed as a response to the 1967 Agriculture Act might have provided a more comprehensive approach, but the first and last to be set up in England and Wales, the North Pennine, survived only seventeen months before being disbanded.

County and District Councils are also involved in the process of job provision in rural areas. Their role is often that of providing advice and the promotion of activities necessary for industry to locate in a given area. Whereas, the District councils are more concerned with the provision of infrastructure such as housing for would be employees (Packman 1979). Low incomes and unemployment are two of the single deprivations, but it follows that lower incomes will be translated into a poorer housing stock. Therefore, the third deprivation on which to focus attention

is that of rural housing.

Housing

"Significantly, those areas which have lagged behind the general improvement trend are to be found in the more rural and less accessible parts of the country where rural incomes are at their lowest level" (Pacione 1984)

The literature relating to rural housing was, in the earlier part of this century, concerned with building styles and materials. It was not until the post war years that interest was focussed upon rural housing standards, tenure, issues of social justice and equity, state involvement and private interests (Rogers 1983).

The 1940's concern was with rural housing standards such as piped water, sewerage, dampness etc. Despite the building of 300 000 new houses in England and Wales between 1919 and 1943 by rural district councils and private enterprise (Rogers 1976), the Scott Report of 1942 reported that 46.0% of all rural parishes had no sewerage system and one million people were without a piped water supply. But, the Scott Report also drew attention to the 'tied cottage' system and the increasing problem of "second homes".

In the last three decades standards of rural housing have improved except, as Pacione (1984) pointed out, in the remoter areas. Although, standards have improved the question which is pertinent to the welfare approach is "Who lives in what type of house and where?" Pahl (1966b) and Ambrose (1974) both were concerned with the relationship of social groupings to the housing stock. Pahl devised a

classification of eight social groupings, but although, useful in some rural locations, its use was limited because it did not allow for second home and mobile home owners as well as "winter lets" and armed forces personnel living in rural rented accommodation. A more comprehensive classification scheme was devised by Dunn et al (1981) using multivariate techniques to identify "rural housing profiles" from socio-economic data in 1971 Census. It was valuable, in that, it distinguished between the North Pennines where agricultural farm workers were the dominant group and the Lake District where farmers predominated. It drew attention to areas where retired owner occupiers were the major group, as in South West England, and identified the rural transitional areas such as the Peak District.

The 'tied cottage' system has been the subject of public discussion since the 1970's with arguments for its continuation being put forward by the National Farmers' Union and Country Landowners' Association, and those against by the farmworkers. The 1976 Rent (Agriculture) Act gave farmworkers a greater degree of security of tenure in that they could not be evicted for any reason including accident, redundancy or retirement. It became incumbent upon the local authority to find alternative accommodation. Although, 'tied cottages' increased from 35.3 for every 100 full-time hired men in England and Wales in 1947 to 54.2 in 1972 quoted in Pacione (1984), the problem was in part a reflection of the limited supply of alternative accommodation. This was the opinion of Gasson (1979) who considered that the 'tied cottage' issue would shrink into insignificance if more housing were made available.

As mentioned earlier, public housing in rural areas had been provided between the wars by local authorities who had built some 60 000 houses under various acts of parliament and a further 5 000 with government subsidies. In the same period 30 000 houses were demolished and 22 000 renovated. However, in post war years the building of rural council houses has declined so that the level of rural provision is below the national average of 29%. In rural England the figure is as low as 22.0% and in rural Wales 27%. Brown and Winyard's work on low incomes, cited earlier, and the 'tied cottage' phenomena both point to the need for rural rented accommodation.

The need for rural rented accommodation was analysed by Larkin (1979) who based his work on the percentage of households on the waiting lists of urban and rural local authorities. Although, there was considerable variation in the criteria used by local authorities, in most cases the percentage of households waiting for local authority housing was greater in the rural authorities than in the urban ones. The actual provision of housing is the responsibility of the district councils while in the mandatory structure plans the housing stock and replacement policy is outlined by the county councils for a period of about fifteen years. Rawson and Rogers (1976) of the Countryside Planning Unit found these structure plans took the view that the residential development should be concentrated in a small number of service centres where it was, in financial terms, feasible to provide basic services. Indeed, this is the policy of the North Pennine county of Northumberland, where the structure plan states the objectives as being firstly, to encourage the majority of new housing development in

existing market towns and main villages. Secondly, to encourage a limited amount of new housing—development in smaller rural settlements which "...is in scale and sympathetic to its character" and yet would not result in a requirement for substantial investment in new infrastructure. As Larkin (1979) pointed out this policy will become a self-fulfilling prophecy with the working class effectively excluded from the countryside.

Rented accommodation which prior to 1976 Agriculture Act may have taken the form of "tied cottages", caravans and "winter lets" of summer tourist accommodation is frequently used by the rural poor who move from place to place in search of seasonal employment. The housing market is further complicated by the "second home" phenomenon which escalates house prices and so excludes the would be local house buyer completely from the market. Davies and O'Farrell (1981) examined the problem of "second home" ownership in West Wales, whereas, Dunn, Rawson and Rogers (1981) who were concerned with the general problem of competition in the housing market, and more specifically the sale of rural council houses under the 1980 Housing Act, concluded that it will be the next generation of rural dwellers who will pay the cost. This view is shared by Gillon (1981), who argued that the council houses remaining in local authority ownership will be the poorer ones, and that the genuine rural workers will be even more deprived in relation to the incomers from the city.

An alternative to council housing was provided for in

the Housing Act of 1964 which contained the legislation necessary for the establishment of housing associations. By 1981, 3 020 housing associations had been established, but although they provided between 20-25% of all new houses, in 1980 they were only responsible for 2% of house building in rural areas. Therefore, their impact has been restricted to a few areas.

To return to the introductory quotation from Pacione, the less accessible rural areas are those to which provision of mains water, sewers and electricity are most expensive, therefore, where accommodation is rented and/or incomes are low such improvements are unlikely to be initiated by the owners or tenants without considerable financial aid. The "home" which Middleton (1983) described as the private space in which women spend most of their time has been shown for many to be a space over which they only have a cosmetic influence. As housing standards can be seen to depend upon physical improvements planning powers may be used to try to ensure that local housing is occupied by local people, but in the last analysis rural housing problems come back to the inhabitants themselves, their incomes, employment opportunities and the services available to them.

Services

Concern for the decline in services grew during the late 1970's. Moseley and Spencer 1978 commented on the problems in Norfolk; Packman and Wallace (1982) listed twelve counties for which reports on rural service provision had been compiled; and in rural Scotland, Cottam and Knox (1982) and Mackay and Laing (1982) investigated the loss of services. Clearly, the decline was depriving some

groups within rural society of essential services.

Numerous statistics can be quoted to support the assertion of the Standing Conference of Rural Community Councils (1978) that the general level of service provision in rural areas was poor. In the areas of education, health and retailing there has been in the post war years a general reduction in service points. In the decade 1967 to 1977, 800 rural primary schools were closed in England; in 1979 approximately, four million people in England and Wales lived in parishes without a doctor's surgery and 750 000 in parishes without a sub-post office. The smaller the settlements the greater the probability of a service being lost.

Declining population and increasing personal mobility explained, in part the downward trend in the number and range of goods and services available in rural areas. These two concepts of range of a good and service threshold were developed by Christaller in the 1930's and applied in the U.K. by amongst others Green and Ayton. They calculated typical service thresholds for Norfolk in the 1960's (quoted in Cloke 1979). The threshold for a grocery shop was given as 300, a single doctor 2 000 to 2 500, a primary school 5 000 and a secondary school 10 000. Estimates for the threshold population necessary to support a range of services vary considerably. In the 1950's, thresholds of 500 to 600 were proposed (Cloke 1979), whereas a decade later Green et al considered 5000 as a minimum population for settlement viability. At the same time, West Suffolk County Council (1968) suggested 1 500 as a maximum figure for a rural settlement. However, what is apparent is that in a search for settlement viability service thresholds have

been revised upwards. The experience of both public and commercial organisations has been that more centralised locations through economies of scale give greater savings and greater profits, respectively.

Each of the services education, health and retailing are single deprivations. As with low incomes, unemployment and housing an individual may be deprived in terms of one or more of the above. In this section, it is the intention to discuss the literature's contribution to the understanding of the rural spatial distribution of these three services.

(1) Education

The restriction of both public and private housing to market towns and service centres has encouraged the migration of families from the remoter areas to these centres, and this in turn makes provision of education in the smaller settlements economically less viable. The function of the school is ostensibly an educational one, yet it provides for the whole population an area of public space and a focal point for village activities.

Since, 1944 Education Act, in theory abolished 'All Age Schools' secondary education has been centralised in all parts of the country. In practice, it was the early sixties before 'All Age Schools' entirely disappeared from the educational landscape. Although, in terms of quality of education this was undoubtedly, an essential step forward, it contributed to the costs of educating the rural child. Village schools lost 40% of their pupils when they became primary only, and this added to the accelerating costs of rural primary education. Nash et al (1976) calculated that

in Wales in 1972 the average cost of educating a child in an eleven pupil school was seven times greater as compared with all schools. In 1978, Powys County Council showed that costs per child in a ten pupil school were three times greater than in a 120 pupil school. This together with the Flowden and Gittins Reports (1967) which both recommended that schools should have a minimum of three teachers or between 50 and 60 pupils, led some county councils to close the smaller, often remoter primary schools. Nevertheless, only four counties had actually set a minimum school roll of 50 children by 1978 (Standing Conference of Rural Community Councils 1978), but recent reductions in educational spending have resulted in counties reviewing the costs of educating the rural child.

However, Nash et al concluded that there was scant evidence to support the view that the attainment of children in rural schools was lower because of the poorer resource level. An OECD/CER 1 (1979) report commented, that rural parents were more concerned with the happiness of their children than their educational achievement, but that in order to overcome the problem of satisfaction with their 'lot' it was necessary to expose children to the more competitive environment of the larger school.

To meet the government's requirement for comprehensive education at the secondary stage, reorganisation of the secondary school system took place in the seventies. In some authorities, the primary/secondary system was replaced by a three tier system of first/middle/high. This effectively, reduced the number of pupils in the first schools by two age groups as they attended from 5-9 years

instead of 5-11 years. Hence, schools which were viable as primaries were too small as first schools. The literature concentrates on the educational benefit to the child of being educated in a larger school and pays little attention to what must be considered as the negative effects of long bus journeys, loss of days in school through inclement weather, an inability to take part in extra-curricular activities due to lack of transport and the isolation of parents from school activities.

One writer concerned with the negative effects of centralisation was Gilder (1979) who from his research into the provision of education, health, transport, and sewerage in West Suffolk concluded that, although internal economies of scale were achieved through centralisation, particularly in education, the costs to the settlements of these policies far outweighed the economies gained. He firmly recommended that in West Suffolk better use of existing facilities in education would, in community terms, be more cost-effective.

These studies relate mainly to the provision of compulsory education, yet local authorities have a statutory obligation to provide further education. In rural areas, where threshold populations are far too low for the establishment of Further Education, long distances often have to be travelled to further and higher education courses. For example, Northumberland's Further education College is located at Ashington some sixty-five miles from the west and north of the county. Requalifying or even gaining basic training may mean leaving the area. The OECD/CER 1 report mentioned earlier states that this in itself can be a deterrent both financially and

psychologically.

The adult evening classes provided on a local basis by the Workers' Educational Association (WEA) and local authorities, have in recent years been centralised in the larger secondary schools where specialist facilities are available (Trotter 1963). Whereas, in 1951, most village schools provided something (and there were far more of them), today the only education provided in many villages is through the Women's Institute (WI) or church. Furthermore, the school environment as a public space was used by women, not only in caring for their own children, but in meeting other women socially and also as a source of employment. Cleaners, cooks, school meals supervisors, secretaries and auxillaries as well as the teaching staff were predominantly women.

Unlike health and retailing services, for adults, education even in the widest sense is not perceived as a necessity, and the opportunities even when available are not used by all village inhabitants. Therefore, attention has tended to focus on the loss of the village school for the children, rather than the loss of an educational and cultural facility which provided important economic and social functions for the community.

(ii) Health

Leschinsky (1977) used a sample of WI members to study the provision of health care in rural areas, and concluded that transport difficulties, shortage of medical facilities and the centralisation of services were the three main problems experienced by rural dwellers. This supports the

discussion by Hart (1973) of the 'Inverse Care Law', where those most in need of health care are least likely to gain access to it, either through geographical location and/or low income. Waddington (1977) from his research into the use of health care services in the London Borough of Southwark found that social class was a key issue in the use of services. He commented that,

"...the highly bureaucratised and highly centralised services were provided in organised settings with which the articulate, professional, socially competent and geographically mobile were able to cope, but which did not fit into the working class lifestyle."

If, his conclusions apply to the inner city, how much more do they apply in the countryside, where distance and the cost of overcoming it, are a far greater obstacle to use.

The work on access to hospital facilities has mainly been carried out in Norfolk. Haynes and Bentham (1979) writing in Area examined the effects of accessibility on the use of hospitals in rural East Anglia. They came to the conclusion that both time and distance do affect the use made of hospital services both by patients and visitors, and that locational decisions are in part a decision as to who will benefit from the services being located. Lumb (1983) in a report on access to medical services in rural Northumberland found that the greatest problem was the availability of transport between the patient's own home and the medical service. She proposed a voluntary car scheme organised locally and in which petrol costs were reimbursed by the Community Council. This 'informal' solution follows the proposal by Moseley, mentioned earlier, that the provision of public transport services in the future could

be met on a community basis.

(iii) Retail Services

"There is a tendency for human activities to agglomerate to take advantage of scale economies." Chorley and Haggett (1967)

This premise which either forms the basis of, or is implicit in, the models of settlement location and urban structure applies equally as well to the location of rural services. The threshold population required to support a shop selling lower order goods and services cannot be reached in many small villages.

The function of the village shop was not only economic, but also social. Socially, the village shop provided a 'local advice service' (Clark and Unwin 1980) where news was exchanged and advice sought. It was, also, one of the few areas of public open space used by women in the performance of their domestic chores (Middleton 1983).

Since 1951, the distribution of retail outlets has been adjusting to the lower rural population densities, outward growth of towns, increase in private car ownership, and the changes in retail selling. Villages in which retail services clustered in the past have been abandoned while new superstore type complexes have opened on the periphery of the urban area. This process of adjustment has left some villages without a single retail outlet. For such villages, the impact is absolute. The elderly, handicapped and young mothers who are least able to travel to collect pensions, or child allowances are the most affected. The greater proportion of these are women.

In the five years 1972 to 1977, 13% of villages in Gloucestershire and Wiltshire lost their shop, and in the same counties 8% also lost their sub-post office (Standing Conference of the Rural Community Councils 1978). These figures raise the question of which rural settlements are at risk. In 1951, Edwards considered 450 adults the minimum in North East England settlements to maintain a stable population; settlements with less than 450 were at that time experiencing decline and those with less than 100 adults a loss of social and commercial facilities. Twenty-four years later, Massam (1975) addressed the question of minimum threshold populations. He concluded, that the threshold can be determined by the lowest population being provided with the given service. However, such a crude method does not consider the shape of the area in which the service is being provided. Hampson (1971) showed that the greater the circularity of the borough the higher the costs of providing a service. A linear settlement pattern led to lower transport costs as compared with a nucleated one. In rural areas, retail services are often provided by a mobile shop. Mobile services do offer one alternative solution to the problem of providing services in a sparsely populated area (Moseley 1979b). Hampson suggested that the feasibility of a mobile retail service may well be a function of the topology of the rural area as well as the density of population. Mobile services in 1981 appeared in many rural areas to be confined to shops, meals-on-wheels, coal and milk deliveries, refuse collection and libraries. Chiropody and dental services are provided in some counties (Moseley and Packman 1983).

Again the problem is not only the actual service that has been lost, but also, in the case of the village shop and/or sub-post office, the information function it performed.

(iv) Information

Like housing and health services, information is not equally accessible to all, but as with education, its value in escaping the poverty trap is so often underestimated by those who need it most. Abler, Adams and Gould (1971) writing before the advent of welfare geography considered three main types of spatial interaction: movements of people; movements of goods and services; and movements of information. Information was defined as new facts, data, ideas, and routine communications. The information sector of a nation's space economy can be said to have three functions, firstly, to produce new knowledge and applications of ideas; secondly, to transmit new ideas and knowledge; thirdly, to train new people in the knowledge business.

"...thus a nation's educational system together with its research and development effort forms the cornerstone for the entire society." (Abler et al 1971)

Information together with education are essential to the economy of a society, therefore, accessibility to information is just as important in the countryside as in urban society. The decision making process relies on,

"...this abstract resource which is used ultimately to reproduce the economic system." (Blaikie 1978)

An individual's decision making is constrained by the

information he has, therefore decision making takes place within a Mean Information Field. When an individual does not have access, or has difficulty in gaining access to information which is relevant to his decision making at a particular point in time, then the group of constraints acting upon that decision has been called an Access Profile (Blaikie 1978). Gould (1975) proposed the use of the gravity model to predict information surfaces and suggested that the information received by any group of people at a given location was relatively homogeneous. When applied to the rural environment where, as has already been shown, the space used by men and women, and hence the contacts they make are quite different, then it follows that the information they receive will be different.

The Access Profiles of many rural dwellers are influenced by low incomes, sometimes poor television and radio reception, lack of a telephone and the absence of newspaper deliveries. Those working within the community or at home i.e. women, move in a small circle and are seldom exposed to the information milieu of the city.

Concern for the lack of information available in the countryside was expressed by the National Council of Social Services (1978) in a review entitled The Right to Know: A Review of Advice Services in Rural Areas. They considered that there was a need for more rural advice services including better publicity, telephones and an expansion of the mobile service bureau. However, when Clark and Unwin (1979) examined the information needs of

rural dwellers in Lincolnshire, they concluded that more detailed knowledge was required about peoples' information needs and their access behaviour. Clearly, as with telephones, radio and television the rural area will be the last to benefit from the new information delivery services of satellite and cable vision, if only on the grounds of cost. The single deprivations discussed earlier act as constraints on the Access Profile of rural dwellers to information. The very information needed to combat deprivation.

This section has shown that the single deprivations for the most part affect some groups far more than others. Women in rural society, have been shown to be more at risk because they form the greater proportion of the social groups identified as being relatively deprived. Furthermore, the decline in services has eroded the public space women have traditionally used in their domestic chores i.e. village shop, school and in some villages even the church. Constraints have been placed on the space women use and increasingly, those who do not work are confined to the private space of home. The situation is further exacerbated by the multi-dimensional deprivation - accessibility. Accessibility, is not only a multi-dimensional deprivation, it is also a multi-faceted concept which will be explored in the following section.

Accessibility

Earlier accessibility was defined as, "...the ease with which people can obtain necessary goods and services." (Pacione 1984). The emphasis must be placed on the word ease, for on the one hand there are people who have 'felt'

needs and on the other, goods and services which satisfy those needs. How accessible one is to the other depends upon two broad groups of factors which may function as obstacles to the satisfaction of an individual's needs.

The first set of obstacles is made up of those concepts concerned with overcoming the geographical distance between the population (demand points) and the goods and services (supply points). The greater the distance, potentially, the greater the accessibility problem. Routes, quality of road and rail networks, the frequency and timing of public transport services are all a part of this parcel of obstacles. The greater the individual's ability to command the resources to overcome the distance to supply points the more goods and services are accessible to them.

The second parcel of obstacles is associated with the socio-economic characteristics of the individual. Age, income, qualifications may all act as barriers to either commanding the resources to overcome distance and/or gaining access to the goods and services. For example, a sixteen year old may have a 'felt' need to own a sports car, but although she may make the journey to a car sales showroom, income, age and qualifications are all possible barriers to owning and driving one.

Knowledge and perception of what is accessible based on that knowledge, both play a role in the ease with which people can obtain goods and services. Where previous experiences, or knowledge of others recounted experiences leads the individual to regard distances, costs and other factors such as physical handicap as preventing them

from obtaining goods and services, then they are perceived as being inaccessible by them. Perceptions are based on attitudes which manifest themselves in behaviour. Attitudes can act as obstacles to obtaining access to goods and services. For instance, attitudes towards dental care as an unnecessary expense prevent many from seeking the services of a dentist until it becomes a felt need!

In overcoming psychological barriers to access to some services in particular requires the support of others: How often is a hospital waiting room filled up by those accompanying patients in order to provide them with emotional support. Support of a different kind is given, for example, by a family to free a member of child rearing responsibilities to 'go out' for an evening. Similar support may also be provided by baby sitting circles, creche facilities, day care centres for the elderly etc.

The multi-facted nature of accessibility was recognised by Hägerstrand (1974) when he proposed from the perspective of Time Geography the following definition:

"...accessibility has at least two sides. One is legal/social. Frequently, an individual must fulfill certain requirements in terms of training, age, ability to pay, support from others and so on, in order to be permitted to pass the barrier around the supply point he wants to reach. The other is physical. He must be able to command the transportation facilities which are needed for reaching the supply points at suitable times."

Hägerstrand's definition of accessibility has been adopted by welfare geographers and is the starting point of this discussion of rural accessibility. The low density of

population in rural areas means that the threshold for both commercial and public services can only be achieved, if they are spaced over a wide geographical area. Locations in larger rural settlements give accessibility to a greater proportion of the population, but conversely, those rural dwellers living outside these settlements find distance a greater obstacle to access. Furthermore, even those who obtain lower order goods and services with ease find distance a considerable obstacle to gaining access to the higher order ones available only in the regional city. Commanding the transport facilities needed to reach the goods and services is one dimension of the rural accessibility problem.

Another dimension stems from differences in the socio-economic characteristics of the rural population. Rural dwellers are older, opportunities for employment are fewer, incomes are lower and housing lists longer than in urban areas. In short, the experience of deprivation has led to different perceptions of what is accessible, and hence different behaviour towards obtaining goods and services. There is generally a greater probability that rural inhabitants will find access to opportunities barred due to a combination of transport facilities, training, age, ability to pay and a lack of support from others than their urban counterparts.

These two dimensions describe the rural population at a disadvantage relative to city dwellers. However, the uneven distribution of resources discussed earlier (Rose et al 1979), and the movement of people with urban lifestyles from the city to the countryside has resulted in

a deteriorating situation. Moseley et al (1983) summarizes the rural accessibility problem as follows:

"...rising car ownership in rural areas (to 60-80% of households) has undermined both village services and the public transport that might have compensated for their decline. A widening gap has developed between the accessibility of those with private transport and the diminished accessibility of those without."

Transport accessibility was defined by Jones (1981) in terms of the ability of people to get to, or be reached by the opportunities which satisfy their 'felt' needs. It emphasises the ability to command the transport resources necessary to overcome distance. Much of the earlier literature was concerned with the measuring of accessibility and in so doing sought solutions to the transport aspect of the problem.

(1) Measuring Accessibility

The study of the problem created by the juxtaposition in space of people and services developed from the need to design efficient transport networks and to understand the processes at work in the choice of retailing centres.

Transport geographers have approached the study from the perspective of network analysis. The morphological study of networks in which route density, route factors (the ratio of route distance to geodetic distance) and the density of access points are used to classify networks was summarised by (Hay 1973) and contrasts with the topological approach first introduced by Garrison and Marble (1962).

They pioneered the application of graph theory and matrix algebra to network analysis. Later refinements by Bunge (1962) and Karsky (1963) lead to its application to the comparison of networks in different times, places and geographical scales. These techniques were criticised by Hay (1973) on three counts; the simplification of the network; lack of independence in the indices calculated; and the interpretation of the results.

A different approach used by transport planners emphasised the interchange between the origin and destination. Models developed to measure trip distribution incorporated the impedance function of the gravity model. The simple gravity model proposed by Reilly in 1929 was based on the Newtonian concept of gravity and made the following assumptions:

"...that trip generation between zones is directly proportional to the relative attraction of each zone and inversely proportional to some function of the spatial separation between zones." (Bruton 1971)

Considerable refinement has taken place in both the USA and Britain. In America travel time has been introduced as an adjustment factor in an attempt to overcome the criticism that the inverse power of distance was unsatisfactory as a resistance factor, failing as it did to give a valid estimate over the full range of distances. One of the American accessibility models was constructed by Hansen (1962) and applied to Greensboro and Washington, DC. The findings supported the premise that accessibility is the main determinant of residential location.

In Britain, Wilson (1967) devised a method of

assigning a cost to both behavioural and time factors. These costs were summed to give a 'generalised cost'. Although, criticised for being subjective, when tested in S.E. Lancashire and N.E. Cheshire using an adjustment factor incorporating the generalised cost for income, car ownership and household structure, it proved to be a useful research tool.

The allocation of trips to different modes of transport, referred to as the modal split, can be measured numerically. All the measures developed assume that for a given total travel demand, the proportion carried by each mode of transport will depend upon the standing of each relative to its competitors. Those travellers without personal transport are deemed to be the captive public because at best they only have public transport, and normally only one mode of public transport is available, whereas the car owners have a choice. The factors influencing modal choice are described by Bruton as the characteristics of the journey; the travellers; and the transportation system. He considered car ownership, or the availability of a car, as the most significant factor affecting modal choice.

Various relative measures have been devised to compare the level of service offered by competing modes of transport. A ratio for relative travel times was developed by the National Capital Transportation Agency (quoted in Bruton 1970). All the elements of travel time for public transport are summed and divided by the sum of the time elements for private transport. The same method is used to calculate a travel cost ratio. What is significant about

these ratios is that they take into account factors such as waiting time for public transport and parking time at destination for private transport.

Weiner (1966) devised an accessibility index to measure the quality of service provided by alternative modes of transport. A travel friction factor was used to include door-to-door travel time in the equation. When it was applied in the Southeastern Wisconsin Regional Land Use Transportation Study, in order to obtain a relative measure the private motor vehicle accessibility index was divided by the public transport index to give an overall accessibility ratio. This enabled comparisons to be made between one area and another for overall accessibility. The London Traffic Survey (Freeman et al 1966) used a different accessibility index which reflected the number of routes serving a zone, the frequency of the services and the area of the zone. There was no attempt to incorporate measures of travel time or cost, nor was it designed for use with private modes of transport. Although, these indices are simple and easy to use Bruton (1970), argued that they do not provide a very satisfactory measure of the relationship between one zone and another. A more detailed discussion of the indices is contained in chapter five.

Curry (1972) writing in Regional Studies reviewed the gravity model as a method of spatial analysis and concluded that there are a number of problems resulting from the method of calibration. If the regression method is used then there is an assumption that friction is constant whereas it varies with spatial patterns. Unless friction is fed in a priori the results may be meaningless. The least

squares accounting method is an alternative, but although all the data is used it does not produce a goodness of fit. He sums up the gravity model as being a shallow explanatory tool which is most effective in the prediction of travel behaviour.

Later Baxter and Lenzi (1975) combined a physical distance measure with population potential to give a composity index to measure relative accessibility in a simple figure. A different approach was taken by Oberg (1976) who described measurements of access "...as yardsticks of the possibilities of utlising the enviroment..." He proposed three mathematical formulae for measuring accessibility to a supply point into which he incorporated meaures of distance and travelling difficulties. Although he discussed the importance of the arguments relating to economies of scale in the provision of services and the costs involved in satisfying both the observed and potential demand, he also emphasised the need for greater knowledge about individual conditions.

The gravity model continued to be the theoretical basis of accessibility measures. Weiner (1966) accessibility indices for different modes of transport was followed by Martin and Dalvi (1976) on this side of the Atlantic. They further refined the gravity model to reflect the influence of partcular modes of transport, thus enabling a comparison to be made. Benwell (1978) incorporated Martin and Dalvi's indices in her proposal of an accessibility framework for the development of techniques applicable to normative transport planning.

From the literature, discussed above, the general consensus is that accessibility measures are valuable research tools providing that their limitations are recognised. Much of the work quoted in this discussion has been applied to the measurement of inter and intra urban accessibility. The limitations of the measures include their inability to estimate accurately trip generation in rural areas; to take account of the considerable variations in socio-economic characteristics between individuals; or to allow for differences in the nature of the services.

In devising accessibility indices transport geographers treat residential populations and services as occupying fixed locations in the short to medium term. A different approach to accessibility is to explore the policies used to locate people and services in space. Here there are two levels of policy, the overall planning strategy of the local authority which determines those rural settlements to experience growth, and the policies applied to individual services. The decision to locate a service is taken within the context of the overall planning strategy so it is necessary to consider this level of policy first.

In post-war years local authority planning has centred on the key settlement policy which was influenced by Perroux's growth pole theory and Christaller's central place theory. Cloke (1979) discussed the development of key settlement policy from these two theories and other related concepts. However, he also stressed that it offered to planners the:-

"...definitive and seemingly innovative policy from which it was evident that the problems of the rural areas were being tackled."

Growth centre theory offers a rationalisation for the concentration of resources in settlements designated as suitable for growth. Economies of scale can be achieved in terms of infrastructure and service provision, agglomeration of manufacturing industry in a rural centre may enable firms to achieve both internal and external economies of scale. Growth poles offer the possibility of introducing some development and prosperity into the more rural areas and to stabilise the rural population through the provision of employment.

The ability of a settlement to achieve these economies and influence the development of the surrounding area as described above will depend upon its size. Two tiers of rural growth poles were discussed by Cloke (1979). The larger rural settlement of approximately 15 000 would be able to provide a range of opportunities for rural employment and have a significant effect on the surrounding areas. The smaller growth pole of between 3 000 and 5 000 population would provide infrastructure and service provision together with a small amount of employment. The number of growth poles obviously depends on the overall size of the rural population and the potential of individual settlements for growth to the threshold size.

Central place theory as understood in the English speaking world has contributed to the key settlement policy by providing an explanation for the historical development of a partially planned hierarchy of settlements which can be

identified in many parts of the world. It also gives the principles and constraints under which central places might grow or decline under more or less free market conditions. Although natural central places can be identified at given points in time, the central place hierarchy is constantly changing as one centre develops and another declines.

The concepts of a threshold population, and range of a good were fundamental to the formation of the marketing aspects of central place theory. The notion of a threshold population necessary for the sale of a good or the provision of any service was important in determining which services would be viable at each tier of the settlement hierarchy. In addition the range of a good concept contributed a measure of physical distance and enabled the areas over which people would be prepared to travel to gain access to a good or service to be delimited.

Amongst other theoretical contributions to the key settlement policy is cost-benefit analysis which has attempted to quantify both the economic and social costs of different policies to the supplier and the consumer. Unfortunately, it is the economic costs which can be most accurately costed and in consequence have been given most weight by the planners. Opposition to key settlement policy has come from those who claim that the price of stabilising the rural population has been to exacerbate a whole range of social problems in small rural settlements (Pacione 1984). The social problems are described by Pacione as a lack of low cost housing, gentrification leading to increased house prices and the further isolation from essential services of the non-mobile population.

Gentrification is specifically a problem in key settlements where high cost new housing has been built.

It can be argued that where the public transport network is hierarchical, then a hierarchical provision of services will be encouraged. Without the public transport network, service provision may develop as in parts of North America with functionally interdependent clusters of similar sized settlements. Where these clusters occur then the interrelationships between settlements are developed (McLaughlin 1979). A further criticism which can be levied against key settlement policy is that it fails to recognise the interrelationships between settlements of similar size. However, this assumes that they are close enough together for interrelationships to develop.

However, although alternative policies exist, the key settlement policy whereby a hierarchy of settlements is identified and a number of growth poles in each tier designated for the concentration of financial resources has been widely used in Britain, and specifically Northumberland and Durham, in the post-war era. It is within this framework that the provision of both public and private services must be considered.

(ii) Service provision

Hodgart (1978) when reviewing the literature of accessibility to public services quoted Bunge (1962) as saying that one of the central geographical questions was "placing" intersecting objects as close to each other as possible in geographical space. The emphasis is not on the movement between fixed supply and demand points, but a

consideration of those points and their optimum location in space. He saw three forms of the problem of the location of public services namely as follows:

1. Assuming that no facilities exist and assign n number of facilities freely.
2. Take into account the existing facilities and locate additional ones.
3. Reorganise existing centres by closing ill located facilities and opening new ones.

Hodgart stated that most writers had concentrated on the problem of assigning facilities to a given population on the assumption that none existed. Whereas in reality, the problem was more likely to be that the location of additional facilities was necessary to compliment existing ones and to improve the general accessibility level. He further criticised models which assumed inelastic demand for seeking to optimise efficiency rather than the goals of equity and concluded that, given distance is a greater barrier to the less affluent and other disadvantaged groups a more balanced approach which takes account of the social and spatial characteristics of the population is required in the rural areas.

One of the models criticised by Hodgart was that of Massam (1974) who explored the number, location and capacity of facilities through the development of an inelastic demand model. Where demand is inelastic the choice is between facilities, whereas when the demand is elastic, as in Christaller's central place theory, it approximates to the distance decay curve in which demand falls as distance increases from the supply point. Theoretically, this would lead to the organisation of services for which demand is

inelastic, for example schools to be widely spaced and to have large catchment areas, and libraries, for which the demand is more elastic to be closely spaced. This ignores both the type and range of the service being provided and the specific characteristics of its users. Furthermore, where a local authority has a statutory duty to provide a given level of facility elasticity of demand is not relevant.

From the point of view of business establishments accessibility is an important locational factor. As Andrioli et al (1979) commented the spatial structure of an area together with the institutional/organisational structure imposed by government both need to be considered in determining a location which serves for the region as well as the immediate locality.

In the section entitled Deprivation individual services are discussed as single deprivations. The discussion here will concentrate on the general locational accessibility of services. Packman and Wallace (1982) reviewed specific rural services in Norfolk and Suffolk, and concluded that the widespread closure of retail outlets, education and health care facilities in parishes with populations between 200 and 600 had adversely affected the accessibility to services such as the post-office, shop, doctors, schools, garages and public house of people living in these smaller settlements. The individual services and the decline in accessibility were discussed earlier in the section on single deprivations. It is sufficient here to note that although, the closure of such services as schools may be in accordance with the county structure plan, the closure of

commercial retail outlets are either because they are no longer economically viable, or as in the case of sub-post offices there is no one to continue the service. The implementation of a key settlement policy does not directly lead to the closure of such outlets, but indirectly by encouraging the location of other services, employment opportunities and the provision of housing in the larger settlements.

To return to the specific characteristics of the users of services, there was an assumption in the earlier rural research that people living in the same household had identical characteristics in terms of access to services. The socio-economic data for households given in the decennial census was used by Knox (1974) in compiling the Level of Living Index and Cloke (1977), the Index of Rurality. One of the problems with using household data is that the car ownership variable does not necessarily reflect accurately the personal mobility of all members of the household. It is a measure of the personal mobility of the most mobile members of the household, therefore, it can be very misleading. Furthermore, it is frequently the man who drives the car, and has it during the day and the woman and children who travel by bus. Many of the county councils and district councils used the household data in drawing up the county structure plans (NCC 1979 and Phillipson 1983) and so ignored the specific individual characteristics of the users of rural services.

Time Geography takes the individual as its central

focus. Therefore, the final contribution to the discussion of the theoretical approaches to accessibility is from Time Geography.

Time Geography

Time Geography was developed by Torsten Hägerstrand from earlier migration studies in Sweden, using historical data, to understand the processes at work in the diffusion of innovations. In the 1960's he turned his attention to using the resources of space and time to construct a broader framework for the study of population movements. Thrift (1977) quoted Hägerstrand as saying of time-geography,

"I am looking for a way of finding conceptual coherence in the geographer's understanding of the human world all the way from home to globe and from day to lifetime."

Pred (1977) further explained that it was Hägerstrand's intention to focus on the local interconnectivity of the real world phenomena as well as the connections between spatially separate configurations of locally connected phenomena. He looked to the time-geographic framework to enable the identification of structural patterns and the study of processes which given current theory had not been possible. Time-geography then is a physicalist approach to the study of society. An approach which recognizes the

"...biophysical, ecological and locational realities which impose constraints on the performance of the social system." (Thrift 1977)

It takes as its base the system of human individuals inhabiting a region and from that focus develops a model of society which attempts to describe the locational and situational relations both within and between society.

Society is composed of human beings who have certain attributes which determine their ability to use space and time.

Hägerstrand (1975) summarised a number of basic conditions affecting human life and society. These included the indivisibility of the human being; the limited length of human life; the limited ability of the human being; the duration of an activity; the use of time to move between points in space; the limited packing capacity of space; the limited outer size of terrestrial space; and that every situation is inevitably rooted in past situations. Given these basic conditions human activity can be placed within a space-time framework.

The activity of human beings is made up of projects (or activities) which occupy discrete units of time and utilize other materials, plants and animals. These projects may not be realised because of constraints which operate on the individual's use of space and the time available.

The constraints are divided into three groups - capability constraints, coupling constraints and authority constraints. Capability constraints limit the individual in terms of her own biological makeup and the limitations of the tools available. Coupling constraints relate to the assembly of the individual, tools and materials at a given point in time, and finally, authority places controls and limits access to the tools, materials and stations.

The points in space time where activities take place are referred to as stations and the paths taken by individuals

from birth to death through the stations form a web as the paths intersect at different stations.

The time-geographic model operates at three levels of society, the individual, the station and the aggregate societal level. At the individual level it is the construction of a life path which reflects choices of activities at different points in time. These choices by implication may block the access of others to the same set of tools, materials etc. and so influence the decisions of other individuals. The station is where a number of activities take place and to which, and from which individuals travel.

The space-time prism developed by the Lund group describes the station level of analysis. The movements of individuals are subject to the coupling constraints imposed by the stations including set work hours and opening hours, for instance, of a public house or a bingo hall. The space-time prism is delimited by the journeys individuals make from a given station such as 'home' to other stations in carrying out their daily activities.

The third aggregate level of the model starts from the premise that in order to fulfill its needs, society has a time demand and a time supply. This concept of time is analogous with opportunity cost, in that if a unit of time is used for one project, it cannot be used for another. Therefore, society has preferences for the use of time as a scarce resource. Furthermore, a social system has a capacity for the use of time and may pack space with projects in the same way as an individual. Time space

packing is a concept which will be discussed later.

The concepts described above form the basis of the time-geographic approach introduced by Hägerstrand. The development of this approach has been continued by a team of researchers at Lund University, the key members of which are Tommy Carlstein, Bo Lenntorp and Solveig Mårtensson.

In 1978, Carlstein, Parkes and Thrift edited a collection of essays entitled "Timing Space and Spacing Time. Included in the collection were papers by psychologists, economists and geographers. The contributions of Hägerstrand and his colleagues form a major part of the second volume of Timing Space and Spacing Time. The review of the literature of Time Geography is based on this collection of essays together with further work from the Swedish geographers. As already stated space and time are the two main resources of time geography. The discussion will explore each concept in turn.

Space refers to a complex set of ideas, in that it has a different meaning for geographers, architects and astrologers to its meaning in common parlance. To geographers, it is the three dimensional space of the world in which we live. Space has both a locational and experiential dimension. Locational space can be measured, plotted and reproduced in atlases and maps, whereas experiential space is the perception of space which is formulated by each individual into a "mental map" of the world (Parkes and Thrift 1978).

Locational space has a past, a present and a future and

so is related to the temporal dimension. The individual receives information about locational space from the past, the present and how it will be in the future. Similarly, experiential space, or the "mental maps" of individuals are compiled from past experiences and are continually being adapted and modified as further information and experiences are gained.

Time like space has a locational and experiential dimension. The calendar and clock measure the locational dimension placing events in measured time. The experiential element of time enables the individual to create a "mental clock" akin to the "mental map", which allows him to make sense of the past, present and future as he perceives it.

Parkes and Thrift (1978) argued that it is through the medium of mental maps and clocks that an individual is able to order the space and time of the outside world. They proposed a hierarchical model of the social system in which four levels of temporal and spatial information are conveyed to the individual. The highest level is that of the superstructure which is described as the

"...totality of the political economy with its three elements: an ideology, a political system and a socio-economic structure."
(Parkes and Thrift 1975)

Environment forms the second highest level and includes all the constraints placed by the spatial and temporal organisation of the built environment. This in turn leads to, and places constraints on, the activity systems manifested in the paths taken by individuals through timed space. Finally, the lowest level of spatial and temporal

information is that of attitudes and perceptions through which the individual formulates his mental maps and clocks.

Reference to the work of Gould (1975) and Blaikie (1978) with their respective concepts of "information", "environment" and "mean information fields" was made earlier in the chapter. Here the focus is on the processes at work in the individual's compilation of a mental schema which approximates the real world, rather than the potentially available information discussed earlier.

Parkes (1974) considered two categories of information - hard and soft. The hard information is that which enables the immediate response, whereas the soft is described as having an elasticity so that it may, or may not, be acted upon. Realization of soft information depends upon whether it is compatible with the realization of hard information, and whether it accords with the individual's mental schema of reality. Therefore, an individual has not only a mental map and clock which represents her perceptions of reality but also a "mental prism", built up from the information she receives.

Parkes and Thrift (1978) saw the mental prism as being the mental map of all the activities at various stations which an individual might think she can participate in. Her perception of what activities and stations are realizable is based on past and present experiences of realised places, and the places which she perceives as realisable in the future. This perception is formed through a complex process of filtering spatial and temporal information received from all levels of the social system. They conclude that it is

only when locational and mental prisms converge that place is realised.

The model outlined above of the relationship of the dimensions of space, time and social organisation to the realisation of place has led to research into the dimensions of both locational and experiential time-space prisms and comparative work on the variations between individuals, groups within society and regions.

The realization of place must be seen in the context of the colonization of time (Melbin 1978) and time-space packing (Carstein 1978). These two concepts add to the understanding of the formation of Individual Activity Programmes (Mårtensson 1978, Lenntorp 1978). The colonization of time refers to the extension of the wakeful activity through the 24 hours of the day. Through shift working, 24 hour establishments such as shops, restaurants and garages have extended the period of time when activity can take place in the western style city. This has implications for both the individual's locational and experiential prisms, as it extends the diurnal period during which place can be realised for given activities.

Carlstein was concerned with the relationship between innovation and the use of space-time. The concept of time-space packing summarises the existence in settlement space-time of human populations and material goods; and the capability of the population to include time consuming activities in their time-budgets, together with the group dimension of the packing of space-time with populations, resources and activities. Innovation has implications for

the resource, time. Within the context of rural populations, settlement space-time in the developed world is less packed with human population than a century ago, partly because agricultural innovations have reduced the labour required to work the land. Similarly, with respect to the impact of innovation on the weekly time-budgets of housewives, fifty years ago washday was Monday and ironing on Tuesday etc. whereas, today household technology and innovation has reduced the time consumed by these activities.

The data on experiential prisms constructed from the mental images of individuals has enabled a number of studies into perception and associated spatial behaviour to be made.

Golledge (1978) using data collected in Columbus, Ohio investigated the information used by people to construct spatial images of an urban environment, and showed that as the spatial and temporal information they received changed, so did the spatial images. Orme (1975) from the discipline of psychology, on the other hand, discussed the importance of the perception of time to people's spatial behaviour. He concluded, that firstly, the perception of time depends on the extent to which an individual packs their time-budget with activity, and secondly, that time horizons are much shorter for the poorer classes than the "better-off" groups in society. These conclusions are important in the explanation of the spatial behaviour of groups within both urban and rural society.

Further work relating human time allocation to spatial behaviour was undertaken by Cullen (1978) in which he considered time as both an accounting unit and an

integrating medium. He argued, that time is the integrating medium for the study of spatial behaviour in that to understand behaviour, the attitudes and motives of individuals must also be understood and vice versa. As attitudes and motives form over time, then time is critical to the understanding of both short and longer term behaviour. Lifestyles are characterised by specific behaviour patterns which are the result of decision making over "life choices". The individual continually adapts his behaviour to accommodate each decision. Cullen argued that while the important choices are made infrequently, their implications are experienced daily, therefore, it is daily behaviour patterns which need to be studied.

In studying, the daily patterns of activity emphasis can be placed on the locational rather than the experiential prisms in which individuals operate. Forer (1973), argued that time-space is a relative space in that as transport technologies change the "qualities of space-time are subtly altered". This dynamic aspect of space has implications for interaction. He saw the growth of commuting as one example of changes in space-time interaction resulting from changes in transport technology. Using empirical data on changing transport technologies in Christchurch, New Zealand, between 1880 and 1970, he constructed a model of a multi-layered city to illustrate how urban time-space has evolved and the implications of that evolution.

Lenntorp (1975 and 1976b) explored a time-space approach to the study of public and personal transport systems. In a second publication in 1976, he discussed the concept of paths in space-time (Lenntorp 1976a). He distinguished

between the potential prism and the events which are accessible within it. The activities which the individual can participate in, he described as the "reach" of the individual. The reach delimits the part of the potential space-time prism which is physically accessible to the individual. Two methods of measurement of the reach were given. The first is a measure of an individuals possible movements and is given by the volume of the section of space-time. In this way the individual's space time is delimited. When the prism is projected on space it is referred to as an activity area. The second measurement is an estimate of the number of possible individual paths produced through the use of a computer simulation model. This model, the PESASP Accessibility model, requires two sets of information: the first contains data relating to individual activity programmes and the second to the space-time environment.

Lenntorp used the same simulation model to investigate the public transport network of the city of Karlstad and concluded, that the PESASP accessibility model had potential as a valuable planning tool. One of the models limitations was that it dealt only with individuals and not groups within society.

Further work by Mårtinsson (1978) explored the differences experienced by individuals in carrying out specified activity programmes such as going to work and visiting a doctor in three Swedish sub-county regions. The intention was to investigate both inter and intra regional differences. The research findings indicated substantial differences in the living conditions of individuals residing

at various locations within the same region, as well as between travel using private and public transport.

Gregory (1985) reflecting on the progress of Time Geography observed that the emphasis upon constraints had led geographers away from the ecological approach of man and his milieu intended by Hägerstrand. The connections between the space-time prism in which each individual exists and the developing structures of social relation and systems of social practices were not being made. Hoppe and Langton (1986) in an attempt to place the activities of Swedish farmers within the changing agrarian scene used empirical evidence from nineteenth century records. They used the analogy of an empty room in explaining the relationship of individuals to the stations in space-time. The room remains empty unless the reasons for people being there and visiting particular stations are known. The individual chooses to visit a given station because of its function, therefore, the relationship of the station to the economic and social systems must be understood. Unless the purpose of the stations and the activities which take place there are fully understood, then the room remains empty and the reasons for people being there are not understood. For this reason Hoppe and Langton, saw time geography as being unable to move from a consideration of geometrical shapes and shifts in paths and webs resulting from constraints on individual's activities to the more fundamental questions about the changes which occur in society.

The problem then, is how to link the roles of individuals and their interaction with each other and specific stations with the social and economic functions of

the stations. To do this, Hoppe and Langton used the concept of a "livelihood activity system" or "livelihood position" originally proposed by Hägerstrand (1975a) and defined as

"...the set of resources of different kinds, divisible and indivisible, owned or otherwise acquired, that sustain the life of an individual or household." (Langton and Hoppe 1979).

Although, theoretically all the resources and relationships necessary to satisfy an individual's needs could exist at one point in space, in practice this can never be so. Fundamental to Time Geography is the need for individuals to travel to obtain the resources to satisfy their needs. They are therefore, involved in a livelihood activity system which is keyed in to the economic and social structure of the local, national and international environment through the stations which they visit.

Hoppe and Langton perceived their empirical research as one step towards fulfilling a gap which they identified between the theoretical parts of time geography, discussed earlier and the empirical analysis which had concentrated on different aspects.

The review of the literature of time geography has suggested a framework for the study of rural (in)accessibility which gives contextual meaning to the downward spiral of service provision experienced in many rural areas in response to the reduction in settlement space-time packing. Whereas, urban populations are benefitting from increasing colonization of time, in rural

locations the lack of transport services confine many to their home localities outside the normal working day, thus emphasising another dimension of rural deprivation.

The filtering of spatial and temporal information received by the individual from the different levels of the social system introduces the notion that the study of accessibility lies in part in disentangling the web of physical, social and economic constraints which form the dimensions of the locational and experiential space-time prisms. The above discussion of time geography would suggest that solutions to the problems of rural accessibility must take a holistic ecological approach and not seek to adjust one aspect of accessibility without regard to the implications for individual "livelihood activity systems".

Solutions

Solutions to rural (in)accessibility problem have been sought from two different perspectives. The first is that of the transport geographers who have concentrated on the study of existing services and ways of improving their efficiency. The second uses the space-time methodology to assess ways of improving the accessibility of social groups within society.

A number of rural transport studies were conducted in different areas of the country. Holding (1979) reported on rural bus provision and the fares policy in Northumberland. He pointed out that nationally between 1973 and 1975 bus fares increased at a faster rate than the Retail Price Index

while during the same period passenger journeys fell. The increase in the real cost of public transport was exacerbating the rural accessibility problem as defined earlier.

The 1978 Transport Act required all non-metropolitan counties to prepare a five year Public Transport Plan and to review it annually. These plans assessed community need, and the extent to which it was satisfied by current services. Objectives and financial proposals to deal with the unmet need were to be presented and implemented to provide a coordinated and efficient public passenger transport service. Rigby (1980), in a study of twelve Public Passenger Transport Plans claimed that the provisions of the 1978 Act had largely been ignored.

Increasingly, government publications had encouraged local authorities to experiment with rural transport e.g. RUTEX schemes and the provision of information as to how local groups could help themselves (Balcombe 1979). It was in this climate, that the incoming Conservative government introduced the 1980 Transport Act which changed the direction of transport planning, in that, many public transport services were deregulated. The legislation allowed for car sharing schemes and school buses to be used by fare paying passengers. Mini-buses could be used for local fare paying services and the Minister was given the power to designate 'trial areas' where no road service licence was needed for a local public service.

In 1986, rural bus services were again the subject of considerable attention in the rural press. The

implementation of the 1985 Transport Act, it was feared, would further reduce, or even remove, the already skeleton services to many remoter settlements, thus increasing the level of deprivation experienced by those dependent upon them, of whom many are women.

From the perspective of time geography, each individual is surrounded by an environment of resources and opportunities. The space used by men and women has been shown to differ, with women spending more time than men in the private space of home. A woman's time is constrained by the domestic chores associated with the daily routine of family life. Moseley (1979a) demonstrated the operation of the family routine constraint on the life of a hypothetical rural housewife whose day revolved around meal times and the school day. The maximum period she had at her disposal was four hours in the evening with two and three-quarter and three hours in the morning and afternoon, respectively.

Previously, Moseley et al (1977) had explored the opportunities available to carless groups within rural society through an analysis of the times at which activities are available together with the frequency and timings of public transport services. Using this method he identified group activity combinations such as housewives-shops and teenagers-extramural education, and evaluated various land use - transport strategies in terms of the accessibility they afforded each of these groups. Built into the evaluation of the various strategies was the reference to a number of "reasonable standards" such as those of acceptable waiting times, walking distances and journey times which varied with both the group and the

activity. What may be a reasonable walking time for a teenager to a youth club may not be reasonable for an eighty year old attending a senior citizens event.

An alternative approach by Moseley et al (1983) to the rural accessibility problem was the assessment of the provision of mobile services in rural areas. Using data gathered in a nationwide survey of W.I. and case studies from mainly Sutherland, Radnor and Suffolk to examine the current provision of fixed and mobile services in rural Britain, Moseley et al reached the following conclusions pertinent to this discussion. Firstly, there had been a noticeable decline in the provision of all categories of mobile services; secondly, that except for mobile libraries, population size was a key factor in determining whether or not a settlement had a fixed, or a mobile service; thirdly, remoteness was significant in determining a settlements services; and finally, that despite the two major disadvantages related to the constraints on quality and availability of services imposed by the size of the vehicle, the many advantages of mobile services include catering to small pockets of demand, flexibility and reaching the housebound, made them a valuable form of rural service. They recommended that mobile services should be evaluated as an alternative service delivery strategy, and that cooperation between mobile services could lead to substantial gains.

Whereas, Moseley (1979a) identified and discussed the accessibility problems of specific groups and sought to increase accessibility through the extension of mobile services (Moseley et al 1983), Nutley (1984) used a

normative approach to the evaluation of forty planning solutions to the accessibility problems of an area of South Radnor in Wales. He calculated, for the area, an aggregate accessibility measure based on the number of social group-function contacts which were accessible, expressed as a percentage of the total desirable contacts. The differences between social groups were incorporated into the accessibility measure through the use of data acquired from a simulation of the 1971 Census. The same method was used to estimate car ownership figures which were then updated using evidence for 1979-80 from an unspecified source. This measure enabled him to compare the changes in accessibility for car owners and non-car owners for each of the forty planning solutions. Two solutions were attractive, in terms of improved accessibility for carless and cost. The first at an estimated cost of £60 per week removed local public transport, but added conventional buses on Saturdays, and midweek with a midday service. A social car service was to be organised for medical trips. A community bus "minimum" service without conventional local public transport was the second scheme. The cost was estimated at #10 per week, but the estimated accessibility level for non-car users was 19.2% lower than for the first solution.

Although, Nutley's method used highly aggregated data for fourteen villages, it did allow for the evaluation of the different strategies. One of the problems which Nutley foresaw in the implementation of the second community bus planning solution was that local people may not have either sufficient skills or the motivation to form an organising committee for community transport. This is supported by the findings of Richardson (1979) who commented that the success

of the innovations introduced by Shropshire County Council namely, Local Representatives, Surveys of Rural Services and Social Car Schemes hinged on the voluntary effort and good will at the community level.

THE INTERFACE OF GENDER GEOGRAPHY AND RURAL GEOGRAPHY

The problem of accessibility for the rural population and more specifically, rural women has been described in terms of the literature of gender and rural geography. The welfare approach and time geographic methodology have provided a theoretical framework, but what has been described so far is the manifestation of a problem which has deep seated roots in the organisation of society. If, real rather than cosmetic solutions are to be found then the way in which power is distributed and used in rural society needs to be understood.

Where does the Power lie in Rural Society?

Power is a particular kind of social relationship which refers to the dependence relationships between people. Power is wielded by groups in rural society to achieve stated goals. The organisation of power in society can be analysed in terms of these formal and informal interest groups. Power can be used by these groups to fulfill societal goals or to involve one individual, or a group of individuals losing at the expense of others (Potter 1975).

"Opportunities for women to improve their position in relation, for example, to the provision of rural buses or nurseries are restricted by the organisation of power within society, the structures of which are controlled by men." (Little 1986)

Little supported this statement with observations about the composition of policy and decision making bodies including

government departments and public and private agencies. Furthermore, she explained that

"...any attempt to understand the inequalities experienced by women as a result of gender role must be located within a class framework."

In the last decade, research has focussed on the decision making process in rural areas. The role of class, informal political organisations and the public planning agencies have been analysed in terms of the way in which they wield power.

Information, as Blaikie (1978) pointed out is power, and is often used to serve the class interests of one class only. Newby, Bell and Saunders (1978) examined the question of "who has power in the rural community ?". Analysis of the way in which farmers and landowners dominated "public interest" gave a different perspective on the roots and continuation of rural deprivation. Using case study work in communities in East Anglia, Newby et al (1978) discussed the three situations in which power was being used to manipulate the market, employment and status.

Pacione (1984) observed that the NFU was one of the best organised pressure groups in the U.K. A view also shared by Gilg (1985) who pointed to their success along with the Landowners' Association in maintaining the "tied" cottage system. There are, then, very powerful class based interest groups operating to influence decision making in the rural environment to their own advantage rather than to achieve a fulfillment of societal goals.

Buchanan (1982) investigated the power behind the decisions and the planning of the Suffolk County Structure Plan. She used a non-decision making approach in which the object was to investigate the bias in the planning process. Her conclusions showed a class conflict between the relatively new middle class residents who were concerned with preservation of the rural environment and used their power to restrict the development of housing and employment, and the farmers. The farmer's power is traditionally based on land ownership which for him is a factor of production. On the other hand the Suffolk middle class of retired and professional people used the abstract resource of information to further their interests in preserving the countryside as an amenity.

The pressure exerted by the informal interest groups on the planning process has encouraged an economic approach to the physical planning of the post war years (Gilder 1979). The debate centres on the planners perception of the requirements of rural society and the lower expression of needs in the countryside. However the power of planners to initiate developments are limited by the framework of government legislation within which they must abide. The power of planners to inhibit development is demonstrated by the application of the key settlement policy discussed earlier, in which growth in small settlements is discouraged while permission is granted for developments in the growth centres. The key and hierarchical settlement policies have been criticised for endeavouring to produce internal economies of scale, but having little impact on the satisfaction of needs (Shaw and Stockford 1979, Cherry 1979). McLaughlin (1979) proposed that a more equitable

provision of services would be achieved by many local authorities if they adopted a policy of functionally interdependent groups of villages.

County and District Councils are not unaware of the inadequacies of rural planning. The Association of District Councils (1978) argued in favour of the proposal for functionally interdependent villages and for more power to coordinate the actions of public agencies within their districts. The Association of County Councils (1979) were more concerned with greater financial assistance to combat the social and economic problems of rural areas. The problems facing County and District Councils, in 1986, are essentially two fold. First, there is the general lack of finance. The second, is that despite government recognition of the need for a single organisation responsible for the coordination of the policies of all planning agencies e.g. water authorities, national parks etc., the only example in the United Kingdom is the Highlands and Islands Development Board in Scotland.

Conclusion

To assign the problems of rural accessibility to present power structures alone, would be to deny the contribution of the past. Hayford (1974) described a change in the role of women resulting from the separation of home and work at the onset of the industrial revolution. Stebbing (1985) found remnants of those pre industrial attitudes in the term "countrywomen" used by women in East Kent and Thomas and Winyard (1979) in their analysis of levels of living in rural Wales identified a component describing the two characteristics of female activity and Welsh. Clearly,

the past has a contribution to make to the understanding of present accessibility problems in rural society.

The literature has pointed to differences in the degree of rurality (Cloke 1977) experienced by rural areas. The remoter settlements have been identified as most at risk and those nearest the fringes of the urban area least so. Within a given area regional variations will occur, with the market towns relatively accessible in physical terms compared with the more isolated settlements, but what of the differences in accessibility for women. Does physical accessibility explain all?

Accessibility has been described as a multi-faceted concept and the relationships between it and the single deprivations, such as low income have been discussed, but what are the different components of accessibility? What relationships exist between life cycle, traditional country women values, education and information, and how do they explain the accessibility behaviour of women?

As the literature review has shown, the need for more detailed investigation into the way in which constraints operate to limit the opportunities available to specific social groups, was apparent in 1979, when this doctoral research was started. Since then, the work of Middleton (1983), Stebbing (1985) and Little (1986) have endorsed the need to analyse those problems which are specific to women, so that a coherent body of knowledge, pertinent to the decision making process may be available to those who either have, or seek, the power to influence the

decisions.

The discussion of accessibility in terms of gender and rural geography has suggested a theoretical framework for the study of rural accessibility which employs the time-geographic techniques of the Lund geographers and draws upon the considerable research experience of the Centre for East Anglian Studies.

The first task is to justify the choice of the study area, S.W. Tynedale. Secondly, Hågerstrand made the point that the present is rooted in the past, therefore in Chapter 3, the historical background to the present accessibility environment in S.W. Tynedale will be presented. In Chapter 4, the accessibility environment will be further explored from the perspective of planning and the role of women in decision making. These four chapters serve to set the scene for the investigation of women's accessibility to services in 1981. The hypotheses are developed in Chapter 5, and the research methodology outlined. In Chapter 6, the viability of the field data is established and an analysis of the relationship between measures of accessibility and socio-economic, mobility and behavioural variables is conducted. The focus of the following chapter is the space-time prism with reference to specific groups of women, while in chapter eight case studies are used in the analysis of the perception and behaviour of the S.W. Tynedale women. The penultimate chapter employs Principle Component Analysis to identify the components of the data and hence, the underlying structure of accessibility. In the conclusion, the contribution of the research to the understanding of the accessibility

problem is assessed and recommendations are made for further areas of investigation.

CHAPTER TWO - CHOICE OF A STUDY AREA

Introduction

The need for a study of accessibility with specific reference to emphasis on women was established within the previous chapter, but the question of 'where' the research was to take place remained. Previous work in this field has been concentrated in East Anglia where a comprehensive body of knowledge relating to rural problems including accessibility has been built up over the past fifteen years through research conducted by the Centre for East Anglian Studies. Much of this work was brought together in the book Power, Planning and People in Rural East Anglia edited by Moseley (1982). Clark and Unwin used an area of rural Lincolnshire in their work on information services and Cloke (1979) applied his work on key settlements to rural Devon. Further work by Thomas and Winyard (1979) developed a levels of living index for Wales and Holding (1979) examined rural bus services in Northumberland. Understanding of the rural problem has accumulated and to contribute to that understanding, it was essential that the characteristics of the study area were such that they enabled a contribution to be made.

Before answering the question 'where', it is first necessary to define the characteristics used in searching for a study area. The main criteria for consideration was the degree of rurality. Secondly, a dispersed settlement pattern in which the existence of a flat plain with evenly spaced settlements and equal accessibility in all

directions, so fundamental to earlier theories of Von Thunen and Christaller, was not apparent. It was important that the linear settlement pattern typical of the remoter upland areas was characteristic of the area chosen. Similarly, that the area had experienced both an agricultural and industrial past. Past industrial activity has to a greater or lesser extent contributed to present road networks and the morphology of settlements. Therefore, to concentrate only on the economic based agricultural areas with evenly spaced settlements and a high degree of interconnectivity of road networks would be to deny the possibility of the greater understanding which the remoter upland areas could contribute.

Within England and Wales, South West England, Wales and the North Pennines all include remote upland areas. The choice between the upland areas was not difficult, with a home in the eastern foothills of the North Pennines, it was axiomatic that it was through my own window that I should look.

The next problem related to the scale of the study. Therefore, it is pertinent here to review the scale of previous studies. Thomas and Winyard were concerned with the regional scale, and Packman and Wallace in their work on rural services used the counties of Norfolk and Suffolk. On the other hand Clark and Unwin confined their attention to fifty parishes within the Lincolnshire district of East Lindsey. However, the problem accessibility implies the location of people and their ability to overcome both

distance and the socio-legal obstacles to essential services - work, shops, cultural/educational facilities. In a dispersed settlement the problems of intra-household accessibility differences are compounded by variations in potential accessibility from one side of the valley to the other. The problem of rural accessibility and women required a small study area and detailed analysis - but, where in the North Pennines?

The North Pennines extending from the North Riding of Yorkshire to the Scottish border includes the Yorkshire Dales and Northumbrian National Parks. The whole area was recognised as being potentially a problem when in 1971, the Countryside Commission initiated the North Pennine Study which was sadly abandoned. Another attempt to focus investment in the area was the proposal for An Area of outstanding National Beauty (AONB). The plans submitted to the Secretary of State languished on his desk for several years although, recent newspaper reports suggest the proposal is being reconsidered (Hexham Courant 09/08/1985).

Of the four counties which are concerned with the North Pennines, Northumberland is both the most northerly, the largest in area and forms the view through my window.

Northumberland

The first characteristic of the study area to be established was that of rurality. Cloke (1977) used 1961 data to compile the Index of Rurality which he used to

classify five districts in the north and west as Extremely Rural. A recalculation of the index using the 1971 data extended this group of districts to include Hexham and Alnwick Rural Districts. Population loss in these districts exceeded -4.6% between 1961 and 1971. Between 1971 and 1981, the decline lessened to between -0.6% and +2.9%. To understand these statistics in the Northumberland context a closer look at the physical and human environment is required.

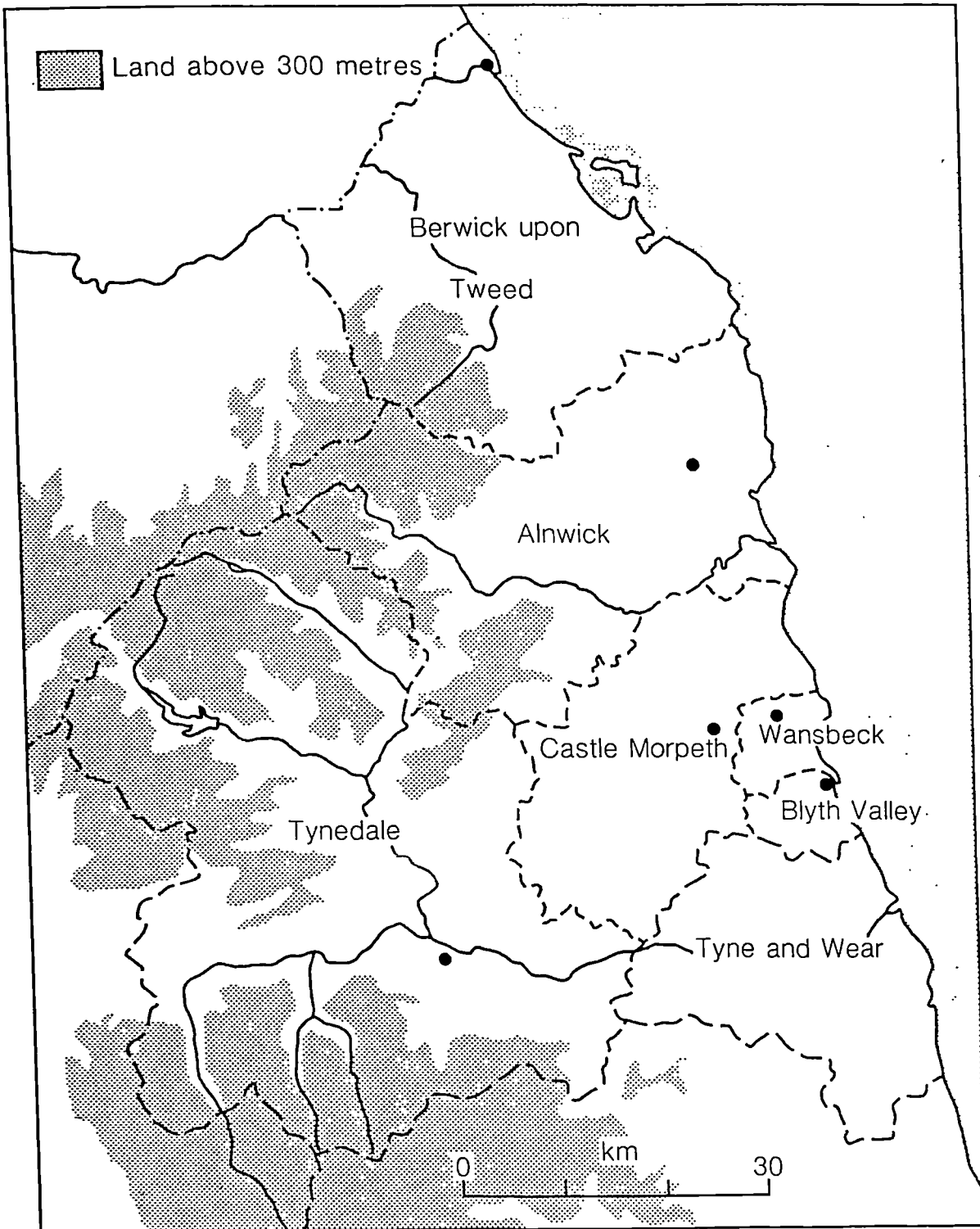
Northumberland consists of an area of approximately 500 000 hectares of which 135 000 or 27% lies above 300 metres and a further 10% above 450 metres. The implications for land use of these altitudes together with the adverse climatic conditions and poor soils are considerable. The highest grade land given in the Northumberland Land Classification (MAFF 1973) was grade 2 and that was concentrated in three areas: the Tweed and Tyne valleys and the coastal plain. In the west of the county the dominant grades of land were 4/5, whereas, in the east grade 3 land prevailed.

When compared with the land use classification for England and Wales the county had 4.5% less agricultural land and 1.7% less urban land than the national average, with twice the area of managed woodlands. The area of rough grazing was nearly three times the average for England and Wales at 40%, but the tillage area was about half. Barley accounts for 63% of the arable crops and wheat a further 16%, however the mainstay of the agricultural economy is livestock rearing and fallowing.

The second, rural, primary industry was mining. Historically, coal, fluorspar, witherite, lead and barytes were important. This century has seen the decline of the mining of the coal measures as the deep mines have progressively, retreated eastwards and since 1972, opencast has taken over in the old drift mine areas. Apart from the coastal coalfield to the north and west of Newcastle upon Tyne, coal measures lie in an east-west line along the Tyne Valley from Hexham through to the boundary with Cumbria. The whinstone is mined in various locations throughout the county, and sand and gravel in the valleys of the Tyne, Coquet and Till.

Within this physical environment in 1981 lived 299 484 people, of which, 42% were found in settlements over 10,000 population; 37% in settlements less than 5 000 which included some 200 hamlets of less than 500 persons.

Since 1974, Northumberland administratively has been divided into six districts of which two are predominantly urban - Wansbeck and Blyth Valley. In terms of area, these are small, yet contain almost half the Northumberland population. However, concern was with the more rural districts of Berwick, Alnwick, Castle Morpeth and Tynedale shown on Map 2.1. Berwick District, divided between the good agricultural land of the Tweed and Till valleys, and the foothills of the Cheviots is served by the small market town of Wooler, and the larger Berwick upon Tweed. Alnwick district extends far to the west of the town of Alnwick to include some of the border forests. In the east, the



Map 2.1 Northumberland: Local Authority Districts Post 1974

coalfield and fishing provide some employment. The south and east of Castle Morpeth District acts as an overspill area for the Tyneside conurbation as does the Tyne Valley in the Tynedale District. Tynedale is the largest in area of all the districts and third largest in population exceeded only by the two urban type districts mentioned previously.

Until the late 1970's, many of the County Council offices were located in County Hall in the city of Newcastle upon Tyne. Local government reorganisation, in 1974, placed that city within Tyne and Wear Metropolitan County, yet it continued to serve Northumberland as a regional city providing higher order services in retailing, banking, education, health, sport and the arts. Indeed, Northumberland is contained within the Newcastle Dominant Metropolitan region as defined by CURDS (1983). In the last decade Northumberland County Hall has been rebuilt in Morpeth, a more central location in terms of the population, yet still far removed from the north and west of the county.

Communications within the county are centred on Newcastle with two national routes; the A1 and A696/A68 linking the city with London and Edinburgh, and Jedburgh respectively; and the A69 to Carlisle. The A1 and A69 have sections of dual carriageway, but the county does not have the advantage of being a part of the motorway network. The remoteness of parts of the county and the distances involved led to car ownership in 1976, being 0.25 cars per person which was slightly higher than the national average of 0.23.

By 1981, the figure for Northumberland had risen to 0.28 cars per person with 50.7% households without a car. There was a marked contrast between car ownership in adjacent Tyne

and Wear where 64.8% of the households were without a car. This is a further pointer to the necessity of private transport to life in rural Northumberland.

Physical accessibility is dependent upon public transport services as well as the private car. Commuters into Newcastle from Alnwick and Morpeth used stopping trains on the main east coast London - Edinburgh line and similarly, Haltwhistle and Hexham residents used the Tyne Valley line to Carlisle. As with the bus services, commuter rail services were subsidised by the local authority and their very existence has led to the growth of in particular the Tyne Valley villages as dormitories for Tyne and Wear.

The influence of Newcastle upon Tyne over the highly populated south east of the county; Carlisle over the area west of Haltwhistle; and Edinburgh in the north has resulted in the rural type districts being served by small market towns. In all of these, retailing floor space was less than 20 000 square metres or 160 establishments (NCC 1974). Administrative, health and education services are concentrated in the towns of Ashington, Blyth, Alnwick, Berwick, Morpeth and Hexham.

This pattern of market towns serving large dispersed populations prevailed in all but the south-east of the county. Therefore, to choose an area for research on rural accessibility was difficult because so many areas were experiencing the problems associated with the extremes of rurality. What was common to most of the areas was the linear pattern of development along the narrow valleys of the North Pennines and the Cheviots in the north. This

linearity placed constraints on communication networks and settlements alike, and the implications for accessibility of this spatial pattern was of importance to this research. The deep incised valleys of the Tyne tributaries in Tynedale forced routeways and settlements into these narrow corridors.

A second area of interest was that of the historical economic base of the rural settlements. Many of the North Pennine valleys were highly populated in earlier centuries not because of the agricultural potential of the land, but as a result of its mineral resource potential. Therefore, the location and morphology of the twentieth century settlements owe much to both both the agricultural and industrial heritage.

Both lead and coal mining were important in Tynedale District in the late eighteenth and nineteenth centuries, although both had been pursued on a minor scale in earlier times. The settlements of Haltwhistle and Allendale Town, to name but two, show evidence of this industrial past.

Tynedale was classified as extremely rural in 1961 and 1971 (Clope 1977). The overall population increase of 3.4% between 1971 and 1981 occurred mostly in the commuter settlements east of Hexham. To the west of the market town the deep valleys of the North and South Tyne, East and West Allen dictate the route of the paths between the linear and dispersed settlements within them. Tynedale, then fulfills the specifications for the study area described above.

Tynedale district is the largest in terms of area of

all the districts in England and Wales. It extends some 35 miles from the boundary with Tyne and Wear in the east to Cumbria in the west. From north to south i.e. Carter Bar in the Scottish borders to County Durham is a distance of 45 miles. From its location it cannot be assumed that all of Tynedale, inclined towards rurality. In the preceeding paragraphs the rural character of upland Northumberland was briefly described, in the coming paragraphs the degree of rurality in Tynedale will be established.

Tynedale

Tynedale is traversed from west to east by the Tyne Valley which forms the main lowland route across the Pennines in the north of England. The flood plain provides the grade 2 agricultural land in the south of the county (MAFF 1973). It is used mainly for dairying with some cereals, livestock and more recently oil seed rape. To the north and south of the Tyne, the quality of land rapidly deteriorates, with altitude, to grade 4 in the valleys and 5 on the higher land.

The tributaries of the Tyne, and indeed the Tyne itself in its upper reaches flow south to north separated from each other by stretches of moorlands such as Plenmeller Common and Whitfield Moor. To the north Hadrian's Wall follows the northern edge of the Tyne Valley along the whinstone outcrop. Beyond the Roman Wall and west of the North Tyne lies an area of forested upland and to the east more densely populated farmland.

Opencast coal mining proposals have introduced a conflict between agriculture and mining in recent years.

The main proposal in the west involved a large area of Plenmeller Common to the south of Haltwhistle and in the east, an area to the south of Stocksfield which is a commuter village in the Tyne Valley. Both proposals have been the subject of a Public Enquiry, but have been refused for the time being.

The whinstone outcrops in a line running north-east to south-west from north of Alnwick to Haltwhistle and in Tynedale it is mined in five different locations. Sandstone deposits are extracted in several places to the north and south of the district and until recently, fluorspar was mined at Allenheads.

The 53 238 inhabitants of Tynedale district in 1981 clustered in two large settlements of very different character. The largest Prudhoe with 10 646 persons was essentially a mining village which owing to its location in the east of the area, had expanded rapidly in the post war period to become a commuter town. Hexham, slightly smaller, but of greater administrative importance had a population 9 138. Here, the district offices are located and it is the main retailing centre for the district. With about 15 000 square metres of retailing space and 139 establishments, Hexham was the second largest centre in the county. Its size as a service centre reflects the population of the catchment area rather than that of the town. The catchment area in 1981 included all of Tynedale District west of Prudhoe.

The dominant role of Hexham in the district makes it important in any study of accessibility. Not only retailing

and health services, but employment and cultural/educational opportunities are concentrated in the town which is the focus of public transport provision.

The west of the district is served by a second smaller service centre, Haltwhistle which was a centre of the mining industry in the last century. It developed around the junction of the South Tyne Railway with the Tyne Valley line, and had, in 1981, a resident population of 3 381. As a service centre, it contained, in 1974, just 47 retail outlets which nevertheless made it the largest centre west of Hexham with its own market and industrial estate providing employment for an area extending as far south as Alston.

The A69 is the major routeway to which other secondary and minor roads (including the A68) lead. The exception being the 'Military Road' which parallels A69 along the route of Hadrian's Wall from Heddon-on-the-Wall on the eastern boundary of the district to Greenhead which is close to the Cumbrian border. Roads wherever possible follow the valleys and seldom cross the moorlands, so that road distances between valleys can be great. However, this concentration of settlements into narrow valleys gives an advantage to public transport which can often serve the smallest of hamlets on the route between larger villages. After the closure of the South Tyne Railway in the early seventies, the Tyne Valley Line between Newcastle upon Tyne and Carlisle was the only remaining railway in the district serving commuter villages east of Hexham together with Haydon Bridge, Bardon Mill and Haltwhistle in the west. Many former stations have now been closed.

Given the physical environment and existing infrastructure agricultural employment at 11.7% in 1981 was twice the percentage for Northumberland and five times the national average. Both employment in construction and distribution services was marginally greater than the county average for 1981, but mining, manufacturing, transport and other utilities a third less.

The Hexham area was more urban in character and, as traffic flows confirm had a stronger relationship with Newcastle upon Tyne than areas further west. Cloke (1977) on the scale -12, extremely rural to +15 extremely non-rural calculated a value of -3.00 in the rurality index, whereas, the measurement for Haltwhistle was -5.00. In the north of the district Bellingham was even more rural with a value of -6.4.

The problem was to identify a group of parishes which allowed for accessibility to be measured along a continuum extending from the larger rural settlement to the isolated farmstead. The choice was between Haltwhistle and Bellingham, but in making that decision the rurality index for each settlement could only be used as a guide, as it did not indicate the extremes of rurality within the surrounding parishes. Hence, other features needed to be considered. In this case, knowledge of the two areas and the constraints of time and cost for the field survey. As for both areas, costs were similar, then it was knowledge of the two areas which led to a decision. Personal knowledge of the Haltwhistle area was marginally greater, but also in using this area the problems arising in the north-south valleys,

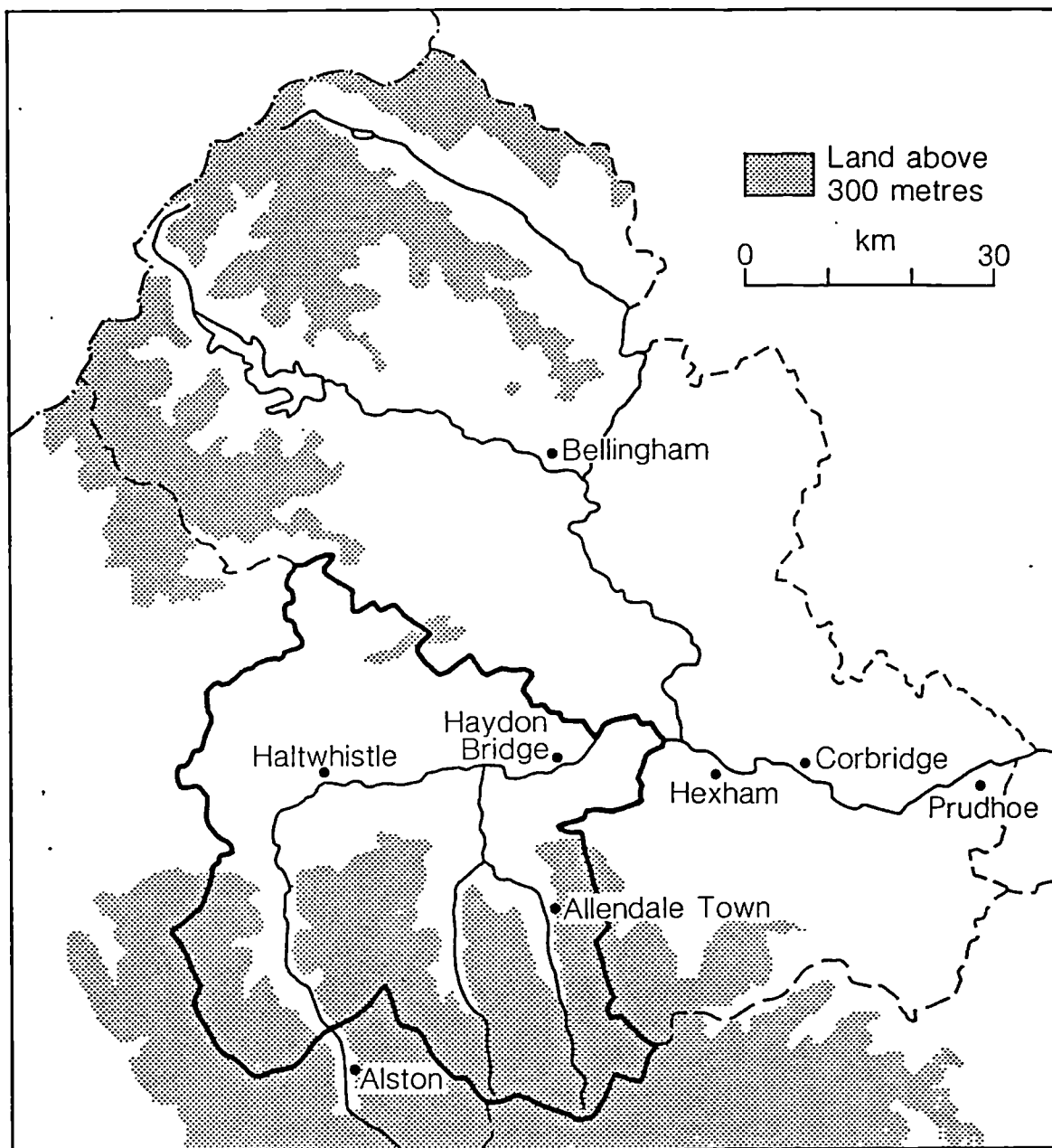
south of the Tyne could be investigated. The linearity of the settlements in these valleys implied a rapid decrease in accessibility with increasing distance from the Tyne Valley.

In the nineteenth century and early twentieth they experienced a rapid population decline when lead and coal mining ceased to be the major employer. The Bellingham area, although it experienced mining in earlier centuries was never the hive of activity which characterised nineteenth century Allendale and the South Tyne. Therefore South West Tynedale was chosen for the study of accessibility problems. The location of S.W. Tynedale in relation to Tynedale District is shown in (Map 2.2)

South West Tynedale

The area comprises thirteen parishes in the vicinity of Haltwhistle which, for the purposes of the research, the name S.W. Tynedale will be given. Within Tynedale, the population of the parishes varies from 3 522 in Haltwhistle to 122 in Featherstone. Distances to the district market town of Hexham vary from 10 Km to over 40 Km. The homes of the residents vary in location from the centre of Haltwhistle to several kilometres from a minor road, and altitudes of 100 metres to 427 metres above sea level.

The facilities present in the thirteen parishes in 1981 are given in Table 2.1. Only three facilities were available in all parishes. Travelling to other parishes for medical attention, primary education, post office, general provisions and garage facilities imposed both financial and time constraints on the inhabitants. Using population data and the socio economic characteristics of the parishes a hierarchy of parishes has been constructed in Diagram 2.1.

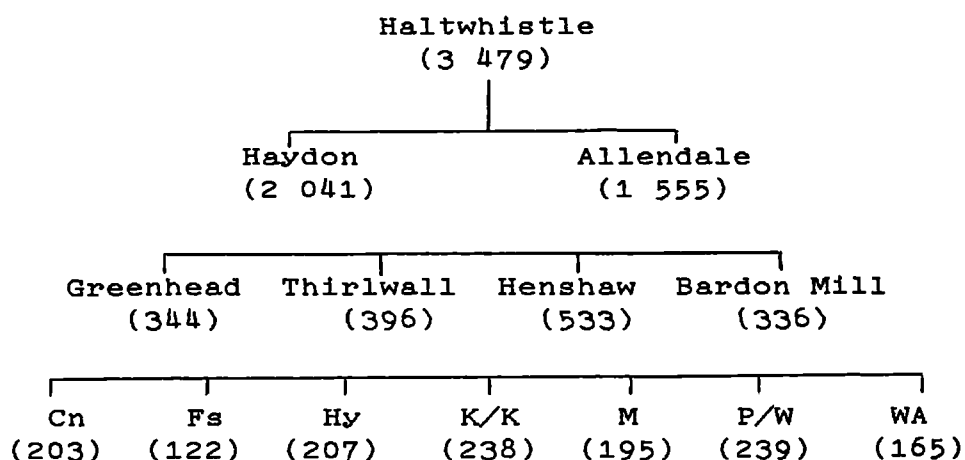


Map 2.2 South West Tynedale: The Study Area

Facilities	Presence in Study Area	Percentage
Mobile/Branch library	14	100
Accessibility by bus	14	100
Telephone kiosk	14	100
Public Hall	13	93
Sub-post office	12	86
First school	11	79
Public House	9	64
General store	7	50
Garage	6	43
Doctor's surgery	5	35
Dispensing chemist	3	21
Sunday school	1	7

N.B. West Allen included as a separate parish.

Table 2.1 Facilities in the Parishes of South West Tynedale.



Source: OPCS 1981.

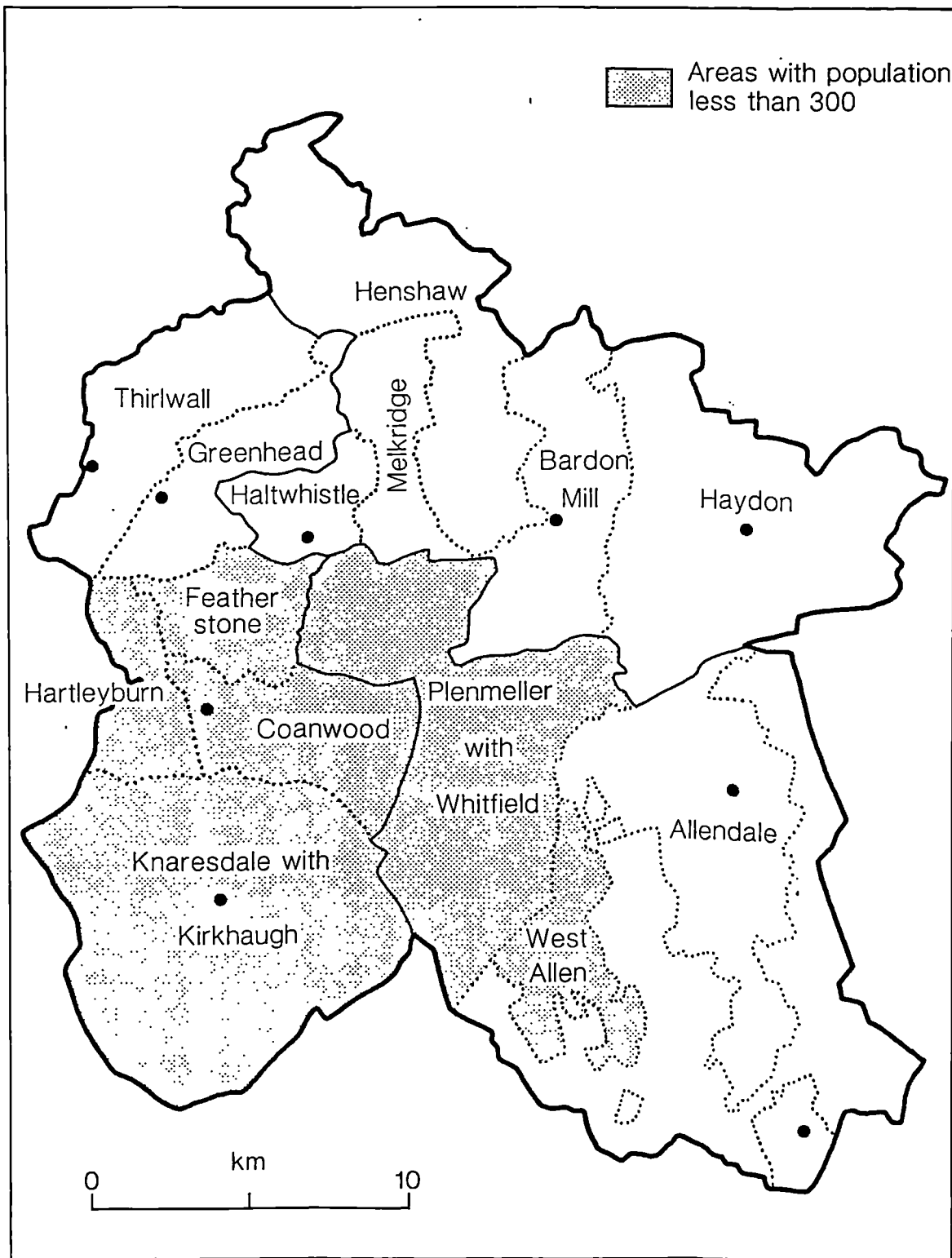
Diagram 2.1 A Hierarchy of Parishes for South West Tynedale.

Half of the thirteen parishes shown in Map 2.3 had less than 300 population in 1981 and only one, Haltwhistle over 3 000. Those with less than 300 cluster in the south and west of the study area.

In order to investigate the implications of these variations in the physical and human environments for the accessibility of women, the study area has been divided into three sub-areas which have been named for convenience Tyne Valley, Allendale and West Tyne. The next problem is to explore the variations in rurality between and within these sub-areas.

Tyne Valley

This was the most populated of the three areas containing the parishes with the two largest settlements - Haltwhistle and Haydon Bridge. The population change from 1961 to 1981 in Haltwhistle was a gain of 2.9%, however, Haydon to the east experienced a loss of 3.8%. Between these two settlements, in an east-west direction lie the parishes of Bardon Mill, Henshaw and Melkridge. In the years, 1961 to 1981, they experienced population losses of 11.8%, 16.1% and 17.0%, respectively. The percentage change in these parishes was related to the larger settlements of Haltwhistle, Hexham and proximity to a railway station. Bardon Mill, although only two thirds the size of Henshaw was closer to Hexham and had a railway station, whereas both Melkridge and Henshaw stations were closed. Hence, the potential for easy rail commuting is important in understanding the population change and characteristics of these parishes.



Map 2.3 South West Tynedale: Parishes

The major settlements, in all of the parishes are in the Tyne Valley, and all the parishes except Haltwhistle, extend north of the Roman Wall; and both Bardon Mill and Haydon include land to the south of the River Tyne. Of the three sub-areas this has the best agricultural land with barley, and potatoes forming the main crops, however, half of the land area was used for rough grazing. It also lies on the Tyne Valley coal measures where several drift mines operated in 1981, although, the NCB closed the colliery at Bardon Mill in 1973.

Accessibility to employment was greatest for locations adjacent to A69 trunk road and stations along the Tyne Valley Line both of which facilitate access to work opportunities in Carlisle, Brampton, Haltwhistle, Haydon Bridge, Hexham and Newcastle upon Tyne. Industrial estates in Haltwhistle and Haydon Bridge have brought in new industries to supplement the traditional varnish and paint industry and long distance haulage firms.

This sub-area was undeniably rural, yet within one hours drive or less of the regional city, it was the most accessible in terms of physical distance and public transport services to a range of low, medium and higher order services.

Allendale

The second sub-area Allendale consisted of two valleys which were separate parishes and in local authority statistics they were quoted separately, until 1981. The two rivers East and West Allen combine approximately 5 kilometres before the confluence with the River Tyne. The

narrow gorge which forms much of this 5 kilometre stretch, in past centuries effectively sealed these valleys from the Tyne Valley.

The parish of West Allen is now combined with the larger parish of Allendale with which historically, it has shared common land and grazing rights. The third parish of Plenmeller with Whitfield provides the link between the three sub-areas, having contiguous boundaries with West Tyne, Haltwhistle and Allendale. As Whitfield, the largest settlement in the parish lies on the banks of the West Allen, it was logical to include the parish in the discussion of Allendale.

Within the East Allen valley, the main settlement is Allendale Town, with a population of 600 in 1981. To the south at the head of the valley is Allenheads with a population, in 1981, of 90, and to the north Catton, population 250. In the West Allen the settlements are smaller, Carrshield at the head of the valley had some 30 inhabitants in 1981, Ninebanks 25 and Whitfield/Bearsbridge 35 (Phillipson 1983). Both East and West Allendale suffered considerable population loss between 1961 and 1971, but that trend appears to have been reversed in the decade 1971-81. Not so, for Plenmeller with Whitfield where a net loss of 22% between 1961-71 was followed by a further loss of 17% in the period 1971-81.

In East and West Allen the number of agricultural holdings in 1981 was 130, but 76 of these were classified as part-time i.e. they were operated on less than 250 standard man days per year. Approximately, 30% of the land was rough

grazing and twice that amount permanent pasture.

In the nineteenth century, these valleys were the centre of lead mining with a communication network which included east-west routes and strong links with Weardale to the south. In this century, a network of minor roads link the two valleys in the north, but further south one route links the heads of the valleys and a second Allendale Town with Carrshield.

A small industrial estate in Allendale Town had attracted a craft factory and a haulage firm, but the sparsity of employment opportunities together with the development of private housing in Catton and Allendale Town had resulted in a commuter population in the north of the dale. This was supported by a bus service to Haydon Bridge and Hexham.

Variations in opportunities were considerable from the remote heads of the East and West Allen to the almost dormitory character of Catton. The physical and human environments change dramatically, yet the extremes compensate for each other and are hidden in the parish statistics for Allendale. This problem is always present with aggregated data and is, perhaps more acute in a linear valley which in effect leads nowhere, and where remoteness and degrees of rurality increase in one direction only with distance from the main settlement.

West Tyne

In the west of S.W. Tynedale are a group of small parishes along the South Tyne and Tipalt Burn. On the

Northumbrian border with Cumbria is the parish of Knarsdale with Kirkhaugh. The main settlement of Slaggyford had a population of 75, further north Lambley in the parish of Coanwood, in 1981, had 55 inhabitants and the adjacent Hartleyburn had 150 living mainly in Halton Lea Gate. Featherstone taking its name from the ancient castle, but with the main settlement at Park in the same year had an estimated population of 50 (Phillipson 1983). To the north of the A69 are the the parishes of Greenhead and Thirlwall with the settlements of Greenhead (population 100) and Gilsland (population 185), both without stations on the Tyne Valley Line. Until the 1970's, the Alston to Haltwhistle railway served the four South Tyne parishes. When it ceased in 1975 a 'so called' all weather road and regular bus service to Carlisle, Haltwhistle and Alston was introduced.

Prior to World War II employment had been in both mining and agriculture. The colliery at Lambley was closed after NCB proposals for expansion in the 1950's were shelved. Private mines were still worked on a very small scale in 1981. The 62 agricultural holdings provided 209 jobs with a third of the holdings classified as part-time operations (MAFF 1981).

Traffic flows on the A69 (NCC 1976) showed twice the number of vehicles at Greenhead than at Haltwhistle. Allowing for through traffic, it was clear that Brampton and Carlisle were supplying some of the demands for work, leisure and educational services of the Greenhead and Gilsland residents.

Conclusion

The central focus of the chapter has been the choice of a study area to meet the criteria specified, namely extremely rural, an upland area and with industrial/agricultural economic base. The study area described has been shown to fulfill these criteria. The socio-economic characteristics of the settlements together with the loss of population in the post war period and small scale settlements add to the suitability of these thirteen parishes for study. Accessibility to facilities for women in S.W. Tynedale has been influenced by the laissez-faire society of past centuries and the national and local government planning policies of the current century.

CHAPTER THREE - THE HISTORICAL PERSPECTIVE

The Introduction

The present accessibility pattern in S.W. Tynedale has developed over time. This chapter seeks to explore three hypotheses. The first concerns the influence of the physical environment on development; the second the effect of changes in transport technology on the criteria by which accessibility is distributed among the population; finally, the processes which led to accessibility to lower order services reaching its highest level in the first half of the twentieth century.

Women are the subject of this thesis and their ability to command the scarce resource - accessibility has changed through time. The interaction between 'man' and the physical environment has resulted in a network of routeways linking settlements. Along these routeways ideas, people, lead, coal and even tourists have travelled. Change follows a basic pattern flowing either from the Tyne Valley south along the tributary valleys, or as in the Industrial Revolution flowing outwards from the heads of the valleys to the Tyne.

The wide variation in the suitability of different locations for human settlement gave accessibility advantages to villages at nodal points in the route network. Accessibility was distributed to men and women according to their age, health and income. The railway increased the spatial element in the criteria by which accessibility was

distributed, in that those who lived in close proximity to the railway station had much greater accessibility to facilities in other settlements than those who did not. The motor car potentially reduced this element of spatial discrimination through the division of labour which had made all machines the province of men.

The division of labour traditionally placed the care of children and the home as the responsibility of women. The lead and coal mining which brought a population boom to S.W. Tynedale, also brought an extension of the service sector in which women found employment. The closure of the mines led to a mass exodus from the Allen and South Tyne valleys from 1921 onwards. The service sector responded slowly with churches, schools and shops serving a dwindling population. Accessibility to lower order services remained high for men and women until after 1951, when the growth in car ownership and still declining population reduced the accessibility to facilities for many on two counts - fewer facilities and relatively low accessibility by public transport compared with car drivers.

To understand how these changes have taken place, it is necessary to discuss the pattern of activity prior to the industrial revolution and examine the way in which change took place in S.W. Tynedale during the industrial period and the effects of the loss of population in the post industrial era.

Pre-Industrial South West Tynedale

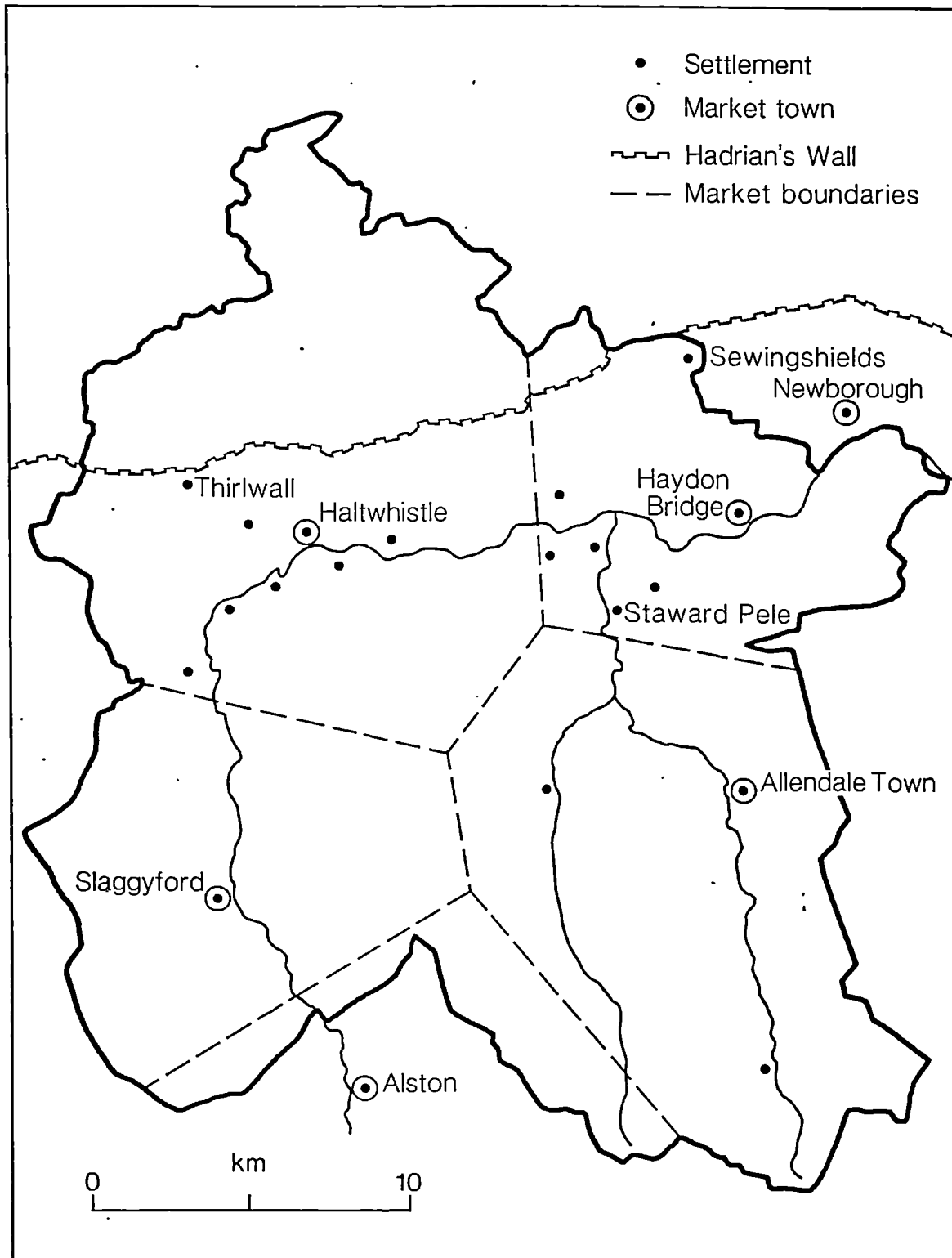
Farming was the predominant activity prior to the eighteenth century, although lead and coal had been mined on

a small scale in earlier centuries, it was not until the 1790's that the industrial revolution really gathered momentum with the expansion of lead mining in Tynedale. Therefore, the pre-industrial period will be defined as ending with the eighteenth century.

The population size and distribution during these centuries can be gauged from historical records which themselves are related to the overriding need for defence in the border counties. The settlement distribution pre 1800, plotted in Map 3.1, was gleaned from archives deposited in the Northumberland County Record Office including the 1415 list of castles, fortalices and towers in Northumberland together with the known licences to crenellate. The dates of churches, subsidy rolls and market charters were used to complete the picture as far as was possible. What is apparent from Map 3.1 is the line of defensive sites along the Tyne Valley and the castles defending the entrances to Allendale and the South Tyne. The Thirlwall and Sewingshields sites along Hadrian's Wall were occupied for at least part of the period.

For evidence of population size the sixteenth century Muster Rolls of 1538, 1580 and 1595 give totals of 64 men, 120 men and 27 men, respectively, being sent from Allendale.

In 1608, Allendale including the West Allen consisted of five greaveships containing a total of 178 holdings, which was consistent with the 1580 Muster Roll. In the South Tyne, Knarsdale sent 16 men to the Muster of 1540. It is known that four years earlier at the dissolution, the Convent of Benedictine Nuns at Lambley had only six inmates. These



Compiled from: 1415 List of Castles, Fortalices and Towers in Northumberland and Market Charters.

Map 3.1 South West Tynedale: Settlement Pattern and Markets

Prior to 1715

statistics, suggest that the South Tyne had a much smaller population than either Allendale or the Tyne Valley at this period.

Church of England records show a 100% increase in baptisms in the parish of Allendale from 1710 to 1810. A similar trend was evident in Haltwhistle and to a lesser extent Knarsdale. Although, caution must be exercised in interpreting the statistics in Table 3.1, they nevertheless describe a growing population in Allendale and Haltwhistle and support the smaller South Tyne population suggested by the Muster Rolls of a century and a half earlier.

Year	Allendale	Haltwhistle	Knarsdale
1670	41	na	na
1680	33	na	na
1695	43	na	na
1696	na	78	na
1700	59	59	na
1704	na	na	14
1710	41	47	na
1720	42	69	na
1730	54	69	na
1732	na	na	6
1740	61	79	13
1750	61	83	7
1760	58	63	5
1770	64	86	5
1780	55	83	17
1790	89	88	18
1800	39	64	9
1810	88	84	21

Source: Original Parish Registers, Northumberland County Record Office.

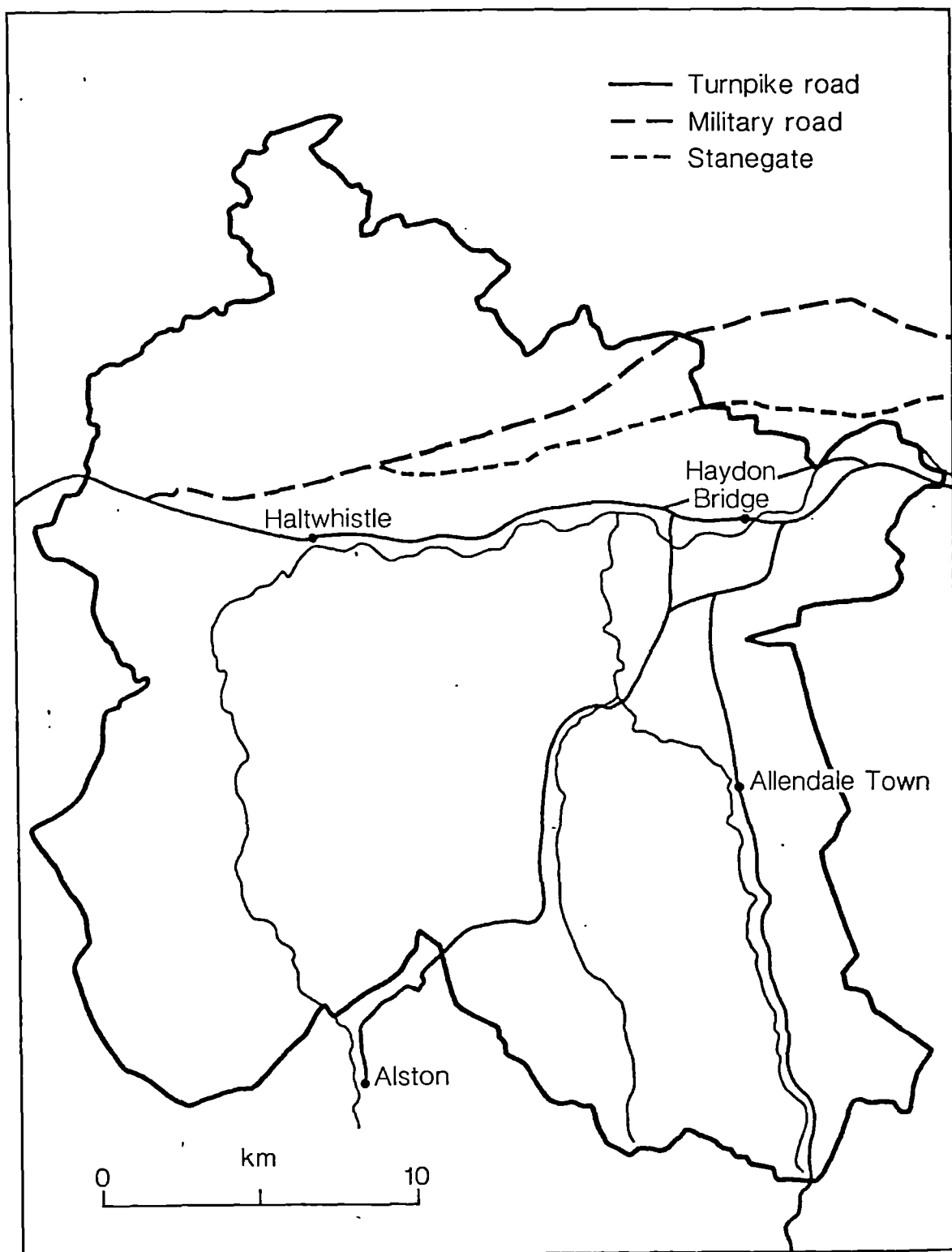
Table 3.1 Baptisms in the Parishes of Allendale, Haltwhistle and Knarsdale 1670-1810

Reports of border raids and skirmishes diminished after the massacre of the Armstrongs of Liddersdale in 1598.

This was in retaliation for a particularly brutal attack by the Armstrongs on Haltwhistle. By the Act of Union in 1707, they had ceased and defensive sites such as Staward Pele and Sewingshields had fallen into ruin. The Catholic families of the Tyne Valley rallied to the support of Bonnie Prince Charlie in the Jacobite Rebellion of 1715, but this was to have a more important consequence for the transport network than the population size.

The road network can be traced back to the Roman occupation. Evidence of a 17' paved road referred to as the Military Way and leading from milecastle to milecastle along Hadrian's Wall was reported as early as 1708 (Birley 1961). In 1716, Warburton's Map showed a road branching off the Military Way at Carvoran (east of Greenhead) and leading eastwards to Newbrough via Corbridge). This was later named as the Stanegate and was shown by Hodgson (1840) to form part of the route network between Newcastle upon Tyne and Carlisle in medieval times (Birley 1961). It is today identifiable as a minor road between Chesterhope and Fourstones to the east of the study area. Prior to 1750, the Stanegate provided one of the few alternative east-west routes to that afforded by the River Tyne.

When, in 1715, it was found to be impossible to move troops rapidly from the east to the west of the country owing to the lack of a proper road, military demands led to an Act of Parliament in 1750 approving the building of the Military Road from Heddon-on-the-Wall in the east to Glenwhelt (Greenhead) in the west. It was built along the line of Hadrian's Wall through the study area. These two roads shown on Map 3.2 built primarily for military purposes



Source: Ordnance Survey 1897 and Hodgson 1840.

Map 3.2 South West Tynedale: 19th Century Road Network

to the north of the Tyne differed from the local tracks which followed the valleys, and the turnpike roads which were to come.

Nationally, the Turnpike Acts of Parliament gathered momentum from 1700 onwards. Unlike, the Stanegate and Military Road, their function was to improve civilian communications locally and regionally. To this end the Hexham Turnpike Trust operated from 1752 to 1877 to improve the Tyne Valley road from Hexham to Glenwhelt via Haltwhistle. Twenty-six years later the Hexham and Alston Turnpike Trust began work on the road linking these two towns.

By the end of the eighteenth century road construction was taking place and the present infrastructure of the twentieth century road network was in its infancy. With minor variations the road network shown in Map 3.2 is still in use today.

Given the state of the local roads prior to the turnpike era, it is useful to establish which settlements held market charters. Map 3.1 shows an almost Christaller type distribution of market towns never more than 8 kilometres apart. These markets were held weekly. Haydon Bridge and Haltwhistle both held markets on Tuesdays which suggests discrete market areas. Hexham's market day was Monday and Allendale Town, Friday. Only Hexham, Alston and Haltwhistle have continued through to the present day, but Allendale Town and Haydon Bridge survived well into the nineteenth century.

The pre-industrial period was a predominantly agrarian economy in which mining periodically provided work. The Rate Returns of 1663 show a corn mill in nearly every settlement (Hodgson 1840). Much of the lower land was under tillage and the common lands of Allendale and Hexhamshire considered to be incapable of improvement as late as 1808 (Marshall 1808).

While enclosure took place prior to 1715 in Haltwhistle and between 1715 and 1799 in the Tyne Valley parishes the increase in demand for lead was attracting miners to the East and West Allen valleys. It has long been debated whether or not enclosure resulted in migration of the poor from the land. In the case of S.W. Tynedale the occurrence of enclosure in the Tyne Valley at the same time as the expansion of lead mining in Allendale somewhat obscured the picture.

Both lead mining and the smelt mills attracted miners to Allendale so that by 1801, it was experiencing boom conditions while the rest of the study area remained predominantly agricultural.

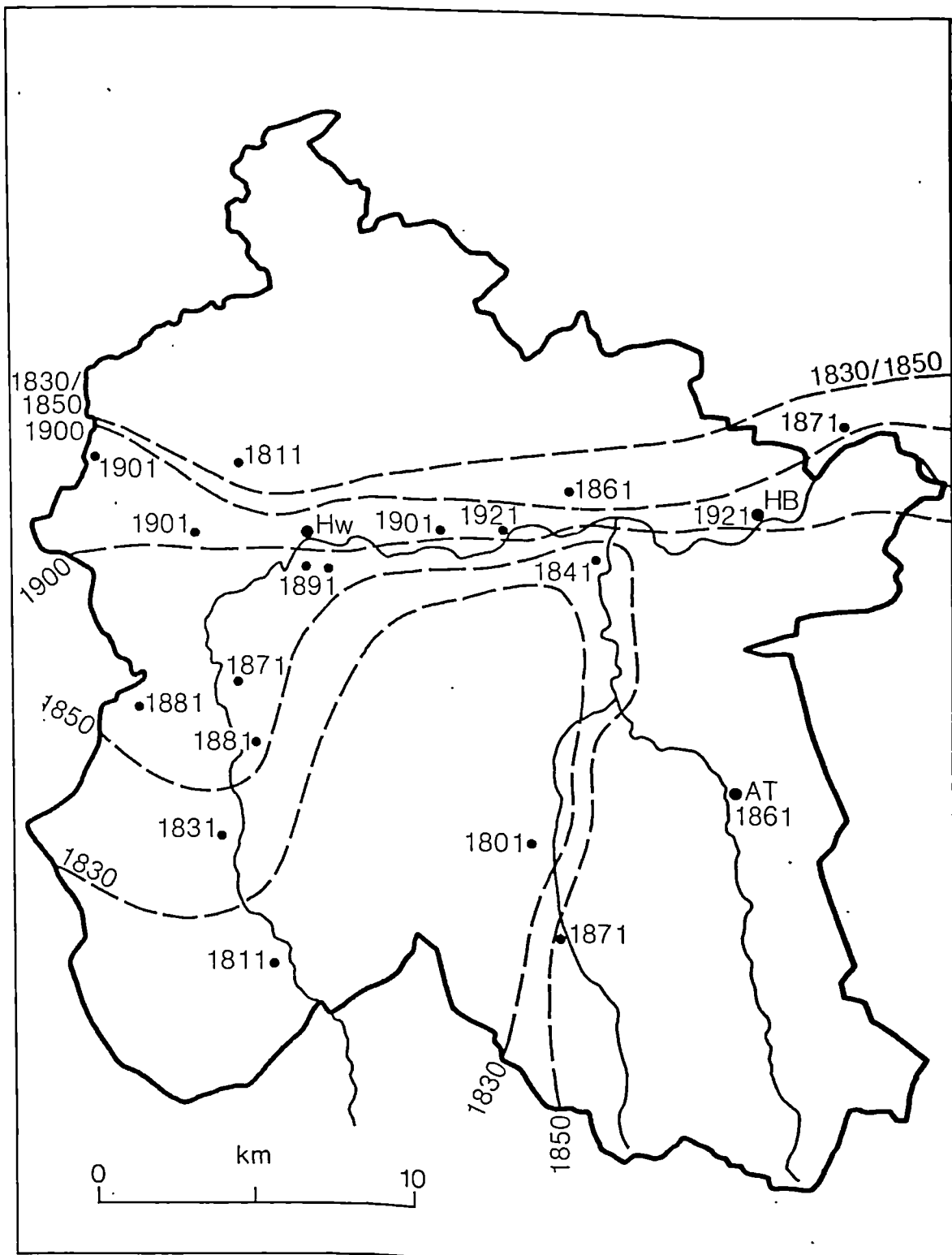
The Industrial Period

In S.W. Tynedale the industrial revolution both waxed and waned in little more than a century. Evidence of its passing and impact on accessibility can be found in census data, directories, church records, buildings, newspapers and company archives. The three valleys did not experience boom town conditions and then a gradual decline in unison, nor did the changes associated with the industrial revolution and its aftermath occur at the same rate. Within a few

while the rate of growth and the years in which that growth occurred varied considerably. By plotting the dates of peak populations in the townships given in the Census of Great Britain for the years 1801-1921 (Map 3.3), the pattern of variation both spatially and temporally can be considered. Within ten kilometres of Whitfield, the population peaked in the years 1831 in Slaggyford, 1871 in West Allen, 1861 in Allendale Town and 1921 in Haydon Bridge. The pattern follows the valleys with the remoter townships peaking at earlier periods than those in the Tyne Valley. In the Allen and South Tyne Valleys population growth was very much in response to the demand for lead and coal, whereas in the Tyne Valley, Haydon Bridge and Haltwhistle's growth was more related to their nodal position in the transport network which developed in response to the demands of the lead and coal industries. Religion and education perceived a potential need for their respective services and before the turn of the century both had established institutions in every settlement. The twentieth century saw the increase in leisure time and the growth of such groups as the Women's Institute, Young Farmers and the Worker's Educational Association.

Through discussion of the changes in the population characteristics, economic activity, transport networks, religion, education and cultural facilities from 1800 to 1971, an appreciation of the changing nature of accessibility in S.W. Tynedale, prior to the field survey in 1981 can be obtained.

The variable population peaks within the study area are one indicator of the rapid population change which occurred



Map 3.3 South West Tynedale: Population Peaks 1801-1971

during the 170 years under discussion. However, at this point reference must be made to the well documented inadequacies of the 1801-1851 Census of Great Britain (Morgan 1979). It is however, the best available data for the period and therefore must be used with caution.

In 1801, the total population of Allendale including West Allen was 3 519, whereas Haltwhistle was a small settlement of 453 persons. The West Tyne parishes together numbered 681 persons living in Hartleyburn, Thirlwall, Blenkinsopp and Wall Town. The latter two are now a part of the parish of Greenhead. Using an index of 1801=100 the changes in population have been plotted in Diagram 3.1. When compared with the steady growth rate for Northumberland and England and Wales, the fluctuations in the Tyne Valley can be shown to be associated with the growth and decline of the railways.

The Allendale population had grown rapidly in the second half of the eighteenth century and continued on an upward trend until 1861. The opening of the railway branch line from the Tyne Valley to Allendale had little impact. The population trend was downwards with only a brief respite during the First World War. Then the lead mines were reopened and population growth reoccurred until after 1921. By 1971 the population was half the 1801 total.

The West Tyne parishes population fluctuated in response to the opening of the Tyne Valley Railway prior to 1841 and later the South Tyne Railway in 1852 (Hoole 1965). The closure of the Blenkinsopp coal mine lead to a loss of 44% of the population of the township between 1851 and 1861

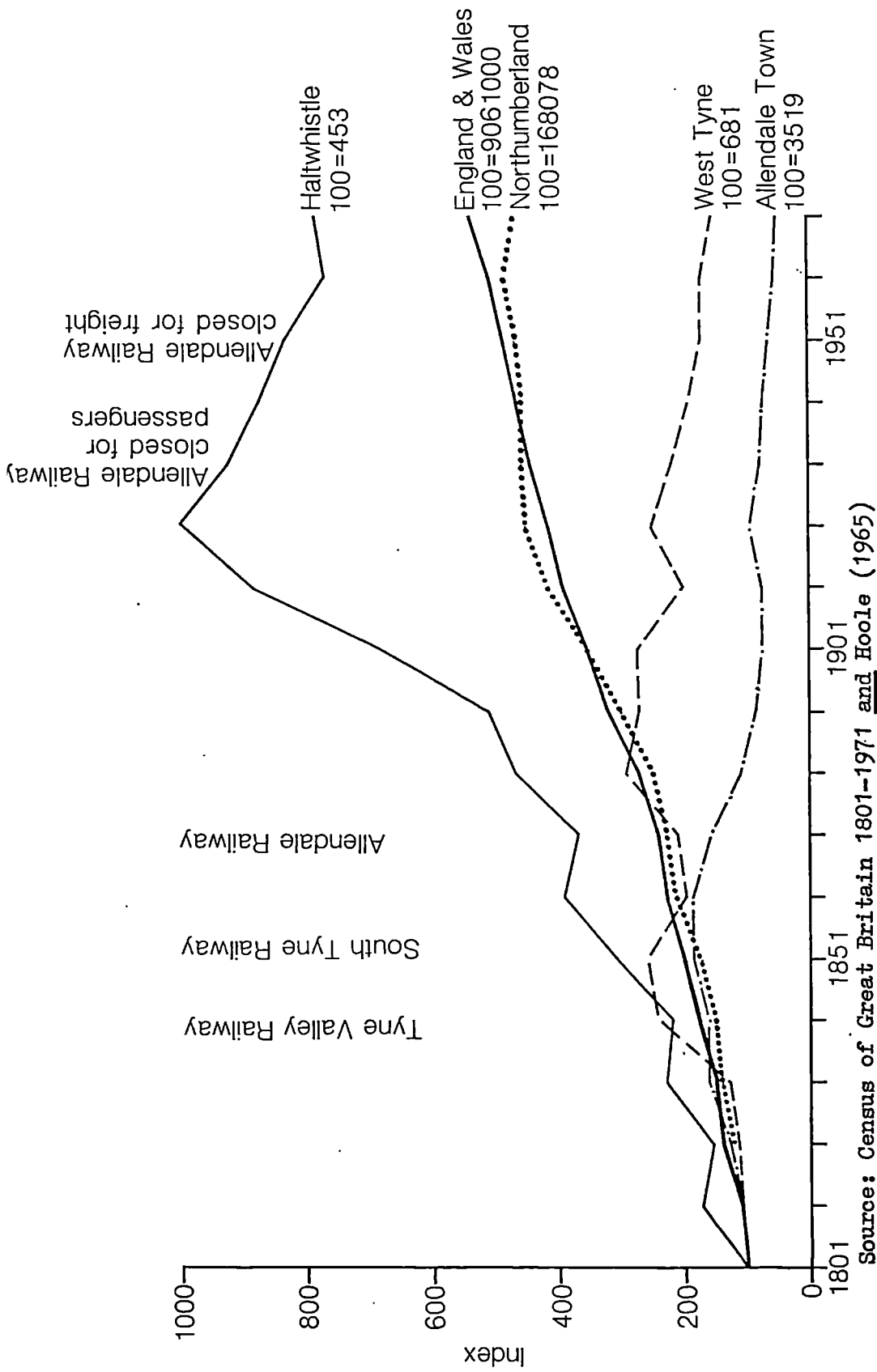


Diagram 3.1 South West Tynedale: Population Growth 1801-1971

(Census of Great Britain 1861), however, 10 kilometres to the south at Hartleyburn mining continued to expand until 1881. This date marked the beginning of the upward population growth in Thirlwall. But, this was associated with the popularity of Gilsland Spa. The 1921 figures are noted in the Census of that year to have been inflated by the presence of visitors (Census of Great Britain 1861 Footnote). As in Allendale, the mining industries in Blenkinsopp, Hartleyburn and Wall Town were reopened in the First World War and the 1921 Census shows the resulting increase in population in these townships.

The smallest settlement in 1801, Haltwhistle doubled in size in the first 30 years of the nineteenth century. Growth accelerated after it attained the status of a railway junction. New industries were established and a note in the Census of Great Britain 1861 attributes the growth in the preceding decade to additional hand being employed at the lime and brick works, coal mines and stone quarries. From 1921 onwards the population trend was downwards only to be halted in 1961 when the total had fallen to 80% of the 1921 peak.

Throughout the nineteenth century, there was a complementarity in that as one mining area closed another opened. Mining families were able to find work within a short distance and new industries were established in Haltwhistle. After 1921, throughout S.W. Tynedale every settlement, excluding Haltwhistle, suffered a declining population until 1971.

The changes in population described above have been

attributed for the most part to mining activity. How then did this affect the structure of the population?

The sex ratios given in Table 3.2 are the numbers of men expressed as a ratio of 100 women. Unfortunately, the Census returns for 1881 - 1901 inclusive, aggregate the totals for males and females which prevents the calculation of sex ratios for that period. In Haltwhistle, up to 1801 women were in the majority and again between 1911 and 1931. As noted earlier, the population had grown rapidly in the decade 1861-1871 with labourers seeking work in expanding primary industries. In Allendale men exceeded women from 1801-1861 when the decline in the demand for Northumberland lead forced miners to leave. In Allendale, women have exceeded men throughout this century. The same pattern existed in Blenkinsopp where the sex ratio was in 1811 100:103. Enclosure took place in 1819 and by 1821 the ratio was 100:96. This was repeated in 1851 when prior to the closure of the Blenkinsopp colliery the sex ratio was 100:109, a decade later it had fallen to 100:97. In this century a similar pattern was evident in Hartleyburn where the colliery expanded from the First World War onwards until its closure in the 1970's.

The process of migration has been well documented and the evidence presented suggests that as elsewhere, men left first in search of work while women, children and the elderly remained to look after the small holdings which miners traditionally farmed (Hollingsworth 1971).

So far, changes in population have been related to the fortunes of the mining industry. Accessibility to

Date	Haltwhistle	Hartleyburn	Thirlwall	Blenkinsopp	Allendale					
	Pop.	S/Ratio	Pop.	S/Ratio	Pop.	S/Ratio	Pop.	S/Ratio	Pop.	S/Ratio
1801	453	91	74	124	322	87	106	90	3519	105
1811	751	96	77	126	282	103	252	103	3884	116
1821	707	86	92	96	293	115	317	96	4629	111
1831	1018	95	161	101	328	113	344	111	5540	103
1841	984	96	288	104	394	118	845	99	5729	106
1851	1420	96	460	118	425	106	796	109	6383	106
1861	1749	102	439	120	360	102	444	97	6401	104
1871	1668	88	387	122	347	114	664	118	5397	100
1881	2108		526		584		743		4030	
1891	2305		510		600		694		3009	
1901	3145		310		610		881		2763	
1911	3979	101	142	82	545	87	595	87	2610	88
1921	4500	101	274	100	792	84	549	90	3476	88
1931	4193	102	339	104	576	93	496	102	2612	84
1951	3745	96	226	117	516	102	346	104	2227	

Source: Census of Great Britain 1801-1951.

Table 3.2 Population Totals and Sex Ratios in the Survey Parishes 1801 - 1951.

employment is a major factor in explaining population change. However, mining was not the only source of employment. To further the discussion a closer examination of economic activity between 1801 and 1971 is required.

Economic Activity

The relationship between mining and population change has already been established. The lead mining boom was to be followed by coal and stone quarrying. Secondary industry and later tertiary expanded; each sector contributing to the present accessibility landscape. The first question that needs to be addressed here concerns the impact of lead mining on accessibility in Allendale.

Lead had been mined in Allendale from the fourteenth century onwards developing alongside agriculture. Miners often kept small holdings so the two activities were complimentary rather than presenting a conflict of interests. In 1518, the lead mines of Hexhamshire were leased for 99 years to Thomas Lord Dacre, but the survey of 1547 listed only one lead mine in use and gave the location as East Allendale (Reid 1940). The annual profit was states as 9s 4d. In 1570, the mines were claimed as Crown Property, but a subsequent legal dispute with the tenants indicated that they were still profitable. Mining surveys in 1608, 1619 and 1624 all indicated that the mines were being worked. Later in 1689, the mines were bought by the Beaumont Blacketts at a time when lead and silver were in demand. The eighteenth century saw the beginning of a period of prosperity in Allendale based on the lead mining. Around 1700, the Blackett family also bought the mines in Weardale to the south. Thus giving themselves a virtual

monopoly over lead and silver mining in the North Pennines. The power of this family over the economy of Allendale was in the next century to manifest itself in changes for the population in accessibility to education and improvements in mobility.

The lead was smelted locally and in 1725 the smelt mills at Allenheads, Allen and Dukesfield (east of the study area) were organised into a group to smelt the lead from both Allendale and Weardale. Before the onset of the nineteenth century Dukesfield had been extended to 400% its original capacity and the Allen mill reconditioned.

In the early nineteenth century lead prices increased and with a minor recession between 1829 - 1833 continued to climb until about 1865. (Table 3.3) The lead was taken from Allendale across Hexhamshire Common to Dukesfield by pony train on a road built in the 1850's (Hinds 1896). A whole network of east-west roads leading from the mines to the Allen mill and Dukesfield are shown on the 1897 Ordnance Survey Map. They ceased to be used after the opening of the railway to Allendale Town in 1868.

By the time the section of railway to Allendale Town was built, cheap imports of lead from abroad had reduced the demand, furthermore resources were being depleted rapidly. The Allen mill closed in 1870 and the West Allen mines in 1894. There was a brief respite during the First World War before the final closure in the 1920's.

Date	Price per ton	Index
		1734=100
1734	£11 16 11	100
1754	£16 3 1	138
1774	£12 4 10	104
1794	£14 1 8	120
1814	£21 8 11	183
1834	£16 8 4	140
1854	£21 13 10	185
1874	£21 7 2	181
1894	£ 9 15 0	83
1902	£10 13 9	91

Source: Northumberland County History Committee.

Table 3.3 Price of Lead per ton 1734 -1902

Employment in agriculture was not an alternative for the unemployed miners. Poor wheat prices had resulted in ploughed land being returned to pasture and the tilled agricultural plots of the miners often worked by their wives were eventually abandoned. Miners from Allendale moved to Elswick in Newcastle upon Tyne where jobs and terraced houses were available. Between 1884 and 1894, the total cultivated area fell from 16 575 to 16 440 acres, although the area given to permanent pasture actually increased.

How then had lead mining contributed to accessibility in Allendale? The only justification for the railway was lead mining, yet it continued to operate for seventy years after the decline in mining. The Beaumont Blakett family had established both a school system, and libraries for adults and children. Every small settlement had a chapel and there were new houses for the miners. The legacy of lead mining for the agricultural population was a high level of services and a railway.

On a smaller scale coal mining had a similar effect on the provision of facilities and hence accessibility. Lead mining in the South Tyne at Kirkhaugh and Knaresdale reached its zenith in 1851. The population declined by 30% in the decade 1851-61, lead mining was no longer the large employer, but the colliery had opened at Lambley, 10 kilometres down the valley. There was work with the Coanwood Coal Company.

Two areas of coal mining developed in the nineteenth century, the first, to the south of Haltwhistle on Plenmeller Common from Blenkinsopp in the west to Bardon Mill in the east; and the second, in the South Tyne where the South Tyne Coal Company and Coanwood Coal Company operated the mines at Hartleyburn and Midgeholme. These continued until nationalisation in 1947.

During the century, Plenmeller's population fluctuated with the extraction of coal from the drift mines. Whereas, the Blenkinsopp Coal Company had its heyday in the first half of the century and deposits were exhausted by the depression of 1870. The 1830's saw schools established in Blenkinsopp and Plenmeller and by 1855 when the South Tyne Collieries were employing 400 men three schools were opened for children.

The third area of activity was quarrying at Wall Town to the north west of Haltwhistle. The community was wholly dependent upon quarrying and the population fluctuated with the demand for stone. The quarrying company never provided the ancilliary services for employees which were enjoyed by

lead and coal miners.

To this point economic activity has been discussed in terms of male employment, although it is known that women were employed in domestic service at Whitfield and Blenkinsopp Halls.

In agriculture, women were employed on Northumberland farms in the eighteenth and nineteenth centuries as labourers. A man and a woman were hired as a team at the agricultural hirings. The man was known as the hind and the woman his bond. They lived together, although they could be brother and sister or father and daughter. It was incumbent upon the man to provide a woman to work with him, however, it must be noted that unlike the man, the woman was employed on a daily basis and earned a lower wage. This system, known as the Bondage System led to large numbers of women working in agriculture in the eighteenth and nineteenth centuries (Neville 1896).

Employment in the towns of Haltwhistle, Haydon Bridge and Allendale Town was recorded in the directories published by Whelan, Kelly and Parson and White.

Whelan's Directory of 1855, lists those employed in different occupations. These lists can be compared with similar ones from Kelly's Directory of 1938. The lists are given Table 3.4, and although not directly comparable, particularly for farmer and graziers, what is evident, is that in the eighty-three year period the number of different types of occupation increased by one in Allendale Town, but in Haydon Bridge and Haltwhistle increased from nine to

Occupations	Haltwhistle		Haydon Bridge		Allendale	
	1855	1938	1855	1938	1855	1938
Inns & Public Houses	8	9	8	5	9	7
Blacksmith	0	1	6	2	2	2
Boot & Shoemakers	8	4	8	1	5	1
Ironmongers	1	0	0	1	2	0
Building trades	6	7	6	6	6	3
Electrician	0	0	0	1	0	1
Farmers & Graziers	14	26	49	39	6	34
Millers	0	0	0	0	1	0
Butchers	0	2	4	2	1	0
Gen. dealers & Grocers	14	26	17	7	13	3
Bakers & Confectioners	0	7	0	3	0	4
Chemist	0	2	1	1	1	1
Surgeon	4	3	2	2	1	1
Dentist	0	3	0	1	0	1
Tailors	3	2	6	0	3	0
Drapers	0	7	0	5	0	1
Haulage	0	4	0	0	0	4
Cartwrights	1	0	0	0	2	0
Motor Engineers	0	2	0	4	0	4
Solicitors	0	4	0	0	0	0
Surveyors	0	1	0	1	0	0
Banks	0	3	0	2	0	0

Source: Whelan's Directory 1855 and Kelly's Directory 1938.

Table 3.4 Changes in Occupational Structures 1855 - 1938

seventeen. The numbers employed in traditional occupations fell in all areas, but new descriptions of solicitors and motor engineers appeared.

In 1938 Kelly's Directory listed 16% of those in occupations as women in Haydon Bridge, but only 9% in Haltwhistle. One hundred and ten years earlier Parson and White's Directory of 1828 lists 12 women in the commercial

section for Haltwhistle. The most common occupation being a milliner. These 12 women accounted for 23% of those listed.

Both the 1828 and 1938 Directories quoted omit domestic servants, factory workers, shop assistants etc. and so underestimate the proportion of women in the work force.

In 1921, nearly 25% of the workforce of Haltwhistle Rural District were women and half of these were employed in domestic services, a further 15% in commerce and finance, 10% in professional occupations and a further 15% in each of agriculture, dressmaking and clerical work. In 1981, the census recorded that approximately one third of the workforce were women for both Haltwhistle and S.W. Tynedale.

Between 1828 and the present day, the proportion of women in the workforce has varied from one quarter to a third. This leads the discussion to the consideration of the effects of accessibility on the proportion of women employed. Prior to mass transport systems when goods and services were available within walking distance, women had established themselves in the retailing and craft industries which were open to them. It is sufficient here to note that the evidence suggests that where women have accessibility to work opportunities they take up employment.

Between 1828 and the present day a revolution in transport technology has resulted in a much greater separation of home and work place. This change in personal mobility has taken place in stages.

Transport

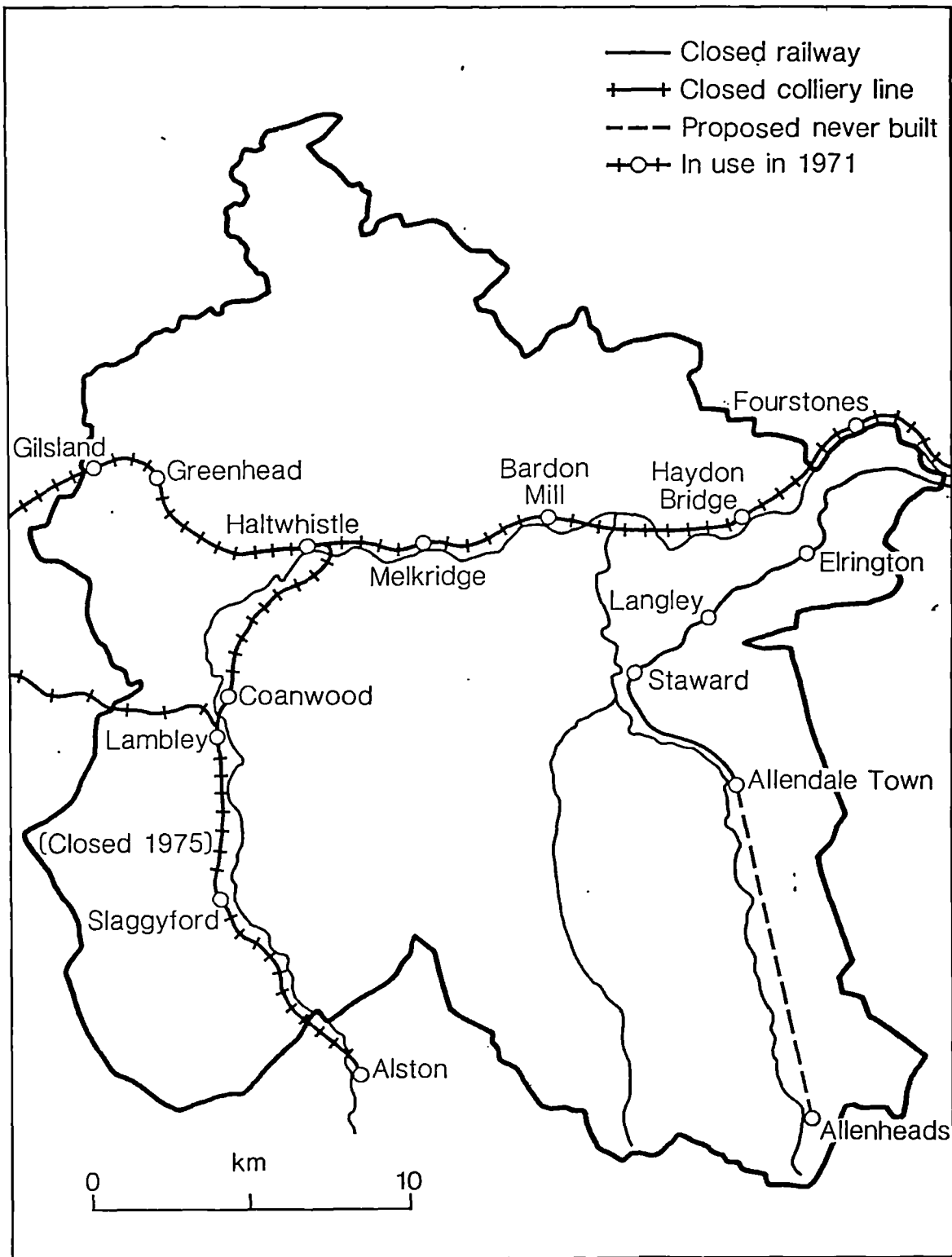
Three periods of change in personal mobility can be

identified. Firstly, between 1844 and 1870 when the railway network was constructed; secondly, the bus network developed between 1922 and 1939; finally, from 1939 -1975 when a massive rise in car ownership occurred. The extent to which these three technological changes affected the study area will be discussed in this section in relation to the changing economic scene previously described.

Before the advent of the railways the movement of heavy goods by waggon was slow. In 1829 on the turnpike roads goods waggons travelled an average of 19-20 miles a day on the journey between Newcastle upon Tyne and Carlisle (Deane 1969). For a time a solution appeared to be the building of a canal at a cost in 1825 of £888 000. However, it was rejected in favour of building a railway at a third of the cost.

Railways followed the valley routes. The first to be completed was the 'intercity' Newcastle upon Tyne to Carlisle in 1837. This had a considerable impact on the settlements along its route. Whereas, both cities had been more than a days journey from the study area, after 1837 the return journey could be made in a day. The city and all its facilities became accessible to the inhabitants of Haydon Bridge, Bardon Mill, Melkridge, Haltwhistle, Greenhead and Gilsland. (Map 3.4).

The mail gigs which had daily plied the Tyne Valley were replaced by the train, but horses still made the journeys from the Tyne Valley through to Allenheads, Coalcleugh and Alston. Carriers left Haydon Bridge several times a week for Allenheads and Weardale. The South Tyne



Source: Hoole (1965)

Map 3.4 South West Tynedale: Railways Prior to 1971

was experiencing a boom period with lead mining in Knaresdale and coal mining in Hartleyburn creating a demand for transport. A branch line from Haltwhistle to Alston was opened in 1852 which gave Haltwhistle a new function as a railway junction. Accessibility, was further improved by the opening of a short stretch of line from Hartleyburn on the Alston line to Halton Lea Gate. From Halton Lea Gate a coal railway linked the Roachburn Colliery with Brampton. This completed the rail network linking Alston, Haltwhistle and Brampton; a link which has had implications for the road network in the twentieth century.

The final railway to be built was the branch line from Hexham to Allendale Town which was opened for freight in 1868. The line was later used for passenger traffic and whereas the intention was to carry lead, it instead carried the migrating lead miners in search of work elsewhere.

The railway building period was over, but in the years 1837 to 1870, it had transformed the accessibility landscape of S.W. Tynedale both in terms of its impact on the larger settlements, such as Haltwhistle, and the speed with which it carried the rural inhabitants to the facilities of the city.

Even in 1857, the closure of Allendale market was blamed on the railway (Dickinson 1903).

The next change in transport technology was the combustion engine which led to the development of a bus network. Although, the railways had improved accessibility, spatially the accessibility was distributed most unevenly. Allenheads and Coalcleugh in West Allen still relied on the carriers for goods to be taken the 12 kilometres to

Allendale Town.

The omnibus service was introduced in the 1920's. The bus route network expanded to the point of duplicating the rail network. The more frequent stops made it more convenient for passengers and more suitable for parcel services operated by the bus company. The exception was in the South Tyne, where the road took a more circuitous route than the railway. The roads were narrow, winding and with steep gradients which prevented the buses competing satisfactorily in winter with the railway. An argument which was to be used in the 1970's against the closure of the Alston to Haltwhistle line (Ross 1973).

The Allendale railway was closed to passenger traffic in 1930, and to freight traffic in 1950 (Raistrick 1965). After a stay of execution following the Beeching Report, the South Tyne railway to Alston closed in 1975. The Tyne Valley line was the only one to survive in to the 1980's, and that with the loss of stations within the study area at Greenhead and Gilsland. In the twenty years from 1961 to 1981 a more integrated bus/rail network has emerged. For instance in 1961, the early morning bus from Allenheads departed at 6.56 am arriving in Newcastle upon Tyne at 8.45 am. A decade later, the same bus left 6 minutes earlier, but took the passengers to Hexham railway station to connect with a train arriving in Newcastle at 8.35 am. By 1981, the journey from Allenheads to Newcastle had been reduced to 76 minutes with a departure time of 7.29 am from Allenheads.

Accessibility to urban facilities by public transport was in the second half of the 1920's at its highest level in

the Allen and South Tyne valleys. The final period of change was soon to follow. The private motor car spread rapidly from 1939 onwards. For those who could afford it, and drive a car, accessibility to urban and rural facilities alike, was equal to the highest levels enjoyed by the most fortunate in the past. Within the study area car ownership was still growing. Table 3.5 gives the percentage of households without a car and with two or more cars in 1971.

In 1971, the two most isolated parishes of West Allen, Knaresdale with Kirkhaugh and Plenmeller with Whitfield already had more than 15% of households with 2 or more cars, whereas Haltwhistle, the most accessible location had only 4.4%. The latter amounts to less than half the average for S.W. Tynedale (9.2%) and Tynedale District (10.8%).

Parish	Households Without car	Households 2 or more cars
<u>Allendale</u>		
Allendale	39.2	13.5
West Allen	19.6	19.6
Plenmeller w. Whitfield	21.3	17.0
<u>South Tyne Valley</u>		
Coanwood	31.8	8.7
Featherstone	38.9	11.8
Knaresdale w. Kirkhaugh	42.5	18.7
Hartleyburn	39.1	4.4
Thirlwall	4.8	6.3
Greenhead	46.5	8.3
<u>Tyne Valley</u>		
Haltwhistle	57.6	4.4
Henshaw	42.7	8.3
Melkridge	41.2	8.8
Bardon Mill	23.3	17.2
Haydon	46.7	10.7
 Tynedale District	 44.1	 10.8

Table 3.5 The Percentage of Households With Cars in 1971.

Through examining the three phases in transport, it is apparent that at the individual level the railway had the greatest single impact on the whole population. The introduction of the bus service extended the public transport network and increased the frequency and type of transport available in the valleys. Time and cost were the major constraints on undertaking a journey in the years prior to the Second World War. These were both socio-economic constraints. The advent of the motor car introduced fairly quickly a legal requirement - a driving licence. This new found mobility was unevenly distributed between the sexes, the young and the old, the rich and the poor. Initially, the motor car improved accessibility for the younger, wealthier men. As Table 3.5 shows even in 1971 more than one third of households were without a car in 11 out of the 13 parishes. For those households without the use of a car, in terms of accessibility they were as a group worse off in 1971 than in the 1920's. Similarly, those individuals without access to a car were relatively disadvantaged as compared with members of the same household who had access to a car. The greater proportion of the disadvantaged were women. Indeed for locations along the South Tyne and Allendale railways accessibility for all households was higher a century ago.

Accessibility implies access to a facility. Therefore, the discussion would be incomplete without an analysis of the changing distribution of facilities.

Village Facilities

Facilities in the widest sense included churches, schools, libraries, villlage and church halls. These were the buildings in which opportunities were provided. Although built for one purpose e.g. school, they were often multi-functional in the sense that the same building was used for other purposes and therefore was an important village facility.

The changes in the number and location of village facilities over the past two centuries gives an indication of the changes in accessibility which have occurred in the same time period. As previously discussed, the population of the area increased rapidly and declined in response to changes in demand for, and supplies of lead and coal. In the remoter parts of the study area, it has been shown that for those without access to a car, accessibility to market town central place functions is lower now than in the first half of this century when a more frequent bus service and a railway network served the valleys. The aim of this section is to examine the growth and subsequent decline of village facilities from 1800 onwards.

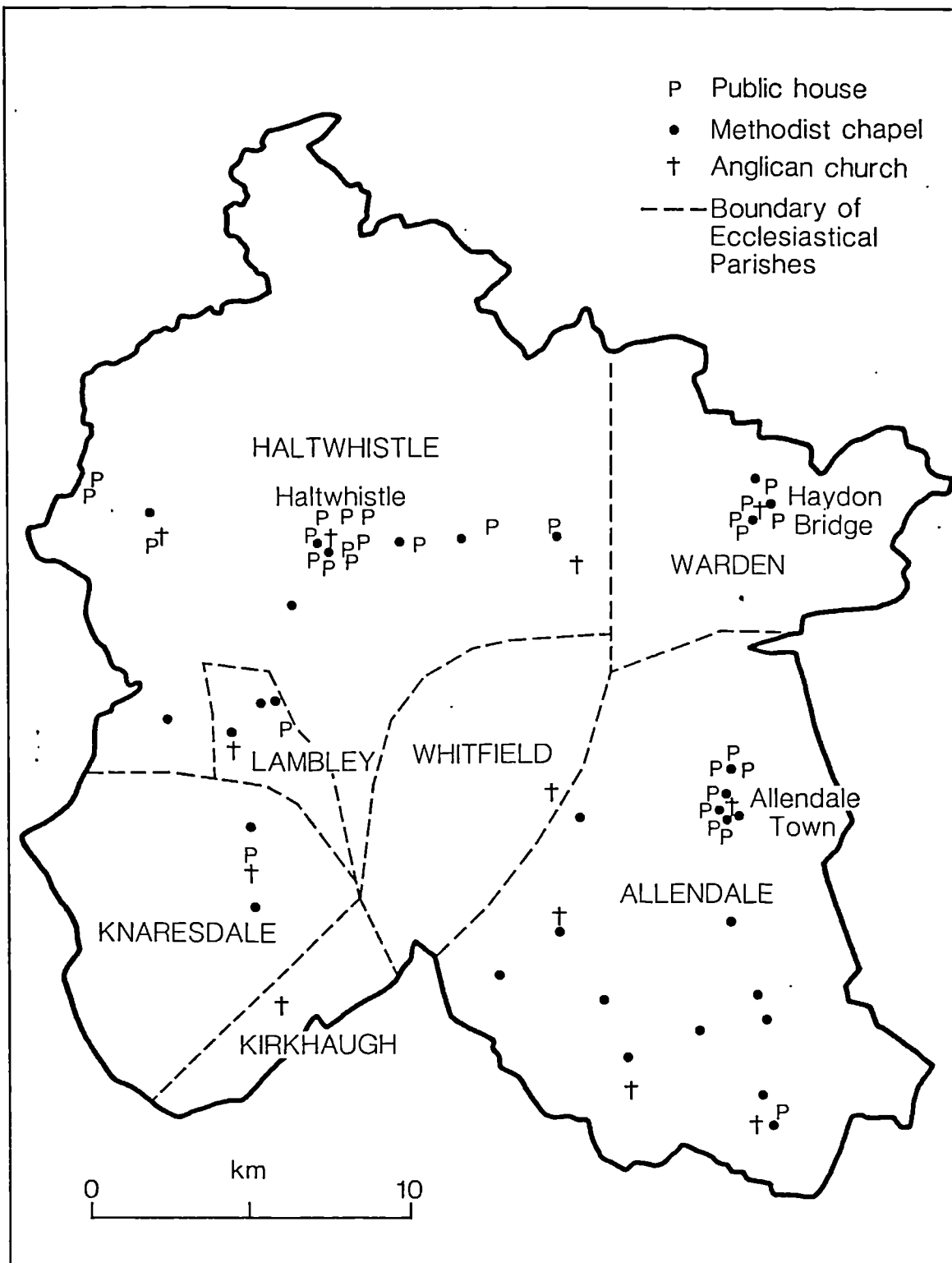
(1) The Church and the Public House

A church, whatever the denomination, is a village facility. Traditionally, the church has had an important role in village life, in that many annual events such as Christmas, Easter and Harvest are religious festivals. In the eighteenth and nineteenth centuries the clergy were in some villages the only educated men and as such were leaders in the community. Alongside the church was traditionally, the inn or public house. The social meeting place of the

men of the village. In S.W. Tynedale the fortunes of these two facilities are linked, although, where the numbers of churches have waxed and waned, the public houses have remained constant through time.

The village church in 1800 was a well established institution. A network of Anglican churches served the ecclesiastical parishes shown on Map 3.5. In the nineteenth century two additions to the Anglican network were the chapels at Allenheads in 1802 and Carrshield in 1823. These were built to serve the growing community of lead miners. The non-conformists also moved into the area after the Restoration in 1660. The Quakers were the first and were reported as being numerous in Allendale in 1688. Later a Meeting House was established at Woolly Burn Foot, near Allendale Town. In 1760, Quakers are known to have met at Coanwood in the South Tyne valley. In the following centuries, non-conformist networks of churches were superimposed on that of the Anglican Church. The most comprehensive of these networks was that of the Methodists.

Wesley visited Allendale in 1748, 1752 and 1761. On the first occasion he was unimpressed by the quality of the lives of the miners (Raistrick et al 1965). Drunkenness in Allendale Town was his main concern. His visits seem to have stimulated a growth in Methodism. For as the population grew so did the number of chapels to twenty-two in Allendale alone by 1884. They tended to be founded in mining villages where the Church of England had not established a daughter chapel. This distribution was significant in explaining the absence of the second village facility - the public house.



Source: Church of England and Methodist Records (NRO).

Map 3.5 South West Tynedale: Ecclesiastical Parishes.
Methodist Chapels and Public Houses Prior to 1914

The intolerant attitude of Methodism to alcohol prevented public houses flourishing in the mining villages. Map 3.5 shows a distinct lack of public houses in the south of Allendale and the coal mining area of Lambley. Today, many of the chapels stand empty as monuments to the more prosperous past.

Since, the Second World War, the rationalisation by the Anglican Church has led to fewer clergy servicing larger parishes. The larger vicarages and manse of the last century have been sold and replaced, where necessary, with smaller houses. When the field survey took place in 1981, the Greenhead vicarage was about to be sold. The vicar was retiring, but was not going to be replaced by a resident clergyman.

Even if changes in transport technology and availability are disregarded, then accessibility for the population to the village church was lower in 1981 than a century ago, yet to the village 'pub' it is similar. The church whatever denomination has in the last century been frequented by women. It has been one of the few public spaces used by women, unlike the 'pub' which has traditionally been a public space used by men. In an ageing population where in the age groups of sixty and above women often exceed men by 50%, then elderly women form the greater part of church congregations. For women in remoter areas, longer journeys coupled with a reduction in Sunday bus services, means that for those without private transport, the church or chapel has become an inaccessible facility.

The influence of Methodism upon the distribution of public houses in the last century has been commented upon, but deeply held attitudes towards public houses as being the province of men have only begun to change in the post war era. These deep rooted attitudes of the last century, together with the need for women to stay in the private space of home and look after the children, while men congregate in the public house still dictate the social habits of the population. The public houses of the last century survive in the 1980's. In the West Allen, a club at Whitfield performs the same function as a public house for the locals, effectively, excluding any but those considered acceptable.

Accessibility, for most 'regulars' at the public house has over the last century improved. Although, evening bus services have been reduced with the last bus in 1971 arriving at Allenheads 10.21 pm, at Slaggyford at 10.32 pm and Gillsland at 10.30 pm, more than 60% of the households had one or more cars in 1971, and it is not unreasonable to assume that the majority would be owned and driven by men.

In terms of these two village facilities accessibility has changed differentially, and this has affected the church going population more than the users of the public house. The latter have benefitted from their improved accessibility to motorised urban dwellers both at weekends and in the evenings while the church has followed a downward spiral of decreasing popularity and declining accessibility.

The third village facility is the school which like the church and the public house has been subjected to the demand

for the services provided.

(ii) The School

Since the 1870 Education Act, schooling has in theory been compulsory in England and Wales. A century later 99% of all children are in school. But schools serve many functions - evening classes, social events, polling stations and a meeting place for societies, clubs etc. as well as the building in which children are educated. To understand changes in accessibility over time, it is important to discuss firstly, the changes in the physical location of school buildings and secondly, the changes in the journeys to school.

Women have traditionally been responsible for the care of children. In the past, it was the mother who took the child to school on the first day and anxiously waited at 3.30 pm at the school gate. It was the mother who went to school open days, plays, sports days. It was the mother who collected the sick child from school and went to the school to discuss any problems. Therefore, the accessibility of the school in which children were being educated was important to the mother. Similarly, accessibility of the school building for other functions was important for all members of the village community.

The school building may for evening activities be duplicated or replaced by a village, church hall or Women's Institute Hall. All of which for the most part serve the same functions as the school building. Therefore, in looking at changes in the distribution of school buildings through time, it is important to first consider the school

as a building primarily for the education of children and the implications of changes in that distribution for women. Secondly, to consider the distribution of buildings which provide village facilities of which the school is one.

To begin with the 1870 Education Act is to ignore the existence of education in S.W. Tynedale prior to this date. In 1760, there were two schools in Allendale Town, and one in Halthwistle, Haydon Bridge and the West Allen. These schools were small and in the case of Haydon Bridge with a private endowment. However, it was not until the early nineteenth century that education became generally available. The benefactors of these early schools came from the mining industry.

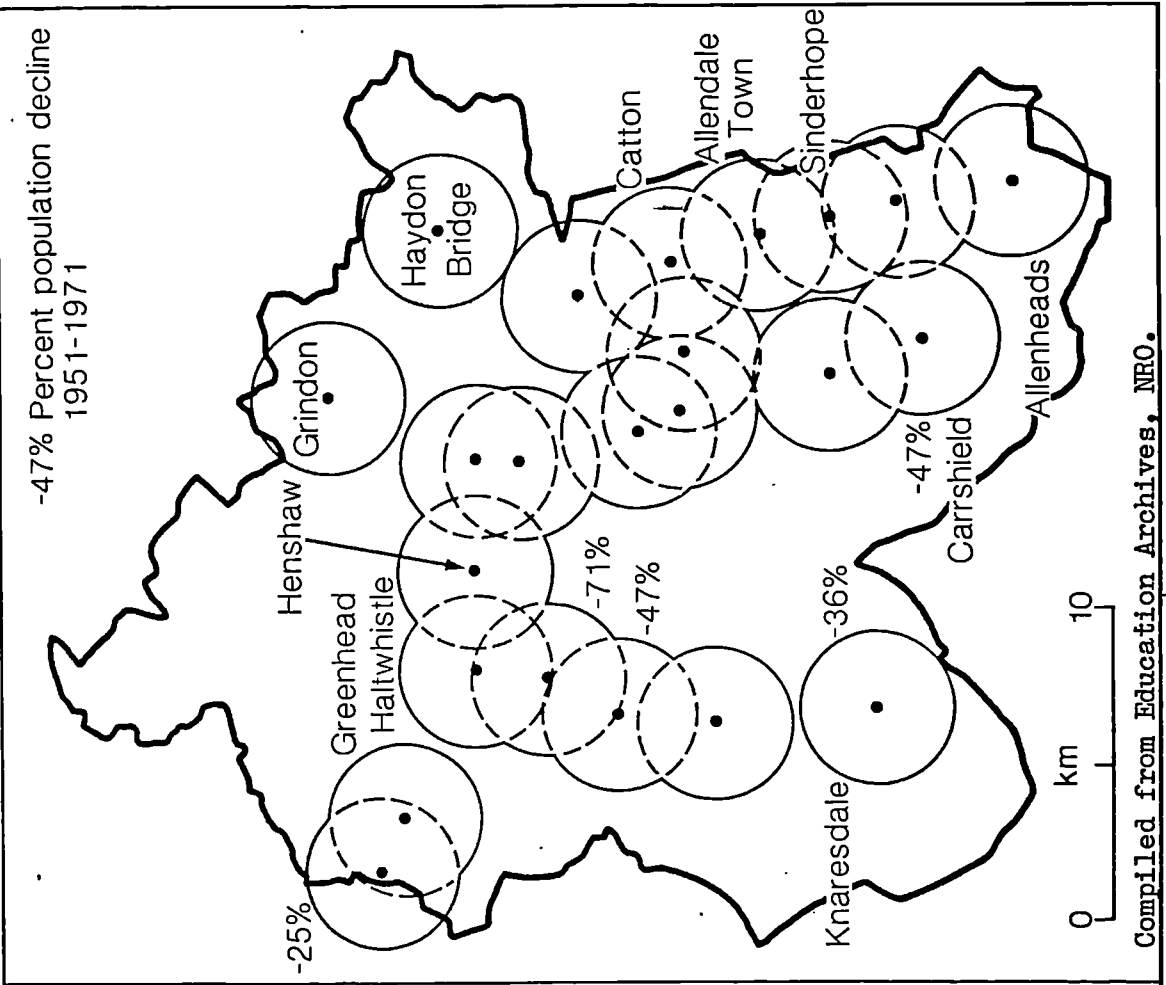
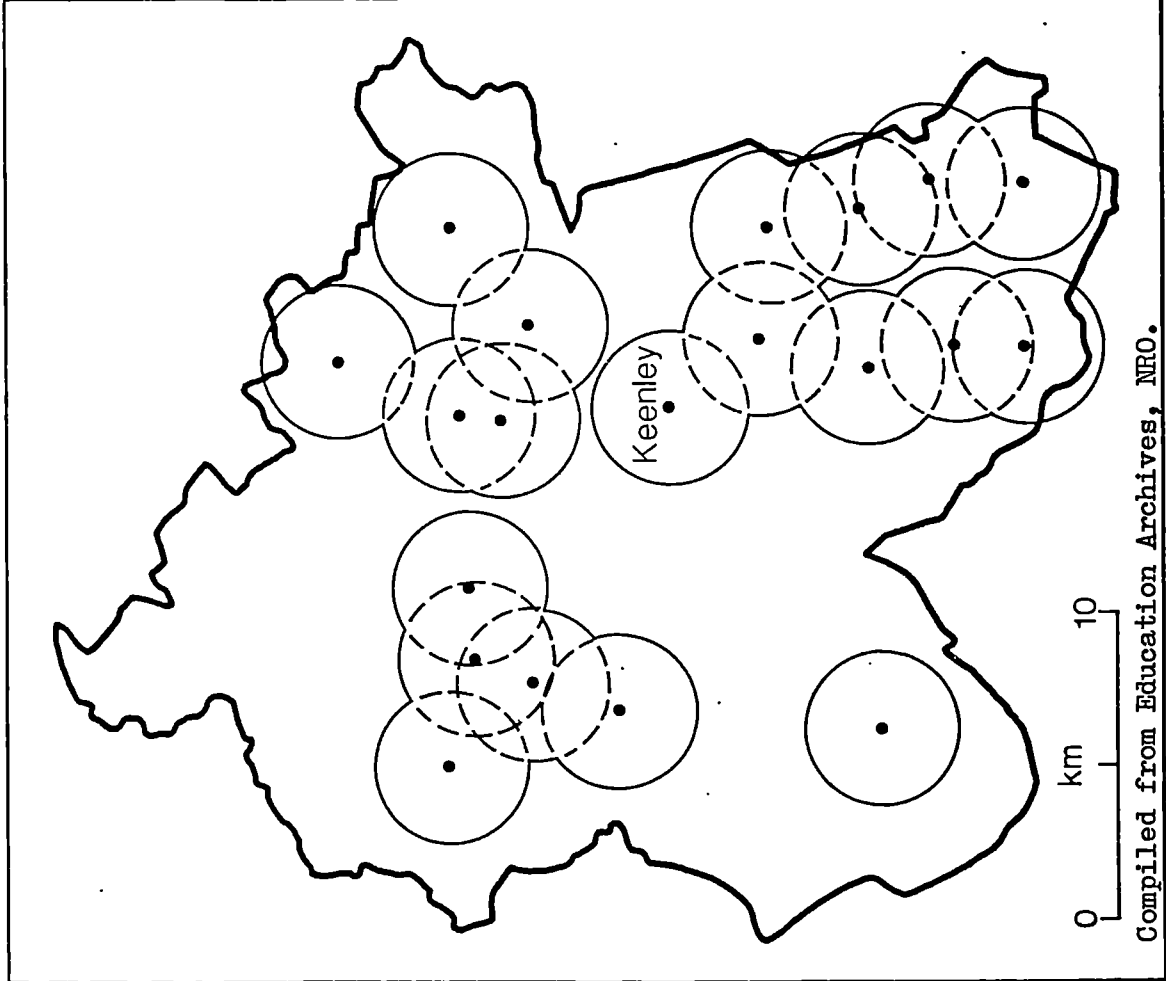
The manager of the Beaumont Mining Company, a man named Thomas Sopwith established schools in Allenheads, Carrshield, Brideshead and Newhouse for the children of the company's employees. The children provided 6d per month and their own books. In 1825, a National School was opened in Allenheads, and Sopwith opened a school in Whitfield on the Beaumont Estate in 1855 (Raistrick et al 1965).

This speight of eductional activity in Allendale was matched in the South Tyne and Tyne valley. A school mistress was appointed for Park Village in 1830, nine years later a school was established at Blenkinsopp for the coal miner's children and by 1855 Lambley, Asholme and Harper Town in the South Tyne all had schools. Thirty years prior to compulsory education, only Knaresdale was without a school (Whelan's Directory 1855).

By 1870, the distribution of schools shown in Map 3.6 had been established. In total, 21 schools taught children to read and write. Every village in the mining area of Allendale and the South Tyne had its own school. Secondary education was provided only in Haydon Bridge and Hexham, but by 1870 the railway network made travel to school possible.

While the population of Allendale and the West Allen declined with the mining industry after 1870, the population of the Tyne Valley continued to expand into the first quarter of the twentieth century. The schools which were built in response to the 1870 Education Act continued to function alongside some of the earlier schools, so that by 1945 the area was served by 23 schools as shown in Map 3.7. The distribution was similar to that of 1870 with additional schools at Grindon, Catton, Sinderhope and Henshaw. This was the peak period for accessibility to schools, for by 1971, the number of primary schools had been almost halved.

The 1944 Education Act, had dealt a severe blow to the village schools by separating primary and secondary education. In the earlier part of the century the village school had taken children up to the school leaving age. The removal of eleven plus children reduced many rolls by 40%. New secondary schools were built in Haltwhistle, Allendale Town and Haydon Bridge. The latter was classified under the tripartite system as a Technical School; whereas Allendale Town and Haltwhistle both fulfilled the role of Secondary Modern Schools. Map 3.8 gives the distribution of primary schools remaining in 1971, but a closer look at the number of children on roll in these schools at that date highlights the problem. (Table 3.6).



Map 3.6 South West Tynedale: Distribution of Schools Prior to the Education Act of 1870

Map 3.7 South West Tynedale: Distribution of Schools in 1945

Schools with < 50 pupils	Number on roll
Greenhead	44
Herdley Bank	20
Hartleyburn	31
Allenheads	9
Whitfield	13

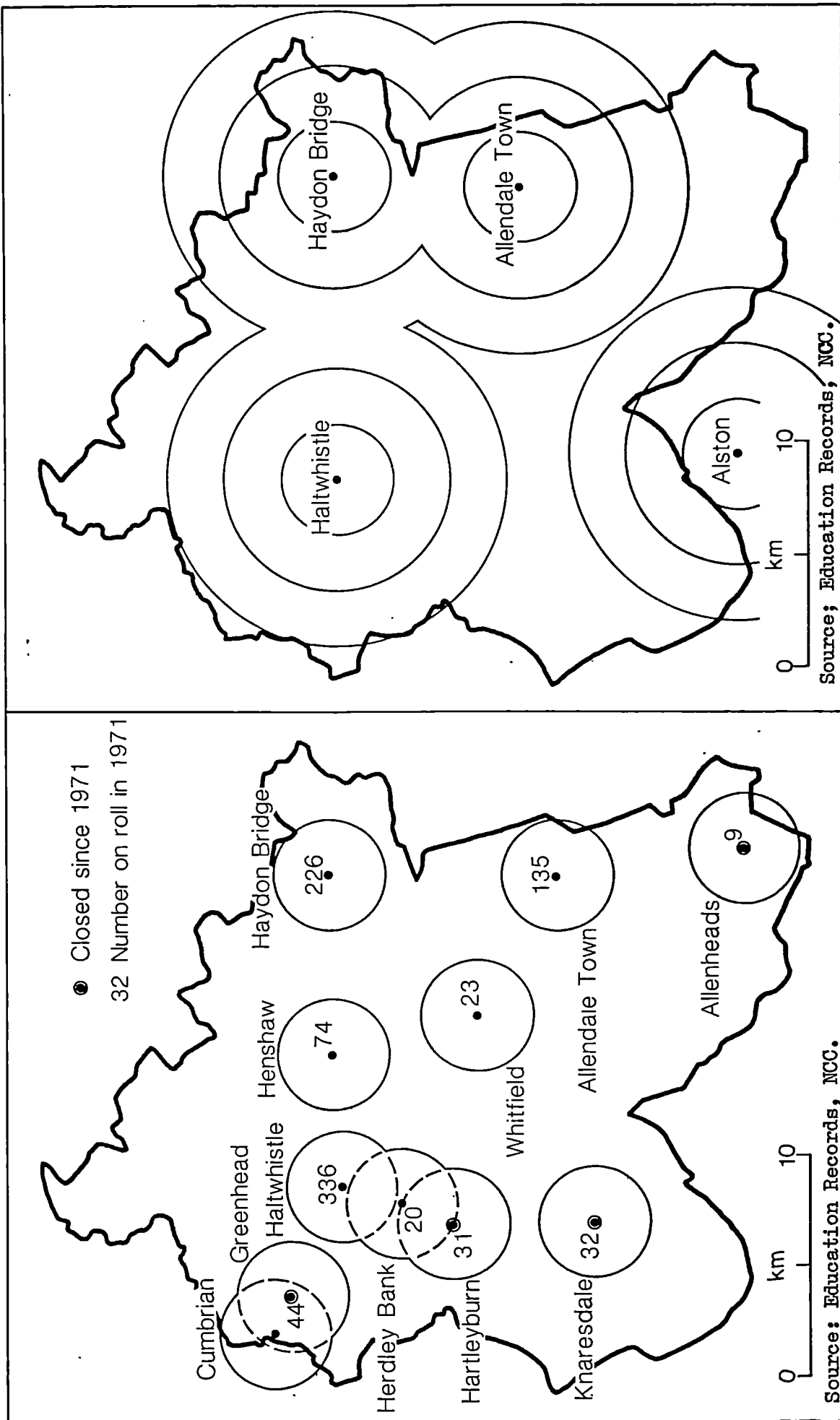
Source: NCC Education Authority Records 1971.

Table 3.6 Primary School Rolls in 1971

Half of the remaining primary schools in 1971 had less than fifty children on roll.

Map 3.9 gives the location of the secondary schools. The Alston secondary school accepted pupils from the South Tyne and this school together with the three mentioned earlier had few pupils travelling more than 7.5 kilometres direct distance to school. The problem area was the West Allen which had poor communications with Alston and Allendale Town in winter. Again the problem with the secondary schools was the small rolls which reduced the provision of specialist teaching. The 1944 Education Act had been complied with, but the problem of accessibility to specialist teaching for secondary age children remained. In 1971, the three secondary and five primary schools were too small to provide the breadth of curriculum available in the larger urban schools.

The loss of more than half the primary schools between 1951 and 1971 had considerable implications for the journey to school.



Map 3.8 South West Tynedale: Distribution of Primary Schools in 1971

Map 3.9 South West Tynedale: Distribution of Secondary Schools in 1971

In Maps 3.6 to 3.9, the circles have a radius of 2.5 kilometres and, although children in 1870 would have walked greater distances to school than their twentieth century counterparts, the 1951 distribution indicates that the majority of children lived within a distance of 2.5 kilometres of the nearest school.

Children may make the journey to school daily, but as discussed earlier there are always occasions when parents need to visit the school. The school in most villages is no longer a part of the village community. The school house has been sold and the school buildings put to other uses which will be discussed later. Therefore, for parents without a car the accessibility to school, was at its highest level prior to 1951. From 1951 - 1971 a deterioration occurred. This deterioration affected families differently, so that for non-working mothers with private transport, the effect was marginal. For those mothers without private transport, but on a direct bus route the deterioration was in terms of time and cost. For mothers without private transport and not on a bus route the journey could not be made without a considerable effort. To use an example a mother living in Keenley, where earlier this century there was a primary school, in 1971 had a 5 kilometre journey to Allendale Town to attend the village school. With a car, the school was 10 minutes down the road, without a car - at least an hour's walk.

To conclude, from the passing of the 1870 Education Act to introduction of the 1944 Education Act, primary education was extended to all parts of S.W. Tynedale. Accessibility

to schools for all parents and children was at its peak prior to 1951. Implementation of the 1944 Education Act together with a rapidly declining population brought an introduction of a better quality of education in the secondary schools, but for the remoter families, a reduction in accessibility to the school as an institution.

With the loss of the church and the school many villages for social and cultural gatherings became dependent upon a hall provided by the village, church or in some cases the Women's Institute. In 1971, Carrshield and Melkridge were the only settlements without such a facility (Map 3.10).

(iii) Commercial Village Facilities

Commercially provided facilities including the sub-post office have changed in response to the rural declining population. Although, only one sub-post office had closed in the period 1951-1971 there had been a considerable reduction in all other commercial facilities. When the 1855, list of grocers and dealers and sundries from Whelan's Directory was compared with a similar list compiled in 1938 for Kelly's Directory and the list of food shops for 1971 the size of the decline was apparent. However, it must be noted that these three lists were not compiled on the same basis and are therefore, only a guide to the reduction in this service.

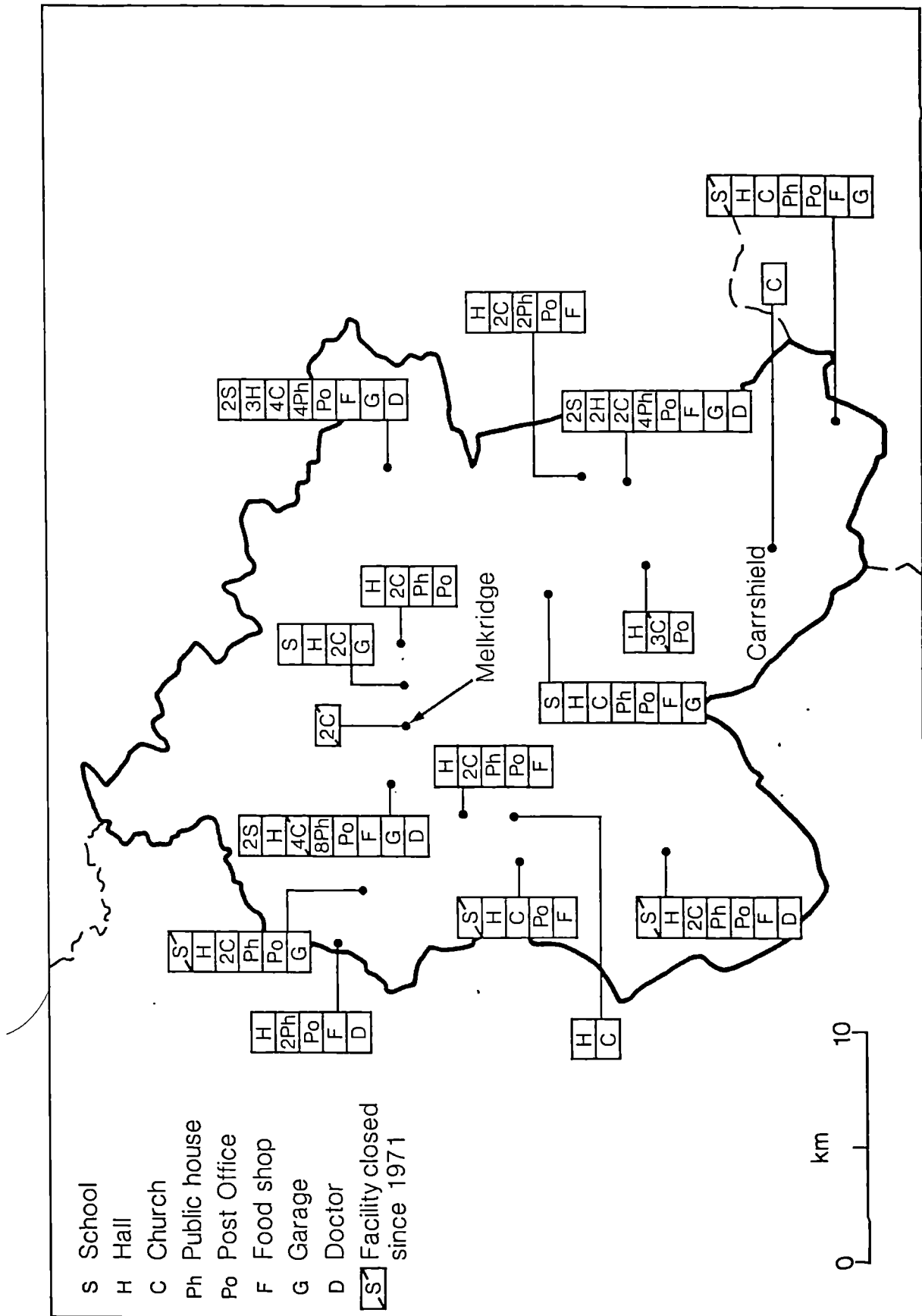
Settlement	1855	1938	1971
Allendale			
Allendale Town	14	3	2
Catton	5	2	2
Allenheads	7	3	1
Sparty Lea	1	1	0
Keenley	1	1	0
Whitfield	1	1	1
Carrshield	5	2	0
Ninebanks	2	2	1
Tyne Valley			
Haydon Bridge	17	5	6
Haltwhistle	18	15	*
Henshaw	6	2	0
Melkridge	2	3	0
West Tyne			
Blenkinsopp (Greenhead)	5	2	0
Coanwood	0	1	0
Park	1	0	0
Featherstone	2	0	0
Hartleyburn	1	1	1
Gilsland	3	4	1
Knarsdale	6	1	1

Source: Whelan's Directory (1855), Kelly's (1938) and Tynedale District (178)

Table 3.7 Grocers and General Dealers in South West Tynedale in 1855, 1938 and 1971.

In all but Haydon Bridge, Haltwhistle and Allendale Town the shops listed in Table 3.7 were the only retail establishments, whereas in 1855 butchers were listed separatley, and were to be found in nearly every settlement. The reduction and change in the distribution of lower order services such as grocers had by 1971 increased the distance many had to travel to buy food (Map 3.10).

One service which had improved was that of the library. Mobile libraries were introduced in the 1960's following fixed routes and calling at most settlements twice a month.



A century earlier the Allenheads Library leant out books to members of the Improvement Society at 6d per quarter on the first Saturday of the month between 2.00 - 5.00 pm. Both the frequency and number of settlements served had increased as had the available book stock.

The existence of rural facilities was to a certain extent a function of demand and it was inevitable with a decline in population the reduced demand for schools, churches and commercial facilities would lead to the closure of facilities. Other rural facilities underwent change in both type and number during the period 1951-1971. Various surveys initiated by the Rural Community Council provided evidence of that change.

(iii) Cultural Facilities

A survey of village facilities carried out in 1958 (Atkinson 1958) showed weekly activities to include whist drives, dances and films. Women's Institute meetings were held monthly in 75% of the halls and over half were used for whist drives and dances occasionally. Other uses included youth clubs, football clubs, Young Wives, and Parish Council meetings. In 38% of the villages weekly Women's Institute classes were held in homecraft skills. The results of a second survey in 1961 (Trotter 1963) in which 70 village hall committees completed questionnaires showed a decrease in whist drives, but an increase in bingo. Approximately, 20% were involved in musical or dramatic activities. These figures were supported by a survey of 116 Women's Institutes in Northumberland. The questionnaire collected data on drama, choral groups and Women's Institute classes for the years 1951, 1956 and 1961. In the decade, drama groups fell

from 46% to 29% and choral groups from 25% to 16% of those attending classes. The number of classes held was 143 in 1956, falling to 126 in 1961.

In South West Tynedale, in 1971, there were 12 Women's Institutes, 6 Mother's Unions and 6 Young Wives groups meeting regularly. Only one drama group met at Slaggyford in the South Tyne Valley, but Senior Citizens and Keep Fit had appeared since 1961. These surveys were conducted by the Rural Community Council because of the concern over the fall in village facilities in 1951. Indeed, during the field survey in 1981 respondents frequently referred to Worker's Educational Association, Women's Institute, and local authority classes which had been held in small settlements such as Allenheads prior to the sixties. One woman even recalled sewing classes held at Sinderhope in the 1930's.

The provision of, and use of, village facilities had declined in the 50 years 1921 - 1971, but the greatest decline in evening classes in rural areas took place in the decade 1951-1961 when the numbers of classes were halved. Although, humanities classes remained constant arts and vocational classes steadily declined. Practical classes fell by one-third in the decade (Trotter 1963).

The availability of cultural facilities had like the other village facilities waxed and waned with the growth and decline of the population. The ensuing time-lag gave the remaining rural population a brief period of high accessibility. This was followed by a downward spiral of decline as leisure opportunities adjusted to the lower

demand from the smaller rural population.

Conclusion

Mobility in pre-industrial Tynedale depended upon the physical condition of the individual and income. The wealthy could afford to ride and the healthy were able to walk. The settlement pattern followed the valleys as did the tracks with exception of the Roman roads. Markets were approximately 16 kilometres from each other and every settlement had its own corn mill. Accessibility to basic necessities was high. As the population grew in the nineteenth century the inaccessible area with resources of lead and coal peaked first with the Tyne Valley later. Enclosure occurred first in the Tyne Valley and spread southwards through Allendale and the South Tyne. It can be concluded that the physical environment was exerting an influence on the spatial distribution of economic activity as well as the settlement pattern and the route network.

The three periods of change in personal mobility resulting from improvements in transport technology brought increases in the range of facilities to which individuals potentially had access. But accessibility to facilities polarised for those in remote areas. The elderly, children and poor had long journeys by public transport to even essential services, whereas the car owners and drivers retained accessibility to both lower and higher order facilities.

The problem of accessibility to facilities for rural women in the 1980's had to be set within the historical

context. For the ages of the present population of women span nearly a century; and each woman has amassed a set of culturally based values and perceptions of the accessibility to different facilities for herself and other members of her family. This chapter has sought to give an understanding of the circumstances in which those perceptions were formed.

CHAPTER FOUR - PLANNING, WOMEN AND POWER

Introduction

The Oxford Dictionary defines planning as:

"...to make a scheme, arrange beforehand."

The agencies making schemes or plans which affect the lives of the people of S.W. Tynedale are multifarious, ranging from government departments, quasi governmental bodies, county, district and parish councils to commercial companies such as British Telecom. The decisions made by these agencies are influenced by the views of those individuals and political bodies who are able to wield the power. The Oxford Dictionary gives fourteen definitions of the term power. The one most applicable here is as follows:

"...Government, influence, authority...under one's control: personal ascendancy (over); political ascendancy as the party now in power."

To understand rural accessibility in relation to any group in society, it is not only necessary to describe the planning agencies and relevant legislation, but also their relationship to the acquisition of power in society.

This chapter has two objectives, the first is to examine the planning legislation relevant to the distribution of the scarce resources in the countryside with specific reference to accessibility. The second is to analyse which groups in Tynedale District and Northumberland County exercise the power over decision making with particular reference to the role played by women.

PLANNING

What is the purpose of planning? Gilg (1978) stated that in Britain it was generally agreed that planning policy

"...should do no more than guide
and shape the economy."

Cloke and Little (1984) commented on the implementation gap (i.e. the difference between the policy and what actually happens. Planning policy is therefore a statement of intent which is sufficiently flexible to be adapted to the changing socio-economic climate.

The resources of the rural areas are in demand for growing the food supply, mining interests, transport networks, water supply commuter housing, defence and recreation. Conflict between these material interests and the interests of the local people for employment, housing, transport, health and education services are inevitable. Inevitable too, is that a plan cannot be operated in isolation. Physical planning may well have unforeseen social and economic costs for others. For instance, a village bypass may well lead to a pollution free village, an increase in house prices, but the local garage owner could be facing bankruptcy.

Planning policy emanates from Central Government and its ministers, departments and quangos. Within this framework the Ministries of Agriculture, Fisheries and Food; Transport and Defence formulate their own policies. The Department of the Environment oversees the local authority planning procedures and water supply, National Parks, Areas of outstanding natural beauty (AONB) who are also in the

business of making plans. How then has the simple concept of planning for the future developed such a multiplicity of agencies? All of these agencies are involved in planning policy which to a greater or lesser degree, depending upon actual implementation, affect the accessibility to facilities of the people.

Historical Perspective.

In this century local authorities have been required to administer an increasing volume of local government legislation pertaining to Town and Country planning, the origins of which can be traced back to the Public Health Act of 1848, and before. The first Town and Country Planning Act as such was passed in 1932 and concerned itself with land use zoning. The laissez-faire' strategy of the 19th century and earlier was no longer the predominant ethos. A series of reports prepared by government committees during World War II examined such issues as loss of agricultural land to urban areas (The Scott Report), the development of new towns (The Barlow Report), and the question of betterment and compensation resulting from land use planning controls (Uthwatt Committee). In consequence, the 1947 Town and Country Planning Act, replacing the temporary 1944 Act, introduced the present system of land use development plans. The 1968 Act was amended by the Town and Country Planning Act of 1971, but a major change in the administration of local government, and hence the planning legislation, came into being with the 1972 and 1974 Local Government Acts which abolished Rural and Urban District Councils replacing them with District Councils. Therefore, planning within Northumberland is vested in the County Council whose responsibility includes the preparation of the structure

plan detailing the development of the county. Tynedale District Council is responsible for preparing local plans within the framework outlined in the Structure Plan. —

At the national level, from 1970, the Department of the Environment took over the functions of the Ministries of Housing and Local Government, Public Buildings and Works, and Transport, and became responsible for land use planning, conservation and recreational use of the countryside, sport and recreation, the protection of ancient monuments and historic buildings, pollution control, the provision of water and sewerage facilities, housing, and the structure and functions of local government. The Department of Environment responsibility for land use planning and settlements is in terms of the production of national policies, through legislation and preparation of national strategies; interpretation of national policies preparation of regional strategies; examination, modification and approval of local authority development plans; and the resolution of land use conflicts through public enquiry or private hearing procedures (DoE 1975).

The study area embraces, in the north a part of the Northumberland National Park, and in the South a part of the proposed North Pennine AONB, thus it is pertinent at this point to consider the role of the National Parks in the planning process.

The purposes of the National Parks were set out in the National Parks and Access to the Countryside Act of 1949 as,

"...preserving and enhancing their natural beauty... and promoting their enjoyment by the public."

The same Act placed on the National Park Authorities the necessity for a regard to the needs of agriculture and forestry which was later extended by the Countryside Act of 1968 to include the economic and social interests of natural areas. Hence, the central government legislation has statutorily delegated planning responsibilities to the National Parks. However the County Structure Plan provides the policy framework to which the National Park Plan is expected to adhere.

At the regional scale, the Northumbrian Water Authority, Northern Regional Health Authority, Northumbrian Tourist Board and the Northern Economic Planning Council are all concerned with the planning of the provision of employment and services in S.W. Tynedale. But, this is primarily an agricultural area and is, therefore, subject to agricultural planning constraints.

Agricultural Planning.

The first piece of post war legislation was that of the 1947 Agriculture Act which aimed at achieving a stable and efficient agricultural industry. After the termination of shortages resulting from rationing during the Second World War, the emphasis moved to the production of quality products rather than the bread and potato staples which it had been necessary to grow during the war and immediate post war years. Later, with entry into the European Economic Community (EEC) in 1972, the objectives of the Common Agricultural Policy of increasing agricultural productivity

and earnings, stabilizing markets, and providing adequate supplies of reasonably priced products to the consumer were followed. In 1975, a government White Paper (MAFF 1975) encouraged an increase in self-sufficiency in agricultural products as a means of partly off-setting an ever increasing balance of payments deficit.

The Ministry of Agriculture, Fisheries and Food is responsible for policy decisions and development of regional and local strategies. The marketing boards which were given wider powers by the Agricultural Marketing Act of 1958 play a key role in deciding the price at the farm gate, and hence the use to which the farmer puts his land. In the study area, the closure of the Allendale Creamery in the 1930's, and more recently the decision for bulk collection of milk are both examples of the local effects of marketing board policies. Other planning agencies designed to influence the economy of the area were the short-lived North Pennines Rural Development Board (Clout 1971), under the auspices of the MAFF, and the Hill Farming Project 1973-78. Agriculture, as the major industry in the study area, and hence a significant employer of resources, is an indirect contributor to the accessibility levels of the inhabitants of the area. Changes in farming methods, choice of crops and animals, location of creameries and transport facilities together with pricing structures and subsidies are all potentially variables which will lead to change in population size and structure, employment opportunities and therefore, in the long term, accessibility levels.

The part played by the planning agencies in terms of

their impact on population distribution, employment in agriculture and industry, housing, transport and cultural educational opportunities has been considerable. This process is, however, a consultative one and an understanding of the relationships between the levels of local and central government agencies and voluntary organisations is essential to an appreciation of the exercise of power in the decision making process. The Northumberland County Structure Plan is the major planning document concerning the study area and requires detailed consideration. However, as point out the gap between policy and implementation can be a significant one. The Structure Plan is therefore a statement of the "...intended lines of action." and not necessarily the policy which will be implemented.

Northumberland County Structure Plan.

In the Written Statement for Consultation in 1978, the Northumberland County Council discussed the issues which were central to the formulation of the structure plan. Those pertaining to the rural areas of the county were concerned with employment, housing, transport, settlement policy, education, leisure and recreation, health and personal social services, outdoor recreation and tourism.

The restricted range and availability of employment opportunities in the county is reflected in the area of S.W. Tynedale and the county's strategy for increasing manufacturing industry; the selective promotion of tourism; giving high priority to the retention of good agricultural land and viable holdings when considering proposals for development; and securing an equitable distribution of employment between rural and urban areas on the basis of

need.

In the study area, English Industrial Estates Corporation (EIEC) have developed industrial estates at Haydon Bridge and Haltwhistle. An Employment Grant Scheme for remote areas with grants of up to £2 000 for capital cost schemes was available to firms employing less than five people. In addition, in 1981, the county budget of £35 800 was intended to encourage small businesses.

Within the study area are considerable coal reserves in the vicinity of South Tyne and Plenmeller Common. It was anticipated that in 1982 an opencast scheme would be approved for Plenmeller Common, although another application for Lambley (South Tyne) was not supported by Northumberland County Council on environmental grounds. The Plenmeller scheme has since been rejected.

Despite these measures to provide new job opportunities Northumberland County Council still forecast a reduction in the population of the rural area. This in part was supported by the 1981 Census which showed a loss of population in the smaller remoter settlements. In the Structure Plan, three basic types of settlement were identified in rural Northumberland; the market town, supporting service centres and villages. The market town, although outside S.W. Tynedale is Hexham, and Haltwhistle, Haydon Bridge and Allendale Town are considered as supporting service centres. The villages are the communities which the county council anticipated would experience the greatest loss of population.

In formulating the housing policy, the objectives were twofold for the rural areas: i) to stabilize the population in market towns and supporting service centres. ii) to minimize loss of population from the villages. To achieve these objectives a policy of encouraging the building of housing in main towns and villages with a limited amount of development in smaller settlements.

"...distributed in such a way that development in each settlement is in scale with and sympathetic to its character and would assist in maintaining existing services without requiring substantial investment in new infrastructure."(NCC 1978).

In the study area, the policy has led to the building of new private and council estates in Haltwhistle, Haydon Bridge and Allendale Town. Retired people's housing has been concentrated in Allendale Town and Haltwhistle with a small development being proposed for Halton Lea Gate. Earlier council house building provided estates in Gilsland and Halton Lea Gate and in the supporting service centres of Haltwhistle, Haydon Bridge and Allendale Town.

(1) Transport.

Transport is essential to the people/resources relationship and the planning of a network to serve this relationship was fundamental to the transport policy. The county council concluded in the Written statement of 1978 that,

"...the population growth was insufficient to exert major pressures on the road network..."

but that if economic regeneration and an increase in the use of private cars for leisure purposes was to take place then

some improvements would be necessary. Emphasis generally was to be on maintenance with access improvements and accident blackspots being given priority. The major road through the area is the A69(T) linking Newcastle upon Tyne with Carlisle. Much of this road is dual carriageway, but within Northumberland there are four sections requiring by-passes. These are in Haydon Bridge, the west end of Haltwhistle, Bardon Mill and Greenhead Bank. The Bardon Mill by-pass was under construction in 1983; the Greenhead by-pass in 1984, but the other two are still in the planning stages in 1986.

The question of transport services was considered in more detail in the Public Transport Plan which Northumberland County Council was legally required to produce in accordance with 1978 Transport Act. In formulating the policy for public transport services four transport needs were considered:

- "i) A social - related to problems of mobility and potential cases of personal hardship.
- ii) A community planning need - concerning the preservation of settlements and their ways of life.
- iii) A commercial need - related primarily to the efficient operation of public transport services.
- iv) A peak travel need - concerned with the problems of moving large numbers of people efficiently." (NCC 1981)

In rural Northumberland the problem of need can be discussed in terms of these four categories. The County Council's research findings concluded that the majority of household needs could be met by not more than two journeys

per week (NCC 1981), and that there was a general concensus about the necessity for a market day service. It is the county's policy for school bus services to be used by the general public as permitted under Section 32 of the Transport Act 1980, but their research found the timings of these services to be inconvenient for other purposes.

The second type of need - community planning - relates to employment and housing policy, and similarly identifies Hexham, Haltwhistle, Haydon Bridge and Allendale Town as growth points, but also recognises Brampton and Alston as lying outside the borders yet serving a part of S.W. Tynedale. The following were identified as journey requirements of the community; access to employment, all levels of school, shops and other related services, medical services and friends, social and recreational activities.

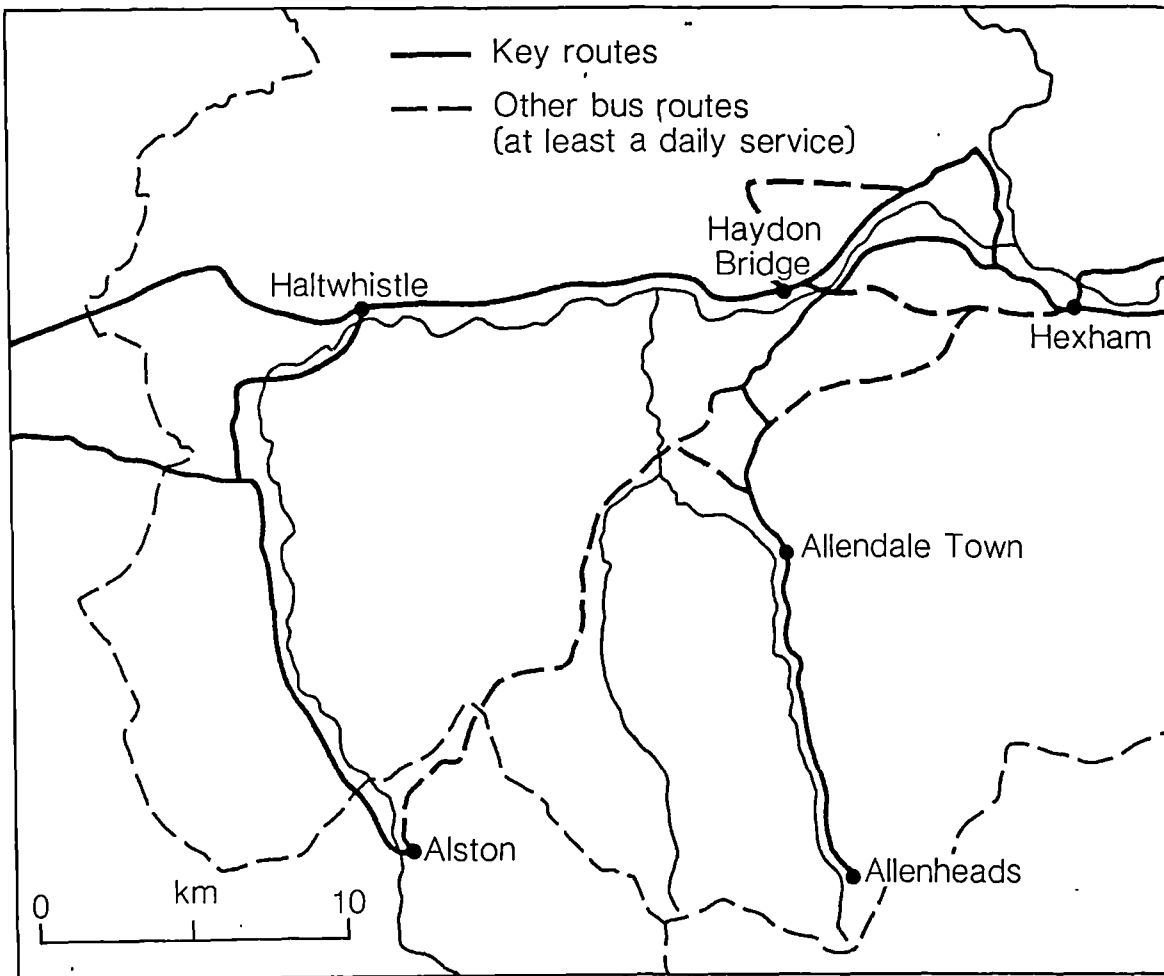
The commercial need arises out of the necessity of the bus operator to make a profit. Where services are not financially viable as in the rural area of the county subsidies are necessary, if the private operators as to maintain the services. Hence, the routes, frequencies and fare structures should be revised to improve the service on the one hand, and financial and operating efficiency, on the other. The peak travel need is the problem of transporting large numbers of people efficiently. This concerns the urban areas more than rural, yet, a peak daily travel pattern is identifiable in all three areas and more specifically in the 'commuter corridor' of the Tyne valley.

Having considered the above needs, a policy was

formulated which included the coordination of services to ensure complementarity rather than competitiveness. In the study area, British Rail and United Bus Services operate the Newcastle upon Tyne to Carlisle route resulting in duplication of the service along some sections of the route. The revenue support and fares policy was essential to the maintenance of services in the area. Until 1969 bus services were operated without a subsidy. In that year, Hexham Rural District Council, under the provisions of the 1968 Transport Act made a subsidy payment to a bus operator mainly to support uneconomic rural services. In 1969, a Key Route Network was introduced which provided a guide for assessment of financial assistance on rural bus services. In the study area, the Newcastle to Carlisle route, Hexham to Allenheads, Haltwhistle to Alston and Alston to Carlisle are shown as Key Routes in Map 4.1.

The concessionary fare scheme gives old age pensioners and the disabled an allocation of National Travel tokens according to the distance of their residence from Hexham or Haltwhistle. The only unconventional service operating in S.W. Tynedale is the use of the school bus by the general public, but despite the publicity policy, the frequency, timings and availability during term time only, as was mentioned earlier, resulted in very little use. The policy towards public transport facilities included the provision of grants towards new and improved public transport facilities where integration and hence service were to be improved.

Transport links people (housing) to resources (employment) hence the rural settlement policy of the county



Source: The Public Transport Plan 1981. NCC.

Map 4.1 South West Tynedale: Key Route Network

must take into account these relationships. The objectives of the Settlement Policy pertaining to rural areas are given below:

- "i) to provide a reasonable choice of housing location.
- ii) to minimise journey to work movements.
- iii) to assist in the provision of a reasonable level of education, social and community facilities and services.
- iv) to minimise the costs of providing utilities, transport, social and community, and education facilities and services.
- v) to conserve agricultural land of a high quality.
- vi) to maintain separate settlement identity, conserve the character of towns and villages of a high quality and improve others which at present have a poor environment.
- vii) to conserve the landscape." (NCC 1978).

(ii) Education

The settlement policy discussed above is fundamental to all other locational decisions and can be seen in the planning of the education service and the location of other social, community and recreational facilities.

The education location policy was to retain the smaller rural first schools for pupils aged 5-9 years and locate middle schools for ages 9-13, years so that the maximum journey times were no more than 45 minutes daily. High school pupils were not expected to exceed 75 minutes. In such cases where journey times exceeded 75 minutes boarding facilities were to be made available. In the study area, the high school serving the whole area is equipped with a boarding wing and additional boarding facilities are

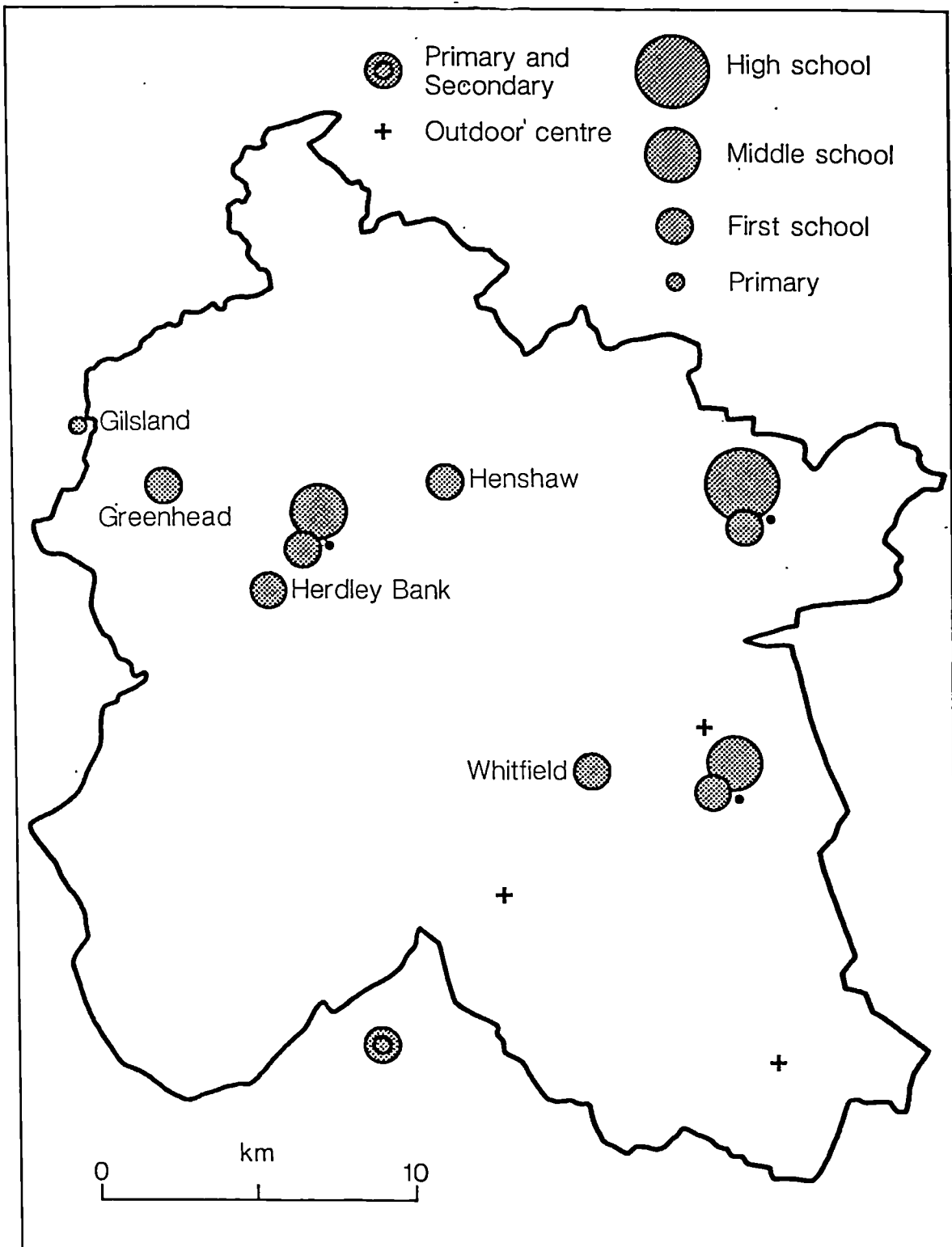
available at the middle school in Allendale Town. A second middle school is located in Haltwhistle. Seven first schools served the area in 1981, but since then Herdley Bank First School has closed. The distribution of schools is given in Map 4.2. Gilsland and Alston primary schools together with secondary schools in Brampton and Alston take pupils at the request of parents.

The county supported Adult Associations based on the middle and high schools where WEA classes took place, but the further education institutions were all to the east and north of the county, the nearest being Ashington Technical College. The area to the west of Haltwhistle was more effectively served by Carlisle Technical College, than Ashington or any of the Tyne and Wear colleges. It was for this reason that priority was to be given to a further education centre in Hexham. This would considerably improve accessibility to education for adults living within the study area as well as Hexham.

The Written Statement for Consultation gave the following objective:

"...promote the joint provision of new leisure facilities on school sites, and the use of the existing educational facilities by the whole community wherever practicable." (NCC 1978)

It was also the policy to support the retention of community and village halls in rural settlements, but these were within the responsibilities of the district and parish councils. The district council i.e. Tynedale District was responsible for the sporting facilities. The national standard of 6 acres of public open space per 1 000



Map 4.2 South West Tynedale: Distribution of Schools 1981

population was laid down in 1925 and this was recommended in the structure plan as the minimum standard for Northumberland.

The policy towards facilities for, the Arts was again based on Hexham, as the main centre where an Arts and Community Centre has been opened since 1981. Otherwise the use of village or community halls for such events was to be encouraged.

The provision of library facilities was met in three ways. Firstly, with full-time branches in towns with 4 000 population and over, secondly, part-time branches in settlements between 1 500 and 4 000 population and finally, mobile services elsewhere. Since 1974, a policy of making the library in each community a focal point has been followed, hence Haltwhistle library became the centre for group meetings of different societies, and Hexham was redesigned as a part of the Arts and Community Centre. The county policy was stated as helping with the provision of museums and art galleries for local residents and visitors.

(iii) Health

Basic to the needs of the community are health and related services. The necessity for access by public transport to these services was recognised in the structure plan. Although, it was feasible to locate a clinic in Allendale Town with hospitals in Haltwhistle and Hexham, the provision of dentist and chiropodist services with higher threshold populations were in the rural areas more difficult to provide. Hence, as with libraries mobile services were the least cost solution. These all operate independently

and there is no evidence to suggest the development of a 'periodic' market where several mobile services ,together with retailing services, regularly assemble in a small settlement on the morning or afternoon of the same day.

In adopting a policy of keeping people in their homes rather than moving them into an institution, the provision of specialist housing for the elderly and transport services to hospitals and day care centres has been necessary. Haltwhistle and Allendale Town have been the centres for considerable development of warden controlled flats and bungalows for the elderly with supporting home-help services. An ambulance is maintained in Allendale Town and the elderly from all over the study area are taken to daycare centres in Allendale Town, Haltwhistle and Hexham. Again this accords with the settlement policy, but it is producing settlements with a population imbalance and inflexible public housing stock.

(iv) Tourism

Finally S.W. Tynedale being predominantly rural and with the Northumberland National Park in the north, the question of the tree planting and felling, mineral workings and recreation and tourism have to be considered in relation to the existing environment.

The policy for woodland was to retain those areas in the upland valleys, where, to remove the timber would completely change their character. Indeed to remove the timber from the Allen and South Tyne valleys would not only change their character, but also make them less attractive to tourists.

Within the study area there was the contrast between the very well developed tourist industry along Hadrian's Wall and the little used areas of Allendale and the South Tyne. The policy of supporting the proposals for an AONB in the North Pennines had the twofold objectives of creating employment in the area and relieving tourist pressure in the Hadrian's Wall area.

The structure plan policies are those which govern the locational decisions of industry, services and public transport. Road networks and land use planning all take place within the framework of the structure plan. Therefore, it is these policies which have been significant in shaping the accessibility patterns of those living within the study area.

The district council had the authority to produce three types of local plans:- district, subject and action. In 1984, there were two local plans of the district type in preparation for the study area. The S. W. Tynedale (not geographically synonymous with the study area) district plan had been completed, but the Tyne Valley district plan was in the process of being compiled. Preparation of subject and action plans were not then envisaged. Working in close conjunction with the County Planning Department was the National Park Authority whose plans complement the structure and local plans.

(v) The Northumberland National Park Plan

Prior to April 1974, this park lying wholly within the county of Northumberland was administered by a separate

committee of the County Council. The 1968 Countryside Act charged the same committee with the responsibility for the countryside recreational functions, and this situation continued until 1974, when under the Local Government Acts of 1972 and 1974, three major changes occurred. The changes were in the areas of administration, planning and finance.

The new single executive authority in Northumberland was a statutory committee of the County Council with a National Park Officer. It retained the responsibilities given under the Countryside Act of 1968 for the county as a whole and was given the title of National Park and Countryside Committee. This committee was responsible for the preparation of a National Park Plan, to be published by April 1st 1977, in which for the first time, the policies for management of the park were to be published. Finally, the new legislation gave a greater share of the financial burden of the national parks, including administration costs, to the central government.

The planning functions were similar to those given to the county and district councils together with those already allocated under the National Parks and Access to the Countryside Act of 1969, and the Countryside Act of 1968. The Northumberland National Park Plan was published in 1977, followed by in 1980, the Hadrian's Wall Area Management Proposals. Most of the Hadrian's Wall area lies within the study area, and hence the plans pertaining to it are relevant to the question of accessibility.

The Management Proposals are a short term plan covering

conservation, recreation, and information and warden services. Implicit in these proposals are questions of employment and accessibility for local people. As the National Park Plan and Hadrian's Wall proposals are only relevant to the Tyne Valley, then their impact on employment and accessibility will be discussed in that context.

The plans, structure, local and national park are prepared in association with the national and regional institutions whose functions were described earlier. Other associations together with the voluntary organisations have the role of articulating the problems of the rural area.

These associations namely, the Northumberland Association of Parish Councils, Rural Community Councils and the Northumberland Community Health council articulate the problems as they perceive them. Each of these monitors and studies the current situation in the rural areas, and it is their work during the period 1951 to 1981 which has contributed to the past and present development of the structure plans, and hence accessibility patterns.

(vi) The Parish Councils

Prior to the 1894 Local government Act, the parish councils had been the administrative unit for local government. This Act created the urban and rural district councils and gave them the responsibility of essential services such as sanitation which hitherto had been administered by the parish councils. They were left with little executive power and became merely advisory bodies. The 1972 Local Government Act required each parish with more than 200 electors to have a parish meeting and establish a

parish council. If the parish had 150 or more on the electoral roll, then a parish council could be set up with the approval of the parish meeting.

The powers given to the parish councils in 1972 were twofold. Firstly, the provision of facilities relating to highways, health, recreation and entertainment and the repose and commemoration of the dead. Finance for these facilities could be raised through the levying of rates. The second area of decision making was in the the protection and improvement of the environment which included the repair of footpaths, initiation of drainage schemes and commenting on planning and public health matters. In order, to be able to comment on planning Section 16 of the 1974 Act provided for parish councils to advise district councils, if they wished to exercise this function, in which case district councils are obliged to send details of proposals to the parish councils. The Town and Country Planning act of 1971 obliged the county and district councils to invite comment from the public in the preparation stages of the structure and local plans. The parish councils as representatives of the local residents point of view are one of the bodies invited to participate.

Although, this is not the case for all Tynedale District parishes, the thirteen within the study area all levy a parish rate varying from 1p to 6p in the pound. In 1967, research undertaken for the Royal Commission found that there was an inverse relationship between rurality as measured by population density and parish council activity. This relationship was established at the county level, but if the parish rate is taken as a measure of parish council

Parishes	Population Density persons per acre	Parish Rate 1981-2 pence in £
<u>Allendale</u>		
Allendale ((B)	0.04	2.0
Allendale (NB)		2.5
West Allen	0.03	1.0
Plenmeller with Whitfield (B)	0.02	0.0
Plenmeller with Whitfield (NB)		1.5
<u>Tyne Valley</u>		
Haltwhistle	1.27	6.0
Haydon	0.67	2.0
Bardon Mill	0.06	1.0
Henshaw	0.05	1.0
Melkridge	0.05	2.0
<u>West Tyne</u>		
Coanwood	0.04	4.0
Featherstone	0.04	2.0
Greenhead	0.05	3.0
Hartleyburn	0.08	2.0
Kirkhaugh with Knarsdale	0.02	2.0
Thirlwall	0.05	3.0

NB. West Allen included as a separate parish.

Source: Tynedale District Council Rates Table 1981-2.

Table 4.1 Population Density and Parish Council Spending

activity, then as Table 4.1 shows, the parish rate in 1981/2 was 6p in Haltwhistle and zero in Plenmeller with Whitfield (Non Burial). Calculation of Pearson's Product Moment Correlation Coefficient gave a value of $r = 0.79$ which is significant at the .025 probability level. In S. W. Tynedale the findings of the Royal Commission were supported at the parish level. The greater the degree of rurality the smaller the parish rate being levied to support parish activity.

Haltwhistle, as the largest settlement provided recreation, entertainment, and public health facilities and street lighting on a larger scale than the smaller parishes, hence the necessity to charge a higher parish rate. This was confirmed by the larger settlements outside the study area of Corbridge and Hexham which both levied 4p in the pound in 1981/2. The parish councils as a part of the local government structure have then the power to improve accessibility within the parish in the two ways described.

(vii) Rural Community Councils

Working as an advisory body to the parish councils are the Rural Community Councils which provide information and advice, educational services and carry out research. Their role is to help the councils to be more effective and to encourage them to widen their activities. Their services are available to village hall committees, local community councils and individuals, and they perform their role through liason with all levels of local government and other government agencies such as the Community Health Councils and the Council for Small Industries in Rural Areas.

In Northumberland, the headquarters of the Rural Community Council are in Morpeth, as are the Northumberland County Council headquarters, and although central to the county, they are remote from S.W.Tynedale. Throughout the county they have been active in monitoring changes in rural services, producing a report in 1963 on Cultural Activities (Trotter 1963); conducting a parish survey to monitor the changes in services in 1981; a report on Access to Medical Services in 1983 (Lumb 1983). The latter was written in

conjunction with the Community Health Council, but initially the request came from the Development Commission.

Contributing to the planning process are voluntary groups who make recommendations to the planning agencies. In 1981, one of the most active in supporting the interests of women was the Women's Institute which had twelve branches in the study area. Another, Age Concern, sharing the same headquarters as the Rural Community Council and CoSIRA, acted as an independent charity, although, its staff were employees of the Community Council. In providing daycare centres, meals schemes together with the WRVS, and friendly visits their work was increasing the opportunities available to elderly rural residents. Twenty-seven per cent of the female population in the study area, in 1981, were over the age of 60, therefore representatives on their behalf are an important part of the public participation in the planning process.

Employment

The Development Commission was created in 1909, had as one of its specific functions the assistance of English rural areas with finance available from the development fund. Since 1968, it has vested the responsibility for setting up small industries in the Council for Small Industries in Rural Areas (CoSIRA). CoSIRA works in conjunction with local authorities and confines its services to the following categories of business and rural communities:- businesses with less than 100 employees and fewer than 20 skilled workers located in the countryside, or small country towns with a population of less than 10 000.

In Northumberland, CoSIRA works closely with English Industrial Estates Corporation who build the Development Commission's factories and workshops. Haltwhistle, Haydon Bridge and Allendale have been recipients of small industrial units, hence again the decisions and recommendations of CoSIRA are concerned with 'Who gets what, where?'. -

Finally, organisations such as the Northumbrian Tourist Board who through the English Tourist Board provide discretionary assistance towards the capital cost of tourist projects, and the Northumbrian Water Authority which has an interest in the environment and employment in the area are all concerned with the planning process.

To conclude this section of the discussion. Planning by commercial concerns providing employment can ultimately affect the lives of all members of small communities. The closure of the lead mines in the last century had a considerable impact, as did the closure of the Lambley Colliery in the fifties, and later the Bardon Mill Colliery in the sixties.

In the area of public transport, British Rail's decision to close the Alston to Haltwhistle line in the seventies was met with much opposition, but nevertheless it went ahead as part of British Rail's overall plan for rationalisation. Until recently, such firms as the bus companies worked closely with the district councils as they were dependent upon the subsidies to maintain rural services. The 1985 Transport Act which takes full effect in October 1986 will

will have considerable ramifications for the relationship between the bus companies and the district councils.

Accessibility during the twentieth century has been subject, not only to the historical legacy of paternalistic planning, but also to the uncoordinated locational decisions, both direct and indirect, of central government policies, local government and commercial concerns. These policies affect settlements and the space-time prisms of their inhabitants daily lives. This leads to the question of which groups, and which individuals in rural society seek to control the decision making process.

POWER

Throughout the period of this research South West Northumberland was represented by the Conservative M.P., Geoffrey Rippon; the County Council had a Labour majority and was chaired by Robin Birley, the elected councillor for Haltwhistle. Tynedale District Council was effectively under the control of the Conservatives who together with the independents held the majority of the seats. Few parish councillors declare their political allegiance preferring to describe themselves as independents or farmers! To further the complexities of political party allegiances the elected Euro M.P. was from the Labour Party. But, where did women stand in the political stakes, and were the farmers powerful in S.W. Tynedale?

Women as more than 50% of the population of S.W. Tynedale have theoretically the same legal access to power as their male counterparts. Yet, as Little (1983) commented they have little control over decision making. Farmers, on

the other hand, have been shown by Gilg (1986) to exert considerable power both through the NFU, Country Landowners' Association and personal ascendancy to power.

Through the analysis of county, district and parish council elections, it was possible to gain some indication of the control over decision making exercised by women in relation to that exercised by other groups such as farmers. It should be noted here, that there was no evidence to suggest that any identifiable interest group other than farmers were represented on any of the councils in significant numbers.

Women

Little (1986) made the allegation that:

"Opportunities for women...are restricted by the organisation of power within society the structures of which are controlled by men"

Women can influence decision making through the institutional structures of parish, district and county councils as well as organisations such as the Women's Institute. In 1979, the elections prior to the field survey of 1981, within the study area 114 candidates stood for 107 seats on the parish councils. The data in Table 4.2 shows that six of the 14 parishes did not have a woman candidate. Amongst those six parishes were Greenhead and Hartleyburn, both West Tyne parishes. In the district-council election of the same year, of the 46 councillors nine were women, in the 1983 elections that number fell to seven. In 1979 and 1983, Allendale, Haltwhistle and West Tyne were represented by women councillors.

Parish Councils	No. of Councillors	Total No. Candidates	Women Candidates
<u>Allendale</u>			
Allendale	13	15	2
West Allen	5	6	2
Plenmeller with Whitfield	7	6	1
<u>Tyne Valley</u>			
Haltwhistle	12	13	5
Haydon	11	14	1
Bardon Mill	8	5	0
Henshaw	7	7	0
Melkridge	5	5	0
<u>West Tyne</u>			
Coanwood	7	7	1
Featherstone	6	6	1
Greenhead	7	11	0
Hartleyburn	7	7	0
Kirkhaugh with Knarsdale	7	7	0
Thirlwall	5	5	1

Source: Hexham Courant 04/05/1979

Table 4.2 Women Candidates: Parish Council Elections 1979

Committees	No. Committee members	Women members	Women as a Percentage
Policy & Resources	22	4	18
Finance	14	2	14
Personnel	14	2	14
Property Services	14	1	7
Employment	14	2	14
Planning	21	3	14
Highways and Transport	21	3	14
National Park	13	3	23
Education	27	7	26
Social Services	25	9	36
Amenities	21	10	48
General Purposes	21	4	19

Source: Northumberland County Council Year Book 1985-6.

Table 4.3 Membership of Northumberland County Council
Committees 1985-6.

At the County Council level, in 1986 women formed 21% of the elected councillors, these included the Allendale and Plenummeller representatives. Table 4.3 County Council Membership of Committees shows a woman on every committee, but they were under represented (i.e. less than 20%) on all but four. The Amenities Committee where women formed 45% of the councillors deliberated on libraries, museums and art galleries, whereas both Planning and Finance had only 14% women members. Women were marginally over represented in Education and more so in Social Services, yet Highways and Transport had only a 14% membership by women. If these committees are analysed in terms of their relationship to the concept of space-time prisms, then for the committees which are concerned with the structure of the prisms women are under represented, but on the committees which make decisions relating to the opportunities which lie within the structure women are represented in greater numbers.

When discussing under and over representation on committees, the term is used in relation to the proportion of women councillors. Women formed less than 20% of the elected representatives at all levels of local government, yet they were approximately 50% of the population. In these terms women are under represented in all areas of local government.

The parish council candidate figures, for 1979, reveal the reluctance of women to put themselves forward for election. Yet, in S.W. Tynedale, Allendale had women councillors at parish, district and county level, Haltwhistle at parish and district, and West Tyne at District level.

As discussed earlier, the major women's organisation, in the study area, is the Women's Institute which was described by Stebbing (1985) as playing a significant role in the reinforcement of the rural ideology. Within S.W. Tynedale the events of thirteen Women's Institutes branches are reported regularly on the 'Women's Page' of the Hexham Courant. Indeed, news of their monthly painting, cooking, knitting etc. competitions occupies between a quarter and a third of the page. The quintessential conservatism of the W.I. in the 1980's is evident from their emphasis on the "For Home..." rather than "...and Country" part of their motto. The National Federation of Women's Institutes Handbook of 1976 defines for itself both an educational and social role with the objective of improving the quality of life in rural communities. It could be a radical organisation wielding power to bring about change, but throughout the period of this research, although the WI was prepared to cooperate with such bodies as the Northumberland Community Council, the branches did not veer from the course of promoting the rural and domestic idylls.

The church based organisations of the Young Wives and Mother's Union followed a similar path to the WI and in the same way were criticised by many respondents as being 'cliquish' and not prepared to welcome new members. A small, but very active group were the Tynedale Spinners and Weavers who took their hobby very seriously, although home-based, there was a qualitative difference in their pursuance of a craft rather than a domestic skill. However, none of these organisations could be regarded as a force for change. Power then did not lie in the hands of women, so

the question remains as to whether a single group in rural society had control over decision making.

Farmers

Gilg (1985) saw the power in rural society as being wielded by one occupational group - farmers, either through the National Farmer's Union, Country Landowners' Association or by direct election to local government. Farmers were certainly very evident at all levels of local government in South West Tyndale, and although precise statistics are difficult to find, cross checking the names and addresses of councillors with the telephone directory for the 1983 election showed that seven of the forty-six District Councillors described themselves as farmers. Of these forty-six councillors, eight represented each of the two urban areas of Hexham and Prudhoe. Thus 23% of the rural councillors were farmers, their influence may well have exceeded 23% in that other councillors occupations and interest may well have been with the farming community.

On the parish councils, the farming lobby varied from nil in Haltwhistle to 71% in Knarsdale with Kirkhaugh. Surprisingly, in Allendale only two out of the thirteen councillors were listed as farmers and in the West Allen one out of five. Not one of the farmers on either District or Parish Councils was a woman.

The evidence suggests that of the elected representatives the farming lobby was the largest single occupational group. If women, were influencing decision making in S.W. Tyndale, then it was the women of the farming community, indirectly, through their husbands.

Conclusion

The Northumberland County Structure Plan has been shown to do no more than attempt to "guide and shape" the economy.

Indeed, that is all it can do. Decisions outside the control of local government do not always concur with the stated objectives of the Northumberland County Council Structure Plan. For instance, a recent proposal to extract opencast coal from Plenmeller Common was rejected because the NUM withdrew support after the miner's strike of 1984. In an attempt to safeguard jobs in the deep mines of the coastal plain, open cast jobs were sacrificed in Plenmeller.

The plans for the North Pennine AONB which have been awaiting approval by the Secretary of State since 1979, when reviewed recently were rejected by the NFU and Country Landowners' Association as being fundamentally unacceptable.

An attitude which in view of the falling land prices, over production of food in the EEC and the need for alternative forms of employment and additional ventures for farmers and their wives was difficult to understand.

These two examples serve to show the power of interest groups to influence decision making to their own perceived advantage and the disadvantage of others. This ad hoc approach to planning serves the most powerful groups in society. The Women's Institute is not one of them. Like the other women's organisations mentioned earlier, it serves to confirm the supportive rather than the competitive role of women (Little 1983). Therefore, there is a need for an overall planning agency to implement the present legislation and coordinate future planning (Gilg 1978). However, such an agency may not be in the interests of those who wield the

power, and could well suffer the same demise as its predecessor the North Pennine Rural Development Board.

Women are a group at risk from rural accessibility problems because, for whatever reasons, generally they do not seek either the personal, nor political ascendancy necessary to influence the distribution of the scarce resource - accessibility. Neither in standing for election to office, nor as councillors have they succeeded in gaining anything other than a token representation on those committees which control the structure of the space-time prisms in which they live.

To understand the accessibility related constraints which were operating on the lives of the women of S.W. Tynedale, in 1981, more detailed empirical work was necessary. The research methodology is the subject of the next chapter.

CHAPTER FIVE - HYPOTHESES AND RESEARCH METHODOLOGY

Introduction

In the first chapter, the definition of the problem of rural accessibility was given as,

"A widening gap between the accessibility of those with private transport and the diminished accessibility of those without."
Moseley et al (1983)

Car ownership undermining the village and public transport services were given as the causes of the problem. The area chosen for the study of the rural accessibility problem, S.W. Tynedale was described in chapter two as a dissected upland characterised by linear valley settlements. Following Hägerstrand's eighth basic condition of human life, "...that every situation is inevitably rooted in the past", the historical background to accessibility in the study area in 1981 was outlined. This was followed by a consideration of the current planning legislation and the participation of women in the decision making process. In this chapter there are two tasks, the first is to present the hypotheses which will be explored in the subsequent analyses chapters, and the second, to describe the research methodology used to obtain the necessary data.

HYPOTHESES

The hypotheses can be divided into three groups which use the same data set, but approach the problem from different theoretical perspectives and utilise different analytical techniques. The first group concentrates on the unequal distribution throughout the study area of the resource accessibility, the second and third groups are set

within a time-geographic framework and explore the organisation of livelihood activity systems in relation to both locational and experiential space-time prisms.

Physical Accessibility

A glance at the ordnance survey map is sufficient to note that accessibility is not distributed equally in S.W. Tynedale. As was discussed earlier the routeways follow the valleys, and the bus and rail networks serve the areas to either side of the routeways. Accessibility is distributed unevenly, both in terms of access to service centres by private and public transport.

In chapter 3, the location of services up to and including 1971 was discussed. The decline in rail services and the loss of village facilities was documented. It was noted that in this century the distance that women had to travel to obtain the goods and services necessary to maintain their families had increased. The 1971 census recorded a further decline in the population of S.W. Tynedale as the trend of young people leaving the area in search of work continued. Inevitably, the migration of one social group from the rural area will result in a demographic and social imbalance in the settlements affected. How does the distribution of the population in terms of socio-economic, mobility and behavioural characteristics relate to variations in physical accessibility? This question points to three general hypotheses which are as follows:

- (1) A relationship between physical accessibility and socio-economic (including demographic) characteristics of the women of S.W. Tynedale.

(2) A relationship between the mobility characteristics of the women of S.W Tynedale and physical accessibility.

(3) A relationship between physical accessibility and the behavioural characteristics of the women of S.W. Tynedale.

The data required to explore these hypotheses further is considerable. Firstly, measures of accessibility for both private and public transport which take into account the hierarchical provision of services need to be calculated. Secondly, the socio-economic characteristics which include age, marital status and number of children of different ages as the demographic element. The length of residence, number of relatives living in the parish, and in the study area together with measures of the women's educational achievements, and economic variables of the type of full or part-time employment, unpaid work and where applicable husband's job and economic status are all socio-economic characteristics which may show a relationship with physical accessibility. Education is a resource and a socio-economic characteristic, but is it distributed evenly amongst the population of women, and if not, does it show a relationship to accessibility?. Similarly, what proportion of S.W. Tynedale women work, and is the proportion smaller in less accessible areas? Are there differences in the proportion of women in full or part-time employment between high and low accessibility areas? To investigate the problem of rural accessibility, as stated earlier, where a widening gap has been identified between those with private transport and those without, patterns in the distribution of the population with different socio-economic characteristics in relation to physical accessibility measures need to be established.

The second hypothesis introduces the mobility variable. In 1971, 49.2% of household in S.W. Tynedale had one car, whereas in Tynedale District the comparable statistic was 45.1%. The same census revealed 11.2% of households had 2 or more cars in S.W. Tynedale, whereas in Tynedale District the figure was only 10.8%. There were, in 1971, considerable variations between parishes within the study area, for example in the West Allen 60.8% of households had one car and 19.6% two or more cars. In contrast, the very accessible parish of Haltwhistle had 37.8% with one car and only 4.4% of households with two or more cars. This suggests that there is a relationship at least between car ownership of households and physical accessibility. However, mobility for women is not just a question of having passed a driving test and owning, or having access to a car.

Many women who do not drive travel everywhere by car, they are in effect chauffeured by other members of their family or friends. To measure mobility and relate it to measures of accessibility, information relating to driving licences, the availability of a car, and the mode of transport they use to make the journeys necessary to maintain their livelihood activity systems is required.

If the gap is widening between the accessibility of those with private transport and those without, then how is this affecting the women in low accessibility areas. One possible scenario is that only those women with private transport live in areas of low accessibility, an alternative one is that women without private transport in these areas cope with the support of others. A possibility which will be pursued in the third group of hypotheses.

The final hypothesis was formulated to investigate the relationship between physical accessibility and behaviour. It has already been established that measures of accessibility for private and public transport will be used, but how does one measure behaviour. Data collected on the activities of women is an indicator of their behaviour. Activities which included employment and the use of available cultural/educational opportunities. What journeys do women make to work and how do they compare with their husbands? Is it, that women in remote areas travel longer distances to full-time jobs and that women in high accessibility areas are able to take part-time jobs nearby? Do women in remote areas travel to cultural/educational activities either within the village or the market town, or does the use of such facilities depend upon personal transport? If so, how does this relate to the measures of accessibility mentioned previously?

Socio-economic, mobility and behaviour characteristics in relation to accessibility are all elements of the rural accessibility problem for women. Whether or not they significantly contribute to the problem and their relative importance will be the focus of chapter six.

Accessibility: The Space-Time Prism

Time-geography gives a different perspective to the analysis of the accessibility problem. Whereas, hypotheses were formulated to investigate the physical facet of accessibility in the previous section, here the focus is on the location of stations as both sources of demand and supply, and the constraints which operate on the locational

space-time prisms of the women of S.W. Tynedale. Constraints of capability, coupling and authority which were defined in the first chapter. Although, the locational space-time prisms vary little from individual to individual at a given station, the experiential prisms may be very different even for members of the same household.

(i) Locational Space-Time Prisms

At the time of the field survey, the most recent published data was that of the 1971 Census, whereas subsequent to this the 1981 Census was published and the Rural Community Council Survey of Village Services in December 1981 was made available. The data provided by these sources was essential to the analysis of the locational (potential) space-time prisms of the women of S.W. Tynedale.

The two major elements of the space-time prism are the stations and the paths each of which will be discussed in turn. In updating the description of the location of stations and activities given in chapter three, the different functions of the stations must be taken into account. Some stations are residential only, whereas many of the remote farmhouses are both residential and employment stations. The larger settlements are residential, employment, retailing and the location of cultural/educational activities. It was reported that nationally, the 1981 Census showed a halt in rural depopulation, and that in some areas a reversal of the downward trend had occurred. Such a change would have implications for the locational space-time prisms of individual rural women. An increase in a village population

may theoretically, not only help to support local services, but also lead to the creation of new jobs for women in retailing, schools and domestic work. But, in S.W. Tynedale did rural depopulation cease in the decade 1971 to 1981? In chapter four, the Northumberland County Council Structure Plan was discussed in relation to the study area. A policy which identified Haltwhistle, Haydon Bridge and Allendale Town as growth settlements in which new housing and rural industry would be located. In which case, is there any evidence to suggest that the growth centres have benefitted to the detriment of the smaller settlements? The following hypotheses will be used to explore population change:

(4) Population change in S.W. Tynedale in the decade 1971-1981 was a function of internal migration.

(5) Services essential to the maintenance of a livelihood activity system cluster in the larger settlements.

The first hypothesis of this group postulates that population movement occurred within the region and uses the 1981 census data and estimates of settlement size by Tynedale District Council, while the second relates the provision of services to the maintenance of a livelihood activity system. A concept discussed by Hoppe et al which was reviewed in the introductory chapter. Retailing, health and education services for children are all essential to survival in present day society. It is usually, the women who do the shopping, take the children to the doctors, dentists etc. and attend school functions, but is there evidence to support the contention that these essential services are increasingly to be found only in the larger settlements, while the locally organised cultural/educational facilities of the Women's Institute,

Young Wives and Senior Citizens are all that remain in the smaller settlements. In order to explore these hypotheses locational data for the different types of facilities from the 1978 Tynedale District Council Survey of Village Facilities and the 1981 Rural Community Council Survey of Village Services together with observations in the field in 1981 will be used.

The set of paths connecting stations in space-time is the second major element of the space-time prism for consideration. The density and length of possible paths are constrained by the mode of transport, journey time and cost to the individual. Given the route network shown in Map 4.1, the remoter stations have fewer paths to the stations where "bundles" of activities take place than the less remote and often larger stations. Similarly, the remoter the station the greater the distance to the dominant station i.e. Haltwhistle, and presumably the longer the distance and the greater the cost. Whereas, time may be the most important factor in the decision to make a given journey for those with private transport, it is cost which may determine the outcome for the "captive" public transport users. To explore the relationship between the dimensions of space-time prisms and paths, as measured by time and cost, the following hypotheses have been formulated:

- (6) The dimensions of an individual's space-time prism are related to the journey time for personal transport and the cost of public transport.

Data needed to explore these hypotheses further includes the location of stations, possible paths by private and public transport including travel times and costs.

Discussion of these two general hypotheses should establish the dimensions of the locational space-time prisms available to the women of S.W. Tynedale in 1981. This leads to the second set of hypotheses which are intended to enable the relationship between the locational and experiential space-time prisms of women with similar locational, socio-economic and behavioural characteristics to be analysed.

(ii) Experiential Space-Time Prisms

One way of analysing experiential space-time prisms is to use data for the actual journeys made by women. Two groups of journeys by women are for shopping, which is considered here as an essential service and employment. The latter depends upon a number of factors including age, and therefore only applies to a proportion of the women. Shopping is an activity which may be shared with another member of the family, but it has traditionally been the responsibility of women. Employment journeys are made by men and women separately and describe the dimensions of their individual space-time prisms. To analyse the experiential space-time prisms the following hypothesis will be used:

- (7) The experiential space-time prisms of women in remoter areas are greater than those in the larger settlements.

The data required to explore these hypotheses includes the two accessibility measures discussed earlier and the destination of shopping and employment journeys.

Moseley (1979) identified groups within rural society who were at risk in terms of the accessibility problem.

Carless young mothers and the elderly were two of these groups, in contrast the carowning women of a market town are least at risk. The carless young mothers and the elderly stand on one side of the widening gap, whereas the carowning women are on the other. Each individual within these three groups organises her livelihood activity system within the framework of a locational space-time prism, but place is only realised when the locational and experiential space-time prisms coincide (Parkes and Thrift 1978). Like locational space-time prisms experiential prisms are subject to the capability, coupling and authority constraints. Constraints which include the transport available, the assembly of all the resources necessary for an activity at a given point in space-time and whether or not access to facilities are restricted.

One of the major groups of constraints operating on a woman's time are those of family responsibilities. These will vary with stage in the lifecycle, but whereas availability of private transport is a capability constraint, family responsibilities may act as a coupling constraint. For instance, a mother may not be able to leave a sick child and do the shopping at a given time, even though there is a bus and the shops in the nearby town are open. To explore the way in which car ownership and family responsibilities influence the behaviour of the three groups of women identified above the following hypothesis will be used:

- (8) Car ownership and family responsibilities are related to the realisation of place.

The realisation of place is a concept discussed in the Literature Review (Parkes and Thrift 1978). They concluded that realisation of place only occurred when locational and experiential space-time prisms of individuals converged.

The data necessary to explore this hypothesis includes the locational data already specified and details of the experiential space-time prisms of individual women in the three groups including journeys made and mode of transport used. This final hypothesis to be explored in chapter 7 points the way to the analysis of the behavioural facet of accessibility.

Accessibility and Behaviour

In this section the focus is that of the individual woman and her behaviour given the constraints operating on the resources of time and space. The classification of the lifestyles of rural dwellers was discussed earlier and amongst others the work of Pahl (1966a) and Stebbing (1984) was quoted. Through the use of an appropriate classification of the lifestyles of S.W. Tynedale the following hypotheses will be explored:

- (9) A relationship exists between lifestyle characteristics and the accessibility behaviour of women in S.W. Tynedale.
- (10) In families where intergenerational lifestyles are different there are social and economic consequences for the accessibility to services of family members.

A case study approach will be used based on the socio-economic mobility and behavioural data previously discussed and information about women's knowledge of individual cultural/educational activities and their participation in such activities. This will need to be

augmented by anecdotal material gained through observation and structured conversations in the field.

The data collected about knowledge and use of facilities within the locational space-time prism will be used in the analysis of the women's behaviour in terms of community involvement.

(11) There is a relationship between lifestyle characteristics and community involvement.

Underlying Structure

The previous hypotheses have been formulated to identify and analyse areas and groups who are at risk from the problem of rural accessibility. If spatial relationships exist between the socio-economic, mobility and behaviour characteristics of the surveyed women, then it is possible that within the small area of S.W. Tynedale there are regional variations related to accessibility and accessibility behaviour. The relationship stated in the following hypothesis will be explored in chapter nine.

(12) There are regional variations in the underlying structure of accessibility in S.W. Tynedale.

The data used in the discussion of the final hypothesis will be drawn from the data collected during the field survey and analysed using Principal Components Analysis.

RESEARCH METHODOLOGY

In the second part of the chapter the task is to discuss

the methodology used to collect the data to test the hypotheses formulated in Part I. The primary data listed is of three types, accessibility measures, factual data collected from individuals and subjective data collected in structured conversations with individuals. The research methodology used to collect the data is described in two sections, firstly, the accessibility measures; and secondly, the 1981 field survey in which the factual data was collected. Collection of the subjective data took place after the formal interview in structured casual conversations.

Accessibility Measures

The accessibility measures available in 1981 were reviewed in chapter one. Measures for a single mode of transport and for alternative modes were mainly derived from the gravity model. The gravity model measures the attraction of one zone to another, which is the first problem encountered in using the gravity model for this purpose in rural areas. The Newtonian theory of gravity assumes a similarity in the composition and structure of the two bodies. Where the bodies are in fact zones one of which is rural and therefore, by definition has a low density of population often unevenly distributed, and the other is a large urban area with high density of population and a more complex structure, it is doubtful whether such an assumption is valid.

All of the models reviewed applied the measures of accessibility from one zone to another. However, remote farmsteads hardly warrant the description of a zone.

Grouping farms together over a wide geographical area to produce a zone may be feasible where farms are evenly dispersed with equal road access to the market town, but in S.W. Tynedale where an unbridged ravine can lead to variations of up to 5 miles in the distance to Haltwhistle for households not more than 100 metres apart, a geographically more sensitive measure is required.

A second problem is the availability of public transport. Firstly, the frequency of public transport services in some rural areas is as low as twice weekly and secondly, there are houses which are not within walking distance of a bus stop. Any accessibility measure for public transport must incorporate both frequency of service and walking distance to the bus.

Weiner (1966) incorporated a friction factor into his accessibility index which measured the door-to-door travel time. The index is applicable to private and public transport and the door-to-door element for private transport includes walking time at the origin and destination, parking and unparking time, as well as the driving time. Similarly, door-to-door travel by public transport includes walking and waiting times at the origin, travel time and time spent waiting when changing between vehicles together with walking time at the destination. The one element missing is the frequency of public transport services, and this together with the problem of creating rural zones which are small enough to reflect the accessibility of the individual locations made it unsuitable for use in S.W.Tynedale.

A second accessibility index used for public

transport was that of Freeman et al (1966). It was used in the London Traffic Survey and reflects the number of routes serving a zone. The off-peak frequency of buses factor is a useful measure, but in the rural context, frequency and route are the most important factors. It is doubtful whether the area of the zone, as a factor is relevant when large areas of any possible zone in S.W.Tynedale are inaccessible by road.

Another model to be considered was that of Martin and Dalvi (1976) who modified the gravity model and used a weighted term for destination attraction as well as a travel cost term. A further modification allows it to be used for any mode of transport, however the main advantage is its ability to reflect the intensity and order of any given opportunity in the zone of origin. In 1981, it had primarily been used in London to measure differences in accessibility to employment by public transport .

A different approach by Wilson (1967) assigned costs to both time and behavioural factors which included perception of the cost per mile for each travel mode and inherent modal handicaps. However, in the context of this research the purpose of compiling accessibility indices was to map the unequal distribution of physical accessibility as afforded by the road network and public transport.

None of the above accessibility models incorporate all the elements necessary to measure physical accessibility to opportunities in the rural context. Apart from the problem of the size of zones, there is the difference in the order and intensity of opportunities provided in each

settlement. Two hamlets with the same frequency of public transport services, costs and distance from a settlement in the next tier above in the hierarchy do not necessarily have the same access to opportunities. The order and intensity of opportunity may differ considerably between two settlements in the same tier of the settlement hierarchy.

If an index is to reflect accurately the physical accessibility afforded by different locations order and intensity of opportunity are important factors. However, it is doubtful whether parking and unparking time for the private motorist in S.W. Tyndale has any influence except in the very few locations where public transport is sufficiently frequent to compete with it. When public transport accessibility is being considered walking time to the bus and frequency are the two major elements in rural areas. Each determine whether a journey is possible, and therefore must be incorporated into any measure of accessibility.

In view of the limitations of the existing models of accessibility to reflect accurately the spatial pattern of accessibility, it was decided to construct two physical accessibility indices, for private transport and public transport.

Accessibility Indices

These are based on the transport available from demand points to a set of supply points. The demand points being the homes of women in S.W. Tyndale and the supply points the central places in which facilities such as retailing,

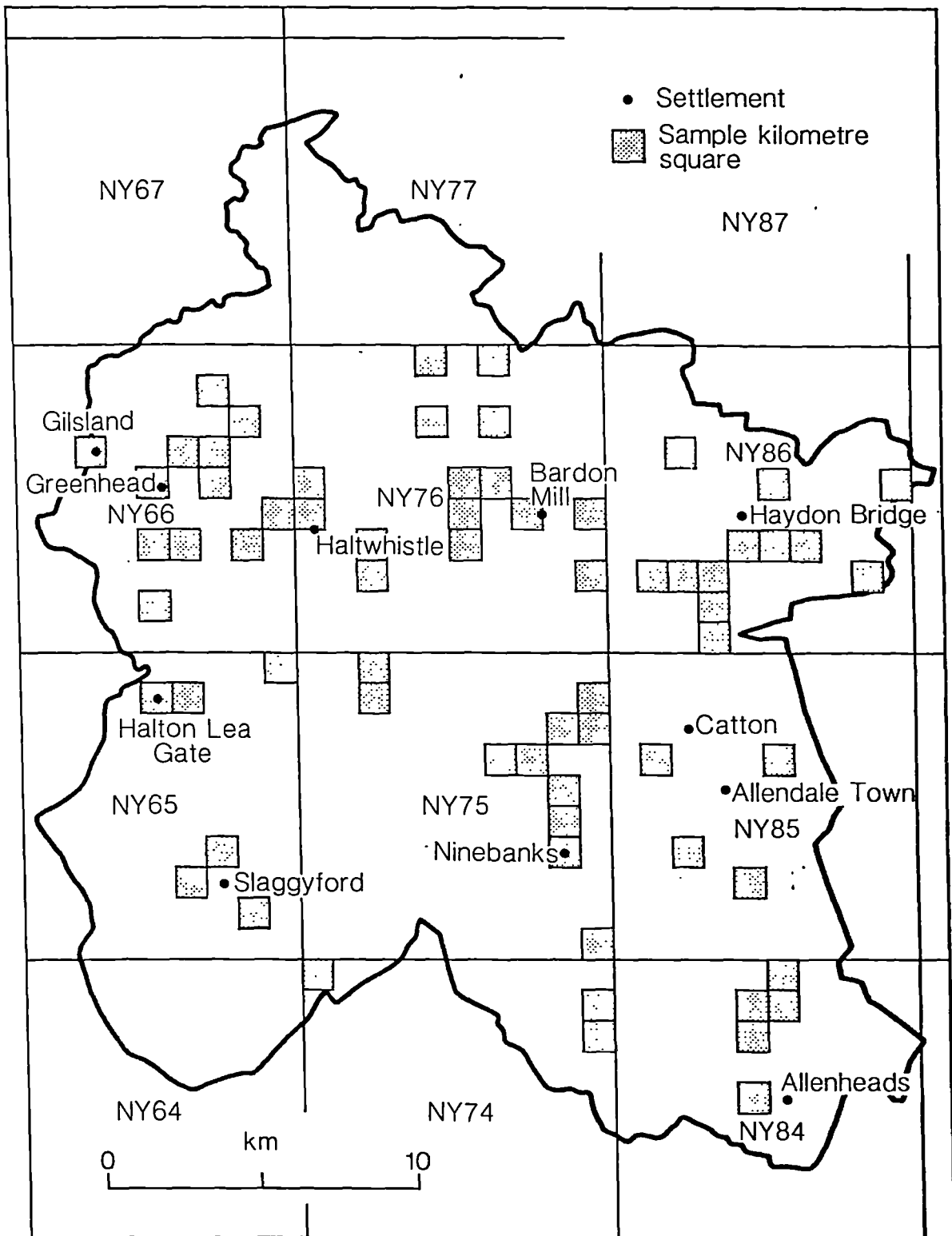
services, health, education and leisure are located. Transport was assumed to be either private in the form of a car or motor-bicycle, or public i.e. a bus or train. For both types of transport the demand and supply points were assumed to remain constant in the short term. The discussion of the methodology used to construct the indices considers firstly the demand points, and secondly, the supply points before describing the indices.

Demand and Supply Points

S.W. Tynedale is a surface of potential demand points each contiguous with the next. To sample these demand points the O.S. kilometre grid squares were used as a framework. S.W. Tynedale comprises some 691 kilometre squares of which 58 were uninhabited when the most recent review of the Ordnance Survey 1:50,000 took place in 1973. An 11.2% random sample with replacement of inhabited grid squares identified 71 square kilometres. Cross checking with Electoral Rolls and in the field subsequently showed six squares to contain only abandoned properties. This reduced the sample to 9.4%. The sample of squares is given in Map 5.1.

The next problem was to identify the properties within each of the sample squares. Although, accessibility could theoretically be calculated from any point in each square, it was decided to base the calculations on potential, rather than theoretical, demand points therefore the number of properties in each of the sample squares were counted. The 1:50 000 and 1:25 000 O.S. maps were used for this exercise.

The sparsely populated areas did not present any problems, but difficulties were encountered in the built up areas of



Map 5.1 Location of the Sample of Kilometre Squares

Haltwhistle. An estimate of 525 dwellings equal to 15% of the inhabited dwellings listed in the 1981 Census were identified by this process. Table 5.1 gives details of the O.S. sheet numbers, sample of kilometre squares and estimated number of dwellings. The 525 dwellings in the sample of 65 square kilometres formed the potential demand points in the construction of the two indices.

O.S. Sheet No.	Inhabited squares	Uninhabited squares	Estimate of No. Dwellings
NY64	0	8	0
NY74	3	4	12
NY84	5	7	53
NY65	5	10	32
NY75	10	7	64
NY85	4	8	21
NY66	11	3	81
NY76	15	7	250
NY86	12	3	112
NY87	0	1	0
Total	65	58	525

Table 5.1 Sample of O.S. Grid Squares Used in the Calculation of Private and Public Transport Accessibility Indices

The supply points clustered together in the settlements. The larger the settlements the greater the number of functions performed. The locations and the many different types of facilities will be discussed in detail in the following chapter. In Chapter 2, the hierarchy of parishes was described in terms of population size; the hierarchy of settlements follows a similar pattern, and was constructed using the criteria of population size and

services given in Table 5.2. The highest order services, in 1981, were available only in the regional city of Newcastle and to a lesser extent in Carlisle. Whereas Hexham with 15 763 square metres of floor space and over 100 retail outlets formed the first tier of the hierarchy. Within S.W. Tynedale, Haltwhistle with 3 034 square metres of retail floorspace was the largest service centre and with a population of 3 381, the most populated (N.C.C. 1974). Of the smaller settlements Table 5.2 shows only Haydon Bridge and Allendale Town with all the 10 services listed in the RCC. survey of 1981. Haydon Bridge had 2.5 times the population of Allendale Town, yet as a supply point was of no greater importance. The third tier of the hierarchy includes Haydon Bridge and Allendale Town.

The remaining settlements all have a population of, at the most, half that of Allendale Town and none have full range of service. They can be divided into those with a population of between 100 and 499 and those with a population less than 100. The distribution of these settlements is shown on Map 5.2.

The west and south of the study area are served by Brampton and Alston. These settlements provide the same level of services as Haltwhistle and therefore, have been included in the second tier of the hierarchy. Like Newcastle, Carlisle and Hexham, although outside the study area, they are on a direct public transport route to places within the study area, and furthermore were given as the destinations of journeys to questions in the field survey to be discussed later.

Settlement	Types of services	Estimated Pop. 1981	Class
Newcastle upon Tyne	N/A	272 900	
Hexham	N/A	8 900	1
Haltwhistle	10	3 380	2
Haydon Bridge	10	1 600	3
Allendale Town	10	600	3
Allendale			
Catton	6	250	4
Allenheads	5	90	5
Whitfield	8	35	5
Ninebanks/Carrshield	4	25	5
Plenmeller	1	40	5
Tyne Valley			
Redburn/Bardon Mill	5	325	4
Henshaw	7	50	4
Melkridge	2	110	4
West Tyne Parishes			
Greenhead	6	100	4)
Blenkinsopp Castle	1	100	4)
Gilsland	6	185	4
Longbyre	3	85	5
Halton Lea Gate	5	155	4
Knarsdale/Slaggyford	7	115	5
Coanwood/Lambley	4	105	5
Park	4	50	5

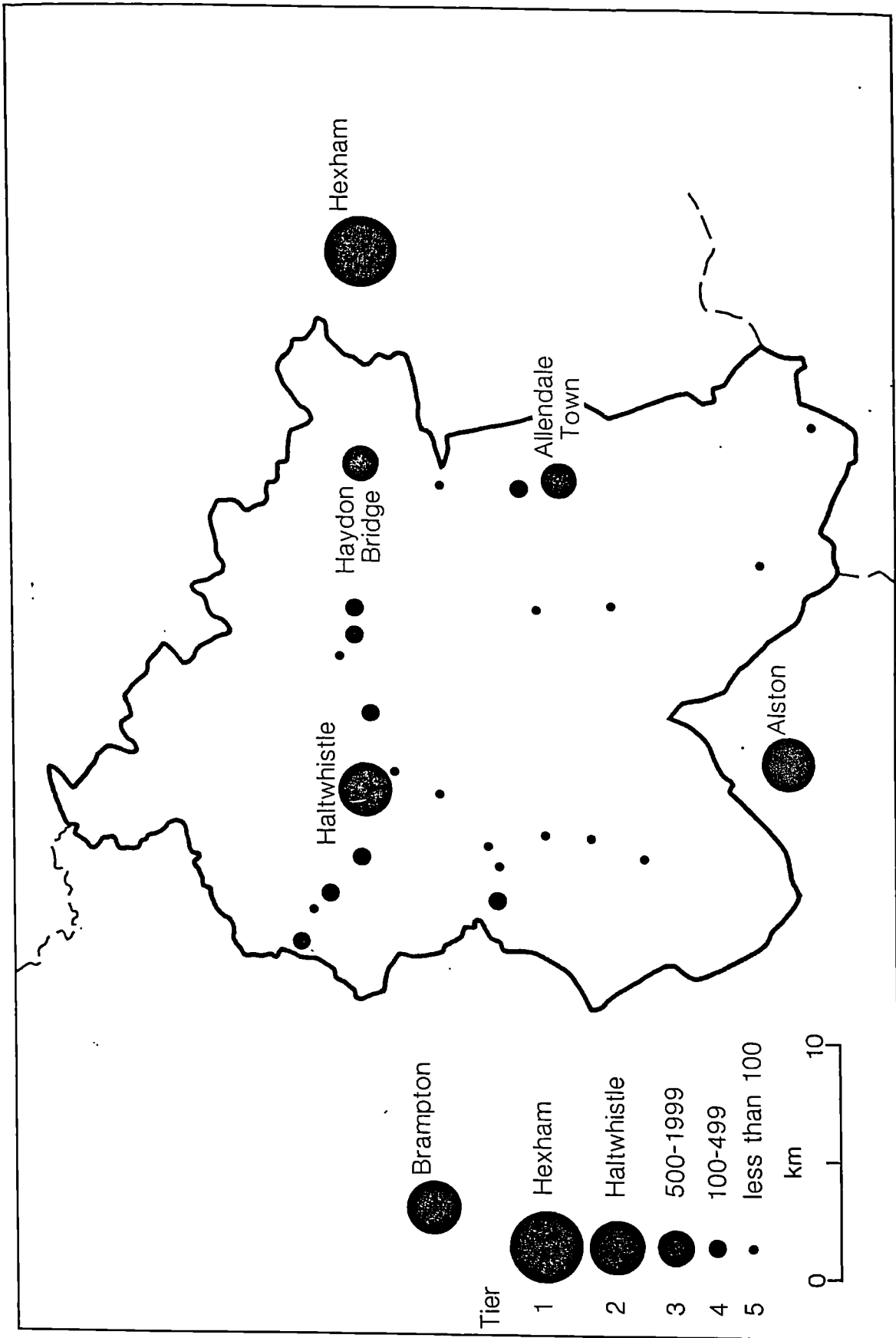
Source: Rural Community Council Questionnaire distributed to the Parish Councils in 1981, verified in the field.

Types of

Services: General Store, public house, garage, post office/sub-post office, primary school, doctor's surgery, dispensing chemist, reading rooms/village/W.I./church hall, church/chapel, telephone kiosk.

In total there were 10 different types of service.

Table 5.2. A Hierarchy of Settlements in South West Tynedale



Map 5.2 South West Tynedale: Central Place Hierarchy

Method

Both indices use measures of distance to settlements in the central place hierarchy. The public transport accessibility index is far more complex than the private transport index incorporating, as it does, measures of the frequency of service and distance from the bus route. Before describing each index the measures of distance used will be explained.

Distance.

The distances between demand points i.e. the sample of 525 dwellings, and the supply points were measured in kilometres for private transport, and time for public transport. Road distance for private transport reflects both mileage costs and time. Variations in average speeds were small because the minor roads were little used and therefore quite fast to drive, whereas the A69 was, in 1981, mostly single carriageway and was relatively slow due to heavy lorries on this trans-Pennine route. The one counterbalanced the other giving a uniformity to the average speeds throughout the area.

A journey by public transport involves three elements, walking time to the bus stop or railway station, length of the journey and the frequency of the service. Although cost may be an inhibiting factor for the individual, potential accessibility by public transport is more a function of the time for the journey between the person's home and the supply point and the timing of both the outward and return journey than either the distance or cost.

Private Transport Accessibility Index (PAI).

Each dwelling or group of dwellings in the 65 sample squares was identified by a six-figure grid reference. The road distance to the nearest central place for each of the five tiers of the central place hierarchy was measured. Settlements which provided central place functions for more than one tier of the hierarchy, such as, Haltwhistle were counted as providing second, third, fourth and fifth tier functions or Allendale Town third, fourth and fifth. The mean of the five measurements for each residence or group of residences was calculated to give a single measurement.

A problem arose in relation to the route chosen for measurement purposes. Where several routes existed, a decision had to be made as to which route residents would be most likely to use. This was difficult to assess from O.S. 1:50 000 maps and as the most recent revision of the 1:25 000 was in 1952, the different routes had to be checked in the field with some surprising and embarrassing results. For instance, what appears on the map to be a track following the Haltwhistle Burn from North Lees Farm on the B6318 to Haltwhistle, is a gated tarmaced road used by the farm. On another occasion, a 'minor' road came to an abrupt end half-way around a ploughed field, clearly not the short cut that it had appeared. The comments of local people were most helpful in making these decisions.

The choice of a kilometre square as an areal unit for calculating the index had advantages in that each was easily identifiable and convenient, but where points were

asymmetrically clustered the single measurement calculated for each square was inevitably weighted by the mean accessibility of the cluster or clusters within it.

The formula used was as follows:

$$PAI = \frac{\left(\sum_{i=1}^5 d_i \right) / 5}{n}$$

where d = distance to 1st tier.

d = distance to 2nd tier.

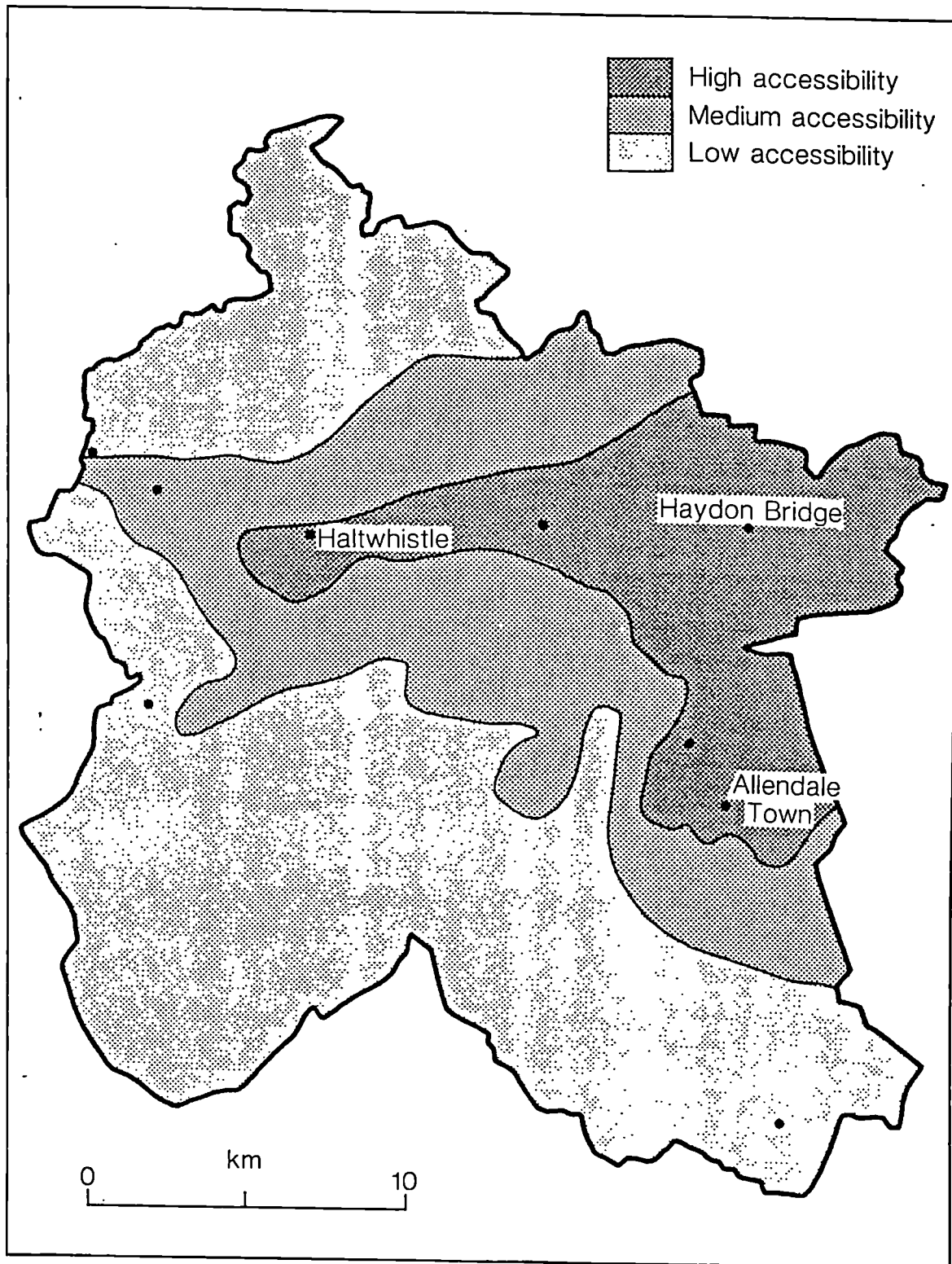
d = distance to 3rd tier.

d = distance to 4th tier.

d = distance to 5th tier.

n = number of dwellings in the kilometre square.

The calculations are given in Appendix I and the results have been interpreted as an accessibility surface in Map 5.3. Three categories of accessibility are shown. In the least accessible category is the hamlet of Allenheads, whereas locations east of Haydon Bridge, in the Tyne valley, enjoy the highest levels of accessibility. The map demonstrates the importance of the Tyne valley as an accessibility corridor and the influence of Hexham on potential accessibility in both the Tyne and Allen valleys.



Map 5.3 S.W. Tynedale: Private Transport Accessibility Surface

Assuming car ownership and an adequate income to overcome distance even on a household basis would be to misrepresent the accessibility landscape of S.W. Tynedale. In 1981 27% of households were without the use of a car and only 20% of households had two or more cars. Households consist of individuals, and although a member of a member of a household may own a car, all members of the household may not be able to drive it, nor could they all do so at the same time. Where income levels are low, unemployment levels high and the population elderly, then, accessibility is as Smith states '...a scarce resource allocated...through the planning process.' and in this particular instance, the planning of public transport.(Smith 1977). Using the same sample of kilometre squares and dwellings an index was devised and a surface drawn to allow a comparison to be made between the potential accessibility afforded by private transport and the potential accessibility provided by public transport.

A Public Transport Accessibility Index (PAII).

An index for public transport measurement has been developed by Martin and Dalvi (1976), but it was not linked to the central place hierarchy, and therefore would not serve the purpose of comparison with the private transport accessibility index.

When using public transport, whether it is road or rail, the walk to bus stop or railway station may be the key element in the decision to make a journey. In the rural area the bus stop may be at the front gate or a major road several miles away. The timing and frequency of the service

is the second important element and one which explains why little use is made of the school bus service. These elements as well as the length of the journey had to be reflected in the index. In order to achieve this each bus passing a point in either direction was counted as 0.1. Therefore, a settlement with a school bus daily and a bus on Tuesdays had a frequency of 1.2. These elements were incorporated into the formula given below:

$$PAII = \sqrt{\left(\frac{\sum (t_1 - 5)/5}{n} \right) \cdot \sum \frac{w}{n} \cdot f}$$

where t = travelling time to 1st tier.

t = " " " 2nd " .

t = " " " 3rd " .

t = " " " 4th " .

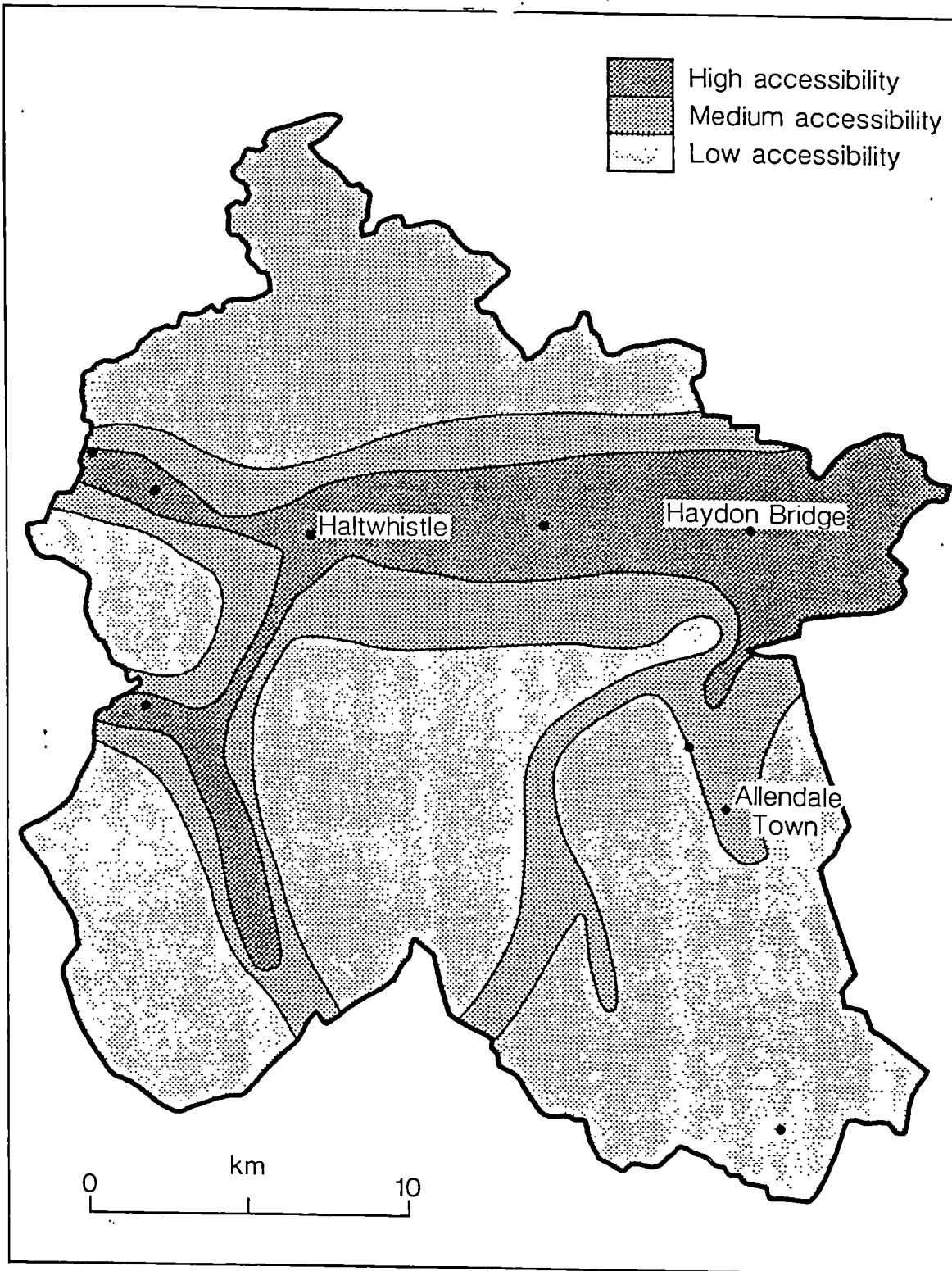
t = " " " 5th " .

w=walking time.

f=frequency of service.

n=number of dwellings in the kilometre square.

Walking time was used as a weight because it is far more important than the length of the journey for the elderly, mothers with young children or anyone carrying heavy shopping etc. It was necessary to divide the calculation by the square root to bring the results into a manageable range. Appendix I gives the calculations which have been interpreted as a potential accessibility surface in Map 5.4.



Map 5.4 S.W. Tynedale: Public Transport Accessibility Surface

A comparison of the two surfaces demonstrates the effect of the planning of public transport routes in allocating the scarce resource - accessibility. The variation in accessibility by public transport was much greater than by private transport. It focuses attention on the really remote areas such as north of the Military Road (B6318), where a 45 minute walk to the nearest school bus service was the only alternative to a car journey. Conversely, Halton Lea Gate, was at the closure of the South Tyne Railway given a regular bus service with connections to Brampton, Alston and Haltwhistle, yet had low accessibility by private transport.

These two measures of accessibility served three purposes. Firstly, a comparison between the potential accessibility afforded an individual by both private, and public transport at a given location; secondly, between individuals living in different locations within the study area, but with similar potential accessibility to central places. Finally, by investigating the socio-economic composition of the population residing in areas of different potential accessibility, insights into the relationships between accessibility and the allocation of resources in the rural area may be gained.

THE FIELD SURVEY

For the research, women were chosen as a group, and a survey was conducted in July and August of 1981. The purpose of the survey was to collect data on those variables identified as affecting accessibility to information and facilities. Before the survey could take place a questionnaire was designed, pretested, a pilot survey

undertaken and a sampling frame constructed.

Compiling the Recording Schedule

In order to test the hypotheses, data was required for 69 variables. The data was factual, and it was this consideration together with the number of variables which led to the decision to use a recording schedule rather than a questionnaire. The recording schedule was to be used by myself to record the respondents answers. The advantage of this method was that the answers could be recorded in a codified form (Moser et al 1971) and that by asking the questions, it could be ascertained whether they had been fully understood and restated, if necessary.

The draft recording schedule presented in Appendix II was divided into five sections as follows:

- A. The Individual and the Constraints upon their time
- B. Knowledge and Use of cultural/educational facilities
- C. Transport
- D. Information Sources
- E. Personal Data

The order in which questions are introduced to a respondent is important. Therefore, taking the two points, that it is important to make respondents feel at ease, and ask question which they can both answer and not feel reluctant about (Moser et al 1971), it was decided that the first group of questions should be about the individual's use of time because these did not require any use of knowledge, nor were they of such a personal nature that women would be reluctant to answer. Moser et al made the

point, that people like to talk about themselves, and these questions gave the respondents that opportunity. Therefore, the ability and the willingness of the respondents were considered very carefully before placing this group of variables at the beginning of the recording schedule.

A further point made by Moser et al was that there should be a logical sequence to the order in which the questions were introduced. Having established the constraints upon the woman's time, the next logical group of questions was concerned with the use of the free time available. Within this section were questions about both knowledge and use of a wide variety of facilities. To keep the schedule short, and yet without losing information, the four most frequent facilities were the subject of separate groups of questions and all others were placed on a check list. Therefore, facilities other than the Women's Institute, Young Wives, Adult Education Classes and Young Farmer's were in the check list.

Logically either methods of travelling or available sources of information could have been placed next. Transport was chosen for Section C. The main reason being that Knowledge and Use of facilities in Section B would lead some respondents to give negative answers, the same applied to sources of information, such a juxtaposition of sections could lead to feelings of inadequacy in the respondents. Hence, transport was neutral ground where all respondents could give positive answers.

In Section D, the sources of information e.g. newspapers, magazines, telephone, radio, television and

library use were the subject of questions. Also included in this section were questions about recording facilities i.e. tape and video. It was hoped that by this point in the interview a rapport would have been established and that the respondent would not object to questions which were basically relating to income level. This leads to the final section which was left until the end because it included the more personal information about age and educational attainment which was possibly a sensitive area.

Whether, or not, a good rapport is established during the interview is dependent upon a number of factors. One of the most important is the actual wording of the questions. Both vocabulary and length of a question can influence the respondent's understanding of it. The way in which the person is lead from the general question to the specific and the amount of recall required by each question may also have an impact upon rapport. Rapport was given by Oppenheim (1966) as one of the major factors in establishing the validity of the data response, whereas reliability is more a function of the internal checks within the recording schedule and the juxtaposition of questions.

Vocabulary was restricted to everyday language and at no time was academic jargon introduced. The advantage of having one interviewer was that with factual questions, it was possible to reword where the meaning had not been fully understood and a greater degree of consistency could be achieved. Wherever possible the questions were short e.g. "Do you use the mobile library?", however, there were occasions when it was necessary to include some questions with clauses such as in Section A, question 5, "Do you have

any responsibilities in connection with the farm, or business for which you are not paid, but which occupy set periods of your time?" This was the longest and most complicated question.

In the order, in which groups of questions were introduced, a logical sequence was established, and similarly within the groups of questions, where possible the respondent was led from a general question which they could easily answer to specific ones relating to their own behaviour. For instance, Section B, question 1, where the initial question asked about the location of the Women's Institute as though it were a general enquiry by a newcomer. The following question was about attendance and transport. Again this 'funnelling' was aimed at building up a good rapport in order to gain accurate information (Oppenheim 1966). A further problem was that in some cases, the respondent was being asked to recall the use made of facilities in the past. In Section B, where the recall of this information was required, it was decided that to request precise information for any period which occurred more than a year before was likely to lead to the respondent feeling inadequate because they could not remember, and as a result would give inaccurate information. Validity then was, hopefully, achieved by designing the recording schedule in such a way as to build up a good rapport with the respondents. However, it is possible to use cross checks within a schedule, and this technique was used to a limited extent with the questions relating to knowledge of the location of facilities.

The check list used in Section B was compiled from

Leisure and Recreation in Tynedale (Gair et al 1980) and the The Hexham Courant (1980). The list in the pre-test and pilot recording schedules was for an area to the east of the study area where these were both conducted.

The final consideration in the design of the schedule was length. Too long a schedule may have resulted in the respondents answering the questions in such a way as to reduce the number of questions asked, particularly where they were in a sequence and a positive response lead to a further series of questions. A long schedule may lead to refusals, also women with young children can only give a few minutes of their time before they are distracted and news of an interviewer can travel very rapidly, with the result that one or two unsuccessful interviews for either reasons of rapport or length can result in many women being 'not at home'.

In order to obtain the maximum number of responses and the highest level of validity and reliability within the recording schedule, the questions were individually pretested on two women living in South East Tynedale, both of whom were farmer's wives, but with differences in age, income level and mobility. Secondly, a pilot study of ten interviews was conducted in different size and type of settlements in the same area.

Pre-test Procedure

The recording schedule was pretested with two farmer's wives, the first aged 50 with a husband near to retirement

and a married daughter living outside the area. She had a provisional driving licence but was dependent upon her husband for transport. The second aged 26 years had an 18 months old daughter and had been married for three years. She had a driving licence and the use of a car nearly 100% of the time. Although, in terms of public transport more isolated than the former, she found little difficulty in attending local facilities.

Both women were told the purpose of the pre-test before the interview. Each was interested in the research and agreed to comment on both the topic accessibility, as they perceived it, and the recording schedule.

Comments arising out of the discussion of accessibility were mainly from the first interview where the woman was acutely aware of her lack of mobility and was trying to overcome it, by learning to drive, but with intermittent encouragement from her husband. The problem of silage and harvest time was introduced by both women who stated that owing to the long hours worked by their husbands all social activities stopped at the busy times of the year.

Neither of the women made any serious criticism of the recording schedule. However, a number of points did emerge.

Firstly, it was pointed out that farmers are often wary of research workers as they have been subjected to very lengthy interviews from agricultural firms. Secondly, there was some confusion between education classes provided by the local authority and similar classes provided on a community basis. It was also necessary to explain very carefully the difference between knowledge of, and use of, a facility.

Both respondents were asked about the length of the interview which took 15 minutes with the older woman, but much longer with the younger, because of interruptions from her daughter and other members of the family. Neither thought it was too long, and the younger woman expressed the view that if it was too short, some respondents might feel that it had not been worth them giving up their time.

Further discussion related to their understanding of the schedule questions, the order in which they were introduced, and whether they considered any of them too personal. They were quite satisfied with all of these aspects.

From the pre-test of the recording schedule, it was decided to make some minor changes. Section B, question 3 was simplified, the wording on two questions modified, and headings added to the check list. The revised schedule used in the pilot survey is given in Appendix III.

The Pilot Survey

This took place on a Friday in early December 1980. Despite a heavy snowfall in the morning ten interviews were conducted in the day, in settlements of different sizes, several kilometres apart, and with women from different socio-economic groups. The pilot survey was most useful in that it highlighted the problems of travelling between settlements and the times of day most suitable for interviewing. It was apparent that the schedule in the pilot study form was cumbersome and difficult to manage on doorsteps, in farm yards and, in inclement weather. The

seven pages of A4 paper were also off-putting to some respondents, hence some significant changes were necessary.

Firstly, it was decided to record property type along with Ordnance Survey grid reference and electoral roll number as identifiers on each schedule. Therefore, a classification of property types had to be devised. This will be described later. The recording schedule was divided into two sections, the first gave all the questions and preamble to the sections and could be used for every interview; the second was a recording sheet which briefly summarised each question on one side of A4 paper, the second side was the check list. Only one recording sheet was required for each interview. The following changes were made to the different sections.

SECTION A. Apart from the removal of the kin question and an amendment to the question relating to children, whereby the ages were divided into three groups this section was left unaltered.

SECTION B was streamlined, in that all the facilities were put into one list, and the questions specifically relating to the Women's Institute, Mother's Union, Young Wives and Young Farmers were omitted. The pilot survey showed quite clearly that women often did not know who provided evening classes, therefore, the subjects were given rather than the organising body.

SECTION C. Again this was simplified and the separate question relating to a provisional driving licence omitted.

SECTION D. The question relating to newspaper delivery was limited to just the existence of the service, rather than the location of the service point. Ceefax was included in the information technology question as there had been a rapid growth in the purchase of sets with this facility.

SECTION E. Years of full-time education and qualifications had been a cumbersome question in the pilot survey. It was simplified to a count of full-time education, or equivalents, after the school leaving age. The kinship question was moved from section A to section E and a count of relatives rather than specific relationships included. Of the whole schedule this was the only question which women had been reluctant to answer.

The final recording schedule and sheet are given in Appendix IV. These were used in the field survey of July/August 1981. The choice of dates was important in that a six week period was required and the only time available was that of the school holidays. The year 1981 was also, the year of the decennial census which provided an additional source of very valuable data.

The Sampling Frame

The first problem was to select a sample of women for interview which represented the extremely rural area in terms of both private and public transport accessibility measures. Secondly, to ensure that the sample was representative of women living in settlements of varying sizes. The sample was drawn from the electoral rolls which,

in the rural areas, are compiled on a parish basis. Therefore, to gain a representative sample a multi-stage sampling frame was used in which the first stage was to sample the parishes of S.W. Tynedale. The two accessibility surfaces together with the hierarchy of parishes discussed in Chapter 2 were used for this purpose. Haltwhistle as the parish with the largest population and the most accessible in terms of both indices was selected as the most accessible large settlement within the study area. The next tier of the hierarchy included the two parishes of Haydon and Allendale, and although, Haydon Bridge in the parish of Haydon was larger than Allendale Town, in terms of accessibility, it fell into the same category for private and public transport accessibility as Haltwhistle. Allendale parish varied from being accessible in the north to remote in the south. Private transport was essential south of Allendale Town.

The third tier of the hierarchy included parishes with populations between 300 -999 i.e. Bardon Mill, Henshaw, Greenhead and Thirlwall. The first two of these were Tyne Valley parishes with high accessibility whereas, Greenhead and Thirlwall were in the west of the study area adjacent to each other. Here, public transport was good, mainly because the Newcastle upon Tyne to Carlisle bus route passed through both settlements. The parishes of Greenhead and Thirlwall (Gilsland) were selected because of their location in the west, their size and high level of public transport accessibility. Finally, of the seven parishes with populations less than 300 in 1981, the parish of Hartleyburn, adjacent to Greenhead also had good public transport accessibility. The main settlement of

Halton Lea Gate, in 1981, had a daily service to Alston, Haltwhistle and Carlisle. By selecting Hartleyburn, a contiguous area of three parishes was included with an estimated settlement size in 1981 of Greenhead - 100, Gilsland - 185, and Halton Lea Gate - 155 population (Phillipson 1983).

The sample of parishes represented the three sub-areas previously described as the Tyne Valley, Allendale and West Tyne. Parishes from each tier of the parish hierarchy of S.W. Tynedale were included and within those parishes were settlements varying in size from Halthistle with an estimated 1981 population of 3 380 to the hamlet of Sparty Lea in Allendale and Kellah in Hartleyburn. Isolated farmsteads were numerous in both Allendale and the West Tyne parishes. These three areas of Haltwhistle parish, Allendale parish and the West Tyne parishes together met the criteria of differing levels of accessibility as measured by the two indices and settlements representative of all tiers in the central place hierarchy. Table 5.3 gives the percentage of the sample living in each of the accessibility areas classified by the two indices PAI and PAII.

The second stage of the sampling procedure was to select women from these three sub-areas for interview. The electoral roll in force from 16th February 1981 to 15th February 1982 provided a list of women over the age of seventeen years. It gave the names of 727 women in Allendale, 1478 in Haltwhistle and 384 in the West Tyne parishes. Although, it would have been an advantage to use the same sampling ratio for all parishes, it was not feasible given the constraints of time and personnel.

Parish	Private Transport Accessibility Areas			Public Transport Accessibility Areas		
	High %	Medium %	Low %	High %	Medium %	Low %
Haltwhistle	98.8	1.2	0.0	100.0	0.0	0.0
Allendale	68.5	10.1	21.4	0.0	77.5	22.5
West Tyne	2.6	72.7	24.7	92.2	5.2	2.6

Table 5.3 Percentage of Respondents Resident in Private and Public Transport Accessibility Areas

Parish	Response		Non-Response		Total		Response as a % Total Pop.
	No.	%	No.	%	No.	%	
Allendale	88	93	7	7	95	100	12.5
Haltwhistle	83	87	12	13	95	100	6.0
West Tyne	77	94	5	6	82	100	20.0
Total	248	91	24	9	272	100	9.6

Table 5.4 Response Rate - 1981 Survey

Therefore, a variable sampling ratio was used to identify a minimum of 90 interviewees in each sub-area. In Allendale, the ratio used was 1 in 7 which gave a list of 104 women; the ratio in Haltwhistle was 1 in 14 and identified 106 women; and in the West Tyne a ratio of 1 in 4 gave a list of 96 women. The total sample size was 306 or 11.8% of the population of women listed on the respective electoral rolls.

The sample was drawn systematically from the electoral rolls starting with the third woman listed. Although, sampling with replacement was a possibility, it was rejected because of the chance of increasing the bias in the sample. This point is discussed in detail in the section entitled 'Response Rate'.

Difficulties were encountered in actually identifying women on the electoral roll. These mainly resulted from local or obscure first names such as Vida and non-standard spellings of first names given to both sexes. The problem must have been solved because on no occasion did a women respondent turn out to be a man!

The Survey.

Lists of names and addresses were drawn from the relevant electoral rolls, and as far as possible located on a local map. The first problem in the field was to record the property type. A scale for this purpose had already been devised by Warner et al (1949) in USA, and the classification used was based on his method, but with

adjustments to accommodate the English housing market.

Building materials, number of bedrooms, internal and external condition and tenure (where possible) were used to produce a fivefold classification. A detailed description of each category illustrated by photographs follows (Photographs 1-6):

House type 1. This category was reserved for dilapidated properties in need of extensive renovations, no matter what their size. The nineteenth century terraced flats in poor condition and the wooden 'summer home' bungalows which can be found permanently occupied in some areas of the county were classified as house type 1.

House type 2. These properties were 1-2 bedrooms, well modernised and the 2-3 bedroomed semi-detached properties in need of renovation. Also included were all local authority housing, farm cottages and terraced nineteenth century housing in good condition.

House type 3. The average house for the area had 2-3 bedrooms and was detached, semi-detached or a bungalow with a garage. Generally, the gardens were small, but well maintained.

House type 4. The larger detached 3-4 bedroomed houses and bungalows were in this category. Older well modernised houses in excellent condition with garage facilities together with the traditional style Northumbrian farmhouse were described by category 4.

House type 5. There were few houses in this category. Houses with five or more bedrooms, in excellent condition internally and externally, and with a minimum of half an acre of well maintained grounds.

Procedure for contacting respondents

Firstly, if the woman was not at home on the first call at the house, but still resident at the address, then a maximum of four calls were made, at different times of the day and in different weeks, to allow for the holiday period.



Photograph 1. House Type 1 - 19th Century Terraced Flats



Photograph 2. House Type 2 - Local Authority Housing



Photograph 3. House Type 3 - 1930's Semi-detached



Photograph 4. House Type 3 - 1970's Bungalow



Photograph 5. House Type 4 - Modernised Traditional Farmhouse



Photograph 6. House Type 5 - Large Post War Family House

The decision to make four calls was based on the findings of the British Market Research Bureau quoted by Moser et al (1971). The research showed that 97% of a sample could be contacted with four calls and given the constraints of time and money, it was very doubtful whether a fifth call would have been worth the additional costs. At the end of the interviewing period 97% of all women identified in the sample and still resident at the same address had been contacted.

Response Rate

There were considerable variations in the response rate between Haltwhistle and the other parishes. Of the 306 addresses visited, 28 women had either moved, were in hospital or unsuitable for interview for medical reasons. One woman had died.

In the cases where people had moved, if it was possible to find the new address, and it was within the survey area, then the woman was contacted in her new home. The main difficulty was in Hatwhistle where the local authority were rennovating a street of inter-war council housing and all the tenants had been moved to other addresses.

A total of 18 non-responses out of 272 women contacted was rather higher than anticipated, however 10 of these occurred in Haltwhistle mostly among residents of category 2 housing. Certainly, this was the only area in which it was necessary to persuade women to be interviewed. The response rates for the different settlements are given in Table 5.4.

It was decided not to replace those who had moved or

were unavailable for interview, or in hospital, as these women would all have individual characteristics which would not be represented. The only argument given by Moser et al (1971) for replacement was in a situation where the resulting sample of the total population was too small for valid conclusions to be drawn from the data. With a 10% sample of the total population of women in the surveyed parishes, replacement was not necessary and would only have served to increase the bias.

By interviewing from 9.00 am to dusk it was possible to complete an average of ten interviews per day. The length of the interviews varied from 12 minutes with a woman who was farming alone, and had just had some young calves delivered, to an over an hour with several of the very elderly respondents. In such interviews the technique of allowing the woman to digress and talk about her life provided useful background information used in the analysis of case studies. The interviewing was virtually finished in the six week period available for the purpose.

Conclusion

The data collected during the field survey is used in the following chapters to analyse socio-economic, mobility and behavioural characteristics of the women living in the different valleys of the study area.

CHAPTER SIX - WOMEN AND ACCESSIBILITY

Introduction

The field survey took place in July/August 1981 and data was collected for 248 women. The mean age of the surveyed women was 55.4 years. Systematic samples were drawn from the parish of Allendale in the sub-area of that name; Haltwhistle in the Tyne Valley; and Hartleyburn, Greenhead and Thirlwall in the West Tyne. In the discussion these areas will be referred to as Allendale, Haltwhistle and the West Tyne Parishes.

The main purpose of this chapter is to explore the relationship between physical accessibility as measured by the two indices PA I Private Transport Accessibility and PA II Public Transport Accessibility, and the socio-economic, mobility and behavioural characteristics of the women of S.W.Tynedale. These relationships are the subject of the first three hypotheses discussed in chapter five. The approach is that of welfare geography in that its emphasis is upon the relationship of the scarce resource of physical accessibility to the characteristics of the population of women. The validity of the conclusions drawn from the analysis of the data depends upon the degree to which the sample was representative of the population of women. Therefore, before addressing the hypotheses the first task is to establish the validity of the data and identify any bias within it.

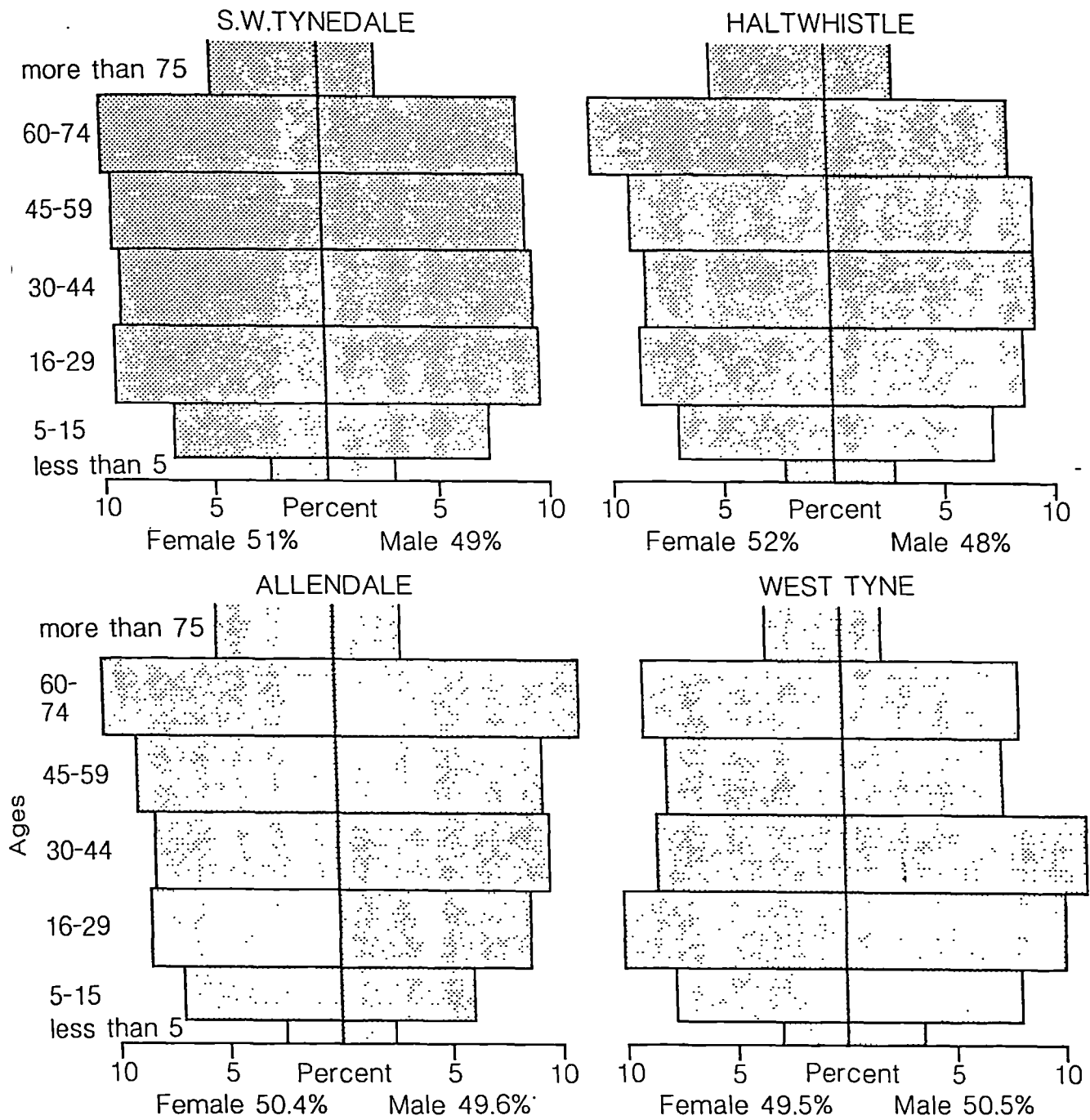
VALIDITY OF THE FIELD SURVEY DATA

Comparison of the survey data with that of the decennial national census which took place only a few months previously, allowed the validity of the sample to be tested.

Identification of bias in the survey data was essential to the interpretation of the results of the analysis and hence the conclusions drawn. Age and sex structure, marital status, family structure and employment data have all been used to test the validity of the sample and identify areas of bias.

The population pyramid Diagram 6.1 for S.W. Tynedale constructed from the 1981 Census describes an ageing female population which exceeded the male population in the age cohorts above 45 years. The pattern was essentially the same in Haltwhistle, but Allendale had an excess of males in the age groups 31 to 74 years. In West Tyne, only males in the 31 to 44 age group exceeded the percentage of females. It was the only area in which women aged 60 to 74 years did not form the largest age cohort. For the percentage of women in each of the five age groups from 17 years upwards Table 6.1 compares the 1981 Census data for S.W. Tynedale with the 1981 Census Data in the surveyed parishes, and the Survey data. The table shows a high degree of similarity between the three sets of data. This was confirmed by the calculation of chi-squared which gave a value of 0.44 with 16 degrees of freedom. This is significant at the 0.99 probability level, therefore the probability that it occurred by chance is less than 1%.

In the survey, although a variable sample ratio dependent upon the parish size was used, the overall



Source: OPCS 1981.

Diagram 6.1 Age Structures in South West Tynedale

Age	Survey Data	Census Data	
	%	Survey Area %	S.W. Tynedale %
17 - 29	21.5	22.1	21.7
30 - 44	17.9	21.1	19.8
45 - 59	23.9	22.2	22.1
60 - 74	25.5	23.2	24.5
75+	11.2	11.4	11.9

Table 6.1 S.W. Tynedale: A Comparison of Age Structures for 1981 Census and 1981 Survey Data

Marital Status	Survey Data	Census Data	
	%	Survey Area %	S.W. Tynedale %
Single	33.5	41.3	38.6
Married	66.5	58.7	61.4

Table 6.2 S.W. Tynedale: A Comparison of Marital Status for 1981 Census and 1981 Survey Data

Married	Survey Data	Census Data
	%	Survey Area %
Haltwhistle	70.6	59.0
Allendale	61.4	54.5
West Tyne	68.8	65.6

Table 6.3 S.W. Tynedale: A Comparison of Marital Status Within the Sub-Areas for 1981 Census and 1981 Survey Data

sampling ratio when calculated from the 1981 Census population totals was 9.6% of the female population in the survey area, and 4.9% of the female population of S.W. Tynedale.

A comparison of the figures for the marital status of the surveyed women and the census data in Table 6.2 show a bias in the interviewing towards married women. Although, interviewing took place both during the day and evening, to avoid where possible losing interviews with women who worked, there were two situations where single women were known to be lost. Firstly, women listed on the electoral roll for their parent's address, yet working away, and secondly, elderly women in hospital for a long period. The latter was a problem in Haltwhistle, the former in Allendale. Sampling with replacement would only have served to increase the bias, therefore, these interviews were 'lost'. A closer look at the marital status of the surveyed women in the three areas as compared with the census (Table 6.3) shows the bias to be greatest in Haltwhistle and least in the West Tyne parishes.

A third area for data comparison was women with children. The only directly comparable statistics are those for children under 5 years. Here again bias was evident, in that although when survey and census data were compared for age groups 0-15 and 0-17, respectively (Table 6.4), the survey data exceeded the census data by several percent. This was to be expected. When these figures were disaggregated and compared for 5-15 and 5-17 years the survey data was equal to, or less than the census percentage. The bias lay in the percentage of surveyed

Years of age	Survey Data	Census Data
	0 - 17 %	Survey Area 0 - 15 %
Haltwhistle	30.0	28.5
Allendale	27.3	24.2
West Tyne	41.5	33.6
S.W. Tynedale	33.0	28.0

Years of age	Survey Data		Census Data	
	0-5 %	5-17 %	Survey Area 0-5 %	5-15 %
Haltwhistle	8.4	21.6	5.6	22.9
Allendale	10.2	17.1	4.9	19.3
West Tyne	15.6	25.9	7.7	25.9
S.W. Tynedale	11.2	21.8	5.7	22.3

Table 6.4 S.W. Tynedale: A Comparison of Percentage of Households with Children in the Sub-Areas for 1981 Survey and 1981 Census Data

Type	Survey Data	Census Data
	%	Survey Area %
Full-time	20.6	20.6
Part-time	18.1	16.9
Unemployed	2.8	2.9
Economically Active	40.0	40.1

Table 6.5 S. W. Tynedale: A Comparison of Types of Employment for Women for 1981 Survey and 1981 Census Data

women with children 0-5 years. As a percentage, they formed twice the number enumerated in the census. The smallest over representation was in Haltwhistle, where non-response occurred with women with young children. This over representation can be explained by firstly, the time of interviewing - school holidays. Families with young children may have taken their holidays earlier in the year. Secondly, children are a constraint on women's activities, therefore, they were the group of women most likely to be at home. Thirdly, women with young children often welcome the opportunity to talk to another adult, and therefore they were more receptive particularly to a woman interviewer requesting information about accessibility. Whatever, the reasons for the bias, it cannot be discounted in drawing the final conclusions.

Employment was the final area for comparison. For the survey and census data Table 6.5 shows full-time employment and unemployment data as almost identical, yet part-time work was recorded as a higher percentage in the survey data. This could be bias in the survey data, or it could reflect the inaccuracy of the census data. Husbands may not have stated, for various reasons, their wife's part-time job - they may have considered it to be insignificant, or it may have been in the black economy. Alternatively, seasonal part-time jobs may account for the discrepancy, but during interviewing this was not apparent. The surveyed data also included 7.7% of women working in their husband's business - unpaid. However, it was unlikely that this work would have been declared as part-time on the Census Return.

It can be concluded, that the survey data was

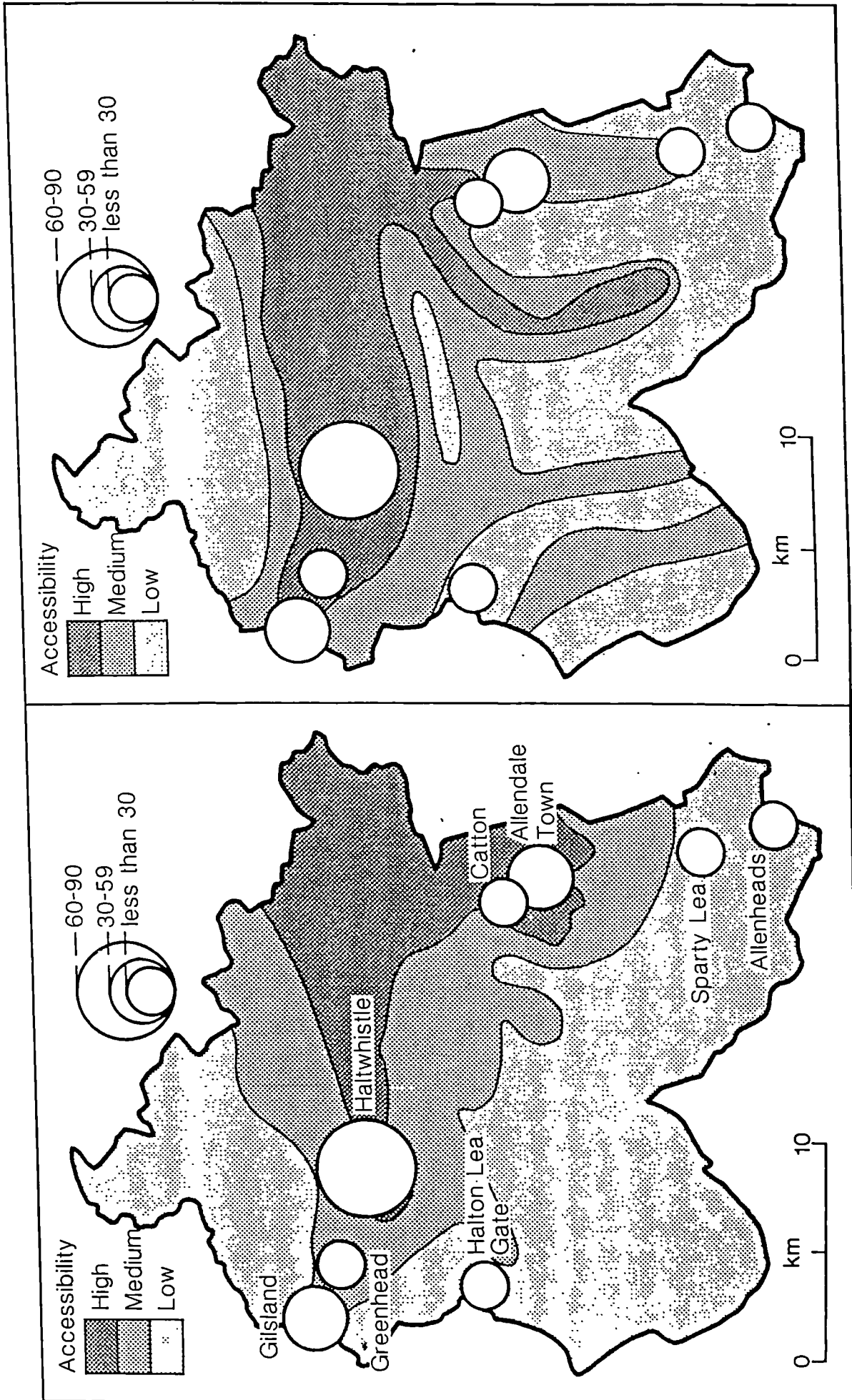
representative, yet the over representation of married women and women with children under 5 years must be taken into account when interpreting the results of the analysis.

ACCESSIBILITY

Two accessibility indices PA I and PA II were constructed and described in Chapter 5 - Hypotheses and Research Methodology. These two indices measured relative accessibility for private and public transport, respectively; and were two of the 69 variables included in the survey data. Road distance to Hexham and walking distance to the bus were two additional measures used to test the accessibility hypotheses.

A comparison of the percentage of respondents in each of the three accessibility categories for both indices was given in Tables 5.3 and showed that the surveyed population declined with decreasing accessibility. A marginally greater proportion lived in the high and medium categories for PA II, than for the same categories of PA I. Map 6.1 and 6.2 show the location of the surveyed women in relation to these two indices. Proportional circles indicate the number of surveyed women for each electoral division. The distribution of accessibility as measured by the PA I was mainly a function of the road network, but for the PA II, walking time (used in the calculation) compressed high and medium accessibility into narrow corridors to either side of the public transport routes.

These two accessibility indices are used in the analysis of the socio-economic, mobility and behavioural characteristics of the women in S.W.Tynedale. Where



Map 6.1 S.W. Tynedale: Location of the Survey Population in relation to Private Transport Accessibility

Map 6.2 S.W. Tynedale: Location of the Survey Population in relation to Public Transport Accessibility

appropriate chi-squared is used to test non directional hypotheses.

Socio-economic Analysis

The sample was drawn from the electoral rolls of February 1981. For the field survey area, 4 965 electors were listed, of which 2 586 were women. The sex-ratio expressed in terms of 100 women was 100:92. Variations in the sub-areas show a ratio of 100:89 in the Allendale Register of Electors as compared with 100:81 for those of voting age recorded by the 1981 Census. In West Tyne, the numbers of men and women given in the Electoral Roll were equal, but the Census recorded a sex ratio of 100:99. The situation was similar in Haltwhistle, where the Electoral Roll ratio was 100:92 and the 1981 Census 100:89. The Census data used for these calculations was for 'All Residents', therefore, it was interesting that the Census should record a lower proportion of men in all areas. Given that the Electoral Roll was compiled in October 1980, for February 1981, and that the Census was taken in April 1981, there is nothing to suggest that the discrepancy can be accounted for by the time of year. The most reasonable explanation is that as the population of women was twice that of men in the 75 years and over age group, then a percentage of very elderly women, through infirmity had not returned the Register of Electors forms. This also helps to explain why, although, there were very few non-responses amongst the elderly, they were still marginally under represented in the sample with 11.2% surveyed as opposed to 11.9% recorded by the 1981 Census. However, what both Electoral Rolls and the Census agreed upon was that women were marginally greater in number than men.

11.9% recorded by the 1981 Census. However, what both Electoral Rolls and the Census agreed upon was that women were marginally greater in number than men.

Variations in the sex-ratios for the three areas and the dependent and independent age groups are given in Table 6.6. Both ratios for the survey area and S.W. Tynedale showed a decline in the numbers of males with increasing age. This pattern occurs in all three sub-areas where in the 75+ age group men are out numbered by women 2 to 1. Allendale had a higher proportion of women in all age groups, although as in West Tyne the proportion of men aged 60-74 was higher than both survey and S.W. Tynedale figures would suggest.

Area	No. of Men Expressed as a Ratio of 100 Women			
	>16	16-59	60-74	75+
Haltwhistle	103	101	78	55
Allendale	95	86	91	42
West Tyne	104	106	91	55
Survey	101	97	85	51
S.W. Tynedale	110	102	887	51

Source: 1981 Census

Table 6.6 South West Tynedale: Age-Sex Ratios

As women increased as a percentage of the population, then problems of accessibility are for this reason alone, likely to be more pertinent to them than to their male counterparts. A consequence of this greater life expectancy of women is the greater propotion of single and widowed

women in the older age groups. Of the surveyed women 14.7% were widowed as compared with 15.9% single and 2.8% divorced or separated, in total 33.4% were without a partner.

Analysis of the spatial distribution of the surveyed women in relation to accessibility as measured by both indices permits the following age related hypothesis to be tested.

...there is a relationship between the age structure of the population and

The raw data is presented in Table 6.7 with marginal totals given as percentages. In all age groups except 30-44 years more than 50% of respondents lived in highly accessible locations as measured by PA I, whereas PA II showed over 70% of women aged 60-74 years with homes in highly accessible areas. Although, 15% of the respondents were in the low PA I category 25% of the surveyed women aged 75+, lived in this area. Overall the proportion of elderly women who lived in highly accessible locations was greater than the proportion in low accessibility areas for both measures.

When chi-squared was used to measure the relationship between age and PA I (Table 6.6) a value of 14.67 with eight degrees of freedom was significant at 0.6 level. Therefore it was possible to accept the hypothesis that age was related to PA I. The relationship was positive in that younger women had a greater tendency to live in locations with lower PA I accessibility than older women. This suggests that there were processes at work which resulted in older women leaving those areas accessible only by car, whereas newcomers to these isolated locations gave a high

Accessibility	PA I			PA II			Total	%
	High	Medium	Low	High	Medium	Low		
Age								
17 - 29	27	17	9	33	17	3	53	21.5
30 - 44	20	18	7	29	10	6	45	17.9
45 - 59	40	9	10	30	22	7	59	23.9
60 - 74	41	17	5	45	13	5	63	25.5
75+	15	6	7	15	9	4	28	11.2
Total	144	66	38	152	71	25	248	
Percentage	58.1	26.6	15.3	61.4	28.6	10.0	100.0	100.0

PA I = Private Transport Accessibility Index

PA II= Public Transport Accessibility Index

Table 6.7 South West Tynedale: Accessibility and Age

priority to private transport. If the same test was applied to age and accessibility as measured by PA II (Table 6.7) then the hypothesis must be rejected. The conclusion is that the relationship between age and public transport was much weaker than that between age and private transport.

To explore the relationship between age and accessibility in terms of public transport measures further the 'Walking Time to the Bus' was used. As the elderly, are the most affected by distance from a shop, if only because of infirmity, then 72.8% in the retired ages lived within 5 minutes walk of a bus route, 18.5% between 5 and 15 minutes and only 8.7% more than 15 minutes. Of the nine women who lived more than 30 minutes walk from a bus route, two were over sixty years of age.

Some of the older women living in the remoter areas explained how they had first come to the area from Tyneside when they had married forty years or more before. This suggested that there was a relationship between accessibility and length of residence. Before considering the relationship between length of residence and age, it is interesting to note that the data matrix in Table 6.8 for PA I indicates that in high accessibility areas the percentage of surveyed women increased with length of residence, whereas in low accessibility areas the reverse was the case. The pattern was not so distinct for PA II and indeed 20% of the expected cell frequencies were too low to apply chi-squared to the relationship between length of residence and this index.

The second hypothesis to be tested is that of the

Accessibility	PA I		PA II	
	Chi-squared	Degrees of freedom	Chi-squared	Degrees of freedom
Age	14.67	8	9.78	8
Length of Residence	13.1	8	*	
Property Class	*		62.01	4
Women w. Children				
0 - 4	4.62	2	0.88	2
5 - 12	0.78	2	2.95	2
13 - 17	0.24	2	0.86	2
Kin living locally	2.02	4	4.44	4
Education	1.9	4	7.3	4

* Less than 80% of expected cell frequencies with values greater than 5.

Table 6.8 1981 Survey: Chi-Squared Values for Accessibility and Socio-Economic Variables

relationship between length of residence and accessibility which is formerly stated as:

...there is a relationship between the length of residence of the population and accessibility.

When tested using chi-squared, a value of 13.1 with 8 degrees of freedom was significant at the 0.1 level. Therefore, the hypothesis was accepted, however, as stated earlier the data matrix indicated a positive relationship in which high accessibility (PAI) was associated with long years of residence.

Long years of residence applies only to the older age groups. The more accessible a woman's home the less the chance of her leaving it when she becomes elderly because all the necessary services are accessible. This applied particularly in the West Tyne settlements of Gilsland and Greenhead where public transport accessibility was medium and high, respectively.

A strong impression during interviewing was of the predominance of Class 2 housing in Haltwhistle. The property index described in Chapter 5 classified housing on a 1-5 scale according to condition and tenure. Class 2 identified terraced and local authority housing. Fifty-three per cent of respondents lived in this type of housing and of these 44% lived in Haltwhistle. The 1981 Census data indicated that 39% of the Haltwhistle housing stock was local authority, whereas local authority housing comprised 15% and 8% in West Tyne and Allendale,

respectively.

Although a measureable relationship did not exist between property class and accessibility as measured by PA I, a very strong relationship was found when property class was related to PA II.

PA II	House Type			
	1/2	3	4/5	Total
High %	74.1	16.2	9.7	100
Medium %	32.0	47.2	20.8	100
Low %	24.0	72.0	4.0	100
Total %	59.0	30.7	12.4	100

Table 6.9 S.W. Tynedale: Relationship between House Type and Public Transport Accessibility Index (PA II)

...there is a relationship between property class and accessibility as measured by the PA II.

The above hypothesis was supported at the .01 significance level. Table 6.9 shows that Class 4/5 housing had the greatest frequency in medium accessibility areas, whereas Class 3 housing formed the highest percentage in the low accessibility areas.

Class 1/2 housing formed 74.1% of all housing in high accessibility areas. Therefore, the relationship is

negative in that low quality housing is associated with high public transport accessibility areas. Photographs 5.1 and 5.2 illustrate the nineteenth century terraced and council housing typical of class 1 and 2 housing, respectively. Both these photographs were taken in Haltwhistle where high proportion of housing is either local authority or Victorian and Edwardian terraced.

Distance from a central place as measured by Private Transport Accessibility Index shows no relation with telephone rentals. Between 60% and 65% in each accessibility category have a telephone installed. However, when accessibility as measured by Public Transport Accessibility Index was correlated with telephone installations for the respondents there was a very strong relationship supporting the hypothesis:

...that there is a relationship between accessibility and telephone installations.

A chi-squared value of 11.17 with 2 degrees of freedom was significant at 0.01 probability level. In the high accessibility category 54.5% of women had a telephone as compared with 70.8% in the medium category and 84.0% in the lowest. The evidence suggests that it is not physical distance, but the distance from a public transport route and frequency of service which influences the decision to have a telephone installed. When telephone installations were correlated with walking time to a bus route, the percentage with telephones within 5 minutes of a bus route was 56.1%, which increased to 76.7% for walking times between 5 and 15 minutes and 79% for over 15 minutes.

Returning to the interview situation, two women both in their nineties explained that their children had insisted that if they were to continue to live alone that they had a telephone installed. Although, one was quite happy to answer and make calls, the other was only able to answer the telephone. Both lived on isolated farms more than 15 minutes from a bus route. These two examples underline the view expressed by other isolated respondents that a telephone was essential, if only for emergencies.

In seeking to assess the validity of the sample data marital status was discussed, and it was concluded that there was a bias towards married women. If the distribution is related to the accessibility measures as in Tables 6.2 there was a marginal under representation of single women in low accessibility areas as measured by Private Transport Accessibility Index which was compensated for by an above a high percentage in the medium category and a low percentage of widows in both medium and low categories. In all other respects, the distribution was proportional to the percentage surveyed in each accessibility category.

Does it follow that women with children will also show the same distributional characteristics? It was previously stated that women with children under 5 years were over represented in the sample, and the possibility that they were over represented in a specific accessibility group cannot be dismissed. The hypothesis stating the relationship between women with children and accessibility is as follows:

...that there is a relationship between accessibility and women with children.

This relationship was tested for both accessibility measures and women with children aged 0-4 years; 5-12 years; and 13-17 years. Chi-squared values and significance levels are given in Table 6.8. The strongest correlation was that of the Private Transport Accessibility Index and women with children under 5 years which was accepted at 0.1 significance level. A weaker relationship existed for Public Transport Accessibility Index and women with children aged 5-12 years. The first of these two relationships was negative, therefore there was an increase in the proportion of those women surveyed with children as accessibility declined. However, this could merely have been a consequence of biased data, although, with a significance level of 0.1 it was unlikely. The second relationship was positive. Women with children in this age group had an observed frequency greater than the expected frequency in the high accessibility category of the chi-squared data matrix.

During the field survey, it became apparent that several young mothers had moved to a more accessible location when their children became of school age, and others were contemplating such a move when the time came. Certainly, there was an awareness amongst the younger women of the problems of bringing up children in a remote area.

As Table 6.8 so clearly indicates the null hypotheses must be accepted.

...that there is no relationship between the distribution of women with children aged 5-12 or 13-17 years and Private Transport

Accessibility Index; and children under 5 years, or 13-17 years and Public Transport Accessibility Index.

Children and to some extent husbands place a constraint on a woman's use of time and therefore the journeys she is able to make. These constraints may be offset by the support of relatives who may regularly help with child care or provide occasional support. One of the rural myths is that families in small settlements are all interrelated. However, when the number of relatives living locally was correlated with the two accessibility indices the reverse was shown to be the case for Private Transport Accessibility Index, in which the observed frequencies in highly accessible areas exceeded the expected frequencies for those respondents with 1-5 and 5-10 relatives, respectively. In the low accessibility areas the reverse occurred. A chi-squared value of 2.02 for the contingency given in Table 6.8 supported the hypothesis:

...that there is a relationship between accessibility and the numbers of kin living in the same parish.

This relationship was very strong with a significance level of 0.01 indicating that women in low areas of accessibility did not have the same level of family support as their more accessible counterparts.

Table 6.8 gives chi-squared values necessary to test the second hypothesis in which numbers of kin were related to the Public Transport Accessibility Index. The

chi-squared value of 4.44 with 4 degrees of freedom was significant at 0.5 level which indicated a weaker relationship and the hypothesis was not accepted. These two results are not entirely unexpected in that where the family lives on a remote farm then children must leave to find work elsewhere and only one usually remains on the farm. If, there is only one house, then the parents may also leave when the son or daughter takes over the farm.

Use of time is constrained in other ways such as by employment which in turn is related to education. The use made of facilities reflects interests, and interests influence an individual's knowledge, and through that knowledge the perception of the space-time prism within which they conduct their daily lives.

The next step in the analysis was to investigate the relationships of these constraints with accessibility and the interaction between such variables as education and age, for without understanding the complexity of the constraints placed upon the rural woman the problems associated with accessibility can neither be identified nor the degree of urgency evaluated.

Education, both formal and informal contributes to the way in which time is used. Therefore, years of voluntary education, readership of newspapers and magazines and knowledge of facilities in the local area and further afield all add to the picture of accessibility gradually being pieced together for the women of South West Tynedale.

In 1981, the Census recorded for South West Tynedale a total of 70 individuals in the economically active age

groups with degrees, professional and vocational qualifications. Altogether, 0.8% of the population were in this category. If expressed as a ratio for every 100 educated women there were 88 educated men. The field survey recorded the number of years of voluntary education. If the respondents are grouped as follows: 0 years; 1-3 years; 4+ years of voluntary education, then the final category describes those with degrees and or professional and/or vocational qualifications. Ten per cent of respondents had 4+ years of voluntary education. However, the figure was not comparable with that of the Census which was expressed as a percentage of total population.

When the relationship between accessibility and education was considered then the following hypothesis was accepted for PA II with a chi-squared value of 7.3 and 4 degrees of freedom at a significance level of 0.15.

...there is a relationship between accessibility and years of voluntary education.

However, the same relationship cannot be accepted when measured by Private Transport Accessibility Index where the value for chi-squared was 1.9 (4 d.f.) and the significance level 0.85.

Some of the houses in West Tyne and Allendale had been bought by well educated two car commuter families. Except for the school bus public transport was of little importance to these families. Of the local women, many of the younger ones had had some voluntary education and were able to

drive. The farmer's wives over the age of 60 years were the group with only the minimum education and without driving licences.

The conclusion that there was a relationship between low accessibility as measured by Public Transport Accessibility Index and educated women was important in that it indicated that they were potentially differences in women's employment related to accessibility.

Data was collected in the field survey for full and part-time employment and unpaid work for women, and husband's employment. Data for the latter was very variable in quality as some women could not describe their husband's job with any degree of accuracy. The Classification of Occupations (OPCS 1970) was used to classify the jobs which the women in the economically active groups were engaged in, in 1981, or had been employed in previously. Similarly, the current and past occupations of husbands were classified in the same way. Past occupations were considered to be relevant, in that they are an indicator of social group and economic status. Using this data it was possible to explore the following hypothesis,

...there is a relationship between accessibility and the number and types of jobs in which women are employed.

Taking the two accessibility measures PA I and PA II and the number of women in full and part-time employment as a percentage of the economically active in each accessibility area, the impact on the total employment was similar for both indices. Table 6.10 shows that in high accessibility

Employment	High %	PA I Medium %	Low %	High %	PA II Medium %	Low %
Full-time	24.7	27.3	26.9	26.9	26.0	18.8
Part-time	37.1	31.9	19.0	36.6	28.0	25.0
Total	61.8	59.1	46.2	63.4	54.0	43.8

Table 6.10 S.W.Tynedale: Economically Active Women in Work in 1981.

Occupation Categories	High %	PA I Medium %	Low %	High %	PA II Medium %	Low %	Total %
Intermediate	17.9	6.8	15.4	12.9	16.0	18.8	14.7
Junior Non- management	29.2	34.1	26.9	26.9	38.0	25.0	30.2
Personal Service	18.0	38.6	30.8	33.3	16.0	12.5	25.8
Own Account	9.0	4.5	3.8	7.5	8.0	0.0	6.9
Agriculture	3.4	9.0	11.5	5.4	6.0	12.5	6.3

Table 6.11 S.W.Tynedale: Past and Current Occupations of the Economically Active Women in 1981.

Occupation Categories	High %	PA I Medium %	Low %	High %	PA II Medium %	Low %	Total %
Professional	1.7	8.3	8.5	3.9	4.0	11.1	4.6
Intermediate	8.7	10.4	8.5	7.1	12.0	16.7	9.2
Junior Non- management	5.2	10.4	2.9	3.1	6.0	0.0	6.2
Skilled/Semi- skilled	51.3	31.3	34.3	55.9	24.0	16.7	44.1
Own Account	13.1	10.4	2.9	8.7	16.0	11.1	10.8
Agriculture	11.3	25.0	28.1	9.4	28.0	44.4	17.4

Table 6.12 S.W.Tynedale: Past and Current Occupations of the Husband's of the Surveyed Women in 1981.

areas more than 60% of women were in employment and this declined to 46.2% and 43.8% in low PA I and PA II areas, respectively. However, part-time work was more strongly related to accessibility than full-time work. It was not economically feasible for women to travel more than very short distances to part-time employment because all that was available was in the low paid personal service, retailing and domestic service jobs. The other main form of part-time employment was semi-skilled in a Haltwhistle factory. Women with children found this work convenient because it could be fitted in with family responsibilities.

Nearly 12% of the economically active women were engaged in unpaid work. Three-quarters of these jobs were in farming and the remainder in small family businesses other than agriculture. The numbers were too small to draw any conclusions, other than there appeared to be an even distribution in the different accessibility areas for both indices.

The second hypothesis related to employment is as follows:

...there is a relationship between accessibility and the dominant occupational group

Analysis of the data classified according to the Occupational Classification cited above revealed a scatter of jobs in professional, skilled and semi-skilled categories which were too small in number for analysis. However, of the economically active group, the past and present occupations showed a concentration of jobs in the

intermediate, junior non-management, personal service, own account and agriculture categories.

Intermediate non-manual are jobs which normally require qualifications of sub-degree level. Teachers and nurses were the two most frequent jobs in this category in S.W.Tynedale. Junior non-management includes the clerical and sales assistants. Personal service was interpreted as jobs such as home help in which there is an element of personal service. Women classified as own account workers included owners of small shops and hairdressing salons, bed and breakfast enterprises and dressmakers. Finally, all women working in agriculture were grouped together under the one heading. The data for these five groups is given in Table 6.11. As expected agricultural employment was highest in the least accessible areas whereas, the reverse is true of personal service and public transport accessibility and own account workers and private transport accessibility. The concentration of retailing establishments and the elderly in Haltwhistle in part explains this distribution.

The reasons for the distribution of the intermediate and junior non-management jobs were more complex. Shift work in nursing makes it difficult for nurses without private transport to travel more than short distances to work. Teachers are not restricted in this way and there were a number travelling from Allendale to Tyneside. Furthermore, first and middle schools are located in smaller settlements, whereas the only hospital in the area is in Haltwhistle. Therefore, of the two main intermediate occupations nurses had a tendency towards locations accessible to hospitals, whereas teachers showed a tendency to choose more isolated locations. However, as inaccessibility increases as

measured by PA II index intermediate jobs also increase as a proportion of the economically active surveyed women.

Finally junior non-management accounts for nearly one-third of the economically active women's occupations in the past, and in 1981. In medium accessibility areas as measured by both indices, these jobs were most numerous. In smaller settlements, sales jobs were mainly occupied by women and together with personal service formed the highest proportion of women's occupations. Clerical workers were prepared to travel and several of the respondents in Gilsland travelled to Carlisle to clerical jobs, and similarly from Allendale Town to Hexham.

In the above discussion a number of constraints on the relationship between accessibility and the occupation of women have emerged. Constraints relating to the number of hours worked, shift work, wages and the nature of the work. Differences in the distribution of types of jobs between private and public transport accessibility indices indicate that in some occupations public transport is more important for the journey to work, than in others.

To further understand the relationship between accessibility and the socio-economic characteristics of the population, it is necessary to look at the data available for the occupations of the women's husbands, in the past and in 1981. This includes the husband's of widows whose incomes were supplemented, or not supplemented, as the case may be, by their husband's pension. However, the data is incomplete and must be treated with caution. Of the 192 for which data was collected, 121 were in work at the time of the interview. Five per cent were classified as in

professional occupations i.e. large employers and managers together with professions normally requiring degree qualifications. Nearly 45% were engaged in skilled and semi-skilled jobs, while 18% were employed in agriculture. Intermediate jobs accounted for less than 10% as did junior non-management. These six occupational categories described 92.3% of the husband's jobs.

The occupational data given in Table 6.12 shows a clear relationship with the accessibility areas. Professions, intermediate and agriculture increase as a proportion of all jobs as accessibility decreases. Professions and intermediate (mostly teachers) have more flexible working hours than those in skilled and semi skilled jobs. These jobs together with junior non- management and own account workers such as self employed electricians, plumbers etc. increase as a proportion of the total, as accessibility increases. Included in the skilled and semi-skilled jobs are factory workers in Haltwhistle and bus, and lorry drivers. The latter tend to live in remoter locations than the factory workers. They use their lorries as transport to and from the firm's depot, thus releasing the car for their wife's use during the day.

The discussion of employment brings to conclusion the analysis of the different socio-economic characteristics. Accessibility as measured by the road network (PAI) showed a relationship with the socio economic variables of age structure, mothers with children under 5 years, length of residence, education, installation of telephones, kinship networks and employment. In low accessibility areas the women were younger; there was a greater proportion with children under five years; they had more years of voluntary

education; 80% had a telephone; they had few relatives living locally; and were less likely to have part-time employment.

The public transport accessibility measure PA II showed a relationship with property type, mothers with children aged 5-12 years, education and telephone installations. Women living in areas with good public transport were more likely to live in property types 1 and 2; to have children aged 5-12 years; to have the minimum in education; to have part-time employment; and to be without a telephone.

The relationship between physical accessibility and socio-economic characteristics is a complex one which relates to both private and public transport, and therefore, the mobility of women.

Mobility Analysis

The highest level of mobility is enjoyed by women who hold a full driving licence and own a car. Many women without a driving licence always travel by car because they organise their activities so that another member of the household is able to drive them. Therefore, the latter have a similar level of mobility to those women who have a licence, but need to share a car with other members of the household. To overcome this problem a dichotomous variable for possession of a driving licence in which a provisional licence was discounted, and a three category variable for use of a car, were used to test the following hypothesis

using chi-squared.

...there is a relationship between accessibility and personal mobility.

The hypothesis was tested in relation to the two accessibility indices. Driving licences were held by 39.0% of the surveyed women and a further 3.2% had provisional licences (Table 6.13). Half of those with provisional licences lived in areas measured as low by PA I and a further three in the medium category of the same index. Perhaps, surprisingly, there was no relationship between PA I and driving licences. The numbers holding driving licences in each category were proportional to the number of respondents in each category. However, the PA II reveals a different picture. In the high accessibility area 30.5% of women held driving licences as compared with 55.6% in medium accessibility areas and 44.0% in poor areas. The relationship between PA II and women with driving licences has a chi-squared value of 14.82 with 2 degrees of freedom and is significant at 0.01 probability level. Again remoteness from public transport rather than remoteness per se is more important in explaining who lives where.

This supports the earlier contention that younger women with driving licences live in the remoter areas. Haltwhistle, the most accessible of the settlements, for both measures had 43.5% of women over 60 years, yet in S.W. Tynedale 84% of all driving licences were held by women under the retirement age. In 1981, only 20% of Haltwhistle women held a driving licence, whereas in the less accessible W.Tyne and Allendale the proportions were 35% and 45%, respectively.

	PA I Driving Licences				PA II Driving Licences			
	Yes %	No %	Prov. %	Total PA I %	Yes %	No %	Prov. %	Total PA II %
High	37.0	62.3	0.7	58.2	30.5	66.9	2.6	61.4
Medium	44.8	50.7	4.5	26.7	55.6	41.7	2.8	28.7
Low	36.8	52.6	10.5	15.1	44.0	48.0	8.0	10.0
Total % D/Licences	39.0	57.8	3.2	100.0	39.0	57.8	3.2	100.0

Table 6.13 1981 Survey: Accessibility, Women and Driving Licences

	PA I Use of a Car				PA II Use of a Car			
	All the time %	Family %	Never %	Total PA I %	All the time %	Family %	Never %	Total PA II %
High	23.3	28.1	48.6	58.2	21.4	33.1	45.5	61.4
Medium	34.3	38.8	26.9	26.7	34.7	31.9	33.3	28.7
Low	31.6	36.8	31.6	15.1	44.0	28.0	28.0	10.0
Total % Use of car	27.5	32.3	40.2	100.0	27.5	32.3	40.2	100.0

Table 6.14 1981 Survey: Accessibility, Women and the Use of a Car

The second variable, use of a car, shows a strong relationship with both measures of accessibility (Table 6.14). When related to PA I, then a chi-squared value of 10.48 (4 degrees of freedom) is significant at 0.03 probability level. Similarly, the relationship between use of a car and PA II shows a weaker relationship with a chi-squared value of 8.9 and is significant at 0.06 probability level. With both indices, women without the use of a car at all were greatest, in the highest accessibility category.

The correlation between walking time to the bus and women with driving licences had a chi-squared value of 4.56 (2 degrees of freedom) and was significant at 0.11 probability level. Whereas, only one-third of those living within 5 minutes walk of a bus stop could drive, two-thirds of those living more than 30 minutes from a bus stop held a driving licence. Of the nine women in this group only two lived in households without a car as compared with half those living within a five minute walk of a bus stop.

Traditionally, the essential journeys made by women have been for shopping. Data was collected for the mode of transport used for local, market town and city shopping journeys.

...there is a relationship between accessibility and the destination of shopping journeys.

For local shopping journeys as accessibility decreased for both measures of accessibility, then the proportion of journeys by car increased, whereas those on foot decreased.

There was a positive relationship between journeys by public transport and PA II, the same relationship was not apparent for PA I categories and journeys by public transport. In both cases the women in the remoter areas tended to shop outside the area. Market town shopping was mainly in Hexham with a few women in the west using Brampton. Whereas between 40-45% of women in all PA I areas travelled by car to shop in the market town the percentage increased from 33% in good PA II areas to 72.0% in low areas. This underlines the point that where there is no public transport a journey has to be made by car. Only one-fifth travelled by bus to the market town from low areas of public transport accessibility, and 8% not at all. This compares with over one-third of women living in average and low private transport accessibility areas not shopping in the market town, and only 20-25% travelling by bus for these journeys. The question arises - where do these women shop? The very elderly rely on others to do their shopping for them, a small proportion used a travelling shop, but this did not satisfy all their shopping requirements. The majority who did not shop either locally, or in the market town, made regular journeys to supermarkets on either Tyneside or in Carlisle.

Journeys to the city are shown in Table 6.15 where in all accessibility categories the majority of journeys were made by car. Public Transport decreased in popularity as accessibility decreased. Similarly, the percentage who did not visit either of the two cities was greatest in the low accessibility categories.

Driving licences, use of a car and walking distance to

Local Shopping Journeys								
PA I					PA II			
	Car %	Bus %	Walk %	N.A. %	Car %	Bus %	Walk %	N.A. %
High	21.2	1.4	67.1	10.3	28.6	13.0	48.1	10.4
Medium	44.8	26.9	13.4	14.9	32.0	6.9	47.2	13.9
Low	47.4	15.8	18.4	18.4	48.0	4.0	24.0	24.0

Market Town Shopping Journeys						
PA I				PA II		
	Car %	Public Transport %	N.A. %	Car %	Public Transport %	N.A. %
High	44.5	43.1	12.3	33.1	35.7	31.2
Medium	41.8	23.9	34.3	55.6	38.9	5.6
Low	42.1	21.1	34.2	72.0	20.0	8.0

City Journeys						
PA I				PA II		
	Car %	Public Transport %	N.A. %	Car %	Public Transport %	N.A. %
High	42.5	39.1	18.5	43.5	37.6	18.8
Medium	53.7	29.9	16.4	56.9	29.2	13.9
Low	57.9	18.4	23.7	48.0	20.0	32.0

N.A. Women who did not make shopping journeys.

Table 6.15 1981 Survey: Accessibility, Women and Shopping Journeys

the bus all showed a stronger relationship with public transport accessibility than with private transport. Women living in low PA I areas were more likely to travel by car than their counterparts in high accessibility areas, generally. However, if related to low and medium PA II areas there was a greater probability that these women had a driving licence, travelled by car, and lived remote from a bus stop. Shopping journeys showed that women undertook the longer journeys by car, travelling on the bus for short journeys within the region.

To conclude the relationship between physical accessibility and mobility is negative, however, it is more closely related to public transport accessibility than road distance. Women in medium accessibility areas had the same, if not a greater degree of personal mobility than those in low PA II areas. Given that a spatial relationship existed between physical accessibility, socio economic and mobility characteristics, it remains to explore the relationship of behaviour and physical accessibility.

Behaviour and Accessibility

Undoubtedly education is related to the readership of newspapers and books. Throughout the interviewing it was never apparent that a respondent was illiterate, although there were two occasions when elderly women mentioned others who could not read, perhaps they were indirectly identifying themselves and discussing their own problems. In a further three instances, elderly women gave failing eyesight as a reason for not reading. Through newspapers and magazines information about and interest in events at all scales is acquired, so what is pertinent here is the relationship

between accessibility and gathering information through the media.

The chi-squared values, significance levels and degrees of freedom are given in Table 6.16. The contingency table has been divided into newspapers and magazines because the latter are more likely to reflect a woman's personal choice whereas in many households the newspaper, traditionally the reading material of the husband, is also read by the wife. Therefore the relationships between accessibility and newspaper readership should be seen in terms of the household as well as the individual.

Whether or not a household or member of a household takes a newspaper may well depend upon a newspaper delivery service. Three-fifths of the women surveyed lived in a newspaper delivery area. However, as the chi-squared value in Table 6.16 shows that

...there is a very strong positive relationship between newspaper delivery services and accessibility as measured by both indices.

The relationship for the readership of newspapers and accessibility is set out below:

...that there is a relationship between accessibility and the readership of newspapers.

A similar relationship to the one between accessibility and the delivery of newspapers existed for the readership of

Accessibility	PA I		PA II	
	Chi-squared	Degrees of freedom	Chi-squared	Degrees of freedom
National Newspapers	4.97	2	5.93	2
Sunday Newspapers	3.34	2	9.03	2
Local Dailies	0.52	2	5.44	2
Local weekly	0.33	2	*	
General Magazines	0.96	2	4.25	2
Interest Magazines	2.44	2	11.15	2
Profess. Magazines	8.37	2	4.44	2
Newspaper Delivery	6.8	2	118.0	2

* Less than 80% of expected cell frequencies with values greater than 5.0.

Table 6.16 1981 Survey: Chi-Squared Values for Accessibility and News Media Variables

national newspapers, both daily and Sunday. Local dailies were negatively related to accessibility (Public Transport Accessibility Index) with expected frequencies exceeding observed frequencies in highly accessible areas and vice versa in areas of low accessibility. The same pattern was evident for the Public Transport Accessibility Index and local weekly newspapers, although the data did not meet the criteria for the chi-squared test.

Reflection upon these findings suggested that local newspapers are bought either when a member of the family goes to work or in the case of the weekly paper The Hexham Courant, during the course of the weekly shopping. This newspaper was delivered by bus to a collection point in all settlements on a bus route and only 31 respondents did not read the newspaper. However, as stated the relationship relates as much to the accessibility of the household as to an individual member.

The three categories of magazines - general, interest and professional were better indicators of a woman's choice of reading material. The following hypothesis was tested using chi-squared for the three categories of magazines and two accessibility indices.

...that there is a relationship between
accessibility and the readership of
magazines.

The findings given in Table 6.16. support the earlier statement of a relationship with educational qualifications.

The readership of professional magazines was shown to be correlated with the Private Transport Accessibility Index

with a chi-squared value of 8.37, 2 degrees of freedom and a significance level of 0.02. There was also a strong relationship between the readership of interest magazines and Public Transport Accessibility Index with a significance level of 0.01. This was an inverse relationship in that low accessibility was associated with high readership of interest magazines.

Other sources of information, both local and national are the radio and television networks. Eight elderly women did not have radios, such was their hearing that they relied on television completely. Two-thirds of the respondents in all accessibility areas had VHF radio, similarly, there was a uniformity in television use with only three respondents without sets. However, parts of Allendale had poor reception on all channels. A further question was asked about recording facilities i.e. tape and video. In 1981, only two respondents had video and about half in all areas tape recording facilities.

Finally, in discussing the sources of knowledge, the library service reaches all parts of the survey area either with a mobile or through the two branches in Allendale Town and Haltwhistle. Since the survey a further branch has been opened at Haydon Bridge. Only sixteen of the respondents used the mobile library. Half of these lived in areas of low Private Transport Accessibility Index and a quarter in low Public Transport Accessibility Index areas. This greater usage by women who were classified as remote by the Private Transport Accessibility Index was supported by a fairly significant relationship between use of the branch library and Private Transport Accessibility Index. A chi-squared

value of 20.77 with 6 degrees of freedom is significant at 0.01 probability level. A weaker, but nevertheless an identifiable one existed between branch library use and Public Transport Accessibility Index.

To this point the analysis of behaviour has supported the general hypothesis, that there is a relationship between accessibility and behaviour, in that those living in low public transport accessibility areas tend to read more local newspapers, interest and professional magazines, and have a greater knowledge of activities than women living in high accessibility areas. But, is the greater interest reflected in a greater take up of opportunities.

The sources of knowledge in relation to the relative accessibility of the surveyed women were explored in the last section. The public transport accessibility measure has provided evidence to suggest that the spatial distribution of educated women, readership of newspapers and magazines and telephone installations were more associated with public transport services than actual distance.

Implicit in the term accessibility is the existence of a given facility. Measures of accessibility which rely on distance, whether measured by time, cost or kilometres as demonstrated so far, leave much unexplained. The accessibility afforded by public transport gives a clearer indication of people's locational decisions. Yet, accessibility depends upon knowledge, for without knowledge of a facility, for the individual that facility is non-existent. Therefore, knowledge must be one of the facets of accessibility, and it cannot be assumed that it is

uniform throughout the population of women.

Through the use of a check list of facilities within Tynedale, the respondents were asked where each of the listed facilities could be found. For analysis of the responses the list was divided into three groups education, sports and clubs. Responses included locations in the parish in which they lived (local), elsewhere in South West Tynedale, Hexham and Newcastle upon Tyne and/or Carlisle. Some facilities such as indoor swimming pool did not exist within the study area others such as the Women's Institute were quite ubiquitous.

The question here is, how does knowledge of respondents relate to other accessibility measures? In Table 6.17 the chi-squared values, significance levels and degrees of freedom are given for the twelve categories of knowledge. Before pursuing the discussion any further, it must be pointed out that local and South West Tynedale knowledge for all three types of activities are infact paired. The problem arose that what was local to a Haltwhistle resident took place elsewhere for a Greenhead resident. There was then a continuum in which surveyed women in the larger settlements potentially had a high local score and a low South West Tynedale whereas their rural counterparts living in, for example, Halton Lea Gate had a high South West Tynedale score, but a low local score for the same group of facilities.

Using chi-squared to measure the relationship of accessibility to use of facilities, the actual, rather than the potential use can be measured in relation to the two accessibility indices.

Accessibility	PA I			PA II		
	Chi-squared	Degrees of freedom	Sig.	Chi-squared	Degrees of freedom	Sig.
Education						
-Local	21.24	2	0.01	1.13	2	0.07
-Area	83.10	2	0.001	15.47	2	0.01
-Town	4.03	2	0.15	40.10	2	0.01
-City	*			0.31	2	0.90
Sports						
-Local	40.10	2	0.1	31.20	2	0.01
-Area	68.40	2	0.01	12.23	2	0.01
-Town	1.87	2	0.50	42.75	2	0.01
-City	27.60	2	0.01	4.78	2	0.10
Clubs						
-Local	13.89	2	0.01	0.02	2	0.99
-Area	62.80	2	0.01	14.50	2	0.01
-Town	0.25	2	0.90	24.02	2	0.01
-City	*			*		

* Less than 80% of expected cell frequencies with values greater than 5.

Table 6.17 1981 Survey: Chi-Squared Values for Accessibility and Knowledge of Facilities Variables

...there is a relationship between accessibility and the use of cultural/educational facilities.

The chi-squared values for these relationships are given in Table 6.18. The facilities were divided into the three categories of education, sports and clubs used earlier. The facilities in each category were then placed into two groups local and non-local, where local referred to the settlement in which the respondent lived and non-local to facilities in other villages, market town or city.

If a significance level of 0.1 is accepted, then the chi-squared shows that the relationship between the numbers of users of non-local education and non-local sports facilities and PA I categories could have occurred by chance. However, a relationship at the 0.1 level existed between PA II categories and use of local sports and local club facilities. In low accessibility areas there is a greater tendency for women to use existing local facilities, such as Senior Citizens, than in the high accessibility areas where there were more opportunities.

The variable use of facilities was related to accessibility, however, use of these facilities was not essential, and use in the individual circumstances may be a condition of attendance with a friend or relative. Of the surveyed women 57.8% used one or more facilities listed on the Recording Schedule check list. Two-fifths of the women attended with another member of the family, one fifth with a friend and the remaining two-fifths, alone. Therefore, family was important in the decision to use facilities. For instance, mothers took their children swimming because the

Accessibility		PA I			PA II		
Variable		Chi-squared	Degrees of freedom	Sig.	Chi-squared	Degrees of freedom	Sig.
Education							
-Local		3.76	2	0.20	4.08	2	0.16
-Non-local		7.39	2	0.05	0.47	2	0.01
Sports							
-Local		3.90	2	0.20	5.89	2	0.10
-Non-local		6.16	2	0.50	3.16	2	0.30
Clubs							
-Local		2.70	2	0.30	4.83	2	0.10
-Non-local		*			*		

* Less than 80% of expected cell frequencies with values greater than 5.

Table 6.18 1981 Survey: Chi-Squared Values for Accessibility and Use of Facilities

Accessibility		PA I			PA II		
Variable		Chi-squared	Degrees of freedom	Sig.	Chi-squared	Degrees of freedom	Sig.
Attendance at Facilities with others		9.0	6	0.17	7.1	6	0.30

Table 6.19 1981 Survey: Chi-Squared Values for Accessibility and Attendance at Facilities with Family or Friends

children enjoyed it, but the mothers would not have used the facility otherwise. Similarly, women went to the Women's Institute with their mothers, because it was an interest they could share with them. Is there, then, a relationship between attendance with family and/or friends and accessibility categories?

...there is a relationship between accessibility and the attendance at cultural/educational facilities with family and/or friends.

Table 6.19 gives the chi-squared values, degrees of freedom and significance levels for the test of this hypothesis. Attendance with others is more strongly related to PA I than the PA II categories. A closer look at the data shows that a fifth of those living in each PA I category used facilities on their own, but 32% in high accessibility areas used facilities with a relative or friend, whereas 48% attended with others in the medium areas, but only 26% in low accessibility areas. This points to the psychological aspect of accessibility where certain facilities are only accessible to some women, if they have the support of a relative or friend. In conversation with the surveyed women this was emphasised by elderly women in aged persons housing in Haltwhistle. For instance, to the question, "Do you attend Senior Citizens?", a frequent reply was, "You see, I haven't lived here very long, and I don't have a friend to go with." Another guise in which the same sentiment was expressed was in the comment made about both the Women's Institute and the Mother's Union, "I don't go because they are a cliquish lot." For a proportion of the respondents, the social barriers to gaining access to

facilities must not be underestimated. In remote areas , distance may not be the overriding factor for staying at home. Although, a woman may wish to use particular facilities, given a certain personality, accessibility can be dependent upon the social factor of 'a friend to go with'. In areas of sparse population where family have moved away 'a friend to go with' may be difficult to find. Similarly, for the elderly moved to aged persons housing in Haltwhistle or Allendale Town, the same problem arises.

Age Groups	<24	25-34	35-44	45-59	60-74	75+	Total
	%	%	%	%	%	%	%
Local							
Education	22	15	14	15	26	10	17
Sports	44	30	21	15	9	0	20
Clubs	9	21	34	24	36	45	28
Non-local							
Education	6	15	17	8	3	3	9
Sports	34	42	10	8	5	0	17
Clubs	9	6	3	3	0	0	4
City							
Carlisle	34	30	45	26	34	23	32
Newcastle	59	58	48	63	47	26	50
Branch							
Library	47	45	48	50	48	39	46

Table 6.20 1981 Survey: Age Structure and Use of Facilities

The distribution of surveyed women using the facilities according to age is given in Table 6.20. Although, use of local educational facilities remained fairly constant with age, use of local sporting facilities declined with advancing years, while use of local clubs increased. The elderly were most active in local events whereas, the under thirty-fives, more than any other age group, travelled to non-local sporting facilities. Branch libraries when compared with all other facilities were the most used, for all age groups except 75+ years. Considering the problems of failing eye-sight and physical mobility for that age group, it was not unexpected.

Finally, city facilities of any kind were used by between one quarter and a half of all age groups in Carlisle, and between one quarter and two-thirds in Newcastle upon Tyne. Use of city facilities declined to one quarter in the age group 75+ years therefore, age per se influenced the type of facility used, but not the overall use of facilities.

To summarize the behaviour of women in different accessibility areas towards knowledge and use of cultural/educational opportunities shows a stronger relationship with public transport accessibility than with private transport accessibility.

Women in low PA I areas were unlikely to have a newspaper delivery or read a national newspaper, but their readership of professional magazines and library usage was

greater than those in high PA I areas. The women in the least accessible areas had a good knowledge of educational opportunities, but unlike the women in high accessibility areas they were less likely to attend activities with other members of the family.

Women in low PA II areas again did not have a newspaper delivery, nor did they read national newspapers, but they did read local daily newspapers and interest magazines. This group of women were regular library users with a good knowledge of educational opportunities, sport and club facilities, and they made use of the sports facilities. By contrast women in high PA II areas were less knowledgeable about all three groups of activities, and they made less use of the available opportunities.

Conclusion

Socio-economic characteristics showed a stronger relationship with PA I which was based on the road distance to the settlements in the central place hierarchy of the region, than with PA II the public transport accessibility measure. Conversely, mobility and behavioural characteristics related more strongly to PA II. The association of younger age groups with low accessibility and women over 60 years with high accessibility areas is important in explaining the differences in mobility and behavioural characteristics.

The analysis of the spatial distribution of women with different socio-economic, mobility and behavioural

characteristics has identified a concentration of women with private transport in medium to low public transport accessibility areas and those without in high accessibility areas. But, the gap between those with private transport and those without was significant for several groups of women. Within the areas of low accessibility were carless women for whom the essential services were decreasing in accessibility through the decline in public transport and village services. One third of all women living in medium accessibility areas and 28% of those in low areas did not travel by car. In total they amounted to 11% of the surveyed women. These women shared a similar set of socio-economic characteristics which together with their lack of personal mobility determined the opportunities which were available to them and hence their accessibility behaviour. The 11% were nearly all elderly women.

Among the 39% in the medium and low accessibility areas who travelled by car, but did not drive were those young women often with young children in the low income groups. They were constrained by family responsibilities, yet dependent upon family for transport

CHAPTER SEVEN - THE CONSTRAINTS OF SPACE-TIME
IN S.W.TYNEDALE

Introduction

Time geography gives a different perspective to the analysis of the rural accessibility problem. Using the concept of the space-time prism, discussed in an earlier chapter, the goods and services within the reach of the inhabitants at different locations within the study area in 1981 can be analysed and compared with the experiential, or actual space-time prisms of the surveyed women.

In chapter five, three locational space-time hypotheses were discussed (4, 5 and 6), hypothesis 4 enables the relationship between population in the decade 1971-81 and internal migration to be examined, while hypothesis 5 explores the changes in the location of essential services. Both of these hypotheses focus on the stations in space-time, whereas the sixth looks at the relationship between the paths as measured by journey time and cost, and the dimensions of the locational space-time prisms.

A further two hypotheses (7 and 8) were formulated in chapter five to examine firstly, the relationship between the actual journeys made by women to shopping and employment, and secondly, compare the different locational and experiential space-time prisms of the three groups of women. Two of these groups, remote carless young mothers and the retired elderly were among the 50% of women in the

medium and low public transport accessibility areas PA II for whom accessibility to a full range of opportunities was declining, while the third group, carowning women in Haltwhistle were among the 31% with high private and public transport accessibility.

Exploration of the locational space-time prisms uses data from the census and therefore, the analysis is of potential prisms which are the same for all members of a given household. This contrasts with the analysis of the experiential prisms which are determined by the interaction of space and time with individuals. Similarly, the locational space-time prisms for the whole of S.W.Tynedale are discussed, whereas the experiential prisms pertain to the surveyed women.

Locational Space-Time prisms

Stations: (i) Size and location of the population in 1981.

The direction of overall change, change within nucleated and dispersed settlements, changes in the age structure and the relationship between population change and housing policy are all elements of the fourth general hypothesis proposed in chapter five. The discussion considers each of the following before reaching a conclusion as to the relationship between population change in the decade 1971-1981 and internal migration.

(a) Rural Depopulation

Population change was one of the main variables used by Cloke (1977) in his index of rurality (quoted in Chapter 2) in which S.W.Tynedale was categorised as extreme rural, in 1961 and 1971. In S.W.Tynedale, the 1981 population

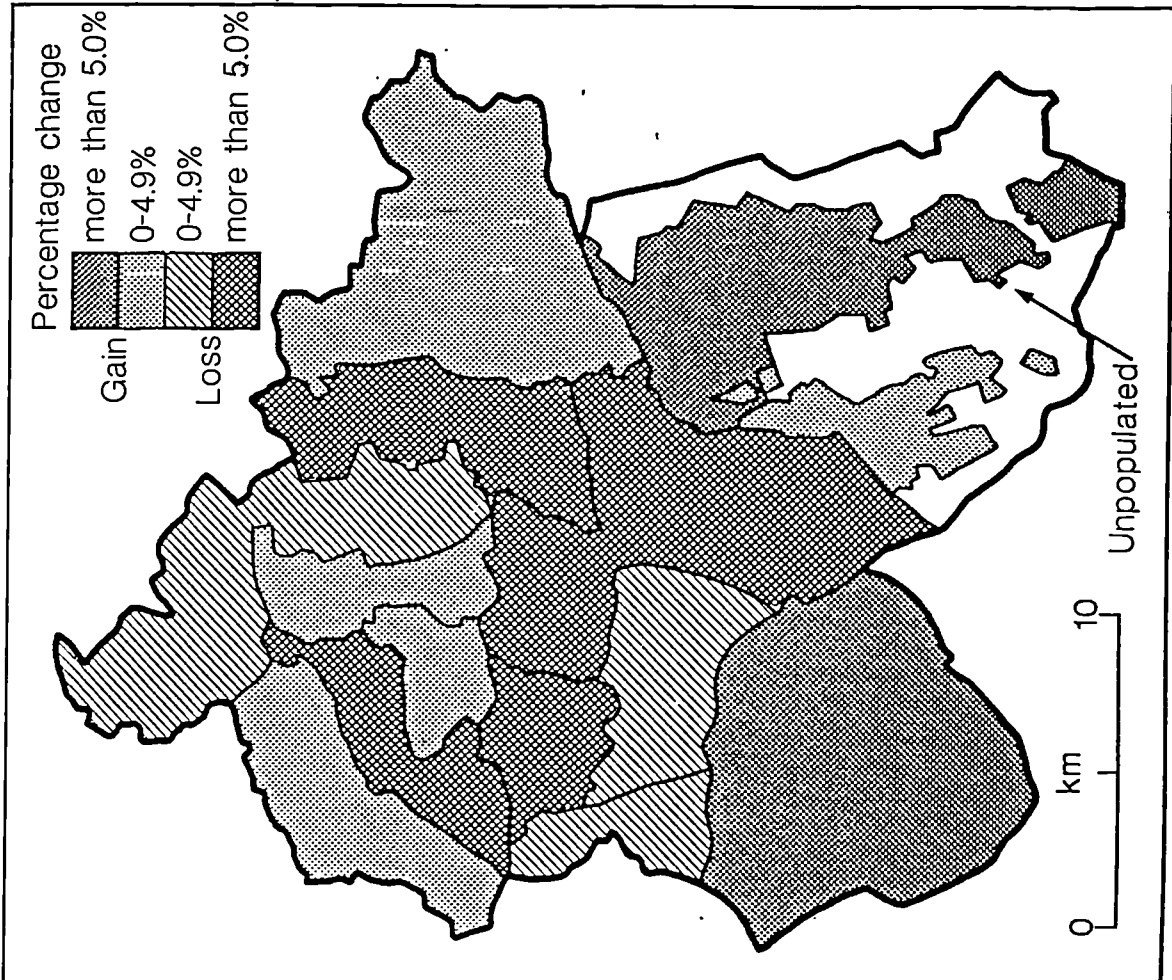
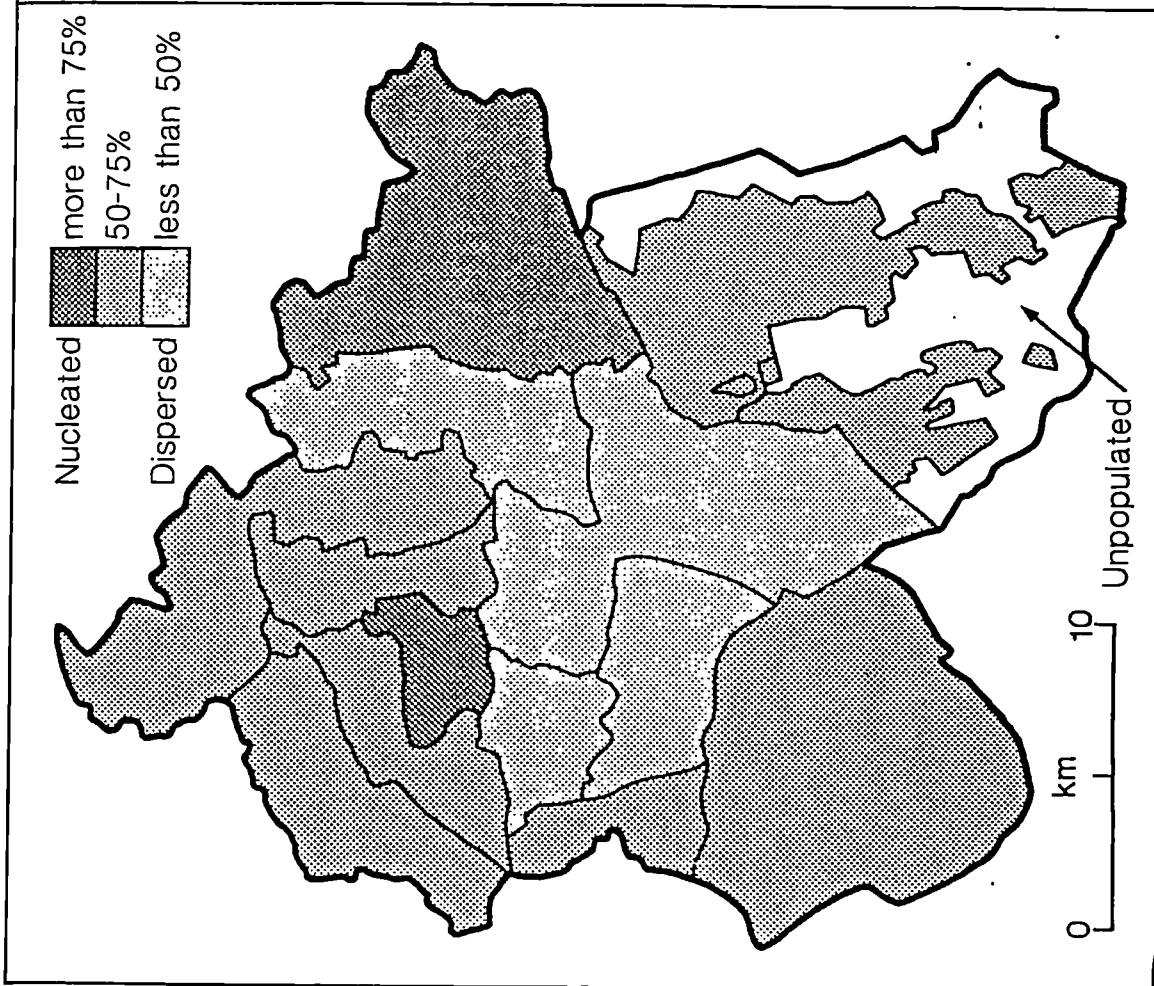
distribution was the result of a loss in population in this century. In the post war years, the period 1951-1971 saw the greatest decline. In West Tyne, in these two decades, falls of up to 50% occurred in the smallest parishes. In Allendale, the decline was in the order of 24%, and in Haltwhistle 6%. Only Haydon showed an increase of 0.8% in the same period.

Despite the reversed population trend for rural areas reported by the 1981 census, population continued to decline in the west and particularly the areas of dispersed population (Map 7.2). Of the fourteen parishes*, seven experienced a population loss in the decade 1971-1981, and of these four had losses in excess of 5%. A closer look at the statistics gives a 0.68% gain in population for S.W. Tynedale, but if the three largest parishes, namely Haltwhistle, Haydon and Allendale Town are excluded from the calculations, 166 people were lost to the parishes which represented a fall of 5.3%. With such evidence, it is not possible to support the contention that in 1981 the decline rural in the population of S.W.Tynedale had ceased.

(b) Depopulation: Nucleated and Dispersed Settlements.

Through the use of data from the records of Tynedale District Council (Phillipson 1983) it was possible to calculate the percentages living in settlements for each of the parishes including West Allen. This data is presented in Map 7.1 and forms the basis of the following discussion.

* West Allen has been disaggregated from Allendale for the purposes of this discussion.



Map 7.1 S.W. Tynedale: Percentage of the 1981 Parish Population Living in Settlements

Map 7.2 S.W. Tynedale: Population Change 1971 - 1981

Halthistle and Haydon Bridge parishes with more than 75% of the population living in settlements experienced an increase in population of 0.9% and 4.7%, respectively, in the years 1971-81. These parishes are highly nucleated. Conversely, Featherstone, Coanwood, Plenmeller with Whitfield and Bardon Mill, all with less than 50% of the population living in settlements (dispersed parishes) had losses ranging from 3.3% in Coanwood to 17.6% in Plenmeller with Whitfield. A comparison of Map 7.1 with Map 7.2 reveals that of the seven nucleated parishes (i.e. 50-75% of the population living in settlements), in three the depopulation trend continued.

Knarsdale with Kirkhaugh in the very south west of the study area requires further comment. For such an isolated parish at the head of the South Tyne, a gain of greater than 5% population is perhaps surprising. However, the change is placed in context when considered in relation to the population size in the years 1961 - 277, 1971 - 225 and 1981 - 238. The increase in the decade 1971-81 is accounted for by seven new houses built by the private sector.

In conclusion, between 1971 and 1981, there were considerable variations, in both the percentage and direction of population change experienced by nucleated as opposed to dispersed parishes. Population loss as a percentage was greatest in those parishes with dispersed populations, whereas population gain was only experienced in parishes with nucleated settlements. In terms of Cloke's classification S.W.Tynedale in 1981 was still extremely rural.

(c) Age structure

The retired or elderly population (i.e. women 59+ yrs and men 64 +yrs) of England and Wales in 1981 was 17.5%, compared with 18.1% in Northumberland, 20.0% in Tynedale District and 22.4% in S.W. Tynedale. At this level the evidence supports the hypothesis that the elderly form a higher proportion of the rural than the general population. But, does this apply to all parishes in the study, and if not, how are the elderly population distributed?

Parishes with greater than 22.4% of the population retired include Featherstone (39.3%), Allendale (26.4%), Greenhead (25.9%), Haltwhistle (24.1%) and Knarsdale with Kirkhaugh (22.7%). These five parishes were described in the previous section as nucleated and except for Featherstone and Greenhead, which are west of Haltwhistle and adjacent to each other, all experienced a gain in population. The high elderly population in Greenhead must be seen in relation to a trailer development at Blenkinsopp Castle, a significant number of which were bought by retirees. Featherstone with only 122 inhabitants had 48 in the retirement category. It was the only parish in 1981, to fit the stereo type of the remote rural village with an ageing population and few young families (11.5% under 16 years).

The picture was very different in the parishes of West Allen, Hartleyburn, Melkridge and Coanwood where the elderly population was 11.4%, 14.5%, 15.4% and 17.2%, respectively. All below the national average of 17.5%, they were similar sized settlements with the smallest being West Allen with 167 inhabitants and the largest Hartleyburn with 207.

Furthermore, apart from Melkridge, they are remote from the Tyne Valley and, therefore, with lower levels of transport accessibility than Featherstone, Greenhead or Haltwhistle. The low elderly population in Melkridge may in part be explained by its close proximity to Haltwhistle where aged persons housing was available.

Clearly, in S.W. Tynedale the proportion of the population in 1981, who were elderly exceeded the national average by almost 5%, but as the discussion has shown the variation in the parishes is between 11.4% and 39.3% and, except for Featherstone, there is little evidence to support the notion, that the elderly were the most numerous in the remoter and smaller settlements. Indeed, it is only in the remoter parishes of West Allen, Hartleyburn and Plenmeller with Whitfield that the percentage of the population under the age of 16 years exceeds the 20.8% average for Tynedale.

(d) Age Structure and Housing Policy

The above discussion points to the idea that the elderly have left the remoter settlements. For the elderly, the inadequacy of many rural properties in terms of size, facilities, maintenance and location means that for some the only solution is to seek more suitable accommodation elsewhere. Both local authority and private housing developments are subject to the planning policy outlined in the Northumberland Structure Plan which was discussed in Chapter Four. The relationship between the effects of the housing policy and the age structure of the population is the final hypothesis to be explored in this section.

By 1981, the implementation of a policy of concentration

of services and housing in the larger settlements had resulted in the distribution of housing given in Table 7.1.

Parish	Total L.A.	Total L.A. Aged	Change 71-81 Private	% Elderly
Haltwhistle	550	107	25	24.1
Haydon	221	38	-15	19.4
Allendale	67	25	66	26.4
Henshaw	44	0	21	21.2
Thirlwall	16	0	5	18.7
Greenhead	5	0	- 3*	25.9

Source: Phillipson (1983)

* +43 Trailer homes

Table 7.1 Age Structure and Housing in the Larger Settlements of S.W. Tynedale

Local Authority housing in the decade 1971-81 was built in Haltwhistle, Allendale Town and Haydon Bridge. A few local authority houses built prior to 1971 were to be found in other settlements. In terms of private developments, the one in Allendale Town was the largest, and there has been a further development since. Therefore, local authority housing suitable for the elderly is only available in the three largest settlements and with few exceptions the only new private houses for sale are also in these settlements. Further evidence is provided in Table 7.2 below.

All except Featherstone had below the average proportion of elderly for S.W. Tynedale and only the last three were above the average of 17.5% for England and Wales. The evidence suggests that there are two links between age structure and housing. The first is the movement of local people, either on retirement from a "tied cottage" or when increasing infirmity demands to suitable local authority housing, which as the two tables show, is mainly available

in the larger settlements. The second trend is for a movement of people on retirement from outside the area into private housing in S.W. Tynedale. All housing is relatively cheaper than the equivalent on Tyneside, and considerably cheaper than many other parts of the country. Rates are also substantially lower than those levied in Newcastle upon Tyne. Allendale Town has been the recipient of many of these retirees.

Parish	Total L.A.	Total L.A. Aged	Change 71-81 Private	% Elderly
West Allen	0	0	-10	11.4
Hartleyburn	38	0	0	14.5
Melkridge	0	0	- 1	15.4
Plenmeller	0	0	- 3	16.3
w. Whitfield				
Coanwood	8	0	8	17.2
Bardon Mill	0	0	- 2	19.0
Knaresdale	0	0	7	22.7
w. Kirkhaugh				
Featherstone	0	0	- 1	39.3

Source: Phillipson (1983)

Table 7.2 Age Structure and Housing in the Smaller Parishes of S.W. Tynedale

The evidence from the 1971 and 1981 census supports the hypothesis that population change has been a function of internal migration, but only in the remoter parishes with dispersed populations. In the nucleated and less remote settlements the population has grown as a result of both internal migration and in migration from Tyneside.

Stations: (ii) Location of Facilities.

As in the previous chapter a distinction was made

between essential and less-essential services on the basis of economic criteria. To elaborate further demand is created by the population's needs and wants. Need is rather different from want in that everyone needs food, but not everyone wants to attend a disco. The first is essential, the second can be dispensed with, being subject to socio-economic characteristics of the individual and fashion. However, it must be noted that there are those services which are essential for the well-being of only some groups in society. Therefore, any division between essential and less-essential services whether on economic criteria, or needs versus wants is arbitrary.

Firstly, the discussion considers the type and distribution of facilities which fulfill the populations needs and are frequently constrained by economic criteria; secondly, those which may be argued to be less essential.

Map 5.2 shows the hierarchy of settlements which not only provide residential locations from where demand is generated but are also the supply points for employment, health facilities, education, retailing, sport and social activities. Outside S.W. Tynedale are the centres of Brampton, Alston and Carlisle in Cumbria, and Hexham and Newcastle upon Tyne. As explained in a previous chapter, these all potentially lie within the space-time prisms of the population of the study area.

(1) Essential Services

The discussion here pertains to the situation in 1981. It is logical then to begin the investigation of facilities with retailing in the largest settlement - Hexham. Hexham

serves a very large population, although it is less than 10 000, therefore, the retailing facilities reflect more the Tynedale population of 53 000 than the size of Hexham. Included in the retailing establishments which exceeded 100 are a medium sized department store, Woolworths and, supermarkets. Branches of banks, building societies, estate agents and solicitors are represented. The Tuesday cattle market and small retail market attracts additional bus services on rural routes. Carlisle to the west and Newcastle in the east restrict the sphere of influence, but to the north and south it dissipates in empty moorland.

The 1971 distribution of retail outlets is given in Map 3.10. The facilities which were lost in the decade 1971-1981 are shown. Sub-post offices, are in most small villages, such as Ninebanks and Sparty Lea. But, these are only post offices and do not provide general store facilities. Garages are infrequent in the South Tyne and upper Allendale valleys which emphasizes the importance of Haltwhistle as a service centre.

Traditionally, the Haltwhistle market is held on Thursdays. It is very small and although, most services are available, the town lacks the larger supermarkets and a sufficient range of retail establishments to provide a full range of goods.

The two small service centres of Haydon Bridge and Allendale Town provide basic food, durables and banking services. Haydon Bridge lies within 15 minutes drive of Hexham, and has fewer retail outlets and services than the much smaller Allendale Town.

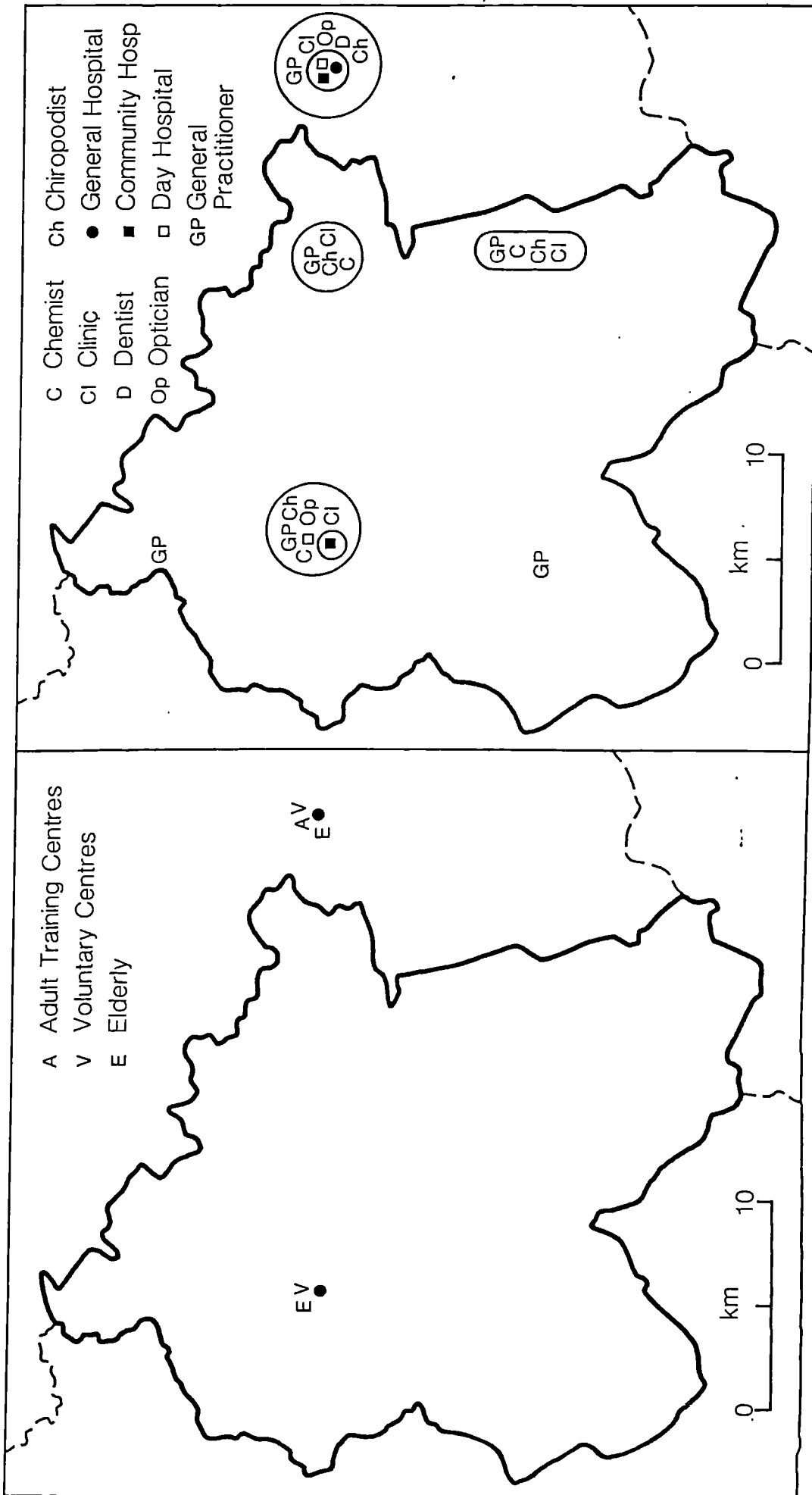
For many individuals in the study area the purchase of food requires a journey and the place where food is bought may also be the boundary of their actual space-time prism.

Needs are not limited to food, but include health and social services. The pattern of location of these services is similar to that of retailing, being concentrated in the four major centres. Gilsland and Slaggyford have the services of a general practitioner and dispensary, but not a dispensing chemist. The only general hospital is in Hexham, but a hospital with community and day facilities is provided in Haltwhistle (Map 7.4). There was much discussion in the local press about the closure of the maternity unit in Haltwhistle - a suggestion which created alarm.

Continuing with the theme of needs, children need education, although they may not perceive that need. Schools fulfill several functions of which one is the education of children. The others are providing employment - teaching, clerical, ancillary, kitchen, cleaning and maintenance jobs and a community building for local events.

Schools although primarily providing essential services also are used for less essential activities. As Map 7.5 shows only three first schools and one primary were located outside the service centres and one of these Herdley Bank is now closed.

As employers the first schools and primary school in Gilsland are the only real providers of employment away from



Map 7.3 S.W. Tynedale: Distribution of Social Services

in 1981

Map 7.4 S. W. Tynedale: Distribution of Medical Facilities

in 1981

the service centres. However, the old village schools in some cases have been converted into outdoor centres used by Northumberland, North Tyneside and Newcastle schools. Although, no longer available as community facilities they continue to provide jobs for wardens, kitchen and caretaking staff, and so have been included in Map 7.5.

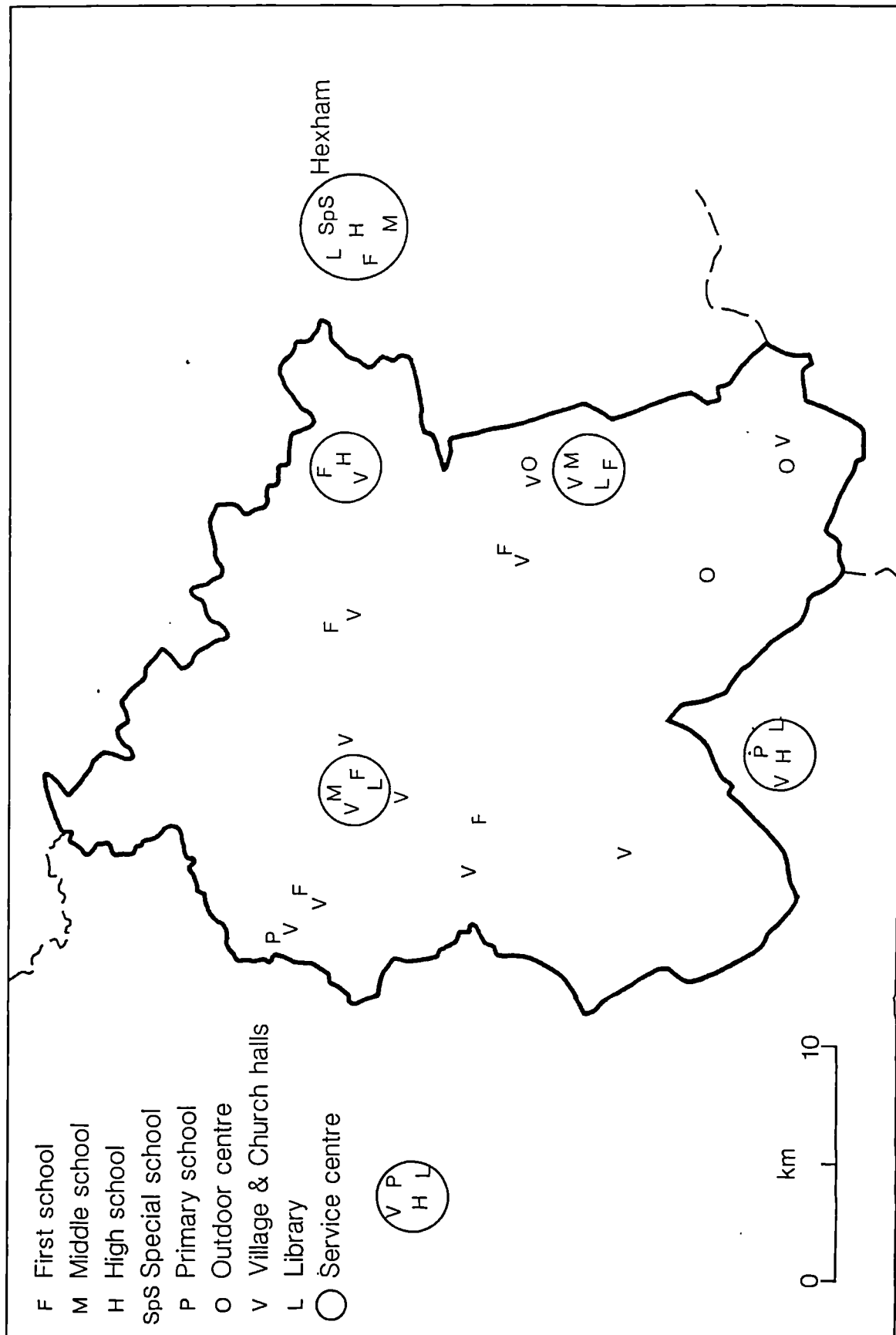
Services essential for some groups in society including the elderly are those provided by Social Services which have only two centres. The major one in Hexham providing adult training as well as the facilities provided in Haltwhistle for the elderly and a voluntary centre (Map 7.3). Facilities provide not only services, but employment. In building up the picture of facilities in the study area, the pattern of tertiary employment is also being described.

Essential services such as retailing, health and education were not available in the West Allen Valley. Food cannot be bought in Henshaw, Melkridge, Bardon Mill, Greenhead, Lambley, Carrshield or Ninebanks. The sub-post office (Map 3.10) is the only essential service to be found in Ninebanks or Bardon mill, but the villages of Lambley, Melkridge, and Henshaw were without even this service.

There is, then, a tendency for the services essential to the maintenance of a livelihood activity system to cluster in the service centres.

(ii) Less-essential services

Less essential services fulfill the demand generated by the populations wants rather than their needs. They include a whole range of social and leisure facilities including



Map 7.5 S.W. Tynedale: Distribution of Community Facilities in 1981

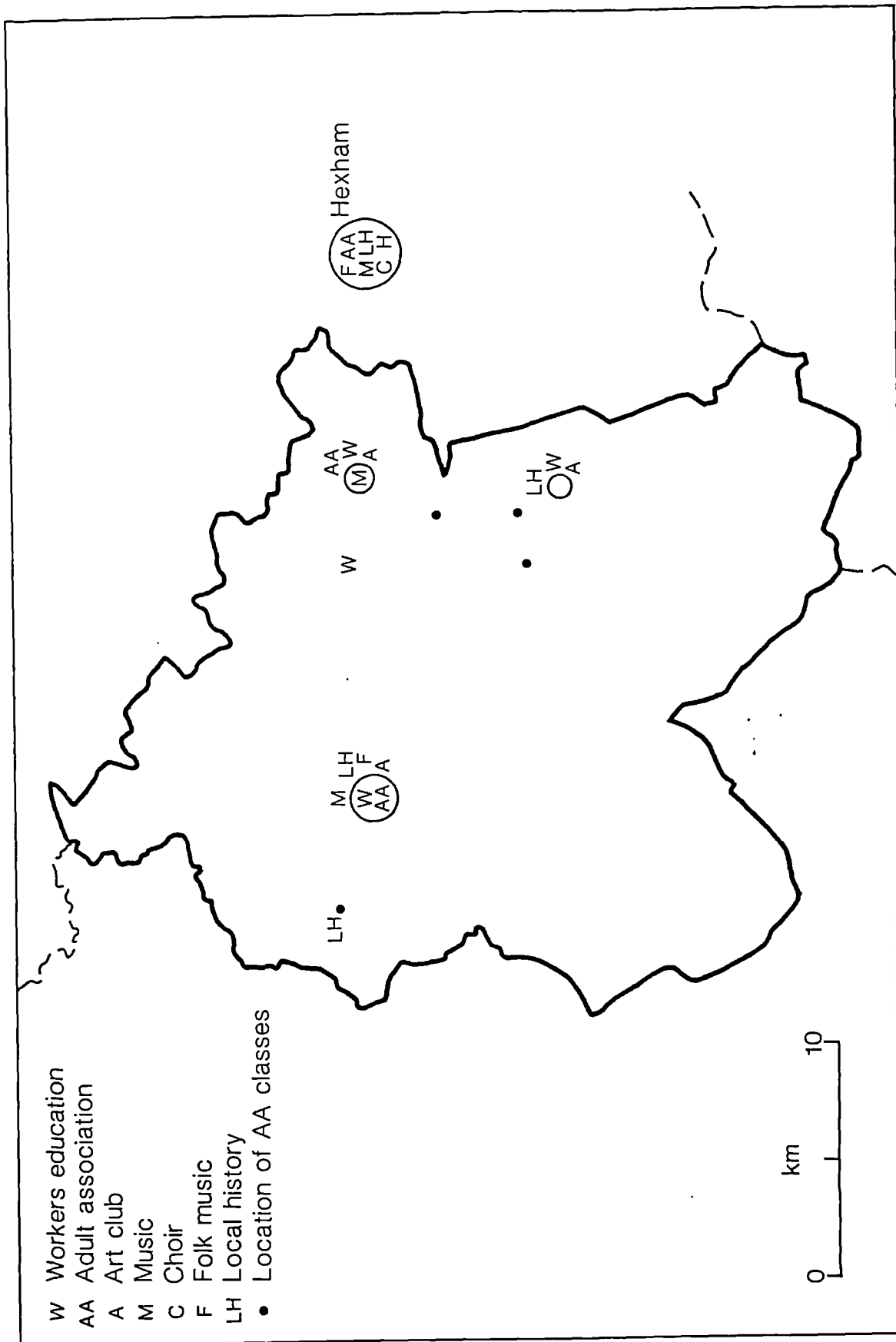
sport and adult education facilities.

Together with schools, village and church halls also serve as community buildings where clubs can meet and events take place. The library in Haltwhistle provides a similar facility. Northumberland County Libraries have a policy of advertising the exhibition space in all their libraries for community activities. All these community buildings have been combined in Map 7.5 to give a composite picture of venues for clubs, evening classes etc. in 1981.

Only the high school and middle schools provide a number of indoor sports facilities. All other facilities are meeting halls. The cluster in the Tyne Valley around the major service centres is a familiar pattern with the frequency of all types of facility decreasing with distance from the Tyne corridor.

The extent to which these buildings were used for adult education in 1981 is shown in Map 7.6. The Northumberland County provides adult education through Adult Associations based at the High and Middle schools and WEA classes are often organised in conjunction with them. Haltwhistle Middle School and Haydon Bridge High, both have Adult Associations, and in 1981 Haydon Bridge organised classes in Allendale Middle school, Whitfield First, Langley Village Hall, and Catton as well as Haydon Bridge. Haltwhistle only advertised outside the town at Greenhead. The full list of classes, for the year 1981-2 are contained in the Check List of Appendix IV.

Some of the Adult Association classes were in the area

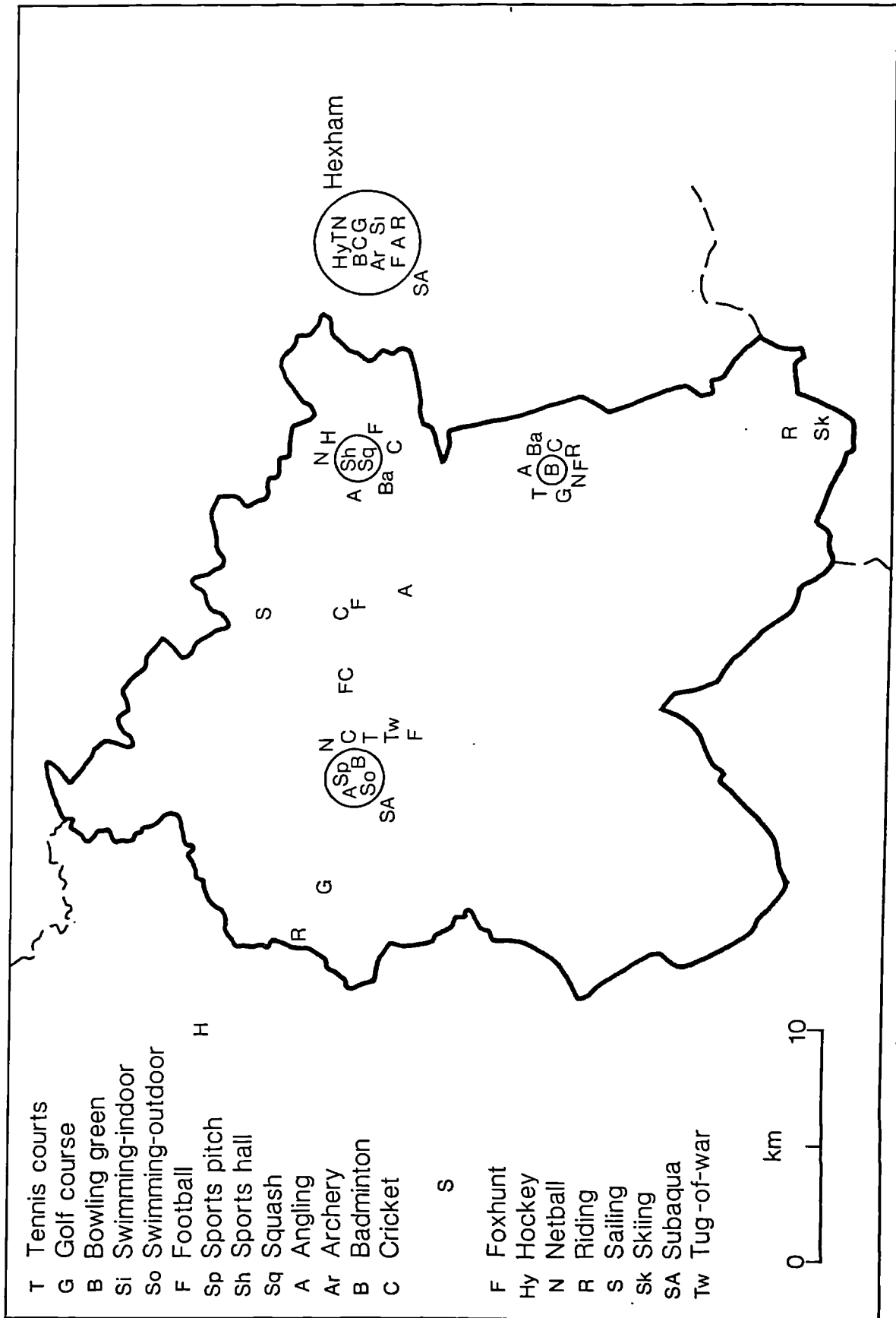


Map 7.6 S.W. Tynedale: Distribution of Adult Facilities in 1981

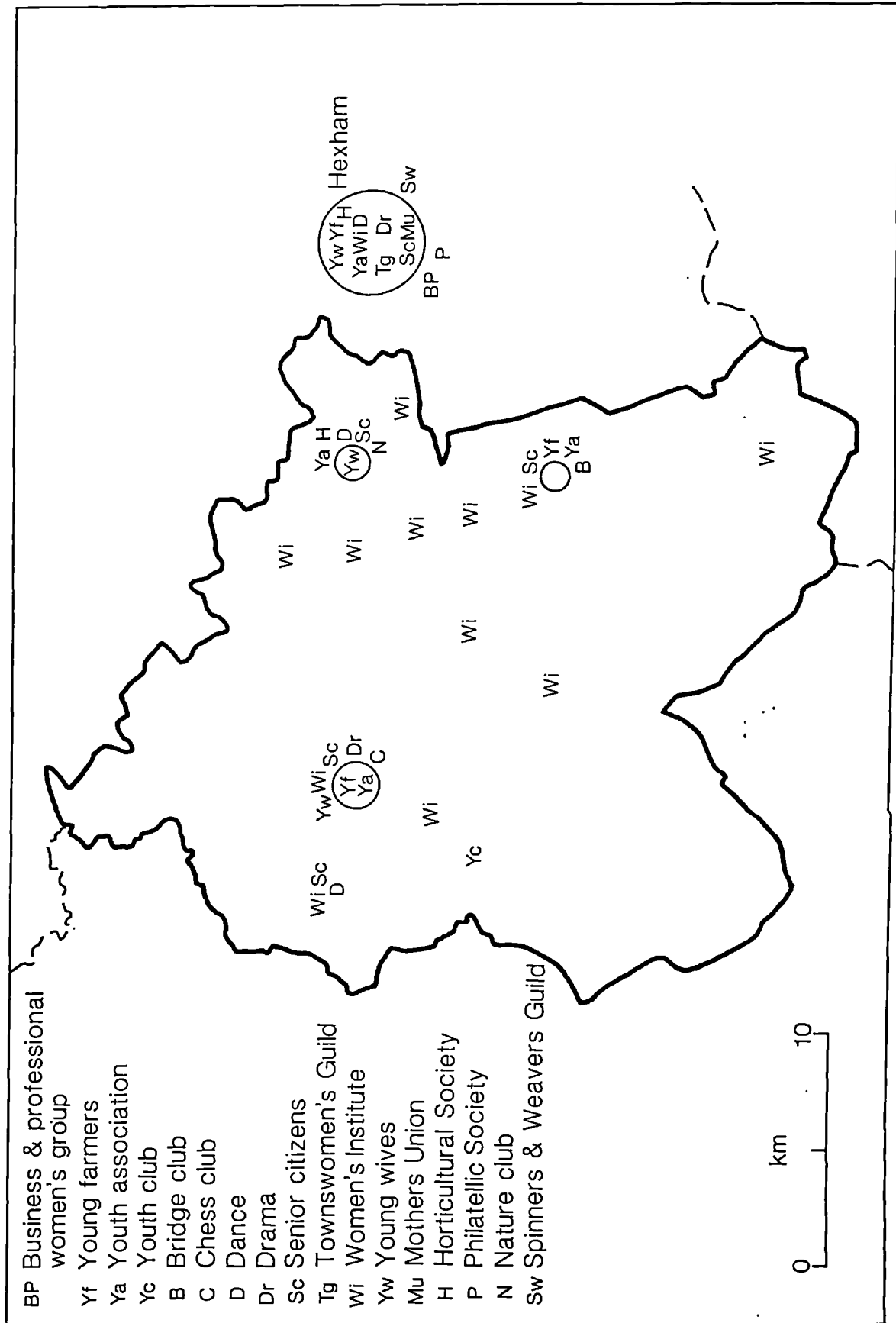
of sports, but many more sporting activities took place either using purpose built facilities or organised through local interest.

A considerable number of sports were available in the study area, but again, with the exceptions of sailing, skiing, riding and hunting they cluster in the centres of population (Map 7.7). A more dispersed pattern occurs with the location of clubs shown in Map 7.8. This is mainly because of the ubiquitous Women's Institute which in some villages has its own hut. These are often isolated and a few women keep branches of this national organisation afloat in very small settlements. Other clubs tend to cluster in the service centres.

In discussing the location and types of facilities, the tertiary sector of employment has, by implication, been described. By 1981 quarrying near Haltwhistle was the only remaining major extractive industry. Industrial estates had been established in Haltwhistle, Haydon Bridge and Allendale Town. A craft factory had located in Allendale, but otherwise the haulage industry was a major employer with three firms operating out of Allendale Town. A similar employment pattern existed in Haydon Bridge with three haulage firms and a furniture manufacturer. Haltwhistle had six factories, of which the largest employer in 1981 was Crown Decorative Products. There was also a chemical manufacturer and an agricultural engineering works located on the trading estate. Nine haulage firms operated from Haltwhistle with a further one at Bardon Mill. In contrast, Hexham had only eight haulage firms none of which were of the size of Ridley's of Allendale, or Ridley's and Elliott's



Map 7.7 S.W. Tynedale: Distribution of Sports Facilities in 1981



Map 7.8 S.W. Tynedale: Distribution of Associations, Clubs and Societies in 1981

in Haltwhistle.

The traditional focus of rural life has been, through the church, yet when Tynedale District Council conducted a survey of village facilities in 1978, this facility was noticeable by its absence from the list. However a survey of parish facilities by the Rural Community Council in December 1981, listed Thirlwell parish (Gilsland) as the only settlement without a church or chapel. This seemingly irregularity is, in fact, the incongruity of drawing a county boundary through a village placing the church and primary school in Cumbria, and all but 27 houses in Northumberland.

In 1981, there was not a fully manned police station in the study area, although Haltwhistle had a sub-station manned during the day. Fire stations were situated in Allendale, Haydon Bridge and Haltwhistle which also had a stand-by ambulance station. At this time Haltwhistle employment office served the area, including Alston, but this was threatened with closure and incorporation in the Hexham office.

Over the last two decades there has been a withdrawal of services from Haltwhistle, the secondary school, the threatened closure of the employment office, and the Alston to Haltwhistle railway to name but three. It is on this note the discussion of facilities within the locational space-time prisms of the population closes.

The evidence presented supports the hypothesis that facilities providing essential services which fulfill the

populations needs tend to be concentrated in the larger settlements. While community facilities providing less-essential services such as the church and Women's Institute, are two of the few remaining services in the remoter villages. In 1981, sub-post offices were the exception.

Paths through Space-Time.

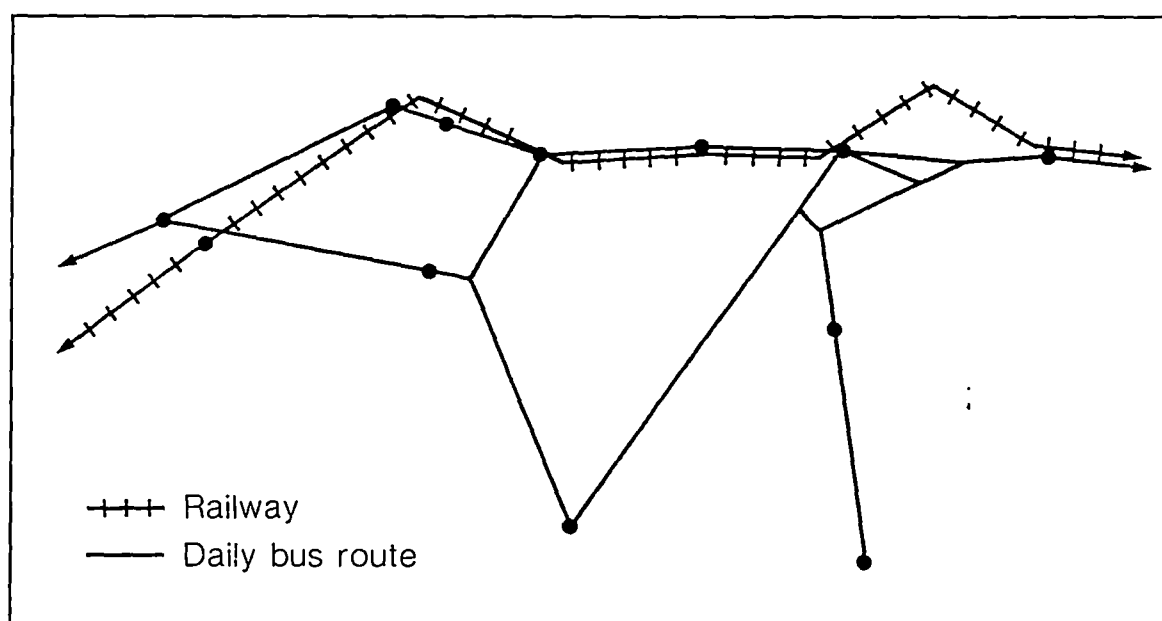
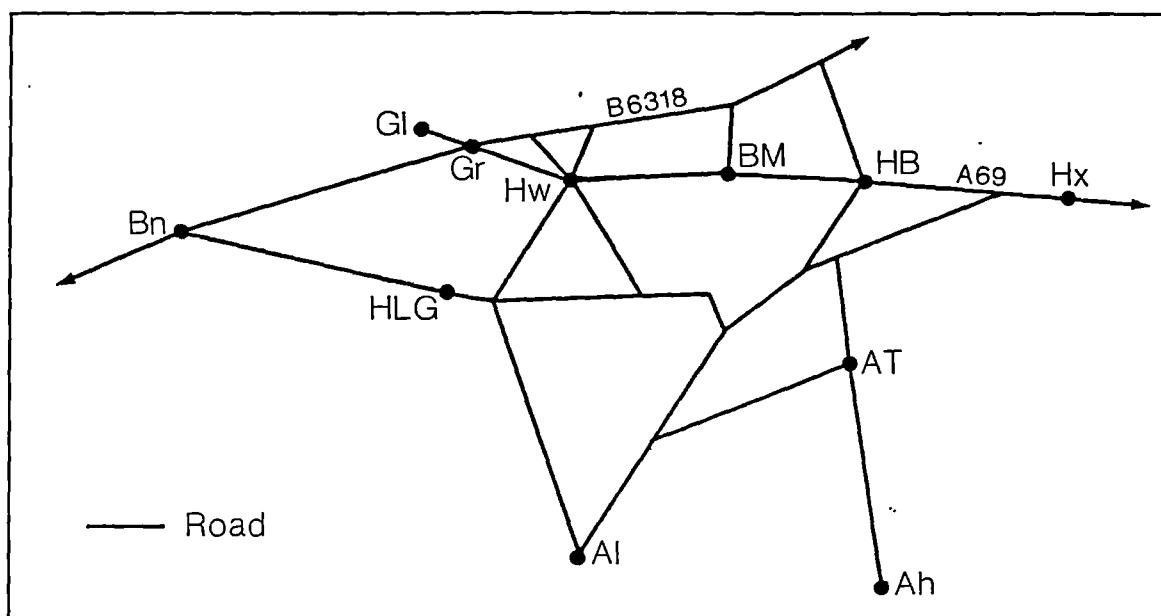
The distance between residential location and a given facility is a path through space-time (Lenntorp 1976a). The above discussion has indicated the multitude of potential paths which exist from each location within the study area. Paths which vary in length, frequency and time of day. Paths which lead to the fulfillment of needs or the expression of a whim. Paths which allow social, economic, medical, educational, and legal purposes to be fulfilled. But, how do the people travel along these paths, and what constraints are placed on their potential journeys.?

The length of path can be measured in the spatial units of kilometres, the time unit of minutes, or the economic unit of pence. Whether the facility is used and the path followed will surely also include for the individual an element of opportunity cost; the choice between alternative uses of resources. Opportunity cost is a concept which will be returned to later. In this section of the chapter the overriding concern is with mobility - overcoming distance. Forer (1973) argued that space-time is relative space because the qualities of space-time are changed by changing transport technologies. Current technology has enlarged

individual space-time prisms, but there can be considerable differences in the mobility afforded by personal transport - usually the motorcar, and public transport - bus or train. Similarly, costs vary from one form of transport to another. Therefore, facilities accessible to some may be inaccessible to others for reasons of cost or travelling time. The hypotheses considered below are those of the relationship of car ownership, journey times for car owners and the cost of public transport to the dimensions of the locational space-time prism.

Before comparing alternative forms of transport, it is worth considering the road network. Map 7.9 illustrates the network with a low level of connectivity. The minor roads shown by pecked lines are subject to closure in winter, a fate which can befall any of the roads between early December and late April, although the A69 usually remains open. In addition to the road network is the railway which like the A69, follows the flood plain of the river.

The road network affords access to the main Tyne corridor, but problems arise with east-west communications to the south. A comparison of the road and rail networks in Map 7.9 emphasizes the east-west and north-south direction of the routes with the transport nodes being located in the Tyne corridor. The local pay-train which plies the line from Newcastle to Carlisle no longer stops at Greenhead or Gilsland. The bus takes a detour through Gilsland to rejoin the A69 at Low Row in Cumbria. The Military road, a fast B road has, throughout the period of this research, had only a school bus service and summer service for tourists to Hadrian's Wall, otherwise the houses at Once Brewed and



Source: Public Transport Plan 1981. NCC.

Map 7.9 S.W. Tynedale: Road, Rail and Bus Networks in 1981

Parish	Households Without car	Households 1 car	Households 2 or more cars
	%	%	%
Allendale	27.0	53.6	19.4
Tyne Valley	40.3	47.0	12.7
West Tyne	27.0	55.5	17.4
Tynedale District	24.5	47.9	17.6
England & Wales	39.5	45.1	15.5

Source: Phillipson (1983)

Table 7.3 S.W. Tynedale: Car Ownership in 1981

Twice Brewed are bereft of public transport services.

A preliminary look at the road network and public transport routes gives an appreciation of the long distances necessary from some points within the study area to facilities in the service centres. From some locations, personal transport in the form of a car or motorbike was necessary to give access to even local events and facilities. Therefore, the first hypothesis for consideration is the relationship between the car ownership and residential location.

(i) Car ownership and residential location

Households with one car exceeds the national figure by 4.5% in the study area as a whole, but as Table 7.3 shows this conceals a different pattern in West Tyne and Allendale to the Tyne Valley. Thirteen percent more households are without a car in the Tyne valley than in the other two areas. Allendale and West Tyne have a greater percentage with two cars than the national percentage, although Allendale is 2% greater than West Tyne.

In an earlier chapter, two surfaces were drawn from accessibility indices calculated for road distance to service centres (PA I) and public transport services (PA II) to the same centres. If the percentage of households with cars are related to the two accessibility surfaces, then settlements in the most accessible areas, for both measures, have the lowest percentage of cars and vice versa. The Tyne valley with high accessibility for both indices had the greatest percentage without a car.

The parish statistics (Phillipson 1983) show that in Allendale for the parish of West Allen households with two cars exceeded 30%. Similarly, in West Tyne, Knarsdale with Kirkhaugh also had 30% of households in this category. These are the two most isolated parishes. The only other parish to have such a high percentage of two car families was Bardon Mill in the Tyne Valley. On the very periphery of Newcastle's commuter belt, it is income rather than isolation which explains such a high incidence of two car families. Elsewhere, in the study area the relationship was not so clear, because of the inter-relationship between income and marginal increases in family accessibility afforded by the purchase of a second car.

Analysis of car ownership using the 1981 Census data reveals a similar pattern to the relationship of women with driving licences and low PA II areas discussed in the previous chapter. However, ownership of a car does not necessarily bring the essential services within reach.

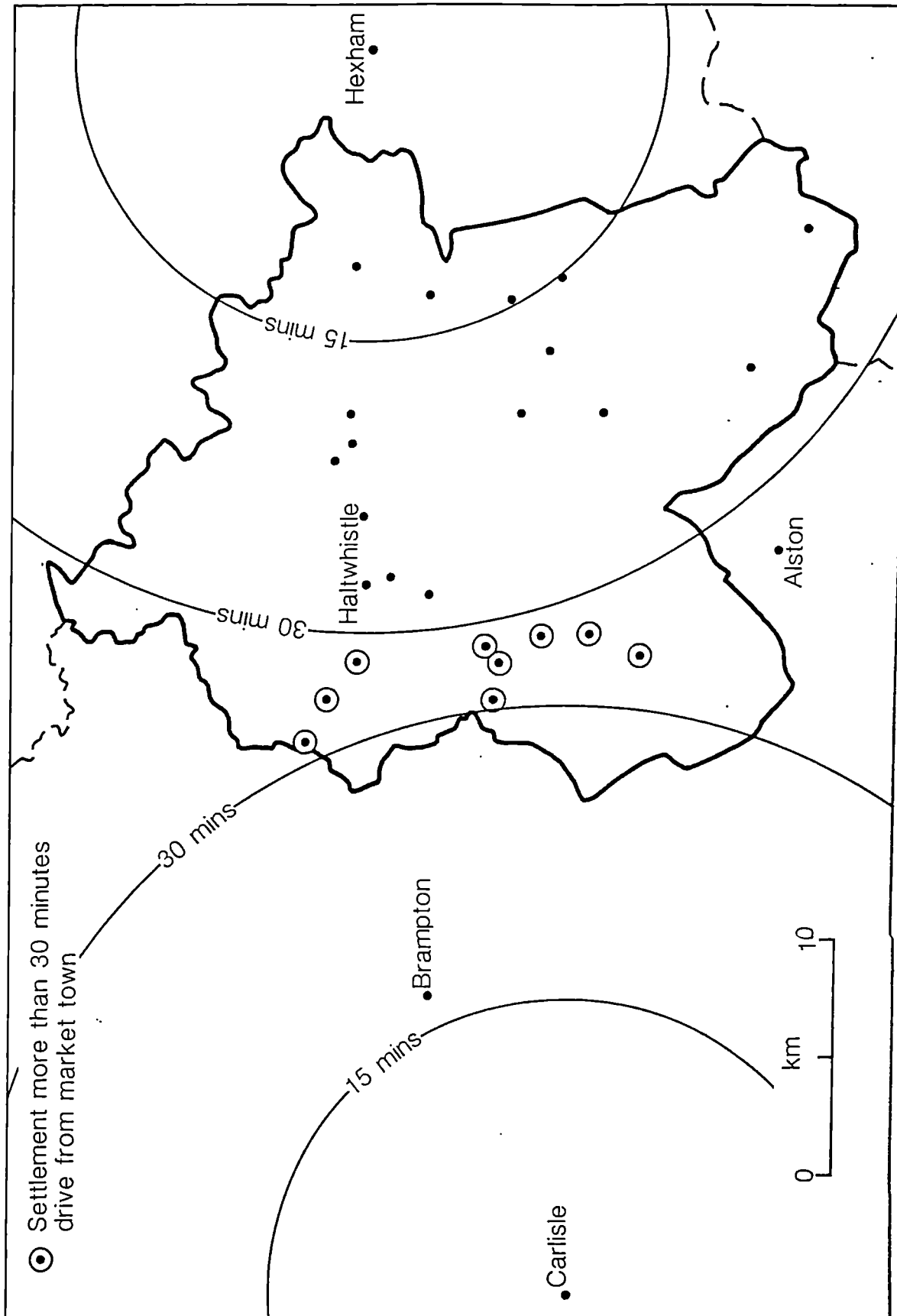
(ii) Journey Time

With a car the potential paths to stations or facilities are constrained by the road network. What is an acceptable journey time to one individual may be quite unacceptable to another. What then can be deemed to be acceptable? In an urban area a thirty minute journey to work is not considered excessive. In the rush hour, the journey from the western boundary of Newcastle to the city centre can take much longer than the scheduled 20 minutes by bus. In thirty minutes the journey from Allenheads to Hexham, or Haltwhistle to Carlisle are both possible. There are those who commute daily from Greenhead and Allenheads to

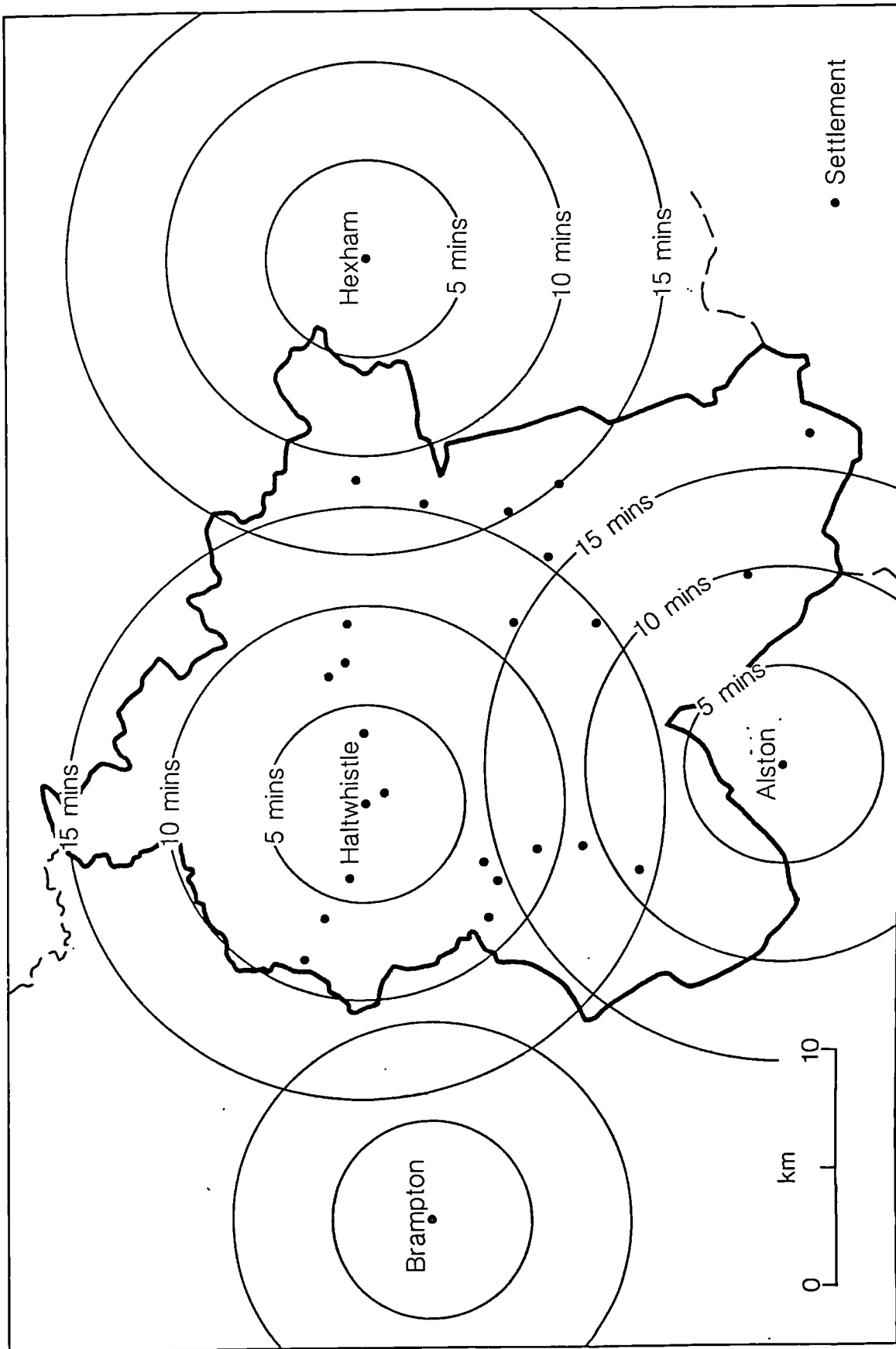
Newcastle, therefore, 30 minutes is surely an acceptable and not an excessive journey time.

Despite the diagramatic form of Map 7.9 the A and B roads carried little traffic, were fairly straight and for the most part followed the direct valley routes. The A69 has been dualled in sections and by-passes built leaving, in 1981, three bottlenecks within the study area; Bardon Mill, Haltwhistle - west end; and Greenhead bank. On such a road to assume an average speed of 50 kilometres per hour was not unreasonable, furthermore, this speed was confirmed during the field work. In Map 7.10 the travelling times to main service centres have been plotted. A group of settlements in the West Tyne lie outside 30 minutes travelling time of either Carlisle or Hexham. They are the settlements in the South Tyne Valley along the now disused Alston to Haltwhistle Railway.

If smaller centres, such as the market towns and a shorter journey time of 15 minutes are included in the analysis what then is the picture? The exercise is repeated for the travelling times to smaller service centres in Map 7.11. Here five minute intervals have been used. Most settlements fell within ten minutes driving time of a smaller service centres. Allenheads and Whitfield were the two which were more than 15 minutes from a service centre. However, they were both within 15 minutes drive from Allendale Town, the third tier in the settlement hierarchy. For the isolated farmsteads where farm tracks had to be negotiated and very narrow roads, travelling times in both Allendale and the South Tyne often exceeded 30 minutes.



Map 7.10 S. W. Tynedale: Travel Time by Road from the Main Service Centres



Map 7.11 S.W. Tynedale: Travel Time by Road Transport from the Market Towns

Given good weather conditions, a car, and the income to afford to use it, in terms of area the locational space-time prisms of these households were large. How then does the accessibility afforded by public transport compare?

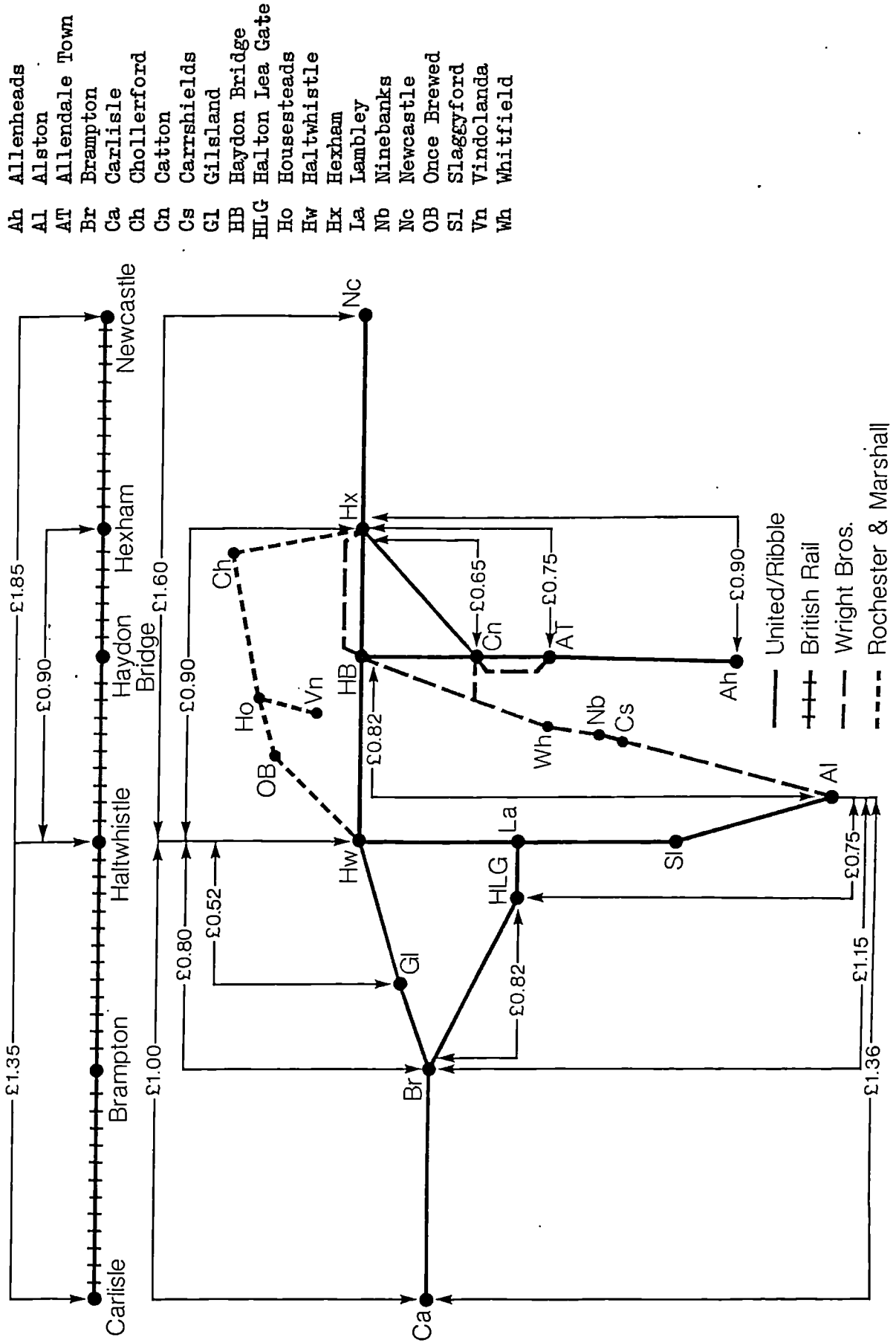
(iii) Cost of Public Transport

The cost of a journey can for those on limited incomes be prohibitive, however, there are considerable variations in the cost of a journey to a service centre even where public transport is available within walking distance. In the discussion of the hypothesis relating to the variations in the cost of a journey to essential services from the remoter parts of the study area, the 1981 single fares provided by the bus operators and British Rail have been used to construct Map 7.12.

A comparison of the fare structure given in Map 7.12 with the 30p single fare charged in 1981 by United Bus Company from the western boundary of Newcastle to the city centre, a distance of some 11 kilometres adds perspective to the cost of remoteness. The same bus company charged 50p for the 11 kilometre journey on the same bus route from Haydon Bridge to Hexham. But, Haydon Bridge is hardly remote, and the Carlisle to Newcastle route, for which both of the above fares were quoted, was in 1981 profitable*.

The single fare from Allendale to Hexham varied from 65p in Catton to 90p in Allenheads. The service along the Military Road, operating in summer only carried the inhabitants of Once Brewed to Hexham for 75p. In the West

* Mr Spencer, United Bus Company.



Map 7.12 S.W. Tynedale: Cost Distance for Bus and Rail Routes in 1981

Allen, the daily journey from Whitfield to Hexham cost 60p single, whereas the weekly service to Allendale Town was 44p. A journey from Gilsland to Hexham was £1-00, while the residents of Castle Nook, close to the Cumbrian border in the South Tyne, could take the logical journey to Hexham via Haltwhistle at a cost of £1-70, single or travel south to Alston and to Hexham via Whitfield at a cost of £1-37. All single journeys to service centres within the study area bore a greater cost than the maximum single journey from the edge of the regional city to its centre, even though distances were often similar and sometimes shorter.

British Rail fares equalled bus fares between Hexham and Haltwhistle but were otherwise greater. Return fares and special tickets for the elderly and families were advertised in 1981 resulting in a more complex fare structure. A further complication was the fare structure on the school bus routes. Where fare structures for school bus routes were requested only one obliged which tended to confirm personal experience that unless the bus was used regularly by the public the occasional passenger negotiated the fare with the driver. Such practices made assessment of frequency of use by the public difficult indeed!

From the discussion of the potential constraints operating on the locational space time prisms of the households in S.W. Tynedale, it is clear that in the decade 1971-81 the retired age groups were tending to relocate in the larger settlements where the essential services were already concentrated. The remaining remote households placed a high priority on private transport with up to 30%

of households owning two or more cars. This was being encouraged by very acceptable journey times of often less than 30 minutes to essential services. Those without private transport in the remote areas assuming that they were within walking distance of a bus stop, and there was a convenient bus were being charged fares far in excess of those in the urban area.

Experiential Space-time Prisms

These refer to actual journeys which people make and the stations they visit. Like locational prisms, they are subject to the capability, coupling and authority constraints, and in addition to the perception of the individual of what is possible. These perceptions are based on past experiences and may bear little relation to reality.

In analysing the experiential space-time prisms of the surveyed women two approaches are used. The first is to examine journeys for shopping and employment, whereas the second looks at three different groups of women and the journeys they make.

(1) Shopping

The purpose of the analysis of these journeys is to establish the paths through space-time and the stations visited by the women in the three different sub-regions of the study area. The data used is that for local shopping which was defined in the survey as food shopping. The frequency of food shopping varied from daily to monthly depending on such factors as age, location, mobility, size of family and food storage facilities. In Table 7.14 the settlements in which the women of the three sub regions are

given.

Shopping Station	Allendale %	Haltwhistle %	W.Tyne %	S.W.Tynedale %
Haltwhistle	1	30	20	51
Allendale Town	19	0	0	19
<u>Villages</u>				
Gilsland	0	0	3	3
Greenhead	0	0	1	1
Halton Lea Gate	0	0	1	1
Brampton	0	0	2	2
Allenheads	5	0	0	5
Catton	5	0	0	5
Not applicable	6	3	4	13
Total	35	33	31	100

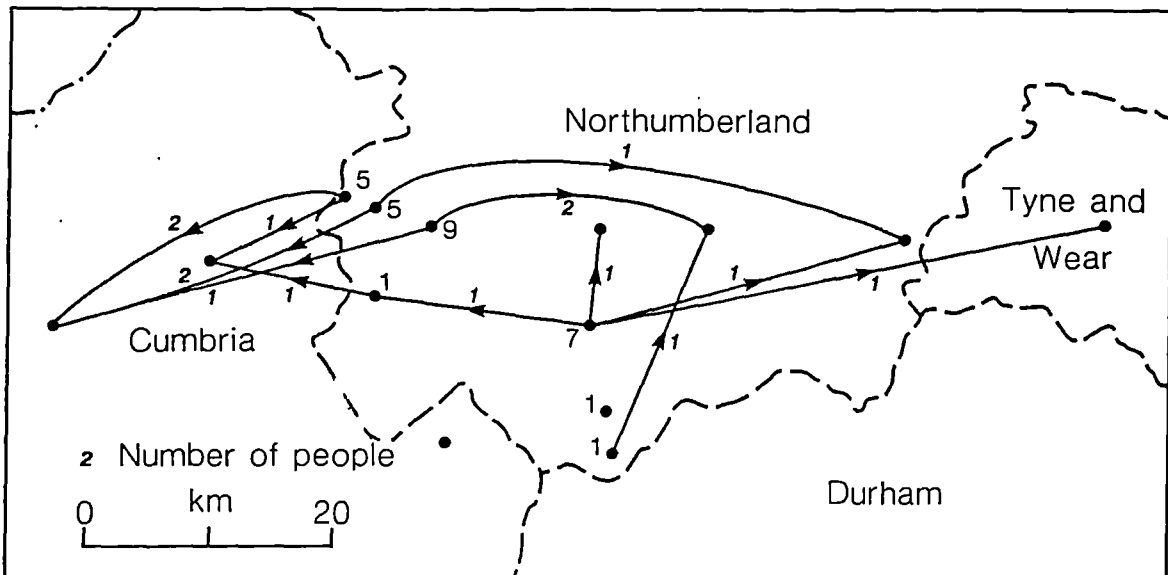
Table 7.14 1981 Survey: Local Shopping Journeys

The 35% of the surveyed women in Allendale remained within the dale for local food shopping with only one person travelling as far a field as Haltwhistle. Six percent of the women shopped outside the region or relied on others to do their shopping for them. Haltwhistle women shopped for food in the town except for 3% of the elderly who had relatives or a home help to do the shopping for them. In West Tyne, the pattern was quite different with over half of the 31% travelling to Haltwhistle, 2% to Brampton and 4% shopping in the villages. In total only 15% of the women shopped in the villages and more than half in Haltwhistle, but 13% were not personally involved in shopping. It was the women in the West Tyne village of Halton Lea Gate who made the longest journeys for food shopping whereas, the women of Haltwhistle were nearly all within walking distance of a range of food shops.

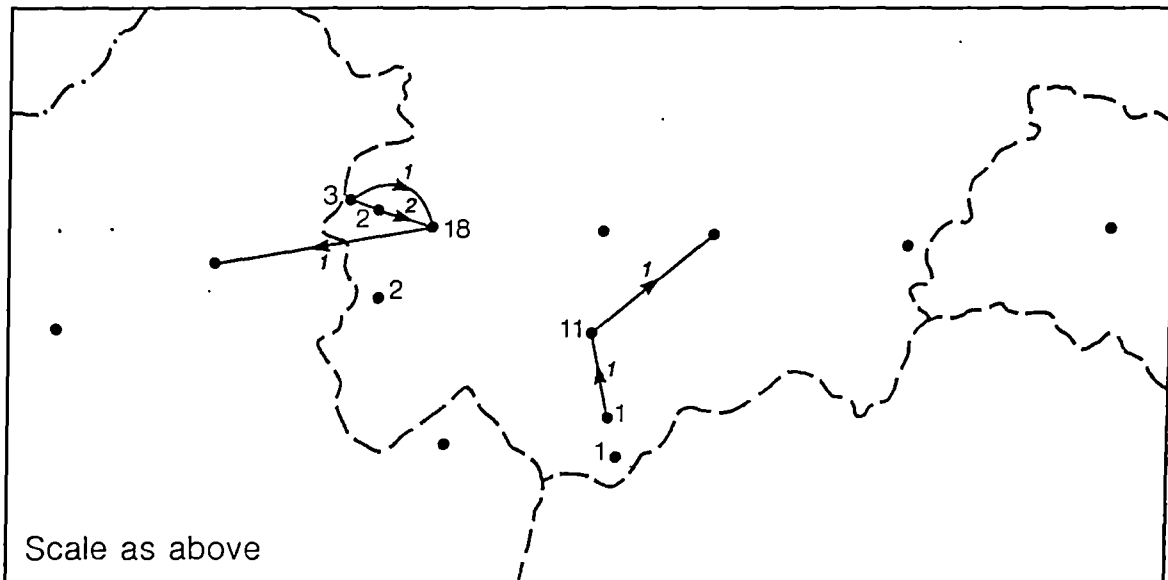
(ii) Employment

The journey to work is made by women for full and part-time work and by their husbands traditionally for full-time work. The journeys made by the women who worked and their husbands are given in Maps 7.13, 7.14 and 7.15. The stations are marked by dots and the arrows show the direction of the journeys from home to work. The numbers by the stations indicate the the number who lived and worked there, whereas the numbers by the arrows indicate how many made the journey. In Allendale Town, there were seven women with full-time jobs in Allendale and a further four who travelled to Newcastle, Haydon Bridge and Haltwhistle, respectively for full-time work. Only three women living south of Allendale Town had full-time jobs, one of whom travelled to Hexham daily. Haltwhistle can be identified in Map 7.13 by the nine local full-time jobs, similarly there were five in Greenhead and Gilsland, and one in Halton Lea Gate. Both West Tyne and Haltwhistle women travelled to full-time jobs in Cumbria.

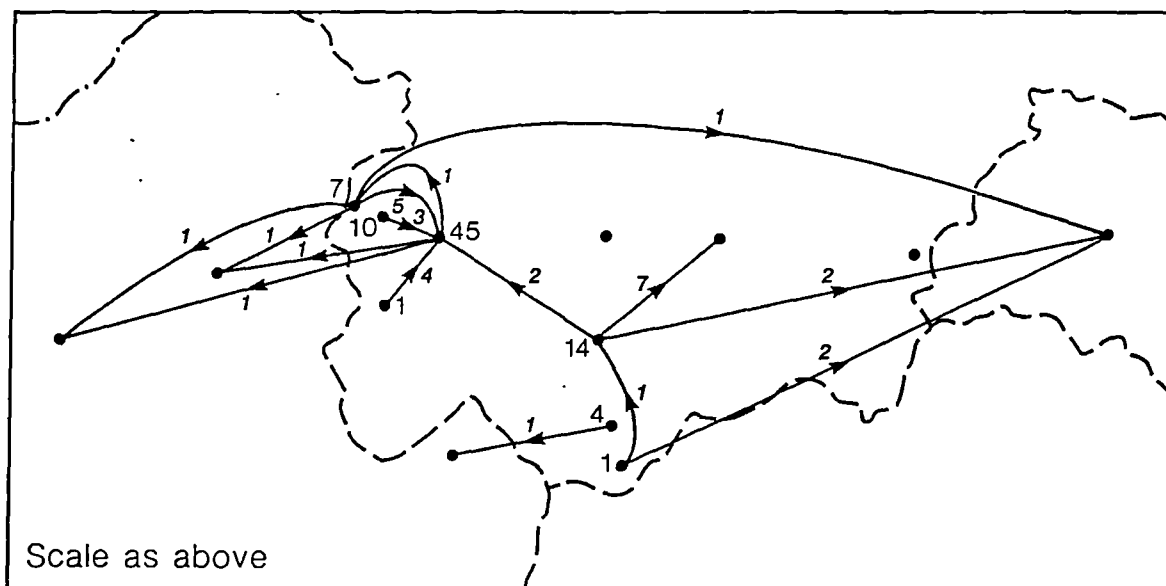
If the full-time job journeys are compared with those for part-time work the pattern is very different. Only seven women travelled for part-time as compared with fifteen for full-time work. The journeys made were shorter with eleven of the fifteen Allendale part-time jobs occupied by women who lived in Allendale Town. Of the nineteen Haltwhistle women who had part-time jobs eighteen worked in the town. Only ten West Tyne women had part-time jobs and three of them travelled to Haltwhistle. Map 7.13 and 7.14 show that there were few full or part-time jobs for women outside the larger settlements of Haltwhistle and Allendale



Map 7.13 Survey Population: Location of Full-time Employment



Map 7.14 Survey Population: Location of Part-time Employment



Map 7.15 Survey Population: Location of Husband's Full-time Employment

Town.

If the full-time jobs are compared with the full-time jobs of husbands then two points emerge. Men and women travel similar distances to work, but fewer women travel than men. More husbands travelled from all parts of Allendale than West Tyne or Haltwhistle. The exception was the village of Halton Lea Gate where only one husband worked locally, the remaining four travelled into Haltwhistle. Only three husbands travelled from Haltwhistle, the remainder working in the town.

From these two groups of journeys a different pattern emerges for each area. In Haltwhistle, men and women work and shop in the town. Their experiential space-time prisms are compact with the stations visited close together and within the one settlement. In West Tyne, work journeys for men and women tend to take place along a Haltwhistle to Carlisle axis with a greater proportion of women (55%) travelling to full-time jobs than men (44%). Shopping journeys followed a similar pattern to work journeys. In Allendale, more than 50% of husbands travelled to jobs in other settlements, whereas only 36% of women with full-time jobs worked outside the dale.

The evidence from the shopping and employment analysis supports the hypothesis that the dimensions of the experiential space-time prisms are larger for women in remote areas, but it suggests a considerable difference between Allendale and West Tyne.

To pursue the analysis of *experiential space-time prisms*

further the capability, coupling and authority constraints are examined in relation to groups of women from the three areas. (Hägerstrand 1975). Capability refers to the biological makeup and limitations of the tools available to women. Therefore, the capability of women changes with age.

Older women often cannot walk as far, or carry the same amount of shopping as younger women. A car is a tool, and it enables a women to make a journey to a given station. As discussed previously, in chapter six, 84% of women with a driving licence were under sixty years of age and 11% in the medium and low accessibility areas did not travel by public transport. The majority of which were elderly and therefore very vulnerable to problems of inaccessibility.

Capability, in terms of car ownership can be important for younger women, but for mothers with young children, the assembly of the individual, tools and materials required for an activity such as a game of badminton may be impossible because of family obligations and the activities of other members of the family. Authority, the third constraint prevents women shopping on Sundays or driving a car without a licence. All of these constraints may be present in any one given situation.

Added to these constraints are the perception of the potential journey of the elderly women, the young mother or the teenage girl. Some journeys are necessary to maintain a livelihood activity system, and to understand the livelihood activity sytem the function of the stations and the interaction between them needs to be analysed together with the web of paths woven in space-time by individuals

moving between stations. .

Livelihood Activity Systems.

Earlier it was shown that the journeys made by women for shopping and employment were different in the three sub regions of S.W.Tynedale. Analysis of the livelihood activity systems of three groups of women with different constraints will be used to explore hypothesis eight, that car ownership and family responsibilities are related to the realisation of place. From West Tyne, the group of carless young mothers living in Halton Lea Gate experienced capability, coupling and authority constraints. In Allendale Town, a group of retired elderly were subject to capability and authority constraints while in Haltwhistle the carowning women were the least constrained.

Through the analysis of the livelihood activity system of each group, and hence their experiential space-time prisms a contribution to the understanding of the gap between the women with high accessibility on one side and the women with declining accessibility on the other side, should be made.

(i) Family responsibilities in Halton Lea Gate.

For some low income young families the Leaside council estate in Halton Lea Gate was the only accommodation available. In the field survey, the electoral roll for the parish of Hartleyburn was used in selecting the sample. Only two of the respondents identified lived outside the village of Halton lea Gate. Of the 76 women living in Hartleyburn parish, 39 had addresses on the Leaside estate. Therefore, it is important to take into account the criteria

used in allocating houses to families on this estate. In an interview with the Housing Officer of Tynedale District Council the following points were made about the Halton Lea Gate estate and the families who lived there.

Although, initially intended to house miners and their families working at the nearby Lambley Colliery, they were never used for this purpose because the colliery was closed, shortly after the estate was built. The 38 houses, built in 1953 of a prefabricated construction, were originally occupied by a number of large families who gave the estate a poor reputation. This stigma was still apparent in 1981 during the field work. The prefabricated construction plus the exposed position meant that they were expensive to maintain and the question of selling them had often been raised in Council. This had been opposed by the Housing Officer on the grounds that these houses were the only ones available to "homeless" families, and therefore provided a "safety valve". He explained that houses on the Leaside estate were only offered to families with private transport.

Even so, because of the isolation and reputation of the estate many young couples preferred to live with parents than accept a house in Halton Lea Gate. In 1981, when a new housing estate was completed in Haltwhistle there was an influx of applications from the Halton Lea Gate residents to move there.

A second proposal put forward by Council was to move "problem" families to the estate. This was again opposed by the Housing Officer as he considered that there was nothing to be gained by adding isolation to the problems of such families, nor did he wish to create problems for those

families already living there. Although, some families were in difficulty with rent arrears because of unemployment, in all other respects the Housing Officer saw Leaside as a problem free estate. To summarise, it is a legacy from the more recent industrial past of the study area which at the time of the field survey housed a number of low income young families waiting to move elsewhere.

The village of Halton Lea Gate has two other groups of housing. The first is a small number of nineteenth century miner's cottages. They were, in 1981, unmodernised and those which were still occupied had elderly tenants. The second group contained twenty-nine houses including a few privately owned semi-detached houses of the interwar period.

All but two of the women interviewed lived within the village. However, concern here is with the relationship between the family responsibilities of the eight young mothers and the way in which they were able to assemble the combination of resources necessary for survival.

Shelter, food, clothing all demand an income. All eight women collected family allowances from the post office. For all except one, the Halton Lea Gate sub-post office was within walking distance. Two of the women's husbands were unemployed and the other six were variously employed as a miner, draughtsman, lorry driver, welder, postman and anthropologist. Two of the women had a small income from part-time irregular employment in sewing and hairdressing and another two regular jobs as a home help and canteen cleaner. The latter was the only one to travel out of the village to a job.

The problem of the Halton Lea Gate women is in part

their lack of personal mobility. Of the eight young mothers two had driving licences and the use of a car. Another drove a scooter and a third had the use of a car at weekends. Therefore, three-quarters of the group were carless during weekdays. These numbers are small, yet when considered in relation to data from 1981 Census they take on a greater significance. In 1981, 75% of Hartleyburn households had children of school age. Of the 90 dwellings, all but five were in Halton Lea Gate, therefore, it is reasonable to assume that approximately three-quarters of households in the village contained young mothers. This is supported by the fact that 24.6% of the Hartleyburn population was under age 16 in 1981. The personal mobility statistics for 1981 show only 16.9% of households had at least two cars and 40% had no car at all. Therefore, the 6 carless young mothers who are the focus of the discussion here are a 20% representative sample of their sub group.

How does the carless young mother cope with the livelihood activities of shopping, business and social engagements during the day? The first objective of the discussion is to establish the constraints that children make on the time available for livelihood activities, of which children themselves are a part. The school bus leaves at 8.00 am with the younger children returning at 4.15 pm and the 9 years plus at 4.40 pm. Two of the women had children under 5 years who needed to be included in their activities, but only one of these had relatives living locally. Indeed this was a point made by the Housing Officer in the interview referred to earlier when he

observed that on the Leaside estate only 10 of the 38 families were local (i.e. Tynedale).

The period of the day free from family constraints was from 8.00 am until 4.15 pm. As the children travelled from 5 years upwards then lunch time did not present a further constraint. However, two other constraints must be considered, the first being the length of time required for a given activity and the second the cost of a journey. To give perspective to the figures, the destinations and paths through space-time are compared with those available to young mothers living in a council estate on the western boundary on Newcastle. Activities in a small town have been allocated an arbitrary minimum time period of 1 hour 30 minutes based on personal experience of family shopping and the towns in question. Namely, Haltwhistle, Brampton and Alston.

The cost of journeys are examined in terms of multiples of the maximum single fare from the western boundary of Newcastle upon Tyne to the city centre, in 1981 - 30p. For 30p, the Newcastle carless mother could gain access to the whole range of goods and services available in the regional city. By using this measure of public transport costs, a comparison can be made between public transport accessibility to different orders of goods and services between locations within the study areas as well as with the urban area.

The possibilities for visiting the three settlements mentioned earlier are given in Table 7.5 where the 3 in the cell for Brampton/90p indicates that three possible return

journeys could be made to Brampton within the time period available, and that the cost was in the band between 60p and 90p single. Haltwhistle was the cheapest destination at just less than 60p single and there was the possibility of a morning and afternoon journey. Alston was the smallest and least satisfactory with only one journey.

Turning to the larger settlements of Hexham and Carlisle where shopping, business and social activities may be combined, the journey possibilities given for a 2 hour activity, number two in each case. The higher British Rail costs make two cost bands applicable to Carlisle journeys. Finally, to gain access to the same range of facilities as the Newcastle young mothers was possible, but only on school days, at a cost eight times greater.

Table 7.5 indicates a series of possibilities given the opening times of shops, banks etc., the public transport schedules and the time available to the Halton Lea Gate young mothers, but a number of other factors must be taken into consideration. How realistic is a day in Newcastle shopping with a child under 5 years? The realities of bus and train together with small child, plus possibly push chair and shopping bags is a daunting proposition for any strong, healthy, young mother. Where and when do these women undertake the livelihood activity of shopping? The field survey showed that three travelled by car at weekends to Haltwhistle, Brampton and Carlisle. The other three used the bus or train to shop in Haltwhistle, Hexham and Carlisle. None made the journey to Newcastle.

The shopping decisions of this group of carless young

Activity Times	Cost in 30p units						
Destination	30p	60p	90p	120p	150p	180p	240p
1hr 30 mins.							
Haltwhistle		2					
Alston			1				
Brampton			3				
2 hrs							
Hexham					2*		
Carlisle				1		1(BR)	
3 hrs							
Newcastle							2*

*At least one journey relies on a school bus operation on school days only.

Table 7.5 Young Mothers in Halton Lea Gate: Potential Journeys.

Activity Times	Cost in 30p units						
Destination	30p	60p	90p	120p	150p	180p	240p
1hr 30 mins.							
Haydon Bridge							
Day			4				
Evening			1				
Haltwhistle							
Day					3		
Evening					1		
2hrs							
Hexham							
Day			3				
Evening			1				
3hrs							
Newcastle							
Day						3	
Evening							

Table 7.6 Elderly in Allendale Town: Potential Journeys.

mothers reflected the general pattern of the women in Halton Lea Gate. Where possible women travelled by car with husbands or other relatives and friends for shopping at weekends. During the week, the women from the low income families of the Leaside estate, in particular, were "village" bound by both family and cost constraints.

The evidence supports the hypothesis that the constraints of family responsibilities and the lack of a car, together limit the distances the women can travel. Although the locational prisms provide a range of stations which potentially can be visited between 8.00 am and 4.40 pm, cost and the possibility of support with transport and the purchasing of food lead the women to organise their livelihood activity system so that shopping is a family event undertaken in an evening or on a Saturday. Other daytime journeys to essential services were short using one mode of public transport. Family, constraints were important in explaining the experiential prisms of these women, but what must also be recognised is that they could only maintain a livelihood activity system by making demands upon other members of their family.

(ii) Retirement in Allendale

The problems which the elderly have in maintaining a livelihood activity system in the rural area have been fundamental to the policy of concentrating aged persons housing in services centres. The relationship of housing policy in S.W.Tynedale to age structure was explored in the earlier part of this chapter. Here the possibilities and realities of the elderly women in Allendale Town assembling the resources they require for survival is the subject for

discussion.

The 1981 Census listed 26.4% of the Allendale population as elderly, however, this figure referred to the Allendale parish, whereas here the focus is on the women aged 60+ years in Allendale Town. The data collected in the field survey represented 12% sample of the village population.

Twenty-five of the 53 women interviewed in Allendale Town were over the age of sixty years, and of these 5 held a driving licence, but only 4 were currently able to drive a car. Personal mobility can change rapidly for the elderly, either due to deteriorating ill health, or the loss of a husband, or other relative upon whom they have relied for transport. Therefore, it is pertinent to take a more detailed look at the circumstances of the twenty-three women in this example. Eleven of the women were either widows or single and wholly dependent upon public transport. A further eight were married and dependent upon husbands for transport. The remaining four had driving licences and the use of a car. Potentially, all these women may be dependent upon public transport and unlike the carless young mothers in Halton Lea Gate, Allendale Town is likely to be their home for the remainder of their lives. However, they were a 12% sample which would indicate that they represent a sub group numbering some ninety women.

Using the same criteria of activity time, and cost as was used in the Halton Lea Gate example, the possibilities for public transport journeys from Allendale Town are given

in Table 7.6. Before discussing the table, it is worth considering variations in the fares charged the elderly population. The 30p Newcastle journey described earlier was free to pensioners between the hours of 9.30 am and 4.00 pm; 6.00 pm and 10.30 pm. This contrasted with the Northumberland token system by which pensioners received £13-00 of free tokens on payment of a £1-00 registration fee. These tokens were valid on all buses and British Rail. To allow for some form of comparison the tokens were equivalent to 40 x 30p units. These can be translated into eight return journeys to Hexham. Clearly, the rural elderly, not only had longer distances and fewer opportunities, but also considerably higher costs than their Newcastle counterparts. In Table 7.6 day and evening journeys are given separately. The elderly were not constrained by family responsibilities, nor did their personal mobility change with the time of day, as it did in the case of the Halton Lea Gate mothers. A number of journeys were possible, but neither Newcastle nor Haltwhistle were on a direct route, and therefore, waiting times of 10 minutes in Hexham and up to 25 minutes in Haydon Bridge were necessary. The latter in part explains why not one of the 25 respondents gave Haltwhistle as a destination.

The purpose of journeys made by the elderly in Allendale Town in maintaining their respective livelihood activity systems were locally for food shopping; Hexham for some food, clothing, household business and social; Newcastle for Christmas shopping, business and social events. Some elderly women relied on others to assemble the resources they required. Of the 23, five relied on the Cooperative grocer's delivery service and/or home help. Three could not

envisage making a journey to Hexham, and in recent years eight had not visited Newcastle.

Local shopping in Allendale Town, for 14 of the women was on foot, and for 4 only, by car. The twenty women shopping in Hexham were divided equally between bus and car transport, whereas 5 travelled to Newcastle by car, and 9 used a combination of bus and train. One respondent regularly travelled to Carlisle by car.

Once outside the narrow public transport accessibility corridor defined on Map 5.4, for the elderly dependent upon public transport, the possible journeys given in Table 7.6 were just not available because of the barrier of walking distance. Indeed that corridor was considerably narrower for those with health problems.

Only four of the retired Allendale women had driving licences, yet a half travelled by car. The capability and authority constraints of car ownership and driving licences applied to eleven of the women, while the authority constraint applied to a further eight. These women were dependent on other members of their family for accessibility to goods and services. Or as the five women mentioned above, who depended upon home helps and the cooperative grocery store delivery service to enable them to assemble the resources they needed at a given location in space without having to make a journey.

Perception of both the journey to Newcastle and the city itself explained why some women did not venture further than Hexham for shopping. For these women, the mental and

locational prisms did not converge for journeys beyond the market town, whereas for fourteen of the women Newcastle was a station within their experiential space-time prism.

(iii) Carowners in Haltwhistle

Given the time, personal mobility and income to sustain it, even with the same family responsibilities as the women in Halton Lea Gate, or the advancing years of those in Allendale Town, the organisation of a livelihood activity system presents few problems for the women in Haltwhistle.

Haltwhistle, as the largest settlement in the study area was found, in the field survey to have 22% of respondents with driving licences, but only 14% with their own car. Indeed, in Haltwhistle car ownership was the lowest in the study area with 44% of households owning a car and 7.2% with two cars. But, the twelve car owning women identified in Haltwhistle who were not employed formed a sub group with which the previous two examples can be compared.

Haltwhistle is highly nucleated and the services described earlier in the chapter are available within walking distance, yet 9 of the 18 women with driving licences used the car for shopping in Haltwhistle. Although, all the basic resources necessary for survival are available within the town the choice of goods and services are improved by a visit to Hexham, Carlisle or Newcastle.

In 1981, with petrol prices in the region of £1-50 per gallon, the 30p unit used earlier purchased for a family car approximately 13 kilometres of petrol. This represents the direct expenditure on a journey and does not include

servicing and depreciation. Given these costs and the same activity constraints applied in the previous examples what opportunities were available to the sub-group of women in question? The journey to Hexham by car takes approximately 20 minutes, Carlisle - 25 minutes and Newcastle - 55 minutes. Therefore, all these centres were accessible within the constraints placed by school hours. Carlisle and Hexham were both half-day activities, whereas Newcastle took more time, but evening visits were possible. In Table 7.7 the costs are given for a single journey, but this assumes one person only travelling in a car.

Given these possible journeys, how do the carowning women of Haltwhistle organise their livelihood activity systems within the space-time framework described? Of the twelve carowning women, eleven travelled regularly to Hexham and nine to Carlisle by car. However, only seven chose to drive into Newcastle and the remainder preferred to take the train. When the preference for the train was queried reasons of parking and city driving were given. Although, theoretically a days shopping in Glasgow, Manchester, Edinburgh or Teesside were possible, it seems few women would undertake such journeys by car, preferring to restrict their driving to the "local" area. For this group the stations visited were restricted by their perception of the station and driving conditions. There was less necessity for the Haltwhistle women to make long journeys for food shopping and indeed the earlier analysis showed that this was the case. Few constraints operated on their time and of the three groups they were the least dependent upon other members of their families.

Activity Times	Cost in 30p units					
Destination	30p	60p	90p	120p	150p	180p
1hr 30 mins.						
Haydon Bridge						
Day	x					
Evening	x					
Haltwhistle						
Day	x					
Evening	x					
2hrs						
Hexham						
Day		x				
Evening		x				
Carlisle						
Day			x			
Evening			x			
3hrs						
Newcastle						
Day						x
Evening						x

Table 7.7 Carowning Women in Haltwhistle: Potential Journeys.

Destination	Local		Hexham		Carlisle		Newcastle	
	cost	time	cost	time	cost	time	cost	time
	pence	mins.	pence	mins.	pence	mins.	pence	mins.
Public Transport								
Halton Lea Gate	58p	20	148p	55	115p	70	243p	95
Allendale Town	0p	10	75p	40	230p	103	170p	90
Car								
Haltwhistle	0p	10	60p	20	90p	25	180p	55

Table 7.8 Comparison of Time and Cost Constraints for Sub-groups of Women.

The discussion has shown that car ownership and a driving licence gives women a greater choice in the stations they are able to visit and allows them to travel greater distances. However, for retired women the same level of accessibility may be achieved through dependence upon other members of the family. Similarly, the women of Halton Lea Gate rather than use public transport they waited to the weekends to make longer journeys for food shopping. Perception of the journey was important for all three groups of women in realising place, in that city driving and parking was important in the carowning women's decision as to the mode of transport for a visit to the city. Previous experiences of journeys by public transport influenced the Allendale Town and Halton Lea Gate women.

Family responsibilities restricted the women of Halton Lea gate to the daytime hours of 8.00 am to 4.40 pm, but on this remote housing estate realisation of place was constrained more by low income and lack of private transport than the responsibilities of children. However, for those women with children under five years access to essential opportunities during the day can be dependent upon a baby sitter. This support is often provided through the family, but only one mother in Halton Lea Gate had relatives she could call upon living locally. Neither were there any institutional support systems such as a creche or nursery facilities.

Conclusion

The time geographic framework has allowed the accessibility problem of the women of S.W.Tynedale to be analysed in terms of the locational and experiential

space-time prisms. Decline in the rural population of the remoter parishes has been compensated for by a small growth in those parishes within commuting distance of employment and service centres. This together with the hierarchical growth centre policy of the county council has encouraged the clustering of essential and many of the less essential services in the larger settlements. The effect of these changes in the location of residential and service stations has been to increase the costs for carless women in remote parishes to the essential services, while those with private transport, although paying higher costs than their urban counterparts, often expend similar amounts of time on travel to opportunities.

Shopping and employment both demonstrated the greater distance travelled by the women in the remoter parts of S.W.Tynedale for food shopping and full-time employment. There was also a greater propensity for women in accessible settlements to take up part-time employment.

Finally, although family responsibilities constrain a woman's time, it is the lack of private transport which places a greater constraint on those women in the remoter areas. A constraint which can only be overcome through family support or the help of social or commercial organisations. This analysis of the experiential space-time prisms as shown that women with private transport can determine the dimensions of their daily space-time prism, so that included within, it are all the opportunities which satisfy their 'felt' needs. Those women who depend on others for private transport are restricted to certain days, and times of the day, for accessibility to the necessary

opportunities. Finally, the group without private transport, mainly through the constraint of public transport cost, are restricted to the settlement in which they live and the opportunities within it.

CHAPTER EIGHT - ACCESSIBILITY BEHAVIOUR

Interviewing the women of S.W. Tynedale in the Summer of 1981 underlined the considerable variations in lifestyle to be found within the smallest hamlets. The heterogeneity was emphasised by differences in housing conditions, mobility, education, general awareness of community activities and commitment to a family support system. There were also differences in the receptiveness of women with different lifestyles to the purpose of the research. Incomers were generally less enthusiastic than S.W. Tynedale women. Those women who lived in isolated farmsteads were fully aware of the problems of inaccessibility in terms of declining village facilities and personal mobility. They were very willing to discuss how they organised their livelihood activity systems. Whereas women who had not experienced isolation had more difficulty in relating to the problem. The contribution of these women living in rural settlements centred on the social and economic barriers associated with participation in activities and use of facilities generally.

Section B of the recording schedule (Appendix IV) was designed to collect data on the behaviour of women. Behaviour is dependent upon perception of the facilities available, and the check list of cultural/educational activities enabled data to be collected on the surveyed women's knowledge of these facilities and on their behaviour in relation to them. With this information, the aim of this

chapter is to use the time geographic concepts of constraints and livelihood activity systems within a sociological framework to explore the behaviour of the surveyed women in relation to their accessibility to cultural/educational activities. The discussion will draw upon case studies of women with different lifestyles and varying degrees of remoteness, with the objective of exploring the explanatory importance of such variables as personal mobility, life cycle, educational achievement and economic status.

As the different lifestyles of rural women are central to the argument, the first task is to establish a classification of women within the study area. The classification together with the variables mentioned above provide the framework for the choice of case studies. These are presented in the second part of the chapter; the third is devoted to an analysis of the constraints of family, lifecycle and remoteness on women's behaviour, the subject of hypotheses 9 and 10; and the fourth to the perception and behaviour of the surveyed women with respect to community involvement (hypothesis 11).

A CLASSIFICATION OF WOMEN

In the introduction reference was made to differences in the receptiveness of incomers and locals to the research problem. Pahl's (1966a) classic work identified incomers as a social group distinct from the local rural population. Quayle (1984) in anthropological research in Allendale found that within the local area the two groups remained distinctive, but accepted within the community. His respondents defined community membership as

"...those who 'belong' there by virtue of birthright, dialect and membership of one of the old Allendale families, and those who come in from the 'outside' and play their role, through work or voluntary effort in maintaining the 'life of the place'."

He argues, that the definition has developed through the very transient nature of the population associated with mining in the past two centuries. Certainly, this research would support the analysis in Allendale, but add that it also applies throughout the mining areas of Tynedale where the population was also transient. Using Quayle's definition 69% of the surveyed women were identified as either 'belonging' there, or as outsiders who were contributing to the 'life of the place'. Implicit in Quayle's analysis is a third group - the 'non-community members'. The people who neither belong there, nor make a contribution to community life. Indeed in this group must be the commuters who work outside, those who have retired to live in the area and the 'second home' owners. The non-community members amounted to 31% of the survey. However, this simple classification does not adequately describe the population of women. Returning to the receptivity of respondents to the research, it was noted that women in isolated houses were more concerned with the problem of accessibility. They perceived the problem as the loss of village facilities and the relative disadvantage of women in terms of personal mobility. They were also concerned for their children and/or grandchildren, as they realised that it was unlikely they would be able to remain in the area.

Isolated houses are for the most part farm houses where

the main economic activity is farming. From the perspective of the agricultural economist Gasson (1984) used a two fold classification to describe rural women - farm women and non-farm women. She specifically looked at the needs of farm women in terms of employment, and indeed the nature of farm work as well as the isolation factor which identified them as a separate group. Within this group are the women farmers and the wives, daughters and sisters of active and retired farmers.

In Gasson's classification the non-farm women also include those who are associated with mining, the provision of local services and the wives of the long distance drivers whose companies are based within the study area as well as the commuters and retirees. If applied to S.W. Tynedale, 83% of the surveyed women are non-farm in contrast to the 17% farm women. From an economic stand point this twofold classification of an agrarian population has the merit of focussing attention on the subject of Gasson's research - farm women. However, the subject of this research is rural women and although, because of the remoteness factor, farm women need to be recognised as a sub group, the distinction between community and non-community is also pertinent.

In the context of the women of S.W. Tynedale the community members are two distinct groups - the farm women and the non-farm women. Women in both groups may belong, or be involved outsiders. Farming as an economic activity places all farm women whether they belong, or are outsiders into this group together with the miners wives, and village postmistress, doctor, policeman, school teacher etc.

The variables of length of residence, employment and/or husband's employment, number of kin living locally and participation in community activities were used to distinguish between community and non-community members. Participation in activities alone was not considered sufficient to warrant community membership. Therefore, although some of the commuters and retired incomers participated in local activities their short residency, past or present employment, and lack of relatives living locally identified them as incomers who were non-community members.

Non-community members, include the retirement group (well documented by Warnes and Law 1984) and the commuters (identified by Pahl). The retired incomers amounted to only 7% of the total and were mainly concentrated in Allendale Town, although a few were interviewed in both isolated and village locations elsewhere. This group had only moved into the area on retirement. For many of this group, the decision to move was based on a romantic attachment to the area gained during holidays in the 1930' and 1940's. At that time, wooden holiday bungalows were built throughout rural Northumberland and used as holiday homes by Tynesiders. Many of these, originally without mains water or sewerage have now been demolished, but they fostered in their occupants dreams of the countryside as an idyllic place for retirement. A number of the retirees reminisced about these long ago holidays, as did a few of the commuters who had spent their childhood holidays in the area mainly in Allendale.

Commuters were concentrated in the north of the Allendale around Catton. One or more of the economically

active members of the family worked in Hexham or Tyneside, both of which provide shopping and leisure facilities for the commuters. The Carlisle commuters were to be found in Gilsland and Greenhead, sometimes indulging in part-time farming, but there were also representatives of another group - the international set. Although, very small in numbers they included the wives of shipping surveyors, and a United Nations representative. Often spending long periods abroad they maintained a "cottage" in the UK. Two of these women were interviewed, but neither could be described as a "community member". In total, the incomer commuters amounted to 24% of the surveyed women.

In terms of social class, the incomer group are more homogeneous in that most, but not all, had the income to buy property and a desire for a particular lifestyle. The variations within the local population were much greater with women's occupations varying from a museum curator to a factory worker, and husband's jobs displaying a similar spread through the professions, business, skilled and unskilled work.

CASE STUDIES

Of the four groups of women, the community members - farm and non-farm face the most severe accessibility problems. Inaccessibility may eventually create problems for non-community members. Having initially chosen a rural environment, they may later become trapped within it as circumstances change. Farm women, on the other hand are tied by virtue of occupation to a given location. It is from this group, that the first four case studies have been taken. The case of a farmer's mother, a farmer's wife, a

farmer's daughter contrast with the experiences of a woman farming alone. In the second local group, the three case studies presented include a part-time secretary, the wife of an unemployed miner and a retired factory supervisor.

The accessibility environment, a term which will be used to describe mobility, location and other barriers to gaining access to facilities for the local population is compared with that of the non-community members through five case studies. The first, a young mother whose husband is often away contrasts with the second, a professional woman who together with her husband engaged in part-time farming. Finally, the retired incomers provide the last three case studies. Two married women and a single woman illustrate the way in which accessibility changes with age.

The choice represents women at different stages in the life cycle, marital status, personal mobility, education, occupation and income. It must be noted, that there has been no attempt to make the number of cases presented from each of the four categories in the classification proportional to the number of women in the population. The emphasis has been on the nature of the problems of inaccessibility. To maintain confidentiality, the names used are fictitious.

Farm Women

The four women in this group of case studies all lived in areas classified as of medium or low accessibility according to the Private Transport Accessibility Index (PA I) and low by the Public Transport Accessibility Index (PA II). Only one of the five, the part-time farmer's wife,

had her own car. The case studies are presented in order of the stage in the life-cycle with the most elderly first. Mrs. Acton was one of two surveyed widows aged over 90 years who lived alone in a remote farmhouse.

(1) Mrs. Acton

To reach the farm, I parked the car on a minor road and walked 1/4 mile to the farmhouse. Although, classified as of medium accessibility for private transport, her house is in the low category for public transport. I found Mrs. Acton washing dishes under a cold water tap over a long shallow porcelain sink in a stone flagged scullery. At the age of 93, she was clearing up after the midday meal which she had shared with her son. He lived in the village with his family, but managed the farm for his mother. This arrangement is not unusual in Northumberland as, it enables the elderly to stay in their lifelong home and to be cared for by their family.

Mrs Acton was born on Tyneside. She left school at fourteen and became a dressmaker in Newcastle. She moved to the farm when she married. When her husband died, many years previously, she remained in the farmhouse, while her son farmed the land. Remote from a bus route, alone at night, her only concession to family pressure for her welfare was the installation of a telephone. Even this was more to ease their minds than hers, because she had never mastered making an outgoing call.

Although, a member of an old Allendale family, she had only three people she counted as relatives living in the parish. She was dependent upon these for shopping and for

many years had remained within the dale. She explained that in recent years, her one visit to Hexham had been to the hospital after she had fallen downstairs. The fall had happened when she was alone, and she voiced her fear of a repeat occurrence. This together with the loss of the sight in one eye had left her without the confidence to cope with unknown environments and no longer able to read newspapers etc.

In her younger years, Mrs Acton had been an active member of the community. Although, housebound in 1981, she reminisced about evening classes before WW II and described the route she had taken with friends across the fields to attend them in the village school. She was aware of the Women's Institute, and although not a member knew of the classes they provided in handicrafts etc.

Although, Mrs Acton lived in a remote farmhouse given her advancing years and failing eyesight, it is doubtful whether she would have had greater accessibility in the centre of a village or at a location adjacent to a bus route. Certainly, remaining in the farmhouse ensured that she saw her son each day and her daughter-in-law came regularly to do the housework. Her accessibility, to goods and services and local information was through them. Radio and television provided her other contact with the outside world. But, she was acutely aware that if she or her son were to be ill, in an emergency inaccessibility would be their major problem. It was doubtful whether she could have made a 999 call for help.

As a postscript, to this case study, in 1985 I noted Mrs

Acton's farm was for sale. Subsequent local enquiries confirmed that she had died and her son retired.

(ii) Mrs Low

In the lowest category for both accessibility indices the location of Mrs Low's farmhouse has already been described in the introductory anecdote. I interviewed her in the farm kitchen one August evening, but the fire was burning in the kitchen range. We joked about the problems of stone flagged floors and black leading fireplaces. Mrs Low was in her fifties and her four children were grown up. The farm was one of two belonging to the family which were run as a joint venture by her husband and his father. The farm vehicle was a land rover, but Mrs Low only had a driving licence for a scooter which was old and in need of repair. The nearest bus stop was 2.5 kilometres away, so that although she had a job as a home help two mornings a week in Haltwhistle as well as helping on the farm, she was constantly worried about whether she would have transport. If the scooter needed repairing and her husband was too busy to drive her, she had to walk. Usually, she managed the outward journey, but returning home with heavy shopping was uphill and in bad weather well over a half hours walk. The same problem arose with shopping trips to Carlisle and indeed Newcastle which she seldom visited.

Despite her remoteness and personal mobility problems Mrs Low could name the locations of 10 sports activities, several evening classes and all the clubs in Section B of the Recording Schedule (Appendix IV). She had walked to the Mother's Union meetings in Greenhead in 1973, but not since. Again, like Mrs. Acton, now that her children had left the

area she had few relatives living locally, so that any off the farm social activities without her husband entailed either a scooter journey or the walk to Greenhead. Radio and television, together with regular visits to the Haltwhistle Branch Library provided her with cultural and educational opportunities. In terms of education Mrs Low had herself stayed at school until she was sixteen, but married at the age of twenty.

There was an incongruity between the modern immaculately kept farm, the unmodernised farmhouse and the inadequate personal mobility. After the interview Mrs Low herself raised the issue of her lack of a modern kitchen, and in so doing brought into the conversation an important psychological/social barrier to accessibility experienced by some farm women.

On farms where spare income is spent on improving the efficiency of the farm but not the farmhouse, there are social consequences for farm women such as Mrs Low. Firstly, when in the company of other women, they are unable to contribute to any conversation about the latest kitchen equipment; secondly, the company of women who are preoccupied with the material improvement of their homes serves to underline their material deprivation; and finally, because of the above they are reluctant to invite women to their homes. Such farm women experience a lack of the outward trappings of urbanism and this contributes to their isolation by creating a social/psychological barrier. Remoteness, the lack of public transport together with the barrier described above constrain their social life to a small family circle. Although, there was visual evidence of

deprivation in other, mainly elderly farm women's homes, none of them related the lack of modernisation to participation in social activities. However, when later I discussed the problem with one of the pre-test respondents who herself had coped for many years with a small housekeeping budget in a partly modernised farm cottage, she confirmed the problem, emphasising that it was a hidden problem which farm women understood, but seldom discussed.

(iii) Mrs Wrea

To interview Mrs Wrea, my journey along narrow roads, in places single track, with a section of 1:5 and 1:7 gradient took me 5.5 kilometres from the nearest village. Both indices classified this location as having low physical accessibility.

Aged 32, Mrs Wrea was busy dealing with a delivery of calves, while her one daughter played in the farmyard. She managed the farm herself while her mother attended to the domestic chores. Mrs Wrea was not local and had no other relatives in the area, nor did she or her mother have a driving licence. Having managed the farm for a year, she ordered a taxi once a month to Hexham for shopping and the cattle market. Otherwise she relied on the travelling shop.

In such a remote location, without a car she was dependent upon radio and television for access to any cultural/educational entertainment.

Although, Mrs Wrea had two years of education beyond the

school leaving age, she did not use the mobile library. Her reading material was related to farming and she took the Farmer's Weekly, Country Life and the Hexham Courant. In terms of knowledge of local activities she could name two evening classes, four sports and the Young Farmers', but had not used any.

Mrs Wrea was not the only woman who had moved into the area with her husband to start a business and found herself running it alone. Marriage breakdown had left several women, including Mrs Wrea, to cope with family and business on their own. This case study underlines the vulnerability of many women in remote areas. Survival is almost dependent upon a driving licence and without a car inaccessibility is acute.

(iv) Miss Alloa

The necessity for personal mobility affects the children of farmers, particularly in teenage when their activities are different to those of their parents, and yet, they are dependent upon them for transport. The final case study of the farm women is a farmer's daughter - Miss Alloa. One of her nearest neighbours is Mrs Low who lives 2.5 kilometres distant. Both farms have the same accessibility classification for the two indices - low.

At seventeen Miss Alloa was one of the youngest surveyed women, and one of two farmer's daughters. She was working towards a career in nursing and when interviewed had a seasonal job at the local museum. The previous year she had travelled daily to Carlisle which, given her home was two kilometres from the Military Road, with a further kilometre

to a bus route, raised the question of personal mobility. Miss Alloa had a provisional driving licence, but accepted that a half hour or more walk into Greenhead was just a part of life. Much of this walk was along a very narrow minor road used only by local traffic even in summer, therefore the majority of the passing motorists, tractor drivers etc. were known to her and she could usually depend on a "lift" for a part of the journey at least. In the interview, it was apparent that mobility did not act as a barrier to gaining access to facilities. To illustrate, the interview took place at lunchtime and Miss Alloa had planned a shopping trip to Newcastle in the afternoon using public transport such a trip would not have been contemplated by Mrs Low.

Miss Alloa had many relatives in the area and had arrangements to stay with them, if she could not get home. The family had only lived in the farmhouse four years, but in that time Miss Alloa had attended Royal Society of Arts and Cookery classes in Haltwhistle and together with a relative yoga classes in Greenhead. She was aware of most of the available sports activities and evening classes, but had less knowledge of the women's clubs. A member of the branch library she seldom used it, but read the family newspapers and magazines.

Although, Miss Alloa's accessibility environment was in physical terms limited, she was not constrained by family commitment, financial and/or social/psychological barriers, and therefore was able to pursue her own interests. Six months later, she left home for Newcastle upon Tyne.

These four case studies of farm women in remote areas have pointed to three factors related to accessibility - life cycle, personal mobility and lifestyle - related barriers. In the next group of case studies attention will be focussed on the local non-farm women.

Non-farm Women

The first case study illustrates the accessibility environment of the local part-time farmer where both husband and wife have jobs outside farming, but run a smallholding. They are community members and yet, cannot be included in the previous category because their main source of income comes from outside farming. The second a young unemployed miner's wife with a family is limited by low income as well as family responsibilities. Finally, a recently retired woman from Haltwhistle allows a comparison to be made between accessibility for non-farm women living in a location classified by both indices as low, a village where private transport is high, but public transport medium and finally, Haltwhistle where accessibility was highest for both measures.

(1) Mrs Heads

On the third visit to Mrs Heads farmhouse, I found her at home. On the first occasion it took half an hour to traverse the 3 kilometres from the bus route to the farmhouse. In that distance, the road climbed more than 100 metres to a height of 430 metres above sea level. The last section was a narrow untarmaced track which circumvented the side of a narrow gulley on a wooden bridge barely the width of a tractor. This was negotiated along with 5 gates before I arrived at a low farmhouse at the very margin of

cultivation. The map shows a number of disused mine shafts, and it would seem that the farm was originally one of the many miners smallholdings. A second farm nearby was operating on a full-time basis.

The interview with Mrs Heads took place in a sitting room complete with panoramic views and a spinning wheel. A point which is relevant to a later part of the discussion.

Mrs Heads and her husband and son had lived there for 12 years and during part of this time her husband's employment had been concerned with safety in a local fluorspar mine. At this altitude in the North Pennines snow can fall during any month of the year, which creates problems for the journey to work. As in some other areas of rural Northumberland, it was the employer who ensured that Mr Heads could get to work (the owners of the mine kept the road snow ploughed), and in so doing enabled Mrs Heads to pursue a part-time career as a secretary and her son to attend school in Haydon Bridge.

Mrs Heads had left school at fifteen, but qualified through evening classes in shorthand and typing. She had a driving licence and used the car for work in Allendale Town and shopping in Hexham and Newcastle as well as pursuing a number of activities. Both an active member of the Women's Institute and Young Wives group she had attended pewter craft, embroidery and cookery classes in the previous two years. But, her main interest was signified by the spinning wheel, and she pursued this through the Spinners, Weavers and Dyers Guild in Hexham, regularly exhibiting work at local shows. In terms of knowledge, she knew the locations

of all but two of the activities on the check list.

Survival in this remote location given that the farm could not provide a family income was dependent upon the snow clearing operation of the fluorspar mine. It closed.

As a postscript, after the mine closed, Mrs Heads was the only member of the family with a job. Employment opportunities for both her husband and her son were readily available outside the North East. They put the smallholding on the market in the summer of 1983 and sold it to a Tyneside family who planned to commute to jobs in the city. After one winter the small holding was again for sale.

This postscript to the interview with Mrs Heads emphasises the point that the loss of an industry can have far reaching implications for physical accessibility of individuals, families and a community. All the farms and houses along the route from the smallholding to the mine had benefitted from the snow clearing operation. The mine closure marked an increase in inaccessibility for those rural dwellers.

Continuing with the problem of the effects of the mine closure on the rural population, the next case study concentrates on the effects on accessibility of unemployment on a village family.

(ii) Mrs Fields

Mrs Fields came from a local family with many relatives in the area. Although only twenty, she and her husband lived in a council house with their young baby. She had

left school at sixteen and described herself as a housewife and her husband as an unemployed miner. He had lost his job when the fluorspar mine closed some months before and she seemed pessimistic about the opportunities for work locally or indeed on Tyneside. Physical accessibility, in terms of public transport was good and the Allendale Town centre was within walking distance. Mrs Fields did not drive nor did they own a family car.

Apart from radio, television and the occasional fishing trip with her husband, the only cultural educational facility she used regularly was the branch library. Despite living in the centre of Allendale Town her knowledge of both sports and evening classes was only partial. She seemed to be unaware of the activities which took place outside the village, and indeed unlike many people in the dale, she did not go further afield than Hexham for shopping.

At this time, there was some hope that a proposed opencast mining operation on Plenmeller Common would be given planning permission, but a Public Enquiry later rejected the plans, and in so doing, dashed the hopes of work for the Fields family and many other unemployed miners in Haltwhistle, the South Tyne and Allendale. For the Fields family, unemployment and the consequent low income had substantially reduced their opportunities and at the time of the interview Mrs Fields showed no inclination to look for work herself, or contemplate moving elsewhere. The contrast between the behaviour of Mrs Fields and Mrs Heads, both in relation to knowledge of, and participation in local activities and their families response to unemployment will be pursued later in the chapter.

The final case study comes from Haltwhistle and provides a further contrast with the behaviour of the women discussed above.

(iii) Mrs Green

Two years earlier Mrs Green had retired from a supervisors job in a Haltwhistle factory. She had left school at fifteen and returned to work when her children were in school. The supervisors job had required some inservice training including safety, but this was the only formal education/training she had had since leaving school. Her husband had recently retired from a driver's job with the same firm. They owned a car which Mrs Green used for her many activities.

When asked about the activities listed in Section B, she was able to give details of all the locally based activities and had attended a number of them. In the previous two years, her activities had included embroidery, dressmaking, cookery, winemaking and brewing, floral art, local history and art classes. At various times she had been involved with the Womens' Institute, Young Wives, yoga and keep fit classes. She was also a member of the branch library and read a number of magazines. Her behaviour bore out her stated philosophy of "living life to the full", and it was evident from a brief conversation with her husband that he shared the same philosophy.

Essential to that philosophy was accessibility to facilities. Most activities were within walking distance, in inclement weather Mrs Green used the car. Given that she

was physically active and her family had left home, she had few constraints on either her time or her energies.

Mrs Green followed a lifestyle which was similar to that of some of the incomers - the second of the two groups of rural dwellers.

Non Community Members: Retirees

Earlier, reference was made to the dreams of retirement in the countryside. But, during retirement people pass through a series of stages beginning with good physical mobility and often deteriorating to being housebound. This may be accompanied by the deterioration of other faculties. The following case studies have been chosen to demonstrate these stages and the accessibility problems associated with them.

(1) Mrs Wentworth

Mrs Wentworth and her husband had moved from Tyneside to a new private estate in Allendale Town on his retirement. She had previously worked as an auxillary in a school, but although only in her early fifties, had chosen to retire at the same time as her husband. They had searched for a property which measured up to their lifelong ambition of retiring to a house in the countryside.

The house they had bought was on the first private estate to be built in Allendale Town since the linear developments of the inter-war years. Originally the houses were planned for commuters to Tyneside, but the oil crisis curbed the spread of commuters into rural Northumberland and most of the houses were bought by retirees. As photograph 4

shows they are small modern houses within five minutes walk of the Allendale Town facilities and therefore, attractive to Tynesiders looking for a rural retirement home.

At the time of the interview Mrs Wentworth had lived in the village for two years, but in that time she had joined the Womens' Institute and Young Wives. Together with her husband she had attended the local history group and played bowls. Furthermore, she was involved with the provision of meals for the elderly. Sometimes she used the library in Hexham, but was a regular user of the Allendale Branch Library. Her knowledge of local events came from the Hexham Courant, but Section B, showed that she had only partial knowledge of events elsewhere in the study area.

For personal mobility, Mrs Wentworth was dependent upon public transport as she was not able to drive, nor did they own a car. All shopping trips to Hexham and Newcastle were made by bus.

In contrast, the second case study highlights the accessibility problems which occur after a few years for those retiring to an isolated location.

(ii) Mrs Long.

The Long's had been living in their retirement home for eleven years when the interview took place. They had lived previously in Sunderland where her husband had been a bus driver, and their children and other relatives still lived in the Wearside area. Mrs Long had always been a housewife and never driven a car. She had had three years education over the school leaving age, but at the age of 71 her sight

was failing and this made reading difficult. Her only activity was attending the Sisterhood in Gilsland.

Mr Long on his pension was able to maintain an ageing car for essential journeys and emergencies. They rationed themselves to one gallon of petrol per week which enabled them to make a weekly shopping trip to Haltwhistle and for Mrs Long to attend the Sisterhood. The house was on the bus route between Newcastle and Carlisle, but is doubtful whether Mrs Long could have undertaken a journey on her own.

In conversation it transpired that their family were dubious about their decision to retire to such an isolated location, but they seemed happy with the decision, although it was obvious that they were concerned about the future.

The final case study in this group illustrates the problem of the retirees who after many years find themselves alone.

(iii) Miss Square

Miss Square moved to Allendale Town with her two sisters and brother. All four had remained single and on retirement had bought a large house. Some years later at the age of 84, Miss Square was the only one left alive. Throughout her working life she had been a nurse, having left school at fourteen she had later undergone three years training and qualified as a State Registered Nurse.

Miss Square did not have a driving licence and was dependent upon the bus for shopping in Hexham. Although, her home was in the centre of the village she had little knowledge of even local activities such as the art classes held across the road. She had used the library in the past, but relied upon Sunday and local newspapers together with television and radio for knowledge of world events. Unlike Mrs Wentworth and Mrs Long, she had some distant relatives living locally, however there was no evidence to suggest that she was involved in local society.

Miss Square represented the group of elderly women alone with few relatives. Some were more able than others to impose a structure to their livelihood activity systems and maintain an interest in the local community, but many were dependent upon the home help service to maintain a home.

These three case studies have served to demonstrate the problem of advancing age and the difficulties of decreasing mobility with deteriorating physical health. Unlike the local elderly, the incomers do not have an immediate family support system, so that when a spouse, brother or sister dies, they often suffer a decline in the accessibility of goods and services. This can have a far reaching effect on participation in activities and access to information.

Non-Community Members: Commuters

The second group of incomers are the commuters; the two case studies are of women married to shipping surveyors, but living in different parts of the study area, with differing degrees of remoteness and at a different stage in the life cycle.

(i) Mrs. Dale

Mrs Dale lived in the commuter village of Catton, much of the time alone with her children. They had lived in a four bedroomed modern stone house for five years, but at the time of the interview, it was for sale. Mrs Dale was a graduate, but had not worked since obtaining her degree. With two children under five years and without family support she felt that it was impossible to consider taking a job. Lack of family support, also made it difficult for her to attend evening activities even in Allendale.

Mrs Dale had a driving licence, but the car was only available at weekends when her husband was at home. Before the children were born she had attended floral art, bridge and RSA typing classes, but more recently, her only activity had been the monthly visit to the Womens' Institute with a friend.

Severely restricted by family constraints and lack of personal transport Mrs Dale regularly used the branch library and watched late night films on television. Her particular accessibility environment was so limited that she and her husband had decided to leave the area for a more urban environment.

By contrast, in the second case study the woman is working, the children are teenagers and the family is engaged in hobby farming.

(ii) Mrs Thirlwall

Three years previously, Mrs Thirlwall had moved with her

husband and children from Carlisle to a smallholding. Both she and her husband worked in Carlisle where the children aged between 13 and 17 years were both in school. Mrs Thirlwall had secretarial qualifications and worked full-time as a secretary. Each member of the family had farm duties each evening. They kept a small milking herd, and she and her husband shared the milking.

The farm was isolated, yet just within walking distance of the Newcastle to Carlisle bus route. Mrs Thirlwall had a driving licence and her own car which she used for work, shopping and attending a course in farming at Carlisle Technical College. She used the library, but much of her reading was in the area of farming. Her knowledge of sporting facilities in Haltwhistle and Carlisle was good, but she had little knowledge of other evening classes.

These two case studies have been used to illustrate how differences in accessibility are important in the decision making of the commuters. Although, the village of Catton when measured by the two accessibility indices was high for private transport and medium for public transport, Mrs Dale found many facilities inaccessible. On the other hand, the smallholding on which Mrs Dale lived was classified by both indices as having medium physical accessibility. For both women, the two overriding factors to survival in the rural area were the availability of personal transport and family constraints.

Through the presentation of these twelve case studies, it has been possible to paint a picture of the different behaviour patterns of the women of S.W.Tynedale. Three

recurring themes with local women and incomers alike, are the variables lifecycle, family and lifestyle. These are interrelated and may enhance or constrain the accessibility to facilities of the individual woman. In the next section, the case study material will be used in the analysis of the constraints on the women's behaviour.

ANALYSIS OF THE WOMEN'S BEHAVIOUR

The relationship between the perception of what is accessible, and the subsequent decision making which is manifest in the behaviour of the women in the case studies is explored in this section. The main argument is that lifestyle is the dominant factor in explaining different behaviour patterns, and that where inter-generational lifestyles vary within a family there are social consequences affecting accessibility of members within the family.

Lifestyle is a nebulous concept which like accessibility itself has many facets, therefore, the starting point of the discussion must be with the term lifestyle. Reference was made earlier in the chapter to Stebbing's (1985) work in which the East Kent women described themselves as "country women". Stebbing interpreted this role as being centred on the home. In seeking a definition of lifestyle in the Northumberland context and drawing on the case study material the concept of country women needs to be further explored through the sociological literature.

In the sociological literature two of the four functions of the family are given as economic and socialization

(Worsley 1970). Where the family is the unit of production, as on a farm, the husband and wife perform different complimentary tasks for which they receive a joint income, but generally in modern industrial society, the home is not the centre of production and individuals are employed by separate production units and each earns an income. Therefore, the organisation of the economic function of the family for farm women differs from the non-farm women.

In the last century, the socialisation function of the family has been to some extent taken over by specialised education institutions i.e. play groups, nurseries, schools.

Yet socialisation, into family mores primarily takes place within the domestic situation. A parallel may be drawn with the concepts of *gemeinschaft* and *gesellschaft* developed by Tonnies a century ago, to describe differences in social organisation. Tonnies used the term *gemeinschaft* where family is the primary unit of social organisation and services and information are provided through informal relationships within it. On the other hand, *gesellschaft* described a mode of organisation which is "transitory and superficial" (Tonnies 1955 pp37-9) based more on the acquisition of services and information through contractual relationships with specialised institutions.

Three facets of lifestyle are implicit in the above discussion. Firstly, the importance of the kinship network, secondly stage in the life cycle and thirdly, community involvement where contractual rather than primary relationships are emphasised. These three aspects of lifestyle will be analysed in terms of the evidence presented in the case studies and with reference to the

survey data.

The interdependence of the family in the economic organisation of the farm tends towards a more gemeinschaft social model. Of the case studies, Mrs Acton and Mrs Low were the most family oriented farm women. Their case studies will be used as a starting point for the discussion of kinship networks in accessibility decision making.

Kinship Networks: the need and ability to provide support.

Mrs Acton and Mrs Low, of the farm women were 40 years apart in age, but both saw their major role as being the "lynchpin" of the farm organisation. Even at the age of 93, Mrs Acton still prepared meals for the farmer (her son). In the same way Mrs Low helped on the farm when needed and organised her part-time job to fit in with the essential activity of shopping to feed the farmer (her husband). Providing for the family and maintaining contact with the family were the two most important economic and social activities either performed. In both cases, the close links with family were emphasised by the presence of grown up married children in the home when the interviews took place.

Another respondent, in her thirties explained that although she returned to teaching after her family were in school, she had left because work on the farm and providing for the family were more important than her career. Again, the emphasis is upon family relationships and the commitment of all family members to the farm. However, evidence of predominantly gemeinschaft relationships can be found among the non-farm women. The same importance was given to family by Mrs Fields, who at the age of 20, with an unemployed husband had not seriously contemplated leaving her home

village. To do so would have meant leaving family and the support system she depended upon for bringing up her children.

The S.W. Tynedale research confirms Pahl's view (1971), that it is possible to identify a lifestyle amongst farm and non-farm women based on primary relationships which is better described by *gemeinschaft* than *gesellschaft* relationships. It is a traditional lifestyle very much akin to the Stebbing's countrywomen concept.

The incomers, are less dependent upon informal family relationships for services and information. Mrs Thirlwall and her family were quite independent managing their smallholding between them. With no relatives living locally, their social contacts were through colleagues at work. Information was sought from farming organisations such as ADAS and through periodicals. In the same way, Mrs Long although elderly and failing in health relied upon her husband and not her children. She expressed the view, "that they were all happier living their own lives". Mrs Wentworth expressed the same view and had clearly relished a retirement in which she was able to follow her own interests without family responsibilities. The incomers differed from the women with traditional lifestyles because, although they may attend the Womens' Institute, live in a farmhouse and travel the same distance to services, they relied more on contractual relationships with specialised institutions i.e. secondary relationships. This group will be referred to as having a non-traditional lifestyle typified by a greater dependence upon *gesellschaft* type relationships.

Where the traditional lifestyle is dominant then an inter-generational family support system providing, child rearing, health care, and economic services in which all members of the family are participants develops. Help and information is sought through family and friends rather than formal institutions. Cooley (1909) used the term primary to describe intimate face-to-face association and cooperation and later the term secondary (Worsley 1970) became accepted as referring to relationships which were non primary. Women with the traditional lifestyle had a greater proportion of their relationships primary than secondary in that they sought help from family in preference to outside institutions.

This was demonstrated repeatedly in interviews with the elderly. Women who had a home help frequently apologised for their families, explaining at length why their daughter or daughter-in-law could not do housework or shopping for them. Yet, nowhere in the interview was this information either directly or indirectly requested. On the other hand, Mrs Acton described the support she received from her family with a certain pride. Amongst the younger women, Mrs Fields was dependent upon her mother for advice and help with babysitting, whereas Mrs Wrea, struggling to farm alone was pleased to have her mother's support, but in all other ways looked to specialist institutions. She reluctantly, explained that a neighbouring farmer had offered her help, but it was clear that from her point of view, she would accept help only as a last resort. Of a similar age, Mrs Dale with two children under five had found life too difficult in a small village without either the family support system of the traditional society, nor the baby

sitting circles and mother and toddler groups which are organised in residential areas where women rely on gesellschaft type relationships for assistance with child rearing. This too was Miss Square's problem, with her brother and sisters deceased she was of a generation which had depended more upon family support systems, yet at the end of her life her relationships were transitory and often with specialised institutions.

Although family relationships are taught through the socialisation process and family support systems are inter-generational, the education process tends to emphasize the secondary associations where formal contractual relationships are entered into. This has been reinforced by fifty years of rural depopulation. When a problem arises it is the Citizen's Advice Bureau rather than a member of the family who is often best able to advise. Therefore, although in some families the traditional lifestyle is dominant in all generations, in others a change is taking place with the older generation still entrenched in a family support system to which the younger members do not subscribe. Miss Alloa exemplified this change.

At seventeen, Miss Alloa belonged to a large local family with a number of relatives she could depend upon for a night's accommodation, if she could not get home. In casual conversation, her mother talked of her daughter's decision to leave home and take up a career in nursing with approval. Miss Alloa was a part of her family, but was not being tied by family responsibilities and allegiances. Similarly, her neighbour Mrs Low also approved of her daughters' decisions to leave the farm. She perceived

herself as being caught up in a web of domestic material poverty imposed by the families economic organisation, and was adamant that the next generation should not be so bound.

The incomers included those who had used geographical separation from their families to opt out of the gemeinschaft relationships. Mrs Long and Mrs Wentworth, together with their respective husbands, had both distanced themselves from family, and in so doing opted out of the assistance with child rearing responsibilities often undertaken by their age group. Mrs Green, in Haltwhistle had on retirement asserted her independence, yet was still clearly involved with a large family (one of whom was present at the time of the interview). As a works supervisor, she had performed a separate economic function to her husband and had developed a lifestyle which included more gesellschaft relationships than many women of her generation. A comparison can be drawn with Mrs Heads, who although involved with homemaking skills through the Womens' Institute, and Spinners, Weavers and Dyers nevertheless had a number of gesellschaft associations through her work. Therefore, the division into traditional and non-traditional does not necessarily parallel the local and incomer classification, but it does facilitate the discussion of the surveyed women's behaviour in relation to accessibility.

To conclude, where primary relationships are dominant they fulfill a number of functions. Firstly, information about events, facilities, transport provision as well as advice are disseminated through the kinship network. Secondly, kin provide support for instance by cleaning, babysitting, and shopping, but in turn kin also impose a

constraint on those providing the support. Furthermore, the support and constraints associated with care of other members of the family have traditionally been the province of women. However, within a family different generations may vary in the balance they strike between primary and secondary relationships. Whether provided through primary or secondary relationships the need for support and the ability to provide support, changes with stage in the lifecycle.

Lifecycle: Changes in the need for and the ability to provide support

Here it is intended to analyse the behaviour of the women in terms of their need and ability to provide support at different stages of the lifecycle. The twelve case studies can be divided into four groups according to stage in the lifecycle - young women without children; mothers with children; middle-aged without the constraints of children; the elderly.

(i) Young women without children are in need of a particular type of support. Miss Alloa needed family support for her activities in terms of transportation and somewhere to stay. In staying with elderly relatives she may well have been providing family support in that they may have enjoyed the company. Had Miss Alloa been living in an urban environment then she would have been able to rely on public transport and taxi services, therefore family support was essential to her accessibility to facilities. The same point was made by a respondent of a similar age in Allendale

who had made quite complicated arrangements to ensure she arrived at work on time in Hexham.

(ii) Young mothers with children are vulnerable in terms of both needing support and having demands made upon them to provide support. The need for help and advice with child rearing is often provided by parents who may gain pleasure from baby sitting etc., but who also may enable a daughter to return to work and so help the family financially. On the other hand, where the mother is at home with her children, demands for her to assist with the care of elderly relatives during the day may become a permanent obligation which is difficult to avoid.

It was noticeable in Halton Lea Gate, where the young mothers had no relatives locally, that they appeared to be underoccupied. They suffered from both a lack of support from their families, and the lack of a demand for the provision of support. A number of them introduced into the interview the question of separation from parents and its effect on their activities. With few opportunities for work, these women had not developed the gesellschaft associations and organised either a support system for themselves, or for the elderly in the community. This may have been in part due to their view of Halton Lea Gate as a transitory rather than permanent village in which to live.

(iii) Middle-aged women with grown up families were most likely to find their services in demand for both caring for grandchildren and elderly parents. Women in this group who had a car found themselves chauffeuring relatives and in particular assisting with shopping. Together with the young

mothers they are the group most likely to be employed as home helps. It is this group of women who organise the Senior Citizens events and help with the meals-on-wheels service. The incomers, like Mrs Wentworth may become involved with the latter, and are often the mainstay of the Women's Institute and the Mothers' Union, contributing in an indirect way through secondary relationships to the "community support system".

(iv) The Elderly. As women advance in years the amount of support they require from family, friends and the social services increases. For some local women, there was the decision to remain in often isolated substandard housing, or move to a modern flat with accessibility to shops and services. Implicit in these alternatives was often the choice between primary contacts with family, or secondary contacts with specialised institutions such as daycare centres.

The balance between dependence upon primary and secondary relationships is changing. The elderly women with the traditional lifestyle such as Mrs Acton typify a generation with a lifestyle dominated by primary relationships and family obligations. They in turn were expecting of their families the support which they felt was their entitlement. Indeed, their relationships with the world were through their families. At the other extreme Mrs Dale and to a lesser extent Miss Alloa and Mrs Wrea used secondary associations to fulfill their information and social needs. For the middle-aged women the balance between primary and secondary relationships had changed during their lifetime. Born into a family dominated environment they had

experienced the reduction in family size, the migration from the rural area and above all the proliferation of secondary sources of information and provision of services. Amongst the case studies, two different responses can be identified, firstly that of Mrs Wentworth and Mrs Long who in retiring away from their families had changed the pattern of support within their own families. Secondly, that of Mrs Low who accepted her own position as the "lynchpin" of the family, but was determined that her daughters would not have the same obligations placed upon them.

However, the change in emphasis from primary to secondary cannot be explained in terms of inter-generational experience alone. On the one hand, the very elderly Miss Square had followed her career, sharing a home with her brother and two sisters only on retirement, and when interviewed was dependent upon secondary relationships i.e. home help and meals-on-wheels; and on the other Mrs Fields, at the age of twenty who emphasised primary contacts for both social and information needs.

The case study evidence suggests that in S.W. Tynedale the general trend is for primary contacts to be replaced by secondary ones in the area of family support. Incomers, of all ages, are less dependent upon family support than the local families. Primary contacts tend to be greater in lower income/less educated families and secondary greater in medium income/educated families. However, for the women of S.W.Tynedale there is a strong link between family support and accessibility. The next step is to examine the extent to which family support compensates for remoteness.

Remoteness

Of the twelve case study women, seven lived in locations classified by the two indices of low or medium accessibility. Yet, all except Mrs Wrea, either were, or had been active while living in their current homes. Only, two of the these "remote" women owned a car and one a motor scooter. This suggests that remoteness per se is not a major variable in explaining lack of participation in local activities.

The two women with cars, Mrs Heads, a community member and Mrs Thirlwall, a non-community member both worked as secretaries and both had teenage children living at home. Furthermore, they were both involved with part-time farming and participated in cultural/educational activities locally and in Carlisle, respectively. Similarly, Mrs Green a very active respondent in Haltwhistle had also had a responsible job and drove a car. The two variables which explain the participation of these women in activities are firstly, a responsible job and secondly, personal mobility.

By contrast Mrs Dale had the education for a responsible job and a licence to drive a car, but family constraints prevented her from seeking a job and the car was not available during the week - she was trapped in a village. Her position was the same as the young mothers in Halton Lea Gate. Mrs Wrea, on the other hand, had the responsible job, but not the driving licence. She saw learning to drive as her first priority after running the farm.

Except for Mrs Wentworth and Miss Square, the other

women in the case studies depended, to a lesser or greater extent, on other members of the family for personal transport. With Miss Allos this extended to accomodation, Mrs Fields to babysitting and Mrs Acton to obtaining the goods and services for her. It is perhaps significant, that both Mrs Wentworth and Miss Square had chosen to live in Allendale Town within walking distance of the facilities and the bus.

The case study evidence suggests that only women who enjoy a combination of a job, personal transport and/or family support in overcoming the problems created by inaccessibility, enjoy a fully satisfactory life in a remote location.

To conclude the section on women's behaviour in S.W. Tynedale a number of interrelated strands have emerged. The balance between primary and secondary relationships and the extent to which the individual women are enmeshed in a family support system are key differences in the traditional and non-traditional lifestyles of the local women and the incomers. The stark contrast between Mrs Fields, the local girl who was happy to remain in Allendale with a young family, an unemployed husband and no car; and Mrs Dale, an incomer on a higher income, yet with similar problems, felt the necessity to leave, demonstrates this point. Young mothers are more in need of support than women with teenage children. The very elderly are another group in need of support, and here Mrs Acton at 93 preferred to live alone and have maximum family support, rather than find herself in the same position as Miss Square, alone in a village dependent upon secondary contacts. Accessibility varies

with stage in the lifecycle not only because of variations in personal mobility, but also family support. A support system consists of a series of enabling mechanisms which the family provides for its different members. The enabling mechanisms include chauffering another member of the family, babysitting, nursing and so forth. The family support system enables the local young mothers and elderly to cope with inaccessibility, but the incomers do not have this support and when problems do occur they can be more acute.

Local women and incomers are affected by differences in inter-generational lifestyles. The incomers, particularly the retirees who have opted out of family support systems elsewhere are themselves left bereft in later years. With the local women, the problem arises where their children have left the area often in search of work. Many of these elderly women find themselves in local authority housing in Haltwhistle and although their physical needs are attended to by health visitors, home helps, meals-on-wheels etc. they find socialising outside the family difficult and suffer from loneliness. Devoid of a family contact to enable them to socialise and maintain a livelihood activity system these women rely on commercial and social organisations to help them.

The case study evidence has supported the argument that lifestyle, interrelated as it is, to lifecycle and income, is a dominant factor in explaining different behaviour patterns to overcoming problems of inaccessibility.

To this point the discussion has used the case study

evidence presented earlier. These women are twelve of the 248 respondents and they have provided an insight into the relationship between kinship networks, ~~lifecycle~~, remoteness and community involvement. In the final part of this chapter, the discussion moves to the wider scene and explores the community involvement of the surveyed women.

WOMENS' BEHAVIOUR - COMMUNITY INVOLVEMENT

Community involvement implies entering into secondary associations and often contractual relationships. Belonging to a committee, for example, chairwoman of the W.I., or attending an evening class both entail a contractual relationship. For many community involvement includes a mixture of primary and secondary relationships whereby they fulfill a contractual role whilst socialising with relative and life long friends.

The starting point of this analysis is the womens' perception of community involvement as measured by their knowledge of activities. Section B of the recording schedule (Appendix IV) asked about involvement in 48 different activities and it is this data which will be used to analyse this aspect of womens' behaviour. Four pieces of information were recorded for each activity firstly, knowledge of the location; secondly, involvement in the activity; thirdly, dates of use and finally, attendance with a friend or relative. This data facilitates the analysis of the knowledge of the surveyed women and their use of these activities. It is pertinent here to consider the differences in the knowledge of the surveyed women of the 48 activities before analysing in detail the patterns of use.

Knowledge of Community Facilities

The percentage with knowledge of each activity is given in Table 8.1. The percentage having knowledge of a given activity varies from 5% for archery which took place in Hexham to 86% for the Womens' Institute with a number of branches in each sub region of S.W. Tynedale. The swimming pool in Haltwhistle and those outside the area in Hexham and Carlisle were known about by 80% of women, and 75% were aware of the locally based Senior Citizens. However, these figures hide considerable regional differences.

There were considerable variations within the study area of knowledge of activities using visually identifiable facilities such as bell ringing and golf. Bell ringing is only practised in Allendale and 67% of Allendale respondents knew of the activity, whereas in Haltwhistle and West Tyne only 2% could name a location for bell ringing. There are golf courses in Allendale and Greenhead and 86% and 94% of the respondents, respectively knew about them. The golf course in Greenhead belongs to the Haltwhistle Golf Club, but only 51% of Haltwhistle women knew of its existence. Similarly, the only public swimming pool in the area is in Haltwhistle where the level of knowledge was lowest at 70%.

With activities using school rooms, churches and village halls etc. again knowledge of an activity was greater in the settlement in which it was taking place. This is illustrated by the Young Farmers' where 76% and 75%, respectively had knowledge of their meetings in Allendale and West Tyne, but only 49% in Haltwhistle. Apart from the swimming pool, the knowledge scores conform to the concept

Sub-region	Allendale		Haltwhistle		West Tyne		S.W. Tynedale	
Surveyed Women	Know. %	Use %	Know. %	Use %	Know. %	Use %	Know. %	Use %
W.I.	99	22	64	4	95	18	86	15
Mother's Union	33	1	46	2	44	4	41	2
Young Wives	65	11	75	6	36	3	59	7
Young Farmers	76	6	49	1	75	1	67	3
Pewter Craft	15	1	28	2	17	0	20	1
Silversmithing	10	0	18	0	12	0	13	0
Metalwork	19	0	30	0	36	0	28	0
Woodwork	51	2	41	0	39	0	44	1
Handicrafts	43	3	43	2	57	5	48	4
Embroidery	31	2	43	2	38	3	37	2
Dressmaking	65	5	48	6	61	1	58	4
Cookery	36	2	34	2	36	3	44	2
Winemaking								
/brewing	6	0	18	2	22	0	15	1
Photography	12	1	12	0	12	0	12	1
Ballroom Dance	36	1	30	5	48	3	38	3
Drama	33	0	30	4	36	0	33	1
Floral Art	43	1	37	4	51	1	44	2
Local History	61	9	36	5	42	7	46	7
Royal Society of Arts	40	2	36	4	59	3	45	3
GCE	30	0	31	0	53	4	38	1
Bridge	60	2	6	0	13	0	26	1
Bell ringing	67	2	1	0	1	0	23	1
Art Club	60	1	31	2	42	4	44	2
Horticulture	45	1	7	0	73	4	42	2
Angling	60	1	36	0	52	1	49	1
Archery	7	1	4	0	3	0	5	1
Athletics	10	0	11	0	18	0	13	0
Badminton	48	2	57	1	52	3	52	2
Bowls	83	3	58	0	71	0	71	1
Fox Hunt	63	0	46	1	66	3	58	1
Golf	86	1	51	1	94	3	77	2
Gymnastics	9	0	14	0	10	0	11	0
Hockey	7	0	4	0	9	0	7	0
Judo	39	0	33	0	44	0	39	0
Riding	80	8	17	1	84	1	60	3
Sailing	36	1	17	0	64	1	39	1
Squash	40	2	23	0	47	4	37	2
Sub-aqua	10	0	7	0	6	1	8	1
Swimming	73	16	70	12	96	13	80	13
Table Tennis	28	1	23	0	35	0	29	1
Tennis	83	6	47	0	57	4	62	3
Keep Fit	53	5	43	2	66	3	54	3
Yoga	39	3	37	8	52	8	43	6
Adult Literacy	7	0	6	0	3	0	5	0
Choirs	30	0	17	2	35	0	27	1
Orchestra/Bands	35	0	42	0	56	0	44	0
Business & Prof.								
Women's Groups	22	0	14	1	16	0	17	1
Senior Citizens	84	5	49	6	86	16	73	9
Total Active		67		57		78		67

Table 8.1 S.W. Tynedale: Knowledge and Use of Facilities in 1981

of distance decay in that knowledge declines with increasing distance from the facility. Following this line of argument, knowledge of activities will be lowest where fewest facilities are located and vice versa.

When knowledge is related to the number of facilities located locally as in Table 8.2, then in West Tyne where there were only 18 facilities, 21 of the 48 were known about by more than 50% of the surveyed women. Allendale like West Tyne with fewer facilities than Haltwhistle, had more than 50% of the women with knowledge of 18 of the 48 activities, the comparable

% Women with knowledge of facilities	Number of Facilities			S.W.Tynedale
	Allendale	Haltwhistle	West Tyne	
<25%	12	18	13	12
25-49%	18	24	14	23
50-74%	11	5	15	10
>75%	7	1	6	3
No. of local facilities	20	35	18	48*

* 3 located in Hexham/Carlisle

Table 8.2 S.W.Tynedale: Women's Knowledge of Facilities in 1981

figure for Haltwhistle with 35 facilities was 6. The question may be asked, is it that, the socio-economic composition of the Haltwhistle women is significantly different from Allendale and West Tyne, or is there a

threshold operating, but the actual threshold and decline in knowledge with increasing size of settlement will depend upon the socio-economic characteristics of the population. Another way of explaining it, is in terms of a saturation point, whereby a population with a given set of socio-economic characteristics will absorb knowledge about cultural/educational facilities to a certain level. In a small settlement where the total number of facilities are below the saturation point of the population then knowledge will be high and include facilities elsewhere as is the case in West Tyne. Given a different set of socio-economic characteristics including lower economic status and educational attainment, then the saturation point will be lower. In a larger settlement where the number of facilities exceed that saturation point knowledge of the proportion of facilities will be smaller and mostly confined to the settlement facilities. This was the case in Haltwhistle.

Having identified this pattern of knowledge the next step is to discover whether it is reflected in the womens' use of facilities.

Use of Community Facilities

Table 8.1 gives the percentage of surveyed women who used each activity. Eight of the 48 facilities were not used at all. Only two of the facilities were used by more than 10% of the surveyed women - WI, 15%; and swimming 13%. Of the church based groups, the Young Wives was attended by

7%; the Senior Citizens was more popular with 9% and among the educational classes local history had 7% attenders. The users of these five most popular activities will be analysed in greater detail later together with the 67% of women who were not actively using the community facilities.

Meanwhile the objective here, is to analyse the pattern of use and compare it with that of knowledge presented earlier.

% Women using facilities	Number of Facilities			
	Allendale	Haltwhistle	West Tyne	S.W.Tynedale
0%	15	22	23	8
1- 5%	25	21	23	34
6-10%	5	4	2	4
>10%	3	1	3	2
No. of facilities locally	20	35	18	48*

* 3 located in Hexham/Carlisle

Table 8.3 S.W. Tynedale: Women's Use of Facilities in 1981

In Table 8.3, Allendale women used the widest range of facilities, in that out of the 48, only 15 were not used, whereas Haltwhistle women used 29 facilities, four less than Allendale, but one more than West Tyne. Again these figures do not reflect the number of facilities located in the settlements. Although, West Tyne had almost half the number of facilities of Haltwhistle, the same number, five were used by more than 15% of the population. The highest use

was in Allendale where 5% of the women used eight of the facilities.

A comparison of Tables 8.2 and 8.3 tends to support the idea that where knowledge is greatest, so is use. For in Allendale, where 7% of the activities were known about by 7% of the surveyed women, then more than 10% used three of the activities. While in Haltwhistle, only one activity was known about by 75% of all respondents and only one activity was used by more than 10%. West Tyne's data reveal a similar pattern to Allendale with more than 75% having knowledge of six facilities and over 10% using three of them.

Number of activities	Active Women %	Inactive Women %
0 - 10	16	34
11 - 20	26	38
21 - 30	42	17
31 - 48	19	9

Table 8.4 S.W.Tynedale: Knowledge of Activities

Table 8.4 summarises the knowledge of the surveyed women according to whether or not they were actively involved with the community. Whereas 61% of the active women were aware of 21 or more activities, only 26% of the inactive women had the same level of knowledge. Conversely, 16% of the active women had knowledge of less than ten activities, but more than a third of the inactive women had the same level of knowledge.

To summarize the preceeding analysis has shown there to be a relationship between perception as measured by knowledge and community involvement as measured by use of facilities, and that variations exist between regions in both knowledge and community involvement. The latter point is pertinent to the macro-scale analysis of later chapters. The next stage in the analysis is to look in detail at the characteristics of those women involved in specific activities namely, the WI, Young Wives, Local History, Swimming and Senior Citizens.

Women Active in the Community

Of the 248 women interviewed, sixty per cent were involved in activities outside the home. These included the five most used facilities identified above. These activities are very different in character and appeal to different groups of women. By definition the W.I. and Young Wives are women's clubs, whereas the Senior Citizens, although often mainly used by women has an exclusive membership based on age, rather than gender. Both local history classes and the swimming pool are provided by the local authority, but whereas swimming is an activity for all the family, local history is adults only. Therefore, these activities appeal to women at different stages of the lifecycle and with different family obligations.

A young family may go swimming when the children are young, whereas in later years husband and wife may take up an interest together such as local history and after

retirement attend Senior Citizens groups.

Where mother and daughter may attend the W.I. together, they may also take the grandchildren swimming. Similarly, the daughter may become involved in organising the Senior Citizens to ensure the continuation of an organisation which her mother attends. A respondent from Greenhead explained her involvement with the Senior Citizens in these terms.

It is significant that the five activities with the greatest percentage of users are complimentary rather than competitive in their appeal. The analysis of the five activities uses the classification of community locals and incomers described at the beginning of the chapter and relates participation to the variables of age, children, employment, education, personal mobility and participation in other activities. Each of these variables represents a constraint on the women's behaviour, therefore, it is important to explore the operation of these constraints using the survey data.

Classification	W.I.	Young	Local	Swimming	Senior	Survey
	%	Wives	History	%	Citizens	Data
		%	%		%	%
Community	58	62	53	50	90	69
Farm	38	13	22	8	29	24
Non-farm	62	87	88	92	71	76
Total	100	100	100	100	100	100
Non-community	42	38	47	50	10	31
Commuters	73	100	50	100	0	77
Retired	27	0	50	0	100	23
Total	100	100	100	100	100	100

Table 8.5 S.W.Tynedale: Participation in Selected Activities for Different Active Groups of Rural Women

The data in Table 8.5 describes the 149 active women in the survey. The final column shows the total percentage of surveyed women in each group. Except for Senior Citizens, the trend is for local women to be under represented and incomers over represented for each activity. The W.I. and Senior Citizens were more popular with farm women whereas, non-farm women tended to be more involved with Young Wives, Local History and Swimming. The retired incomers attended the W.I., but and participated in the Senior Citizens, whereas the active commuters attended the Young Wives and used the swimming pool.

The discussion using the case study material suggested that employment and personal mobility were important in determining who was involved in the community. In Table 8.6 activity is related to the variables of children, employment, education, driving licence, participation in other activities and age.

Variables	W.I.	Young Wives	Local History	Swimming	Senior Citizens	Survey Total
	%	%	%	%	%	%
Children at home	22	44	18	65	0	33
FT Work	11	6	12	32	0	21
PT Work	11	38	12	29	0	18
Voluntary Education	50	19	59	50	29	36
Driving Licence	53	31	65	65	20*	39
Other activities	75	50	76	74	33	29

* Driving licences held by organisers only.

Table 8.6 S.W.Tynedale: Participation in Selected Activities by Women with Different Personal Characteristics

The Women's Institute often meets in the afternoons which may in part explain the concentration of membership in the 45-59 age group, few of whom had either full or part-time jobs. However, they tended to be more educated, in that 50% had some voluntary education as compared with 36% of the surveyed women, and similarly 53% had driving licences - 14% more than in the surveyed population. Women's Institute members were highly involved with other community activities which contrasts with 29% in the surveyed population and 50% of Young Wives.

Concentrated in the same group as the Women's Institute, the Young Wives appealed to a different group. Twice as many had both children at home and full or part-time jobs as the W.I. members. In terms of education and driving licences they were well below the surveyed women with 19% and 31%, respectively.

Local History members were on average older, therefore less likely to have children at home or be employed. Their characteristics were similar to those of the W.I. members in that they were more likely to have some voluntary education, drive a car and be involved with other activities.

Another group highly involved with other activities were those who used the swimming pool. Although, the median age group was 25-34 with 65% with children at home, this group had 61% in employment, 50% with some voluntary education and 65% with driving licences.

Finally, the Senior Citizens, a third of whom were

involved with other activities. The only women involved in the Senior Citizens with driving licences were the organisers and perhaps surprisingly some 29% had had voluntary education which is 10% more than the Young Wives group.

Earlier, the discussion focussed on the role of primary relationships and in particular kinship networks in both supporting and constraining women's opportunities. Attendance at activities with family and friends is one measure of the support women give and receive. In Table 8.7, the data for attendance with family and friends at the five facilities for the local and incomer groups in S.W. Tynedale is given.

Activity	Attendance with Family and/or Friends				
	W.I. %	Young Wives %	Local History %	Swimming %	Senior Citizens %
Community members	43	10	67	71	21
Non-community members	40	17	38	76	0
Percentage	42	13	53	74	19

Table 8.7 S.W.Tynedale: Attendance at Activities with Family and or Friends for Different Groups of Rural Women

The actual numbers are very small, but there is a considerable difference between the Young Wives and Senior Citizens which women tend to attend alone, and the W.I., Local History and Swimming which they participate in with others. Swimming was specifically a family activity, whereas Local History and W.I. were attended with friends or

family. The only significant difference between community and non-community members was attendance at the Senior Citizen's - the few incomers who did use the facility, did so alone.

These five descriptions serve to highlight the differences not only in interests of women at different stages in the lifecycle, but also with different lifestyles.

This is most apparent between the W.I. and the Young Wives where farm women are active in the former and non-farm women in both. There are distinct differences in the membership in terms of education, driving licences and other activities. Women who are involved with the W.I., Local History or swimming have a 75% chance of been involved with other activities and are more likely to have participated with family and/or friends. Driving licences and education seem to be important explanatory variables for three of the five activities, whereas constraints of children and work appear to be less important. Forty per cent of the surveyed women were not involved with any activities. To further explore the relationship of involvement to the variables analysed above the discussion needs to focus on this group of inactive women.

As Table 8.8 shows the local women are marginally over represented and the incomers under represented when compared with the surveyed women. Fewer farm women are inactive than non-farm women and the commuter group is less active than the retired incomers, but generally, the spread of inactivity is proportional to each groups representation in the survey.

Classification	Inactive Women %	Survey Total %
Community members	76	69
Farm	18	24
Non-farm	82	76
Total	100	100
Non-community members	24	31
Commuters	79	77
Retired	21	23
Total	100	100

Table 8.8 S.W.Tynedale: Inactivity in Different Groups of Rural Women

If the inactive group is analysed in terms of constraints using the data in Table 8.9, and beginning with age, then 45% are over 60 years of age, therefore age cannot be discounted as a major constraint. Maintaining a livelihood activity system is only managed with great difficulty by many of the elderly. A second constraint, caring for children only applied to 27% of the inactive group which is 5% less than the women with children at home.

Part-time work showed a stronger relationship to inactivity than full-time work, but the strongest relationships were between inactivity and education and driving licences, respectively. Six per cent less than the average for the survey data had any education above the statutory requirement and 9% fewer had driving licences.

Variables	Inactive Women %	Survey Data %
Children at home	27	33
Retired	45	37
FT Work	18	21
PT Work	24	18
Voluntary		
Education	30	36
Driving		
Licence	30	39

Table 8.9 S.W.Tynedale: Inactivity of Women with
Different Personal Characteristics

The analysis of the participation of the respondents in the activities given in Section B of the Recording Schedule has shown that activity is related to knowledge in that the women who are involved have a greater knowledge of local activities than those who do not participate. It was possible to identify five activities which were attended by more than 5% of women, when they were analysed in terms of both the classification of rural women and specified characteristics then, it was shown that firstly, the five activities appealed to women at different stages of the life cycle and with different lifestyles. The two most important variables explaining participation in activities were education and driving licence.

Conclusion

Using a classification derived from Quayle's analysis of different groups within rural Allendale, this chapter has concentrated on the micro scale approach. Evidence from case studies and data on women's perception and use of facilities was used to elaborate the varied life styles, the role and the changing nature of the family support system and the

characteristics of those groups of women who are actively involved in the community. The importance for rural women of the family support system both as an enabling mechanism to offset the effects of inaccessibility and as a constraint on time was the major contribution to the analysis of women's behaviour using the case study material, whereas the analysis of community involvement emphasised personal mobility and education as being important determinants of community involvement.

From this chapter, it can be concluded that the accessibility behaviour of rural women in all stages of the life cycle depends upon a balance between personal mobility, family support, and constraints on time through both family and work obligations. The balance tends to be weighted by family support and constraints for local women, and employment and car ownership for the incomers. The case studies showed how the balance between support and constraint changes with stage in the lifecycle, and how within families women may change the balance at different stages of the lifecycle.

To return to the rural accessibility problem, the analysis of the behaviour of women has shown that rising car ownership may be contributing to a change in intergenerational lifestyles, whereby women with increased accessibility depend less on the family enabling mechanism and therefore may choose to opt out of their family support system. By the same token, it can be argued that increasing car ownership enables women to provide greater support to non carowning relatives, and over a greater distance. What is apparent is that rising car ownership is bringing about a

changed lifestyle which gives the carowning women a greater independence and leaves the carless more dependent upon family support.

CHAPTER NINE - THE UNDERLYING STRUCTURE

Introduction

Through the analysis of pairs of variables and the methodology of time geography, it has been established that for the women in the three sub-regions of S.W.Tynedale, there are considerable differences in the physical and social accessibility to opportunities. Hypothesis 12, discussed in chapter 5, was formulated to explore the underlying structure of the regional variations in accessibility. In this chapter the task is to analyse the data structure, for which a method of data synthesis is required which reduces the data to its basic components.

Principal Components Analysis (PCA) was chosen from the family of statistical techniques collectively known as Factor Analysis. PCA was available on computer in the Statistical Package for the Social Sciences (SPSS), and it was this package which was used for the PCA analysis. The discussion begins with a summary of the purpose of PCA which is followed by a discussion of the methodology used to identify a number of components. The components are described in terms of the variables which they summarise and their contribution to the explanation of the total variance.

Two methods of rotation are considered. The first, an orthogonal solution using the Varimax technique, and the second, a Direct Oblimin which allows for a number of oblique solutions. The Direct Oblimin technique provides a factor correlation matrix and this forms the basis of the discussion of the relationships between the components. Finally, by analysing the component scores for the

individual respondents a picture of the regional variations in the underlying structure of accessibility in S.W. Tynedale can be assembled.

PRINCIPAL COMPONENT ANALYSIS

The main objective of PCA is the calculation of components representing the summarized description of a data set (Davies 1984). Components are mathematical constructs and for a given group of variables one or more components identifies the major elements of variation, and the extent of common characteristics between each pair of variables. The intention is to achieve as parsimonious a description of the data set as possible.

The Principal Axes technique is a method of extracting the maximum amount of variance from a data set by extracting the dominant source of variance first, and then, each successive component accounts for a decreasing amount of variance. Emphasis is placed on those variables accounting for the greatest degree of variation, while those which contribute little to the explanation are rejected. It is inevitable that a percentage of the variability is lost in representing the data in this way.

In applying PCA, the researcher is faced with a number of decisions. The first is the question of which of the variables to include, and the second the optimal number of factors in the factor solution. But, first a point about terminology. In the following discussion the term factor may be used interchangeably with the term component. Likewise, components may be referred to by their

mathematical terms of axes or vectors.

Which variables?

The initial problem, in applying principal component analysis was the choice of variables. Of the sixty-nine variables in the data set some were locational identifiers, and therefore, unsuitable for statistical analysis. These were excluded together with those variables which were not coded on interval or ordinal scales. The remaining 44 variables were all used in the initial calculations in which the number of factors equalled the number of variables.

Examination of the estimates of communality for the 44 variables suggested that those with values of less than 0.3 should be reconsidered. Before discussing the variables, it will be useful to consider a definition of communality. Communality is a measure of the amount of variability accounted for by the factor solution. It is constructed from the sum of the squares of each row of factor loadings. Communality can be estimated using the Principal Axes technique. The variables are expressed in a standardised form and the greatest amount of variance possible is then extracted from the observed correlation matrix.

The communality value of 0.3 seemed to be an appropriate 'cut-off' point because variables with values of less than 0.3 have little in common with the other variables. Conversely, variables with communalities approaching 1.0 may be measuring the same dimension as one or more of the other variables in the data set and, therefore, may also need discarding. Before discarding a

variable the balance between the groups of variables must be considered. The variables were classified into the following four categories:

- Accessibility and mobility
- Socio-economic
- Spatial Knowledge of facilities
- Use of facilities

Table 9.1 on the following page gives the variables in each group and the estimates of communality. These estimates pointed to a reconsideration of the following variables:

- Mobile Library Use
- Branch Library Use
- Use of non-local libraries
- Children aged 5-12 years
- Children aged 12-17 years
- Media Magazines

The choice of variables could not be isolated from the number of components. Before, finally deciding which variables to discard various solutions to the question of how many components were considered. PCA was calculated for solutions with between 8 and 14 components. For reasons which will be discussed later a nine component solution was chosen; the communality values used here for the above group of variables were for the chosen solution. When the factor loadings for the variables in question were examined; Children aged 5-12 years; Children aged 12-17 years; Branch libraries; and Non-local libraries all accounted for approximately 7% of the variance, whereas, Mobile libraries accounted for even less. A further examination of the factor loadings identified the three newspaper variables (Sundays, Dailies and Weeklies) as accounting for <10% of the variance.

Variables	Estimates of Communality
Accessibility and mobility	
Private Transport Accessibility Index	0.70
Public Transport Accessibility Index	0.74
Distance to Hexham	0.70
Walking time to the bus	0.62
Use of a car	0.62
Driving Licence	0.58
Transport to town	0.43
Socio-economic	
Attendance with family	0.69
Age	0.59
Length of Residence	0.48
Children under 5years	0.43
Recording Facilities	0.41
Education	0.40
Kin living locally	0.40
Property Class	0.31
Children 5 - 13 years	0.28
Children 14 - 17 years	0.25
Spatial Knowledge of Facilities	
Sport - local	0.72
Sport - area	0.70
Education - area	0.66
Education - local	0.65
Sport - city	0.64
Sport - town	0.63
Clubs - area	0.49
Education - town	0.48
Clubs - local	0.45
Education - city	0.44
Clubs - town	0.38
Clubs - city	0.36
Use of Facilities	
Sport - non-local	0.58
Clubs - local	0.50
Sport - local	0.41
Education - local	0.40
Education - non-local	0.40
Professional Magazines	0.33
Branch Library	0.31
Non-local Libraries	0.31
Clubs - non-local	0.30
Interest Magazines	0.30
Mobile Library	0.30
Media Magazines	0.24

Table 9.1 Estimates of Communality for the Selected Variables

Each of these variables was then considered in relation to the distribution and balance between the four groups. Of the three library variables, mobiles accounted for the least amount of variance and as the mobile library did not serve all areas, and also because women in mobile library areas travelled to use the wider stock and services of the branch library, it was decided to discard the mobile library variable. On the other hand the 'Use of facilities' category contained only nine variables as opposed to the twelve variables in the 'Knowledge of facilities' category. In the interest of balance the two remaining library variables were retained.

At this point it must be noted that the knowledge variables were infact paired for local and S.W. Tynedale facilities. Where a respondent lived in a small hamlet with few or no facilities their knowledge was of opportunities within the study area, whereas the knowledge of the respondents living in Allendale Town and Haltwhistle where many facilities were located was potentially, local. Few women had high scores for the paired variables; a far greater number had low scores for both. The result of this pairing of knowledge variables, in effect, reduced the number in that category to nine.

A similar problem arose with children aged 5-12 years and 13-17 years., because, although the respective communalities were low, to remove these variables, and yet, retain the variable 'Children aged under 5 years' would have created an imbalance in the socio-economic category. Therefore, all variables relating to children were retained.

The second group of variables for consideration at this stage were those identified by low factor loadings i.e. newspapers. With these variables the quality of the data had always raised a personal doubt, in that, although the question asked was stated in terms of the newspapers read by the respondent, it was possible that some respondents answers related to the newspapers present in the household. Interest, professional magazines and media magazines (e.g. Radio Times) had not presented the same problem, therefore, there was more confidence in the data for these three variables. This greater level of confidence in the data quality, together with the higher factor loadings lead to the decision to retain interest and professional magazines while discarding the three newspaper variables.

The two indices - private and public transport which were described in an earlier chapter included measures of physical accessibility. The first, private transport (PAI) was basically a measure of road distance to settlements at different levels of the central place hierarchy. The public transport accessibility index (PAII) incorporated measurements of travelling time (including walking time to a bus or rail service) and the frequency of public transport accessibility services to the same settlements in the central place hierarchy, as those used in PAI. Simple measures of distance to Hexham, the administrative centre, and walking time to the bus were variables added to improve the balance between the accessibility and mobility group and the other three.

The final number of variables used was forty. The second set of decisions was concerned with the optimal number of components.

How many components?

The components, earlier described as mathematical constructs, are parsimonious descriptions of the data, and as such they are linear rearrangements of the data along axes or vectors of unit length. The importance of each component is measured by the Eigenvalue. (The eigenvalues are calculated by summing the squares of the factor loadings for each component.) The eigenvalue, then, is a measure of the amount of variance accounted for by each component. As such, it is the measure which can be used to decide on the number of components in the optimal solution. A number of "rule of thumb" methods have been suggested for ascertaining the optimal solution.

Two 'rule of thumb' methods were applied to the eigenvalues. The first, and most popular, method was advocated by Kaiser in 1961 (Davies p.174). It is known as the Eigenvalue 1.0 rule and is based on the notion that axes which account for less variance than that which is contributed by a single variable are of little value. If, then, this rule is applied to the forty variables, then the number of components to be extracted would be fourteen. However, the automatic use of the rule has been criticised because it does not take into consideration the number of variables. A second method, 'five percent 'cut-off' value' includes all the components with eigenvalues, equal to, or greater than 5% (Davies 1984). This method produced a four

factor solution. The rule of thumb methods served to 'narrow down' the number of components to between four and fourteen. Successive runs of PCA with varying numbers of components showed that the nine component solution had the most clearly identifiable axes. The nine components remained stable in successive runs whereas, additional components had low factor loadings and were difficult to identify. The forty variables compressed into nine uncorrelated components explained 53.4% of the variance of the data set.

The Components

PCA is one of two models of the Principal Axes technique. As was explained earlier, the technique extracts the component which accounts for the greatest percentage of the variance amongst the variables, first. Therefore, the first component has significant loadings for the greatest numbers of variables. In Table 9.2 below, the components are listed in the order of extraction. The number of variables for which each component has loadings greater than plus or minus 0.3 shows the emphasis placed upon the first axis.

The choice of the 0.3 'cut-off' point is recommended by Davies (1984) as being the most commonly used. The percentage of variance explained by a loading of 0.3 is slightly less than 10%. Most researchers have considered that levels of explanation less than 10% are not worthy of interpretation.

Component	No. of Variables
I	20
II	7
III	8
IV	5
V	3
VI	2
VII	4
VIII	3
IX	2

Table 9.2 The Unrotated Solution for Nine Components

The axes in the unrotated solution were difficult to identify, therefore, the next step was to consider rotating the axes to alternative positions to enable them to be identified.

Rotation

Once the initial component solution has been produced, then the axes of differentiation can be moved to any position in the multi-variate space defined by the components. Rotating the axes to a new position does not lead to any loss of variance. The problem, therefore, was to find the set of positions which allowed the most parsimonious description. The choice was between an orthogonal rotation in which the axes were at right angles to each other in multi-dimensional space and rotated as a fixed framework or, an oblique rotation in which each axis was free to rotate independently.

(1) Orthogonal Rotation

Initially. the purpose of the rotation was to enable

the components to be identified. An orthogonal rotation was chosen for this purpose. Two orthogonal solutions have been used by geographers - Varimax and Quartimax. The differences between the two procedures are minimal, however, in general varimax is the more satisfactory because it represents an invariant solution (Davies p.151 1984).

Varimax

The term varimax refers to the method of maximising the variance of individual components, so that each variable has high loadings on as few factors as possible. The results of the Varimax method are given in Table 9.3. The components are listed in order of extraction together with the factor loadings greater than plus or minus 0.3.

In the following section, the identification of the components, using the Varimax procedure, will be discussed in terms of the factor loadings and the percentage of the variance attributed to each one. Particular attention will be given to loadings which are greater than 0.7 and, therefore, account for more than 49% of the variance.

Component I

The first component to be extracted accounted for 18.1% of the total variance. Of the forty variables this component had high loadings on a total of six. Two of these had loadings greater than 0.71. They were Knowledge of Local Education Facilities (-0.73) and Knowledge of Local Sports Facilities (-0.87). Knowledge of Local Clubs also had a negative loading of -0.58, similarly, two of the three variables concerned with knowledge in South West

Variables	Components								
	I	II	III	IV	V	VI	VII	VIII	IX
Accessibility & Mobility									
Private Transport Index	+61				+33				
Public Transport Index		+69				+49			
Distance to Hexham		-70							
A Walking time to bus						+57			
Driving Licence							-48		
Use of a car							-55		
Transport to town		-40							
Socio-economic									
Age			+85						
Length of Residence			+44						+49
Children under 5years			-38						
Children 5 - 13 years			-25						
Children 14 - 17 years							+38		
Kin living locally									+54
Attendance with family					+88				
Education								+40	-41
Property Class		+31							
Recording Facilities			+44						
Spatial Knowledge									
Education - local	-74								
Education - area	+55					+45			
Education - town		+56						+32	
Education - city				+34					
Sport - local	-84								
Sport - area				+77					
Sport - town		+71							
Sport - city				+80					
Clubs - local	-58								
Clubs - area	+53								
Clubs - town								+32	
Clubs - city				+37					
Use of Facilities									
Education - local					+42				
Education - non-local					+27				
Sport - local			+38						
Sport - non-local			+48						
Clubs - local					+48				
Clubs - non-local						-34			
Branch Library									+40
Non-local Libraries								-40	
Professional Magazines								+59	
Interest Magazines						+43			
Media Magazines									-33
% variance explained	18.1	14.4	13.0	12.2	10.5	8.5	8.4	8.0	6.9
Cumulative % variance	18.1	32.5	45.5	57.7	68.2	76.7	85.1	93.1	100.0
Eigenvalues	3.1	2.5	2.2	2.1	1.8	1.5	1.4	1.4	1.2

The decimal points in the component loadings have been suppressed

Table 9.3 Characteristics of the Principal Components: Component Loadings and Eigenvalues for the Varimax Rotation

Tynedale which, as was explained earlier, were paired with local knowledge, also had high loadings on this component. These were education with +0.55 and clubs with +0.52. With the knowledge variables a negative score indicates a low level of knowledge and a positive score a higher level.

The private transport accessibility index had its highest loading of +0.61 on Component I. A positive score for this variable describes a fairly remote location and a negative score a less remote one. Through the interpretation of the factor loadings from the coding of the variables, this component was associating remoteness with a low knowledge of local facilities, but a higher knowledge of facilities in the study area generally. It identified an orientation towards local activities and events and associated them with a facet of accessibility. The component was named Local Orientation.

Component II

Here, the percentage of the total variance explained was 14.4% and six variables had their highest loadings on this component. Two of these were variables measuring Knowledge of Facilities in the town - Education and Sport with loadings of +0.56 and +0.71, respectively. Again the positive loadings indicate a higher level of knowledge.

The two accessibility measures of PAII and Distance to Hexham were both associated with this component and, respectively, had loadings of +0.69 and -0.7. The positive score for the first of these two variables denotes a

location remote from the public transport network, whereas the negative score for distance to Hexham describes properties relatively near to the town. The highest loading of the variable Property Class +0.31 was, also, on this component as was that for transport to Hexham (-0.4). Property class was the most direct measure of wealth in the data set, and yet its loadings on the remaining eight components were not worthy of interpretation. A point which will be returned to later. The negative loading for transport to town associates travel by car with the knowledge variables.

The second component associated knowledge of activities in the town and above average property with the accessibility measures of short distance and poor public transport accessibility. The orientation here is towards the town, and again it is associated with a facet of accessibility. The component has been named Town Orientation.

Component III

The third component to be extracted accounted for 13.0% of the total variance. Five variables have their highest loadings on this component and one other - Length of Residence, had a loading higher than +0.3. The variable Age with a loading of +0.85 was the dominant variable with a loading almost twice that of the second highest loading Use of non-local Sport facilities (+.48). Both Age and Length of Residence were positive while the other variables for young children, recording facilities and use of local sports facilities were negative. The axes associated higher age

groups and longer residence with lack of children under the age of five years, recording facilities and a tendency not to use sports facilities either locally or elsewhere. Component III was identified as summarizing the Life Cycle variables.

Component IV

The fourth component was similar to components I and II, in that, it was identified by the variables associated with an orientation towards city activities. Only three variables had their highest loadings on this component which accounted for 12.2% of the total variance. They were the key variable, a Knowledge of City Sports Facilities with a loading of +0.8, Knowledge of South West Tynedale Sports Facilities (+0.77) and Knowledge of City Clubs which had a much lower score of +0.37. Although, sport was important in the group of variables, the city orientation seemed to dominate. Therefore, this variable, as it described the third level of spatial orientation, was identified as City Orientation, the first two being local and town.

Component V

The total variance accounted for by this axis was 10.5%. The variables which had their highest loadings on this component were Attendance with Family (+0.88), Use of Local Educational Facilities (+0.42) and use of Local Clubs (+0.48). Generally, there was a low use of facilities among the respondents and the positive direction indicates non-use and non-attendance with family. The variables summarized were those which measured community involvement, therefore this component was named Local Community Involvement.

Component VI

Component six explained 8.5% of the total variance. Of the five variables with component loadings greater than 0.3, three had their highest loading on this component. They were in order of magnitude Walking time to the bus with +0.57, Public Transport Accessibility Index +0.49 and Private Transport Accessibility Index +0.33. The positive scores for these two indices, like Walking time to the bus, indicate a remote residential location. It is perhaps, pertinent here to restate that the accessibility indices are a measure of potential physical accessibility given the 1981 road network and public transport timetables and should not be confused with mobility.

The final two variables associated with this component were Interest magazines with a loading of +0.43 and Use of non-local clubs (-0.34). The positive score for Interest magazines indicated high readership, whereas, the negative score for non-local clubs measured use and a positive score non-use. The association of remoteness with the readership of magazines such as Farmer's Weekly and Freezer Digest will be discussed later, but for the present component six was labelled Remoteness.

Component VII

The seventh component to be extracted accounted for 0.1% less of the total variance than the sixth component. Of the four variables with loadings greater than 0.3, three had their highest loading on this component. The loadings for Use of a car and Driving Licence were -0.55 and -0.48,

respectively. These two measures of mobility are associated with women who have children aged between 13 and 17 years (+0.38) and Knowledge of education facilities in South West Tynedale (+0.45). Women with children of this age need to be mobile to take children to activities, and through their children, are more aware of the education facilities in the study area. Measures of mobility and associated variables were summarized by this axis and, it was, therefore, named Mobility.

Component VIII

Measures of education and related variables were summarized by the eighth component to be extracted. The total amount of variance explained was 8.0%. The variable education had a loading of +0.4 on this component and a loading of -0.4 on the ninth. The positive value indicated education above the contemporary school leaving age and was related to readership of professional publications (+0.59), such as Lancet and The Times Educational Supplement. Other variables associated with education on this axis were use of Non-local Libraries (-0.4), and Knowledge of Education (+0.32) and Club Facilities in Hexham (+0.32). The scoring of the use of Non-local Libraries variable meant that a negative loading indicated high usage. Although, variables measuring use of non-local facilities were incorporated in this component, it was decided that Education was the most appropriate label.

Component IX

The final component accounted for only 6.9% of the total variance. It brought together a number of variables which measured characteristics of the traditional Tynedale woman. The negative education loading of -0.41 was associated with many relatives living locally (+0.54), and long residence (+0.49), both of which had their highest loading on this component. The negative score of -0.4 indicated Non-use of the Branch Library and the loading of -0.33 on Readership of Media Magazines also indicated non-readership of Radio Times and TV Times. The component summarized those variables which measured the characteristics of the Tynedale women who had spent their lives in the area. Having left school as early as possible, they tended to be very family oriented with few interests outside the local area. The name Traditional Lifestyle was given to this final component.

PCA has identified nine components which described the underlying structure of accessibility in South West Tynedale. In the varimax rotation components are located orthogonally to each other and are unrelated. However, an orthogonal relationship cannot be assumed, therefore, in order to discover the precise relationship between the components an oblique rotation was used.

(44) Oblique Rotation

The orthogonal rotation used earlier is, in fact, one of a set of oblique solutions. In rotating the axes obliquely, if, any or all, of the axes are orthogonally

related it will be apparent. However, on a priori grounds, it seems unlikely, that the axes of differentiation should be orthogonally related. If each axis is allowed to rotate freely, then the principle of parsimony, referred to earlier is more likely to be satisfied (Davies p.152 1984) Once the fixed orthogonal framework is abandoned and the principle of oblique axes adopted, then, the description of any point in space becomes more complex. Whereas, one correlation matrix was used in the varimax solution, three are produced for the oblique.

There are a number of different techniques available for oblique rotations. The more commonly used are those which minimize the iteration process and are called 'oblimin'. The discussion will be confined to this group of techniques.

The two matrices which are calculated for the oblique rotation are firstly, the structure and pattern matrices; and secondly, the factor correlation matrix. The factor pattern and structure matrices measure the amount of variance of a variable uniquely associated with each component, and the correlation between the variable and each axis, respectively. The more oblique the rotation, the greater the difference between the unique variance and the correlation, whereas in the orthogonal rotation they are identical. The second matrix gives the correlation coefficients between the axes and hence, a measure of the relationship between the components.

The 'oblimin' technique used in the oblique rotation of

the data set was the 'Direct Oblimin' developed by Jenrich and Sampson in 1966, and so called because it was applied directly to the factor loadings. Available through the SPSS package, it was reported to have produced results which were comparable with the Biquartim, a technique, used by geographers, and calculated from reference axes rather than directly from the original loadings.

Direct Oblimin

The angle between the axes is represented by delta and can be varied to give different oblique solutions. However, experience has shown that unless the value of delta is set between 0.0 and -1.0 the iterations do not produce convergence of the estimates of communality on the diagonal axis of the correlation matrix. The value 0.0 gives a fairly oblique solution whereas a value of -0.5 is nearly orthogonal. Values for delta of between 0.0 and -0.2 were experimented with, but there was no apparent advantage in using a value other than the accepted value of $\delta = 0.0$.

Table 9.4 gives the percentage of total variance attributed to each component for the three solutions - unrotated, varimax and direct oblmin. The variance for the direct oblmin was calculated from the structure matrix.

The loading of the variables on the first axis in the unrotated solution is clearly demonstrated by the total percentage of the variance accounted for by this axis. By comparison, the first component in the varimax solution explained only two thirds that of the unrotated, but the ninth component accounted for 2% more. Rotation resulted in

Solution	Percentage of Total Variance on Each Factor								
	I	II	III	IV	V	VI	VII	VIII	IX
Principal Axes									
Unrotated	27.6	18.0	13.5	9.2	8.0	6.9	6.5	5.5	4.9
Rotated:									
Varimax	18.1	14.4	13.0	12.2	10.5	8.5	8.4	8.0	6.9
Direct Oblimin	15.6	13.1	12.7	12.6	10.3	9.6	8.5	9.5	8.1

Table 9.4 Three Solutions: Total Variance Attributed to Each Component

a more even distribution of the variance amongst the variables and hence earlier identification. However, relaxing the orthogonal assumption and using the direct oblimin technique had two effects. Firstly, it further reduced the range in the percentage of total variance explained by the first and ninth components, and secondly, through the redistribution of the variance it gave heavier weightings to some variables.

The higher correlations on the Education Component had the effect of increasing the eigenvalue, and hence, the percentage of the total variance that it accounted for in the oblique as opposed to the varimax solution. This points to the next area for discussion which is the relationship between the components.

The third matrix which SPSS provided for the Direct Oblimin rotation was the Factor Correlation Coefficient Matrix given in Table 9.5. The correlation coefficients measure the relationship between the pairs of components on a scale of -1.0 to +1.0. If the relationship is orthogonal (i.e. there is no relationship between a pair of components) the coefficient is 0.0. Where coefficients are close to plus or minus 1.0 there is a close relationship between the components and a higher order analysis is advisable to further summarise the first order axes into a lower number of second order axes. This process of summarising the components is continued until the axes approach zero.

Components	I	II	III	IV	V	VI	VII	VIII	IX
I Local Orientation		-0.05	-0.08	+0.13	-0.04	-0.07	+0.06	+0.03	-0.02
II Town Orientation	-0.05		-0.03	+0.02	-0.08	-0.11	-0.11	+0.15	-0.02
III Life Cycle	-0.08	-0.03		-0.18	-0.11	+0.12	+0.11	-0.07	+0.07
IV City Orientation	+0.13	+0.02	-0.18		0.07	-0.06	-0.13	+0.18	-0.07
V Community Involvement	-0.04	-0.08	-0.11	+0.07		-0.09	-0.06	+0.14	-0.09
VI Remoteness	-0.07	-0.11	+0.12	-0.06	-0.09		+0.16	-0.18	+0.05
VII Mobility	+0.06	-0.11	+0.11	-0.13	-0.06	+0.16		-0.05	+0.09
VIII Education	+0.03	+0.15	-0.07	+0.18	+0.14	-0.18	-0.05		+0.08
IX Lifestyle	-0.02	-0.02	+0.07	-0.07	-0.09	+0.05	+0.09	+0.08	

Table 9.5 Factor Correlation Coefficient Matrix

The coefficients presented in Table 9.5 range between -0.18 and +0.18 indicating that the pairs of axes were virtually unrelated. However, one set of relationships are worthy of mention. Education and City Orientation were positively related (+0.18) and Education and Remoteness were negatively related (-0.18). This suggests that there is a tendency for education to be associated with a knowledge of urban facilities, but also, that lower educational achievements may be linked to remoteness. The coefficients were so close to zero there was little to be gained from a higher order analysis.

The lack of relationship between these components was, perhaps, surprising. An analysis of the regional variations within South West Tynedale in terms of the factor scores will point the way towards an explanation, but firstly, a brief discussion of the nature of 'remoteness' in the study area will prepare the way.

The component Remoteness summarised those variables which measured road distance, and distance from public transport routes together with a measure of frequency of service. To appreciate the problem of remoteness in South West Tynedale, the implications of the valley shape on physical accessibility must be taken into consideration. In an upland area, there are considerable variations in degree of remoteness for locations equidistant from the central place.

For example, the East Allen river flows south to north and the main settlement Allendale Town lies some 9

kilometres to the south of its confluence with the Tyne. Two kilometres to the north is the more accessible village of Catton; three kilometres to the south the marginally less accessible village of Sinderhope. The main road through the valley links the two and both are within walking distance of Allendale Town. However, two kilometres to the east of Allendale Town at an altitude of 335 metres is High Struthers, a farm at the end of a minor road to Hexhamshire Common. It is 135 metres above the valley on open moorland.

The climate is correspondingly harsher and the walk from Allendale Town more difficult. Whereas buses regularly pass through Sinderhope and Catton, High Struthers is 'remote'. Similarly, to the west of Allendale Town remoteness increases rapidly. Locations in the valley are relatively accessible but, many minor roads only lead to farms on the edge of the moorland and these are extremely remote. Consequently, remoteness varies both with distance and direction from the central place. What then are the regional variations in accessibility in S.W. Tynedale.

Factor Scores

The nine components discussed earlier described the main axes of differentiation in the data set, but what of the spatial dimension? To analyse the spatial distributions of the components, it is necessary to summarise the variations in the 248 cases. The factor scores measure the importance of each case on every component and thus provide the summarizing measure. They are in fact composite measures which can be calculated from different weightings of the variables. Only in Principle Axes technique where

the components have a fixed position is there only one set of scores produced. Therefore, the investigator has a choice of factor scores calculated from different rotations of the data set.

Earlier, it was demonstrated that the axes are almost orthogonally related, therefore, those used here were obtained from the Varimax rotation. The factor scores enable isopleth or choropleth maps to be drawn to show the spatial distribution of the loadings on the 248 cases. However, with respondents clustered in narrow valleys and no observations in the intermediate areas an isopleth map would add little to the discussion. A choropleth map, on the other hand would facilitate the representation of the spatial distribution of each component, yet it is debatable whether any greater level of understanding would be gained than from the data presented in Table 9.6. The percentages given in this table are for the positive and negative factor scores for each component by sub-area. These can be calculated from factor scores produced either by the Varimax or Direct Oblimin rotations. A comparison of the two showed that whereas for components I to III the results were almost identical, the Direct Oblimin produced more polarised results in West Tyne and Haltwhistle for the City Orientation. There were other minor variations for those components accounting for a smaller percentage of the variance. It was decided that as the axes of differentiation approximated an orthogonal relationship, then the factor scores calculated from the Varimax should be used for the next stage of the analysis.

When the factor scores are presented as 'dichotomous variables' as in Table 9.6, it is readily apparent that the right-hand margin provides the essential data for a general analysis of S.W. Tynedale, whereas the cells contain the necessary data for a discussion of the regional differences within the study area.

SOUTH WEST TYNE DALE

In Chapter Two, Choice of A Study Area, the decision was taken to choose an area which contained different size settlements with varying degrees of remoteness. Although, Cloke (1977) identified S.W. Tynedale as 'extremely rural', even in such an area considerable variations can be found. One of the sixteen variables used by Cloke was remoteness, yet remoteness itself is a relative concept. In terms of S.W. Tynedale only 37% of the respondents were classified as remote by component VI. The other 63%, although, remote by national criteria were in terms of the mean for the study area, less remote. From the discussion earlier, about the constraints placed by the physical environment on human settlement, it is the few rather than the many, who live at the 'heads' of the valleys and occupy the upland farmsteads.

However, the remoteness component identified as many as two fifths of respondents as being potentially 'at risk' from accessibility related problems.

To identify a group statistically as being 'at risk' merely draws attention to the possibility of a problem. The three components Local, Town and City orientation gave an insight into the knowledge the respondents had of their environment. The knowledge questions were based partly on

		West Tyne	Allendale	Haltwhistle	S.W. Tynedale Total
Components		%	%	%	%
I	Area	1	20	24	45
	Non-area	30	15	10	55
II	Town	1	35	2	38
	Non-town	30	0	32	62
III	Above mean	14	22	19	55
	Below mean	17	13	15	45
IV	City	22	12	5	39
	Non-city	9	23	29	61
V	Active	11	17	19	47
	Non-active	20	18	15	53
VI	Remote	8	20	9	37
	Non-remote	23	15	25	63
VII	Mobile	17	16	13	46
	Non-mobile	14	19	21	54
VIII	Educated	13	12	13	38
	Low-education	18	23	21	62
IX	Traditional	17	15	24	56
	Non-traditional	14	20	10	44
Percentage		31	35	34	100

Components

I	Local Orientation	II	Town Orientation	III	Life Cycle
IV	City Orientation	V	Community Involvement	VI	Remoteness
VII	Mobility	VIII	Education	IX	Lifestyle

Percentage of total number of cases in each component category by area.

Table 9.6 South West Tynedale: Regional Distribution of Component Scores

information gained through reading the local newspaper. The Hexham Courant, as the local newspaper was bought by 90% of households so that the majority of respondents had access to the same information in their homes weekly. Therefore, knowledge of facilities or opportunities provided a measure of the dimensions of the respondents space-time prisms. Less than half the population were locally oriented, whereas for the town and city orientation components, marginally less than two-fifths had high scores for either. Regionally, there were considerable variations but these will be discussed later.

The decennial Census recorded an increase in the percentage of elderly in the survey area of between 2.8-4.2% in the years 1971 to 1981 (CURDS 1984). Indeed 55% of the respondents were above the average age, but as discussed earlier the factor correlation matrix indicated almost an orthogonal relationship between the Remoteness and Life Cycle components. Therefore, the evidence does not support a relationship between these two components.

The elderly are one of the life cycle groups who have been identified as potentially deprived owing to low levels of mobility. Moseley (1979b) rejected the view that rising car ownership would eventually solve the rural accessibility problem, and pointed out that car ownership brings 'inequitable intra-household distribution of benefits' (p.140). In the survey parishes, where 40% of households were without a car in 1981, even if rising car ownership was a solution, it was clearly a long way from solving the problem. The mobility component classified 54% of the

respondents as having a low mobility level, which, when considered in conjunction with the car ownership figures for the same year - 1981, supports Moseley's argument of intra household inequity. Little (1986) in a brief discussion of the access to transport problems of rural women emphasizes the resulting isolation of many rural women and the almost impossibility of performing routine domestic tasks, or taking up employment when their mobility is dependent upon public transport services. Mobility, therefore, has far reaching implications for rural women, yet again, there was no relationship between Mobility and Remoteness or Life Cycle.

Lifestyle has been identified as an important variable in rural research by others including Stebbing (1985), who found that in her East Kent survey 65% of the women considered themselves to be 'country women'. The lifestyle component, although, compiled from a different group of variables classified 56% as traditional in their lifestyle. The correlation matrix showed that neither the Community Involvement nor the Education component were related to Traditional Lifestyle, despite a slight tendency for educated women to be more involved in the community.

Education and Community Involvement both had less than 50% of the women with high scores. Only, two-fifths of the respondents had above the mean education, whereas 47% were active in the local community. Excluding the orientation components, the overall tendency in South West Tynedale was towards an elderly, less educated population of women with a traditional lifestyle. Although, many lived in fairly

accessible locations, mobility and community involvement levels were low. However, as Table 9.6 shows the factor scores revealed considerable variations within the survey area. When the data was segregated for the three sub-areas of West Tyne, Allendale and Haltwhistle distinct regional characteristics were apparent.

REGIONAL VARIATIONS.

The components describe a complex picture of accessibility where in one small area of the North Pennines there are regional variations in the barriers to accessibility. Of the components three represent the dominant space-time prisms, one the 'take up rate' of opportunities and five summarize the barriers.

The three space-time components of local, town and city classified Haltwhistle as Area with two-thirds of the women showing a high area orientation. In Allendale, although, more than half were locally orientated, the total population were Town orientated. West Tyne, on the other hand, were neither Area nor Town oriented i.e. Hexham, but four-fifths looked to the city for opportunities and facilities. Newcastle upon Tyne was quoted in the West Tyne responses to the knowledge questions, but the preference was clearly for Carlisle.

Map 9.1 facilitates a comparison of the dimensions of the three located space time prisms. It indicates an inverse relationship between the size of settlement and the space-time prism. The surveyed women of Haltwhistle are

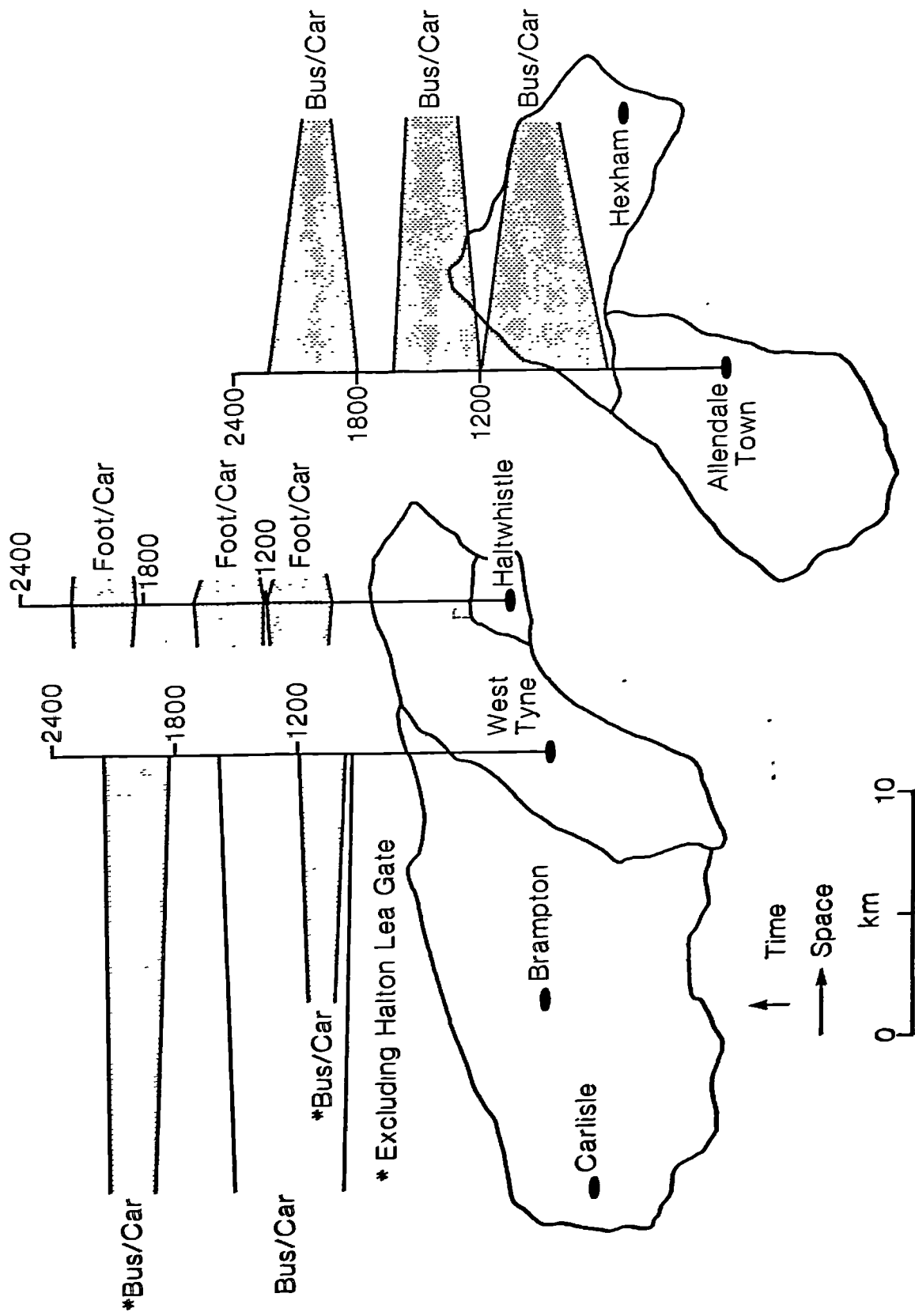


Diagram 9.1 S.W. Tynedale Located Space-Time Prisms

represented by the central parish. The area of the parish is shown at the base and time is on the vertical axis. By foot, or by private transport both in the morning, afternoon and evenings journeys were possible to all parts of the parish. As the Haltwhistle women were identified by the Local Orientation component, then this indicates a preference for using the facilities within the town of Haltwhistle. This confirms the conclusions of the shopping and employment journeys in chapter seven.

The surveyed women in Allendale were identified by the Town Orientation component because their journeys took place along an Allendale to Hexham axis. Journeys to Hexham were predominantly by bus or car. Each of these modes of transport allowed a return journey to be made in the morning, afternoon and evening from Allendale Town to Hexham.

West Tyne women were identified by the City Orientation component. In the morning the women from Greenhead and Gillsland could make a return journey to Brampton with time for shopping, by bus or car. The women of Halton Lea Gate could travel to Carlisle in the morning by bus or car, and return in the afternoon, as could the women of Greenhead and Gillsland. In the evening the Halton Lea Gate women were restricted to private transport, only whereas those living in Greenhead and Gillsland had a choice of transport mode for the journey to Carlisle.

In an earlier chapter a size/function relationship was suggested in which settlements above a minimum threshold satisfy a sufficient proportion of their inhabitants

requirements to spatially limit the space-time prisms of the majority to the town. Below that minimum threshold to satisfy essential requirements women need to travel and thus, where there is a choice will opt for the larger settlement with the wider choice of goods and services. This relationship is reflected in the Area, Town and City components.

For example, in Allendale more than one-third of the respondents were classified as city orientated, conversely, few in Haltwhistle were shown to have either a city or town orientation. However, the remaining components also summarize the characteristics of the surveyed population and explanation of the three very different space-time prisms needs to be sought in terms of these measurement as well.

In terms of remoteness, Allendale with three-fifths of the respondents living in relatively remote locations in an area classified as extremely rural has potentially the greatest problem, yet there were pockets of isolation in West Tyne which equal those in Allendale, and in terms of public transport show a greater degree of remoteness. These were for the most part remote farmsteads north of Hadrian's Wall and east of Gilsland. As in Allendale, private transport in these areas was, and for the foreseeable future, will be essential. Is it reasonable, though to explain the high mobility score of 55% in West Tyne in terms of necessity alone? Similarly, can the much lower mobility score of 38% in Haltwhistle be justified by the mere reason that there is no necessity for women to drive?

Both Allendale and Haltwhistle, had approximately

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Both Allendale and Haltwhistle, had approximately

two-thirds falling into this category. The greatest proportion of the non-traditional were found in Allendale where the commuter and retirement groups were, for the most part, incomers.

The distance decay curve describes the relationship between use of a facility and distance. This is reflected in the Community Involvement component where the greatest level of activity takes place in Haltwhistle. Conversely, the least amount of activity takes place in West Tyne where the least number of facilities were located. The differences in community involvement level between Haltwhistle and Allendale are minimal, yet the opportunities in Allendale are more limited and the distances involved much greater. Surely, this is an indicator of the social rather accessibility problems in Haltwhistle referred to in chapter eight.

Rural accessibility in South West Tynedale encompasses the many facets of the concept defined by Hagerstrand. Before summarizing the major elements of the underlying structure in the conclusion to the chapter, it is first necessary to review the geographical context.

Conclusion

In 1981, within Tynedale District in Northumberland some 51 530 people lived in two towns and fifty rural parishes. Twelve per cent of the population were located in the five survey parishes. They represented a very small part of the local authority planning area.

The application *Principal Components Analysis to

the survey data led to the identification of nine components which summarised the data structure. Distinct regional variations both in the orientation of the women towards different sized settlements, the distance they were prepared to travel, and the characteristics of life cycle, community involvement, remoteness, mobility, education and lifestyle were apparent.

The components described the underlying structure and identified the different regional accessibility problems. In so doing, the PCA served to confirm the conclusions of the analysis in the earlier chapters. In Haltwhistle, the accessibility problem was social contact for the elderly; in Allendale the problem was the carless elderly gaining access to a range of goods and services; and in West Tyne, the carless young mothers who could only gain access to a range of goods and services in the evenings and at weekends were the ones who experienced the greatest problems.

CHAPTER TEN - CONCLUSIONS

Introduction

In seeking to explore the differences in the accessibility to goods and services for rural women in S.W. Tynedale the contribution of the past and the role of women in the decision making process, and hence their input into local planning formed the first part of the discussion. The data collected in the field survey was used to explore twelve hypotheses relating to physical accessibility, locational and experiential space-time prisms, accessibility behaviour and the underlying structure of accessibility. There are two major tasks in this chapter, the first is to summarize the findings of the research in relation to the literature, and the second to consider areas for further research.

The Contribution of the Past to the Accessibility Problem

The "countrywomen" concept referred to by Stebbing (1985) and the earlier research by Hayford (1974) both identified a role for women at the centre of the family. A role which has survived in rural areas from the pre-industrial period when the family was the economic unit and the home often the work place. This is fundamental to the understanding of rural women and the problems of accessibility to services which some women experience today.

Chapter three described the physical constraints on accessibility which have operated throughout the centuries, including the years of economic prosperity of the last century and earlier part of this century. Years in which

the present settlements and the transport network were developed. The ageing population of S.W.Tynedale spent their formative years dominated by those who remembered the prosperous years of mining when every hamlet had a chapel and school, and the trains plied the valleys. The location of services and the provision of public transport meant that for all, but the most remote accessibility to opportunities was high. Women were able to obtain the goods and services they required within a small area. The space used by women at this period was limited to the chapel and/or church, shops and other locations associated with family related chores. Although, public houses were few, they were concentrated in the larger settlements and were considered to be the province of men. As Middleton (1983) found this social limitation on the space occupied by women still exist in rural areas in a more limited form, today.

Both in agriculture and mining women had a supportive role, but until the twentieth century the differences in mobility between men and women were minimal. In the late nineteenth century railways served rich and poor, men, women and children alike. Cultural barriers to mobility, undoubtedly led to differences in intra household accessibility in some families, but the legal barrier of a driving licence had, yet to be introduced. The mobility of female agricultural farm labourers, or bondagers was equal to that of their male partner, or hind. The partnership arrangement of a hind and bondager underlined the supportive role of women.

The nineteenth century division of labour placed all machines as the responsibility of men. When the motor car

was introduced at the turn of the century only the most liberated of women from the wealthier classes ventured behind the wheel. In 1981, in S.W.Tynedale evidence was found to suggest that women are still discouraged from driving and in extreme cases prevented from doing so by husbands.

Hesse Biber et al (1984) highlighted the unequal power base between men and women in most marriages. The power base of the "country women" is the family and in the last century when the conjugal family often numbered twelve or more, this would be considerable, but today as with family size, that power base has dwindled. Therefore, in 1981 remnants of the "country women" role and the paternalistic approach of men towards their wives was found, but where men had maintained their power base through the economic system, women who remained outside of paid employment were often locked in to a family system.

During the period of prosperity, a paternalistic 'planning' was in force. The mine owners provided for their employees in order to retain their services. The railways were built to increase the profitability of the mines. In the nineteenth century, neither the mine worker nor the hind and his bondager had access to power.

Although, today both men and women have access to power, as was shown in chapter four in the discussion of local authority elections and committees fewer women seek power than men, and when in office they tend to sit on committees associated with education and family related services. Therefore, women have less power over the decisionmaking

process, and yet they are often the most affected by the policies relating to accessibility.

Another legacy from the past is the acceptance of incomers who play a part in either the economic or social life of the village as community members. Quayle (1985) observed this attitude in Allendale, and explained it in terms of the rapid growth of the population during the late eighteenth and nineteenth century which lead to a readiness of the local population to accept newcomers. During the field survey there was no evidence of animosity between the incomers and local population.

The past has endowed S.W.Tynedale with a built environment and communications network which forms the skeleton of the predominant space-time prism of the different social groups. But, what is more significant is the legacy of the "country women" role which ties many rural women into a complex intergenerational family support system. A support system which both constrains and enables accessibility to opportunities.

The Physical Accessibility Problem

In exploring the relationship of socio-economic characteristics to the two accessibility surfaces age emerged as an important variable (Hypothesis 1). The mean age of the surveyed women was 55.4 years and although, in the remote areas younger women were the larger group there remained a residue of elderly widows living in unmodernised housing. It can be argued that with time, the problem will solve itself, but there was some evidence to suggest that retired incomers may be the problem of the future. Moseley

(1979) identified rural young mothers without private transport as one group at risk from problems of inaccessibility. In Halton Lea Gate such a group was identified. Moseley considered the elderly to be the most significant group suffering from accessibility deprivation. Certainly, there was evidence in the remoter areas and in the smaller settlements of both isolated individuals and groups of carless elderly women.

Physical accessibility was shown to be related to employment with a smaller proportion of the economically active women in employment in areas of low accessibility than other areas. However, personal service and junior non management jobs were the most frequent types in all areas of S.W. Tynedale.

The relationship between accessibility as measured by the private transport index and socio-economic characteristics was stronger than with public transport accessibility. Generally, there was a tendency for the women in the remoter areas to be younger, better educated and living in better housing than women in the higher accessibility areas.

This can partly be explained by the housing policy of relocating the elderly and low income groups in the growth centres, and partly by an influx of small groups of incomers both commuters and retirees. The two together has resulted in an imbalance in the socio-economic composition of the areas of low private transport accesibility.

A second important variable was personal mobility, the

subject of Hypothesis 2. It was more strongly related to public transport accessibility than private transport accessibility because women who lived at a distance from public transport routes were more likely to have a driving licence or travel by car. However, 11% of the women living in low and medium public transport groups did not travel by car. Many of these women were among the elderly and in terms of physical accessibility they were a critical group.

When the behaviour of women in the different accessibility areas (Hypothesis 3) was analysed, it was also found to be more closely related to public transport accessibility than private transport. Women in the remoter areas had greater knowledge and were more active than the women in higher public transport accessibility areas. The younger more highly mobile women tended to live in the remoter areas. Although, fewer as a proportion worked, they were more likely to be employed in agriculture, junior non management or intermediate jobs. Similarly with the husbands of the women in low accessibility areas, the probability that they were employed in a profession, intermediate job or agriculture was greater than in other accessibility areas. Therefore, this group of women were more likely to have the income to overcome physical inaccessibility.

The young mothers and elderly without access to a car were the two groups whose behaviour in terms of use of facilities was most influenced by physical inaccessibility. Therefore, stage in the life cycle coupled with mobility were the two most important variables in explaining physical inaccessibility.

The Resources of Space and Time

The concept of the space-time prism provided the framework for the analysis of demographic changes in the location of essential and less essential services and the paths available through space-time in 1981. In exploring hypothesis 4 two trends in population change were identified; the first was one of internal migration from the remoter parishes with dispersed populations to the larger settlements of Allendale Town and Haltwhistle; and the second a small inflow of commuters and retirees into the Allendale and Gilsland. The former reflects the planning policy previously referred to and discussed in detail in chapter 4, while the latter is also in part a reflection of planning policy, but also the lower cost of housing and rateable values, and the upgrading of the A69 from Carlisle to Newcastle which had reduced commuter journey to work times.

Hypothesis 5 explored the location of essential and less essential services and concluded that only locally organised activities such as the Women's Institute remained in the small villages. For all the essential services necessary for the maintenance of a livelihood activity system such as food and health care a journey was necessary to a service centre. The actual dimensions of the individual's space-time prism were in effect determined by journey times for those with personal transport, and both cost and journey times for the public transport users. The comparison of the time and cost of journeys in the study area with those of an urban area revealed that while journey times compared favourably, public transport costs were considerably

greater. Whereas hypothesis 6 was concerned with the locational space-time prism, hypothesis 7 used actual shopping and employment journeys to explore differences in the experiential space-time prisms of the surveyed women. Women in remoter areas satisfied their needs within larger experiential space-time prisms than women in larger settlements such as Haltwhistle. West Tyne and Allendale women were more likely to shop in Carlisle or Newcastle, respectively, than Haltwhistle women who were the most advantaged in S.W. Tynedale in terms of public transport services.

The relationship between mobility and the realisation of place was pursued in hypothesis 8. The young mothers of Halton Lea Gate and the elderly women of Allendale Town were compared with the carowning women in Haltwhistle. Two important variables for the maintenance of a livelihood activity system emerged; private transport and family support. Without either, the women in Halton Lea were the most at risk from problems of inaccessibility, whereas in Allendale Town opportunities were very limited, but it was possible to maintain a livelihood activity system without leaving the village. In Haltwhistle, the carowning women with few family responsibilities were only constrained by the resource of time.

Accessibility Behaviour

In chapter 8 the focus was on the accessibility behaviour of women with different lifestyles. Hypothesis 9 explored the relationship between accessibility behaviour and lifestyle through the use of case study material. The survey data supported Quayle's (1985) definition of community

in Allendale and from this a fourfold classification of women was developed. When the behaviour of the different groups of women was analysed in terms of primary and secondary relationships the importance of the family support system and the extent to which women depended upon family to overcome problems of inaccessibility to opportunities emerged. The family support system was analysed in terms of both constraining and enabling mechanisms. Previous research has concentrated on the constraints placed by the immediate family on women's activities (Mårtensson (1978) and Moseley et al 1977). However, many of the women who were community members with the traditional *gemeinschaft* relationships were found to be tied into a family network which often spanned several generations and several parishes. From the discussion of hypothesis 10, the different roles of community members at the different stages of the life cycle emerged. The young mother and the elderly woman who needed the support to enable them to gain access to opportunities were contrasted with the middle aged woman who found her activities constrained by the demands upon her time of both the younger and older members of the family.

Some women were found to be moving away from the traditional lifestyle and relying more on *gesellschaft* relationships over which they had more control while others were successfully managing both. Therefore, the women could be placed upon a continuum between total involvement with the family support system at one extreme and independent of family for daily activities. To understand the experiential space-time prisms of the rural women and hence their accessibility to opportunities both the enabling and constraining mechanisms by which baby sitting, care for the

elderly, shopping etc. are achieved must be considered.

The relocation of any member of the family support system has implications for the accessibility of others. A social accessibility problem was observed amongst the elderly. A problem resulting from the absence of the family enabling mechanism as a result of either a relocation of family members or a change in intergenerational lifestyles within the family. Rural women who had spent their lives in small communities with the majority of their social contacts through the family appeared to find adjusting to a greater reliance on gessellschaft relationships very difficult. For some elderly women the move from a remote location to a service centre in effect exchanged physical for social inaccessibility.

When the relationship between lifestyle and community involvement was investigated, through hypothesis 11, personal mobility and education emerged as the most important determinants of behaviour. Stage in the life cycle was less important in explaining overall involvement with the community, although activities changed with stage in the life cycle. Women living in the least accessible areas were more independent than the women in the larger settlements who often attended activities with other members of the family. Swimming, Women's Institute, Senior Citizens and Young Wives were the four most popular activities amongst the surveyed women.

The case study approach brought to the fore the importance of family support and lifestyle. For women accessibility to opportunities depends upon the balance

between role in the family support system, personal mobility, age and employment status. Community members and incomers maintain the balance with different combinations, but once an imbalance occurs for community members there is an accessibility problem which may be physical, social or if the opportunity is employment, economic. Unlike the incomers, many community members either do not have, or are not prepared to entertain the option open to the incomer of leaving the rural area.

The Underlying Structure

The final hypothesis related to regional variations in accessibility within S.W. Tynedale. Principal Components Analysis identified nine components each indicating considerable variations in the underlying structure of accessibility in the three regions of Haltwhistle, Allendale and West Tyne. The four components accounting for the greatest variance were life cycle and the local areas, market town and city orientations. Implicit in these three orientations is the concept of goods and services. It was suggested that a threshold existed whereby the women who lived in the larger settlements of Haltwhistle confined their livelihood activity system to that town because it was able to satisfy the majority of their felt needs. The axes of differentiation summarised the characteristics of Haltwhistle women as being locally oriented, above the mean age and with a traditional lifestyle. When compared with the West Tyne parishes where public transport accessibility was relatively high, and yet private transport poor as measured by the two indices, the axes of differentiation described a city oriented, mobile population with a traditional lifestyle. But in Allendale above the mean age

was associated with a market town orientation and remoteness.

The component scores were orthogonally related, yet the factorscores showed that within each sub area there were distinct variations in the characteristics of the underlying structure. Women living in areas where public transport was relatively good had different socio-economic characteristics to women in areas where public transport was relatively poor, yet the road network afforded high accessibility by private transport. Where both public transport and private transport accessibility were high, low incomes, above the mean age and dependence upon public transport were the dominant characteristics.

The various methods of analysis enabled different aspects of the widening gap between those with private transport and those without, to be explored. In S.W.Tynedale the same loss of village and transport services documented by the Standing Conference of Rural Community Councils (1978) was found to have exacerbated the accessibility problem. Three groups of women emerged the carowning, the carless and the family dependent women. Much of the research to date has concentrated on the carless groups in rural society because they are the ones for which accessibility poses the greatest problem. The family dependent women assemble the goods and services they need with the help of other family members. These are potentially the carless women of tomorrow.

The families to which the surveyed women belonged often consisted of immediate households and a more extended family. These rural women may still see themselves as the lynch pin of their family, but the family is a part of the socio-economic system and the larger political economy as described by Parkes et al (1975). Future changes in rural accessibility for women lie within the sphere of the political economy. Only 11% of women in medium to low public transport accessibility areas did not travel by car, but 44.9% did not have a driving licence. One third of the women in these two accessibility areas were gaining access to goods and services through the enabling mechanisms of the family. How then may government policy affect the rural family?

Government policy towards unemployment has been to encourage firstly, new small business and secondly, a more mobile population. Although, English Industrial Estates together with CoSIRA have set up small factories in the service centres they have not solved the unemployment problem of Haltwhistle. Elsewhere in the study area actual numbers registered as out of work are low. With an agricultural depression widely reported to be pending and nationwide discussion of the necessity to take agricultural land out of production, the marginal hill farmers of S.W. Tynedale and their employees, or indeed the Pennines or Welsh Mountains may find themselves forced out of agriculture. Even with the designated AONB, the very short summer season limits the opportunities for new ventures in tourism. Where they do occur, it may be that it is the women in the household who are able to economically maintain

the family. The price of families leaving the area is the collapse of the family support system. Those who are left behind such as the low income families trapped by rural poverty and the elderly find that only in the larger service centres can they find support provided either commercially or through institutions. Grocery delivery, day care centres, senior citizens, mother and toddler groups, baby sitting circles are only available in the larger centres.

The empty remote properties may find second home owners or hobby farmers as buyers, thus further exacerbating the decline in rural services. Government policy, and indeed the EEC Community Agricultural Policy may have far reaching implications for the accessibility of rural women to goods and services.

A different threat to women's accessibility comes from the ideology of the political economy. Throughout this century women have sought equality of opportunity with men. The power base of the working woman is not so much the family, as her economic status. Little (1986) saw the rural ideology as pressurising women into the domestic role, but as the demographic and socio-economic characteristics of the remoter areas change these pressures may diminish. As the discussion of the case studies revealed some women rejected deep involvement in the family support system by geographically distancing themselves from all but the immediate family. As women take a more active part in the economic system their involvement with the family support system may also diminish through lack of the resource of time.

However, to what extent are women prepared to become involved in the political system? As the emphasis changes from *gemeinschaft* to *gesellschaft* relationships, then the support previously provided wholly through the family will need to be supplemented by community facilities. The decision to provide nursery places, day care facilities etc. is a political one. Without such facilities the carless and present group of family dependent women will find that in the future they cannot maintain a livelihood activity system within the smaller rural settlements. But, in 1981 the women of S.W.Tynedale had much less control over the decision making processes than their male counterparts. In recent elections there has not been a significant change in this balance of power.

Current Policies and Future Research

If only the physical and economic facets of accessibility are taken into account then the Northumberland policy of a hierarchy of settlements with growth centres designated in each tier has been shown by this research to be effective in relocating those rural women at risk. The exception is the Lea Side estate in Halton Lea Gate where the carless young mothers found themselves "village bound" during the day. In some cases the elderly suffered from social inaccessibility despite the availability of goods, home help service, doctors, day care centres and Senior Citizens clubs. This is a problem for which there is little concern in the literature of accessibility.

Previous research has explored the possibilities of changing the dimensions of locational space-time prisms. The planning solutions of identifying key settlements (Clope

1979) or developing interdependent clusters of villages (McLaughlin 1979) concentrated on the location of the stations which people visited in maintaining a livelihood activity system. Whereas, organising voluntary car schemes (Lumb 1983) and assessing alternative transport strategies (Nutley 1984) concentrated on different aspects of the possible paths through space-time. The former investigating a problem specific to health care accessibility and the latter the accessibility to a range of opportunities. An alternative approach was to explore the extent to which opportunities such as employment and services were mobile (Moseley and Darby 1978 and Moseley and Packman 1983). Unlike the key settlement policy, the emphasis in the research into transport strategies and mobile services is upon enabling rural dwellers with the traditional lifestyle to remain in the rural environment.

As this research has shown growth centre planning solutions to problems of inaccessibility may merely replace a physical accessibility problem with a social one. It is questionable whether the relocation of remote women with a traditional lifestyle in a larger settlement actually improves their quality of life. The whole field of social accessibility is as yet unexplored. This is one of the areas for future research.

Linked to social accessibility are the constraining and enabling mechanisms of the family support system. What proportion of rural women are bound by the family support system and how extensive is the system in terms of women's daily activity? During this century the use of time and space by women has changed, so that today women share many

public spaces with men. But, how is the use of space related to lifecycle, and to what extent are there still social barriers to the use of specific spaces by women?

What is lacking at present is a coordinated approach to rural accessibility which involves the rural dwellers in the decision making process. The above questions need to be addressed, and a cohesive policy of social support developed which enables members of rural communities to continue to live in the settlements which by reason of birthright, work or voluntary effort have become their home.

ADDENDUM

Since 1981 a number of changes have occurred in both local and national government policies. These have had far reaching effects on the accessibility of the women in S.W. Tynedale.

Many of these decisions have been in the area of transport. In 1982/3 British Rail reduced services on the Tyne Valley Line between Carlisle and Newcastle. The building of the Halthistle and Haydon Bridge by-passes have been postponed yet again.

The 1985 Transport Act threatened even further reductions in bus services. By April of 1986, nationally 68% of existing bus routes had been registered. In Tynedale District thirteen of the existing routes were still outstanding including three within the study area. Namely, Alston to Haltwhistle, Halton Lea gate to Carlisle and Alston to Hexham via West Allen. Eighteen months later these three routes are operating, and it is now possible to gain some appreciation of the effects of the de-regulation of bus services upon accessibility to opportunities in S.W. Tynedale.

There has been very little change in Haltwhistle, but the same is not so in Allendale and Halton Lea Gate where the elderly and young mothers, respectively were identified as groups at risk.

From Allendale Town in 1981, it was possible to travel by bus to visit relatives or friends on a Sunday afternoon in Hexham, Haydon Bridge or other Allendale communities. The Sunday Service from Hexham to Allenheads has been discontinued.

The number of buses from Allendale Town to Hexham on a Saturday has been reduced from nine, in 1981, to four in 1987. On weekdays, excluding school buses, the service has been reduced from eight to five buses per day with an additional bus on Friday. In 1981, except on Sundays, it was possible to travel into Hexham for the evening arriving back in Allendale Town at 22.01. In 1987, except on Fridays the evening buses have been discontinued. The carless women have to return to Allendale by 17.48 Monday to Thursday and 18.18 on Saturdays. Even visiting the sick in Hexham Hospital is only possible on Friday evenings and Saturday afternoons.

In Halton Lea Gate the service previously operated by Ribble has been taken over by a local company Wright's Brothers. In 1981, this service did not operate on Sundays and this has not changed. The main difference is the last bus into Halton Lea Gate which from Alston was 19.27, and is now 17.22. From Haltwhistle, a bus arrived at 20.20 whereas the last bus from this direction to arrive in Halton Lea Gate is now 18.39.

The Carlisle to Halton Lea Gate service was prior to deregulation a Ribble service, but is now operated by Cumberland Motor Services on weekdays only. The Saturday and Sunday services have both been discontinued. During

weekdays there are now three buses, whereas before there were five. The 10.27 from Halton Lea Gate to Carlisle and the 15.05 from Carlisle are the two buses most likely to affect the group of carless young mothers. The 10.27 gave women time to organise themselves after husband and children had left for work and school, respectively. It was then possible to return on the 15.05 arriving home at 16.15 about 20 minutes before the school bus.

The early bus to Carlisle from Halton Lea Gate leaves at 8.39 arriving there at 9.38 which is not convenient for working in Carlisle. Similarly, the return bus in the evening is at 17.05 which is early for women working in retailing, but late for mothers who have been shopping and need to be home for children returning from school.

During the seven years of this research the differences in the paths through space-time available to those women with private transport and those without have increased. Although, there have been few changes in accessibility by public transport for those women living in Haltwhistle and the Tyne Valley including Gilsland and Greenhead, in Allendale and Halton Lea Gate the elderly and carless young mothers have fewer opportunities available to them than before. The 1985 Transport Act has widened the gap between those with private transport and those without in these two remoter rural areas. Conversely, for those with private transport the Bardon Mill and Greenhead by-passes on the A69 are both completed and the dualling of the A69 between Hexham and Newcastle upon Tyne is nearly finished. The carowning women can now travel greater distances in shorter times.

The problem of accessibility to opportunities for the carless women of S.W. Tynedale is now more acute than it was in 1981.

APPENDIX I

Private and Public Transport Accessibility Indices Values
and Classification for the Sample of Grid Squares

Kilometre	Private Index	Transport Class.	Public Index	Transport Class.
7950	25.94	3	10.56	2
7853	23.36	3	8.35	1
7854	23.12	3	12.40	2
7855	22.85	3	15.30	3
7656	21.64	2	15.40	3
7756	21.44	2	7.16	1
7258	23.28	3	14.29	2
7259	23.20	3	41.93	3
7957	25.06	3	31.10	3
7958	23.47	3	8.87	2
7947	29.72	3	32.43	3
7948	28.33	3	66.25	3
7049	29.31	3	13.14	2
7262	21.66	2	9.04	2
7263	19.60	2	9.98	2
7064	18.11	1	4.21	1
7065	19.22	2	6.98	1
7764	17.46	1	3.29	1
7665	18.02	1	3.41	1
7565	18.57	1	5.29	1
7564	18.18	1	3.23	1
7563	19.13	1	4.17	1
7964	15.20	1	3.21	1
7962	20.93	2	12.76	2
7667	20.30	2	8.83	2
7467	20.50	2	14.99	2
7469	21.90	2	58.09	3
7669	22.64	2	57.31	3
6561	24.22	3	21.16	3
6563	23.20	3	13.35	2
6663	21.34	2	5.97	1
6863	19.10	1	6.68	1
6768	25.06	3	14.86	3
6867	24.42	3	17.50	3
6765	23.81	3	6.98	2
6666	22.27	2	8.79	2
6766	21.58	2	12.53	2
6565	21.36	2	1.37	1
6964	18.02	1	4.33	1
8360	17.90	1	9.11	2
8361	18.11	1	9.57	2
8362	15.70	1	2.76	1
8262	16.36	1	10.88	2
8162	17.66	1	24.57	3
8862	12.90	1	1.65	1
8663	12.45	1	7.18	1
8563	13.12	1	4.71	1
8463	13.91	1	3.40	1
8565	13.66	1	2.08	1
8965	12.00	1	2.80	1

APPENDIX I cont...

Kilometre	Private Index	Transport Class.	Public Index	Transport Class.
8266	16.90	1	3.74	1
8156	18.52	1	15.76	3
8556	17.30	1	11.53	2
8253	20.18	2	19.06	3
8552	21.27	2	10.56	2
6851	27.62	3	3.49	1
6652	29.01	3	20.00	3
6558	24.90	3	2.29	1
6459	26.50	3	8.78	2
6959	22.26	2	15.80	3
8445	29.40	3	15.48	3
8447	24.90	3	15.93	3
8549	23.35	3	5.47	2
8448	23.80	3	9.43	2
8548	23.78	3	4.82	1

Classification of the Indices Values for the Grid Squares

Private Transport Class Intervals		Public Transport Class Intervals	
Index Values	Classes	Index Values	Classes
12.00-19.10	1	0.10- 8.49	1
19.20-22.70	2	8.50-14.99	2
22.80+	3	15.00+	3

APPENDIX II

Draft Recording Schedule

Location Ref. _____

I am conducting a survey into the accessibility women have in this area to cultural/educational facilities. Would you answer a few questions for me about yourself, your activities and your means of transport?

A. To begin with I am interested in the amount of time you have to yourself.

- 1 a) How long have you lived in the village?
i) All your life _____
ii) 10 years + _____
iii) 5 - 9 years _____
iv) 1 - 4 years _____
v) Less than 1 year _____

1 b) Are you married/single/widowed/divorced ?

2 Do you have any children ? YES/NO _____

If YES ask the following:

- a) How old are they? _____
b) Are they girls or boys? _____

3 Do you have a full-time job? YES/NO _____

If YES, ask the following:

- a) What is your job? _____

If NO, ask the following:

- b) Do you have a part-time job? YES/NO _____

If YES, ask the following:

- c) What is your part-time job? _____

If No to 3a and 3c ask the following:

- d) Would you describe yourself as a housewife?
YES/NO _____

If the answer to 1b is married, ask the following:

4 How would you describe your husband's job?

If the answer to 4 is a farm or business, ask the following:

5 Do you have any responsibilities in connection with the farm or business for which you are not paid, but which occupies set periods of your time?
YES/NO _____

If the answer to 5 is YES, ask the following:

a) Would you briefly tell me what they are?

6. Do you have any of the relatives listed below living in either the parish or Tynedale?

Relatives	Parish	Tynedale
Parents	_____	_____
Grandparents	_____	_____
Children	_____	_____
Brothers/sisters	_____	_____
Aunts/Uncles	_____	_____
Nieces/nephews	_____	_____
Cousins	_____	_____
In-laws	_____	_____

B. There are many activities which come under the broad umbrella of education and I would like to ask you some questions about those available in this area.

1. Where is the nearest Women's Institute?

Place _____

Don't know _____

If the answer is other than DON'T KNOW, ask the following:

a) Have you ever been to a meeting of the W.I.?

YES/NO _____

If the answer to 1a is YES ask the following:

b) Have you attended meetings of the W.I. this year?

YES/NO _____

If the answer to 1c is YES ask the following:

c) How often have you attended?

i) every month _____

ii) less than once a month _____

iii) occasionally _____

d) How do you travel to the meetings?

i) walk _____

ii) bus _____

iii) drive _____

iv) car with friend _____

iv) driven (by _____
person not attending)

v) other _____

If the answer to 1a is YES and b NO, ask the following question:

e) Why have you not attended meetings this year?

If the answer to 1a is NO ask the following question:

f) Have you ever been on a W.I. outing?

YES/NO _____

If the answer to 1f is YES ask the following question:

- g) Have you been on an outing with the W.I. this year?

YES/NO _____

2. Do you attend Young Wives or any similar church organised group?

YES/NO _____

If the answer to 2 is YES ask the following:

- a) Where does the group meet? _____
b) How do you travel to the meetings?
i) walk _____
ii) bus _____
iii) drive _____
iv) car with friend _____
v) driven _____
(by person not attending)
vi) other _____

c) If you have attended meetings Young Wives or similar group in the past but no longer do so, can you tell me why?

3. Are there any Adult Education Classes held within the area? e.g. Local Authority, W.E.A., University or Open University organised courses?

YES/NO _____

If the answer is YES to 3 ask the following:

- a) Where are they held?

- b) Have you ever attended any?

YES/NO _____

If YES to 3b ask the following:

- c) Which have you attended and can you tell me when?

- d) Are you attending any classes this year?

YES/NO _____

If the answer to 3d is YES ask the following question:

- e) What is the class? _____
f) Where is it held? _____
g) How do you travel to meetings? _____

- i) walk _____
- ii) bus _____
- iii) drive _____
- iv) car with friend _____
- v) driven (by _____
person not attending)
- v) other _____

4. Can you tell me about the Young Farmer's group? When and where do they meet?

where _____
when _____

If the answer to 4 is positive ask the following:

- a) Have you ever attended any meetings? YES/NO _____
- b) Have you attended meetings this year? YES/NO _____

If the answer to 1c is YES ask the following:

- c) How often have you attended?
 - i) every month _____
 - ii) less than once a month _____
 - iii) occasionally _____
- d) How do you travel to meetings?
 - i) walk _____
 - ii) bus _____
 - iii) drive _____
 - iv) car with friend _____
 - v) driven (by _____
person not attending)
 - v) other _____

5. There are many other educational activities taking place within the area some of which you may know about, but never use, and others which you may use or have used in the past.

- a) Can you tick off on this list the ones which you know about and the ones you have used in the past?
- b) Can you tell me where each of these activities you have ticked off takes place? (Go through the list and write the names of places in the appropriate spaces).
- c) For the activities which you attend at present, can you tell me how you travel to them? Walk, bus, drive, car with friend attending, driven by person not attending. (Write the answers in the appropriate spaces on the list).

6. Do you attend any activity at the same time as another member of the family is attending a different activity?
YES/NO _____

7. Do you attend any activity with another member of your family?
YES/NO _____

C. Now I would like to ask you about the way in which you travel about the area.

- 1. Do you have a driving licence?

YES/NO _____

If the answer to 1 is YES ask the following:

- a) Is the licence a PROVISIONAL or FULL ? _____
- b) Do you have your own car ? _____
- c) Do you have the use of a car ? _____
 - i) weekdays _____
 - ii) evenings _____
 - iii) weekends _____

If the answer to 1 is NO ask the following question:

- d) Does your husband/relative drive you to places, if you wish to go?
 - i) always _____
 - ii) sometimes _____
 - iii) never _____

If the answer to 1d is SOMETIMES, ask the following:

- e) Would you explain why you are only taken to events sometimes?

- 2. Do you use the bus for shopping trips ?
YES/NO _____

If the railway is accessible ask the following:

- 3. Do you use the railway for shopping ?
YES/NO _____

D. An alternative source of educational opportunity which does not rely on transport is the media i.e. T.V., radio, newspapers and books. The next few questions are about the availability of these.

- 1. Can you tell me which newspapers you take ?

- 2. Which magazines do you take ?
(include Radio Times & TV Times)

- 3. Do you have a newspaper delivery ?
YES/NO _____

If YES to 3, ask the following:

- a) Who delivers your newspapers?

If NO to 3, ask the following:

- b) Where do you buy newspapers?

- 4. Do you have any of the following:
 - Radio L & M _____
 - Radio VHF _____

TV BBC1 _____
ITV _____
TV BBC2 _____
Tape Recorder _____
Video Recorder _____
Telephone _____

5. Do you use the County Library ?
YES/NO _____

6. Does the County Mobile Library stop nearby ?
YES/NO _____

7. Are you a member of the Newcastle upon Tyne City
Library ?
YES/NO _____

E. Finally, to help me analyse the data would you answer
a few additional questions about yourself ?

1. Would you mind telling me your age ?

2. At what age did you leave school?

3. Have you attended a Further or Higher Education
Institution ?
YES/NO _____

If the answer to 3 was YES ask the following:

a) What qualifications did you gain? _____

Check List of Activities for Pre-Test
and Pilot Study

Location Ref. _____

Place a tick in the appropriate column.

Facilities	Know.	Place	Use
Sports			
Angling			
Archery			
Athletics			
Badminton			
Bowls			
Fox Hunt			
Gliding			
Golf			
Gymnastics			
Hockey			
Judo			
Riding	L		
Sailing			
Squash			
Sub-aqua			
Swimming			
Table Tennis			
Tennis			
Keep Fit			
Other (specify)			
Cultural			
Art Club			
Adult Literacy			
Bridge			
Choirs			
Dance			
Drama			
Floral Art			
Horticulture			
Local History			
Photography			
Business &			
Professional			
Orchestra/Bands			
Senior Citizens			
Other (specify)			

APPENDIX III

PILOT SURVEY Recording Schedule

Location Ref. _____

I am conducting a survey into the accessibility women have in this area to cultural/educational facilities. Would you answer a few questions for me about yourself, your activities and your means of transport?

A. To begin with I am interested in the amount of time you have to yourself.

- 1 a) How long have you lived in the village?
 - i) All your life _____
 - ii) 10 years + _____
 - iii) 5 - 9 years _____
 - iv) 1 - 4 years _____
 - v) Less than 1 year _____

b) Are you married/single/widowed/divorced ?

2 Do you have any children ? YES/NO _____
If YES ask the following:

- a) How old are they? _____
- b) Are they girls or boys? _____

3 Do you have a full-time job? YES/NO _____

If YES, ask the following:

- a) What is your job? _____

If NO, ask the following:

- b) Do you have a part-time job? YES/NO _____

If YES, ask the following:

- c) What is your part-time job? _____

If No to 3a and 3c ask the following:

- d) Would you describe yourself as a housewife?
YES/NO _____

If the answer to 1b is married, ask the following:

4 How would you describe your husband's job?

If the answer to 4 is a farm or business, ask the following:

- b) Do you have any responsibilities in connection with the farm or business for which you are not paid, but which occupies set periods of your time?

YES/NO _____

If the answer to 4b is YES, ask the following:

c) Would you briefly tell me what they are?

5. Do you have any of the relatives listed below living in either the parish or Tynedale?

Relatives	Parish	Tynedale
Parents	_____	_____
Grandparents	_____	_____
Children	_____	_____
Brothers/sisters	_____	_____
Aunts/Uncles	_____	_____
Nieces/nephews	_____	_____
Cousins	_____	_____
In-laws	_____	_____

B. There are many activities which come under the broad umbrella of education and I would like to ask you some questions about those available in this area.

1. Where is the nearest Women's Institute?

Place _____
 Don't know _____

If the answer is other than DON'T KNOW, ask the following:

a) Have you ever been to a meeting of the W.I.? YES/NO _____

If the answer to 1a is YES ask the following:

b) Have you attended meetings of the W.I. this year? YES/NO _____

If the answer to 1c is YES ask the following:

c) How often have you attended?
 i) every month _____
 ii) less than once a month _____
 iii) occasionally _____

d) How do you travel to the meetings?
 i) walk _____
 ii) bus _____
 iii) drive _____
 iv) car with friend _____
 v) driven (by _____
 person not attending)
 v) other _____

If the answer to 1a is YES and b NO, ask the following question:

e) Why have you not attended meetings this year?

If the answer to 1a is NO ask the following question:

f) Have you ever been on a W.I. outing? YES/NO _____

If the answer to 1f is YES ask the following question:

g) Have you been on an outing with the W.I. this year? YES/NO _____

2. Do you attend Young Wives or any similar church organised group?

YES/NO _____

If the answer to 2 is YES ask the following:

a) Where does the group meet? _____

b) How do you travel to the meetings? _____

i) walk _____

ii) bus _____

iii) drive _____

iv) car with friend _____

v) driven (by _____

person not attending)

v) other _____

c) If you have attended meetings Young Wives or similar group in the past but no longer do so, can you tell me why?

3. Are there any Adult Education Classes held within the area?

YES/NO _____

LEA _____

WEA _____

University _____

Open University _____

If the answer is YES to 3 ask the following:

a) Where are they held? c) When?

LEA _____

LEA _____

WEA _____

WEA _____

University _____

University _____

Open University _____

Open University _____

d) Have you ever attended any? YES/NO _____

If YES to 3d ask the following:

e) Which have you attended and can you tell me when?

d) How do you travel to meetings ?

- i) walk _____
- ii) bus _____
- iii) drive _____
- iv) car with friend _____
- iv) driven (by _____
person not attending)
- v) other _____

4. Can you tell me about the Young Farmer's group ? When and where do they meet ?

a) where _____

b) when _____

If the answer to 4 is positive ask the following:

c) Have you ever attended any meetings ?
YES/NO _____

d) Have you attended meetings this year?
YES/NO _____

If the answer to 1c is YES ask the following:

e) How often have you attended?
i) every month _____
ii) less than once a month _____
iii) occasionally _____

f) How do you travel to meetings?
i) walk _____
ii) bus _____
iii) drive _____
iii) car with friend _____
iv) driven (by _____
person not attending)
v) other _____

g) If you have attended meetings in the past but no longer do so, can you tell me why?

5. There are many other educational activities taking place within the area some of which you may KNOW about, but never use, and others which you may USE or have USED in the past.

a) Can you tick off on this list the ones which you know about and the ones you have used in the past?

b) Can you tell me where each of these activities you have ticked off takes place? (Go through the list and write the names of places in the appropriate spaces).

c) For the activities which you attend at present, can you tell me how you travel to them? Walk, bus, drive, car with friend attending, driven by person not attending.

(Write the answers in the appropriate spaces on the list).

6. Do you attend any activity at the same time as another member of the family is attending a different activity?
YES/NO _____

7. Do you attend any activity with another member of your family?
YES/NO _____

C. Now I would like to ask you about the way in which you travel about the area.

1. Do you have a driving licence?
YES/NO _____

If the answer to 1 is YES ask the following:

a) Is the licence a PROVISIONAL or FULL? _____

b) Do you have your own car? _____

c) Do you have the use of a car? _____

i) weekdays _____

ii) evenings _____

iii) weekends _____

If the answer to 1 is NO ask the following question:

d) Does your husband/relative drive you to places, if you wish to go?

i) always _____

ii) sometimes _____

iii) never _____

If the answer to 1d is SOMETIMES, ask the following:

e) Would you explain why you are only taken to events sometimes?

2. Do you use the bus for shopping trips?
YES/NO _____

If the railway is accessible ask the following:

3. Do you use the railway for shopping?
YES/NO _____

D. An alternative source of educational opportunity which does not rely on transport is the media i.e. T.V., radio, newspapers and books. The next few questions are about the availability of these.

1. Can you tell me which newspapers you take?

2. Which magazines do you take?
(include Radio Times & TV Times)



3. Do you have a newspaper delivery ?
YES/NO _____

If YES to 3, ask the following:

a) Who delivers your newspapers?

If NO to 3, ask the following:

b) Where do you buy newspapers?

4. Do you have any of the following:

- Radio L & M _____
- Radio VHF _____
- TV BBC1 _____
- ITV _____
- TV BBC2 _____
- Tape Recorder _____
- Video Recorder _____
- Telephone _____

5. Do you use the County Library ?
L- YES/NO _____

6. Does the County Mobile Library stop nearby ?
YES/NO _____

7. Are you a member of the Newcastle upon Tyne City Library ?
YES/NO _____

E. Finally, to help me analyse the data would you answer a few additional questions about yourself ?

1. Would you mind telling me which age group you fall into:

- 16 - 21 yrs. _____
- 22 - 35 yrs _____
- 36 - 49 yrs _____
- 50 - 65 yrs _____
- 65+ yrs _____

2. At what age did you leave school?

3. Have you attended a Further or Higher Education Institution ?
YES/NO _____

If the answer to 3 was YES ask the following:

a) What qualifications did you gain?

APPENDIX IV

Recording Schedule

I am conducting a survey into the accessibility women in this area have to cultural/educational facilities. Would you answer a few questions for me about yourself, your activities and your means of transport?

Section A.

To begin with I am interested in the amount of time you have to yourself.

1. How long have you lived in the village?
a) All your life b) 10+ years c) 5 - 9 years d) 1 - 4 years e) Less than 1 year
2. Are you married/single/widowed/divorced ?

3. Do you have any children in the following age groups?
a) under 5 b) 5 - 12 yrs. c) 13 - 17 yrs.

4. a) Do you have a full-time job? YES/NO

If YES, ask the following:

- b) What is your job?

- c) Do you have a part-time job? YES/NO

If YES, ask the following:

- d) What is your part-time job?

- e) Would you describe yourself as a housewife? YES/NO

If No to 4a and 4c and the person is elderly ask the following:

- f) Are you retired and would you tell me your occupation before you retired?

(Record job title or housewife in the space 4f)

If the answer to 2 was MARRIED, ask the following:

5. How would you describe your husband's job?
(If the husband is retired or unemployed, record present status and previous job)

If the answer to 4 is a FARM or BUSINESS, ask the following:

6. Do you have any responsibilities in connection with the farm or business for which you are not paid, but which occupies set periods of your time?

If the answer to 4b is YES, ask the following:

- c) Would you briefly tell me what they are?

Section B.

There are many activities which come under the broad umbrella of education and I would like you tick off on this list the ones which you know about.

a) Ask the respondent about each of the facilities she has ticked and record the information for place, use dates of use and attendance with other member of the family or friends.

Section C.

Now I would like to ask you about the way in which you travel about the area.

7. Do you have a driving licence? YES/NO/PROVISIONAL
8. If YES to 7. ask the following:
Do you have the use of a car
a) weekdays b) evenings c) weekends d) all the time ?
9. How do you travel to do the shopping a) locally
b) Town c) City
(Record walk, bus, train, bicycle, car, car with
relative/friend)

Section D.

An alternative source of educational opportunity which does not rely on transport is the media i.e. T.V., radio, newspapers and books. The next few questions are about the availability of these.

10. Can you tell me which newspapers and magazines you read ?
11. Do you have a newspaper delivery ?
12. Do you have the use of any of the following:
Radio L & M, Radio VHF, BBC1, ITV, Ceefax, BBC2, Tape Recorder, Video Recorder, Telephone?
13. Do you use a) local branch library b) mobile library
c) Hexham library d) other ?

Section E.

Finally, to help me analyse the data would you answer a few additional questions about yourself ?

14. Would you mind telling me which age group you fall into:
a) under 24 yrs., b) 25 - 34 yrs, c) 35 - 44 yrs, d) 45 - 59 yrs, e) 60+ yrs
15. At what age did you leave school?
16. How many years of full-time education (or equivalents) do you have over and above the school leaving age ?
(Record the total number of years)
17. Do you have any of the relatives listed below living in either a) this parish or b) Tynedale ?
(Explain to the respondent that in-laws should be included, but relatives they have not had contact with for two or more years need not)

APPENDIX IV cont...

Recording SheetO.S. Ref. 804576Electoral Roll No. 403Property Class 3Section A

1. Length of residence 60 yrs.
2. Marital status Widow
3. a) Children < 5 /
b) Children 5-12 /
c) Children 13-17 /
4. a) Full-time job /
b) Job title /
c) Part-time job /
d) Job title /
e) Housewife (✓)
f) Retired ✓
5. a) Husband's Job (Farmer)
b) Retired /
6. a) Unpaid work (✓)
b) Description (Farm)

Section C

7. Driving licence No
8. Use of car None
9. Shopping
a) locally Monthly order
b) Hexham Car. (With son)
c) City /

Section D

10. a) National dailies /
b) Sunday newspapers /
c) Local daily Newcastle Journal
d) Local weeklies Hexham Courant
e) Radio Times /
f) TV Times /

Section D cont...

10. g) Magazines Woman's Weekly
Woman's Weekly
Woman's Realm
11. Newspaper delivery No
12. Radio ✓ VHF
TV ✓ BBC1 ✓ BBC2 ✓ ITV ✓
Ceefax /
Taperecorder /
Videorecorder /
Telephone ✓
13. a) Branch Library /
b) Mobile Library /
c) Hexham Library /
d) Library elsewhere /

Section E

14. Age group 75+ (91yrs)
15. Age left school 13 yrs
16. Yrs. F/T education 0
17. a) No. kin/parish 7
b) No. kin/Tynedale 3

Interviewers Comments

Lived alone.
Isolated farm.
Son farmed the land.
/
/
/
/
/

Date 21/08/1981.

APPENDIX IV cont...

Check List of Cultural/Educational Facilities

Facilities	Knowledge of	Place	Dates of use	Attendance family/friends
Women's Institute	✓	Whitfield	1974	
Mother's Union				
Young Wives				
Young Farmers				
Pewter Craft				
Silversmithing				
Metalwork				
Woodwork				
Handicrafts				
Embroidery				
Dressmaking				
Cookery				
Winemaking /brewing				
Photography				
Ballroom Dance				
Drama	✓	N'ld Group		
Floral Art	✓	Allendale		
Local History				
Royal Society of Arts				
GCE				
Bridge				
Bell ringing				
Art Club				
Horticulture	✓	Allendale		
Angling	✓	Allendale		
Archery				
Athletics				
Badminton				
Bowls				
Fox Hunt	✓	Haydon Bridge		
Gliding				
Golf	✓	Allendale		
Gymnastics				
Hockey				
Judo				
Riding	✓	Allendale		
Sailing	✓	Derwent		
Squash				
Sub-aqua				
Swimming	✓	Hexham		
Table Tennis				
Tennis	✓	Allendale		
Keep Fit				
Yoga				
Adult Literacy				
Choirs				
Orchestra/Bands				
Business & Prof. Women's Groups				
Senior Citizens	✓	Allendale		
Other (specify)				

APPENDIX IV cont...

Recording Sheet

O.S. Ref. _____

Electoral Roll No. _____

Property Class _____

Section A

1. Length of residence _____
2. Marital status _____
3. a) Children < 5 _____
b) Children 5-12 _____
c) Children 13-17 _____
4. a) Full-time job _____
b) Job title _____
c) Part-time job _____
d) Job title _____
e) Housewife _____
f) Retired _____
5. a) Husband's Job _____
b) Retired _____
6. a) Unpaid work _____
b) Description _____

Section C

7. Driving licence _____
8. Use of car _____
9. Shopping
a) locally _____
b) Hexham _____
c) City _____

Section D

10. a) National dailies _____
b) Sunday newspapers _____
c) Local daily _____
d) Local weeklies _____
e) Radio Times _____
f) TV Times _____

Section D cont...

10. g) Magazines _____
11. Newspaper delivery _____
12. Radio _____ VHF _____
TV _____ BBC1 _____ BBC2 _____ ITV _____
Ceefax _____
Taperecorder _____
Videorecorder _____
Telephone _____
13. a) Branch Library _____
b) Mobile Library _____
c) Hexham Library _____
d) Library elsewhere _____

Section E

14. Age group _____
15. Age left school _____
16. Yrs. F/T education _____
17. a) No. kin/parish _____
b) No. kin/Tynedale _____

Interviewers Comments

Date _____

APPENDIX IV cont...

Check List of Cultural/Educational Facilities

Facilities	Knowledge of	Place	Dates of use	Attendance family/friends
Women's Institute				
Mother's Union				
Young Wives				
Young Farmers				
Pewter Craft				
Silversmithing				
Metalwork				
Woodwork				
Handicrafts				
Embroidery				
Dressmaking				
Cookery				
Winemaking /brewing				
Photography				
Ballroom Dance				
Drama				
Floral Art				
Local History				
Royal Society of Arts				
GCE				
Bridge				
Bell ringing				
Art Club				
Horticulture				
Angling				
Archery				
Athletics				
Badminton				
Bowls				
Fox Hunt				
Gliding				
Golf				
Gymnastics				
Hockey				
Judo				
Riding				
Sailing				
Squash				
Sub-aqua				
Swimming				
Table Tennis				
Tennis				
Keep Fit				
Yoga				
Adult Literacy				
Choirs				
Orchestra/Bands				
Business & Prof. Women's Groups				
Senior Citizens				
Other (specify)				

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