

M. Church

The Analysis of Resident Satisfaction as an Indicator of
Environmental Quality

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THESIS

SUMMARY

This thesis is concerned with developing an indicator of environmental quality, based on behavioral and attitudinal responses of residents. It illustrates how housing policy since the war has attempted to act as a market stimulator rather than as a control, marked by the gradual change in emphasis from redevelopment to renovation. Attention is focused on the role of improvement areas as improvement grant stimulators and their failure to fulfill expectations. This failure is attributed to inadequate knowledge of consumer attitudes and preferences. Part II examines the distributional influences of housing policy within the market. Particular attention is paid to the relationship between housing obsolescence and the factors which influence house value and the individuals propensity to invest in the dwelling. The various empirical approaches to the isolation of environmental attributes are examined and a system based on residents satisfaction levels is postulated. Adopting earlier research convention, dwelling attributes are categorised into those relating to the house, to the social and physical environments and accessibility. It is hypothesised that accessibility factors alone provide a coherent study unit and that individuals perceptions of accessibility can be explained by their regular journeys to other land uses. For a sample moved by redevelopment, the influence of specific activities on satisfaction is assessed before and after the move. The relationships between distance, time and other physical stimuli and perceptions of convenience are also examined. The study concludes by suggesting a way in which the technique could be used to monitor improvement areas and direct resources to those attributes most likely to increase satisfaction with an area.

INTRODUCTION

The work described in this study postulates and tests a measure of environmental quality based upon the behavioral responses of residents. The origins of the study lie in three separate strands of thought which all pointed to this approach. The first two elements can be dealt with together and are related to the policy issues involved and the way these decisions are informed, both generally and in relation to housing. The final point is concerned with the theoretical basis of alternative approaches to the understanding of the housing system and with the specific contribution of empirical studies.

In the absence of any theoretical structure, public policy inevitably evolves incrementally and this development can be caricatured into two phases. The initial concern is with overall provision and the need to give most people minimal access to the public good. When this is achieved, focus of attention switches to the quantitative and distributional characteristics of the policy and it is at this point that existing data sources become inadequate. The data we collect both reflects and influences the problems to which it is addressed and over time the measures used become institutionalised and hard to change. At national, regional and local levels there are indicators of economic performance but there are few comparable indicators of social criteria. It is to this problem that the development of social indicators and

social accounting frameworks have been addressed. These have attempted to measure the social costs and net returns on innovations, the measurement of social ills, the creation of performance budgets in areas of defined social 'need', such as housing and the definition of economic opportunity and social mobility. It is as an indicator capable of fitting within some overall accounting frame, that the measure of convenience detailed here has been proposed. The development of such a system of indicators is fundamentally based upon the collection of behavioral and objective data, since by relating the two a more rational resource allocation can be achieved.

The ways in which statistics harden into very limited agenda is well illustrated with reference to physical planning. There seems to have been a mutual failure of those responsible for housing and planning policy to understand both the extent to which housing problems are exacerbated by planning factors and the effect which planning has on the housing market. Housing policy commonly fails to recognise the influence of employment location and the distribution of environmental attributes, which are instrumental in determining some of the undesirable features of the market, such as high prices, overcrowding and obsolescence: while planners tend to see housing problems in terms of housing statistics and aggregate numerical balances between households and dwelling units and to see the solution in terms of physical redevelopment. The institutional framework has made it very difficult to establish an

over-view of the situation: in particular, the effects of transport proposals and employment location on house price are rarely considered. Here again, the development of an accounting framework which can integrate aspects of house quality and accessibility will provide a more unified and logical approach. One area of housing policy where such intergration is essential, is within the General Improvement Area, as proposed in the Housing Act 1969. Within these areas, provisions for improvement are based upon the principle of voluntary participation between the authority and the home owner. Within these areas, local authorities are investing in 'environmental' improvements, to give confidence in the area and incentive to residents to improve their homes. It appears, however, that although the general rate of improvement grant take-up has increased, most of this has occurred outside the general improvement areas. In addition, the location of some of these improvement areas has led to serious second order consequences in terms of social upheaval and the destruction of communities. There is therefore a powerful impetus for an improved understanding of the processes at work within the housing market and the consumers ability to express his preferences and attitudes.

This leads me to the third and final element, related to the theoretical and empirical approaches to study of the housing market. There are a number of different ways, mainly derived from sociology, geography, economics and systems theory, in which people have approached the task of explaining housing

market processes. Simulation models have been used but these are more fitted to modelling larger scale dynamic processes, than micro-scale studies of the type required here. Much spatial analysis of urban processes has left itself open to the criticism that it is merely descriptive and not explanatory and therefore of limited value. Sociological research has fallen into two broad categories: the first has emphasized the role and behavior of agencies which control the workings of the system, while the second approach emphasizes the constraints within which people operate. The basic difference between this and the economic approach is the lack of theoretical base to most urban sociological research, which has meant that empirical studies tend not to build into a coherent body of knowledge. Since economics provides such a theoretical base I have adopted this approach to the explanation of urban processes, with relevance to housing. However, there are a wide variety of influences upon the housing market which introduce imperfections, or things which the theory cannot handle. The influence of most governmental controls, such as taxation and subsidies, planning controls and rent regulations act as imperfections within the market. I have pointed out a variety of ways in which economists have sought to overcome these deficiencies and derive cash values for things not priced in the market. From a practical standpoint, many of these economic analyses have advantages over the approach adopted here, simply because they produce cash valuations of environmental variables. However, this advantage is usually gained at the expense of other factors, specifically, those

things which have no price in the market and other non-economic costs which are considered too trivial but which may influence peoples attitudes to an area. No one technique is going to decide the choice of policy, which is basically a political and not an analytical process. I therefore believe that a measure of resident satisfaction can complement the information already available to the decision-maker.

The study is divided into three sections. The first section covers chapters one and two and is concerned with the gradual change in emphasis in housing policy, from redevelopment to renovation and the subsequent effects. It is postulated that the improvement area was conceived as a device to stimulate grant applications in specific areas of deficiency, in terms of house quality. The reasons why this does not appear to have worked to date are given, drawing upon information on the national situation and some of the specific problems faced by Birmingham. The need for greater awareness of consumer attitudes and preferences is expressed.

Section two covers chapters three, four and five and provides the link between the survey of housing policy and the specific study detailed in section three. Chapter three examines the economic and spatial controls upon the housing system and points to ways in which these allocate resources differentially within the city. Particularly, it emphasises the ways that market forces fail to put values to those factors of specific relevance to the housing environment. The process of obsolescence

is related to the willingness of individuals to invest in property through the lifetime of the house, relating the success of improvement policy to this stimulation of incentive in householders. Chapter four compares the empirical approaches used to isolate components of the residential environment, in order to isolate the factors that would most influence individuals decisions to invest. These fall into two broad groups: those that seek to equate cash values with environmental attributes and those that seek a more general measure of attitude. The difficulties of devising a valuation for something that has no specific market price, are discussed. It is suggested that some data system based on social indicators of policy performance would be useful and this theme is developed in chapter five. The argument is based upon the premise that consumer satisfaction is a valid goal for policy. A number of studies that have used this approach are discussed and their failure to relate attitude to behavior is criticised. Attributes of dwellings have been divided into convenient groups by various researchers concerned with house price studies and dwelling satisfaction studies. I have followed the conventional threefold division of attributes: specifically, those relating to the property itself, to the environment in which the dwelling is located and to the accessibility of other land uses to the dwelling. Due to the considerable workload involved in collecting perceived and objective measures of environmental stimuli and the problems with devising measures for some of the stimuli, I have concentrated exclusively on the accessibility attributes. Some theoretical concepts of accessibility are outlined, as are some of the cognitive controls

upon convenience perception and their relationship to a model of convenience are examined.

Section three includes chapters six to eight and is concerned with the actual survey approach adopted for study. Chapter six specifies the reasons for the research design adopted. A measure of consumer satisfaction with accessibility is postulated and a number of working hypotheses are developed, which it is felt, will have some control over levels of convenience. Chapter seven is concerned with the analysis of the data and examines the ways in which attitudes to convenience change between amenities and for the same amenities over time. The degree of control which the hypothesised activities have over peoples convenience estimates is measured and the influence of planning action on both attitude and behavior is specified. Finally, chapter eight draws together some of the implications of this type of survey for directing public investment in housing area improvement and examines how this approach could be used to monitor the success of general improvement areas. The need for further research, using varied sample populations is expressed but the value of this approach, in conjunction with other methods, is reiterated.

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PART ONE

CHAPTER ONE: REDEVELOPMENT OR RENOVATION - THE CHANGE IN
EMPHASIS 1940 - 1969.

Housing policy in Britain has been geared to the changing nature of the problem. The housing stock has an inherent stability since, on past performance, new building can only add approximately two percent to the total stock each year. The majority of our houses are therefore quite old and often the products of very different eras. Donnison has described this process as a nations attempt "to adapt its inheritance to new needs and to add to this inheritance in ways that accord with a changing economic and social structure and rising human aspirations"¹. There are two broad components to the development of housing policy: the first is one of gross housing shortage and for most of this century the terms 'housing Problem' and 'housing shortage' have been used synonymously. The second component is one of housing quality, an issue inseparable from the bundle of services provided by the location of the dwelling. It can be argued that in a situation of gross shortage, the major effort should go to meet the deficit. However, as the situation changes to one of present or projected surplus of houses over households, the question of house quality and resource distribution becomes increasingly critical. From the end of the war to the Housing Act 1969, the emphasis in housing policy has been placed upon new construction and the eradication of existing slums. A Ministry of Health circular of 1933 noted, "the programme of redevelopment should as far as is possible, be drawn up on the basis of clearing all

areas that require clearance not later than 1938"². In 1955 Duncan Sandys estimated ". . . there are about one million slums. If this figure proves correct, I suggest we should aim to break the back of the problem by 1965"³. In 1967 the Sample House Condition Survey found 1.8 million dwellings unfit, even though 750,000 houses had been demolished since 1955.⁴ The pronouncements of those responsible for housing policy have generally failed to appreciate the evolving state of the housing system and have concentrated upon the short term interests. The development of policy since the war has illustrated the increasing awareness of this dynamic situation and is indicated by the growing commitment to improvement.

Housing Policy Since the War.

The tradition of planning has been, and to a remarkable extent still is, that of the new town and the suburban estate, as a well regulated alternative to the inner city area. This view was reinforced by the immediate post war situation, since the main requirements for action were to repair damaged houses and rebuild demolished properties. By 1945 the only legislation on maintenance and improvement of dwellings was related to agricultural workers cottages: however, this lack of legislation is not surprising when the scale of the housing shortage is visualised. Of a total pre war housing stock of 11.5 million, half a million had been completely destroyed, a quarter of a million were severely damaged and a further 3.25

million required repairs of some kind⁵. This meant that one house in three was in need of some attention. In addition, the shortage of materials during the war had meant that repairs were temporary affairs at best, so that after six years even the untouched houses were in need of maintenance. This decline was most marked in the private rented sector, caused, as I shall discuss later, by regressive tax controls. Much of the war damage was concentrated in the centres of the major cities and ports, London being particularly badly affected. In this situation it was really not surprising that the Barlow Committee Report of 1943 concentrated on the needs to rebuild city centres and halt the spread of development⁶. The suggestions of this report were embodied in the 1945 Greater London Development Plan, which recommended the containment of London within a 'green belt' and the reconstruction of the city centres at lower densities and consequently, with a higher level of amenities⁷. At the same time the Silkin Committee recommended the use of conversion and improvement as methods of making better use of the post war housing stock.⁸ In practice, little emphasis was placed on this aspect of housing policy.

During the war the building industry had lost a large number of its labour force and it still had not attained pre war size by the end of 1945: despite this, 59,000 houses were constructed by the end of 1946⁹. The government extended requisitioning powers to enable local authorities to take over empty houses for the homeless but despite this, squatting became endemic.

The organisational problems involved in getting the building industry back on its feet were not aided by the administrative incongruity of having housing policy formulated by the Ministry of Health and the new Ministry of Town and Country Planning.

* This situation was not fully rationalised until 1958 ^{with} the establishment of the Ministry of Housing and Local Government. Nevertheless, a policy existed which the Minister of Health described in the following way; "We propose to solve first, the housing difficulties of the lower income groups".¹⁰ To achieve this they introduced a variety of administrative devices including rent control, cheap loans, subsidies and rent tax allowances. The allocation of building materials was rationed on a priority basis and in practice it proved almost impossible to get a licence for anything other than industrial plant and local authority housing. This concentration upon the public sector meant that owner occupiers and landlords had no way to effect repairs and consequently neglect became obtrusive in all sectors of the market. It is against this background that the first improvement legislation was introduced, contained in the Housing Act 1949.¹¹ Grants were given to cover half the cost of approved works and were to be administered at the discretion of the local authority. These 'discretionary' grants were given little effective support and it is therefore quite surprising that 160,000 grants were approved in the nine years up to 1958. However, the majority of these were given to owner occupiers, with very few going to the private rented sector.¹² Nevertheless, this act established the role of improvement in national housing legislation.

By 1951 one million permanent homes had been built, making the total stock of housing in Britain nearly 13.5 million, against just over 14.5 million households.¹³ With the continuance of rent controls, the unsatisfied demand for public housing and a marked rise in house prices, dissatisfaction with the housing situation was widespread and it was the main plank of the Conservative 1951 election campaign, *i.e.* that they would solve the problem. By 1953 they had achieved a building rate of 300,000 houses a year and then decided that a new policy emphasis was required. The white paper of 1953, 'Housing - The Next Step' was based on three policy components:

1. To restart slum clearance that had not been restarted under the post war legislation.
2. To encourage repairs to rented property by decontrolling rents.
3. To put more emphasis on improvements.¹⁴

The first component ran into trouble over semantics, since it proved extremely difficult to produce a standardised definition of a slum. The second element did little to improve the standards of maintenance in the privately rented sector, for although landlords were enabled to raise rents if they guaranteed improvements, they still carried a heavier tax burden than owner occupiers: the Housing (Repairs and Rents) Act 1954 was envisaged as a prelude to the Decontrolling act of 1957 but neither act stopped the decline of privately rented houses.¹⁵ The third measure was the most modest, simplifying the grant

application procedure for improvements and giving, for certain repairs, the grant as of right. This was needed because some authorities had proved reluctant to give discretionary grants but again, it was the owner occupier who made most use of the grant.

Improvement grants to convert structurally sound old houses were taken a stage further in 1959 with the introduction of standard grants for the installation of five basic amenities (a fixed bath, a W.C., (wash hand basin,) hot water system and a food store).¹⁶ Again, the measure met with considerable response but mainly from owner occupiers. Landlords, particularly those with property let at controlled rents, were not so enthusiastic.¹⁷ However, from 1959-1968 a total of 1,148,000 houses were improved compared to a total of 750,000 dwellings redeveloped in the same period.¹⁸ It appeared that renovation ~~ment~~ had greater scope than redevelopment and that, at least in the short term, it was cheaper than other courses of action.

Improvement Policies after 1959

Schemes for area improvement had been encouraged under circulars issued after the Housing Act 1959, but little guidance had been given over the implementation of such schemes: indeed, at this stage, the Ministry had as little experience of procedures as local authorities. This lack of guidance resulted in a variety of approaches to area improvement, not all of them successful. Two such early schemes have been documented by

Pepper, one in Leeds and the other in Newcastle. The Leeds example was also cited in the Denington Committee Report, 'Our Older Homes - A Call for Action', as a particularly successful way of organising an improvement policy. By contrast, the Newcastle experience has received a great deal of criticism.¹⁹

1. Leeds

Leeds commenced their improvement policy about 1956 and this involved no special legislation beyond that generally available in relation to discretionary and standard grants and the powers to purchase houses, contained in part V of the Housing Act 1957. When the powers of compulsory improvement were introduced in 1964, Leeds continued to use the old procedures. The success of their schemes was based on the improvement of all houses within an area. Leeds concentrated on areas outside their designated redevelopment areas and evolved a policy of numerous small improvement areas, within which landlords and owner occupiers were induced, by information on grants and ultimately by the threat of compulsory purchase, to improve the house. By 1968 Leeds had 83 such areas in operation covering 11,300 houses, of which 8,600 had been improved.²⁰ In terms of houses improved, the Leeds method proved particularly successful.

2. Newcastle

By contrast, Newcastle's problem was not simply one of slums. Unlike most of Britain's cities, Newcastle's unfitness problem was not really bad: it was the amenity situation that was seen to be the most serious, since as late as 1951 some 28,000 of the city's 87,000 households entirely lacked a fixed bath.

The second major problem area was the degree of overcrowding, since the city had a disproportionate number of small dwellings.

* Newcastle's Development Plan proposed the clearance of all statutory slums by 1967, while at the other end of the quality scale it proposed the designation of revitalisation areas, where the houses were declining but not yet slums. The plan envisaged that these areas would have a life of 30-40 years after improvement and that when complete, that the houses should be better than the statutory twelve point standard. In this respect Newcastle was being more ambitious than Leeds, for Leeds had used improvement as a short term measure to delay redevelopment in an area. Newcastle's Long term revitalisation started in Rye Hill in 1959 but by 1969 only seven houses had been improved to the standard envisaged in the original plan. This was partly due to the fact that the council had insisted on compulsory purchase and subsequent improvement; while the gamut of objections was run the area became badly blighted. The major problem was, however, that the improvements to the proposed standard made the cost of new units cheaper. The policy failure was general: the Development Plan had proposed the improvement of 4,000 dwellings up to 1969 but between 1960-68 only 1,850 grants were given and few of these up to the originally proposed standard. In retrospect the scheme seems far too ambitious and too inflexible; if these two early schemes indicate anything, it is that the approach to improvement should be as unstructured as possible. However, despite such conspicuous failures, there was a growing feeling that redevelopment alone was failing to solve the housing problem and that a policy of

change was required.

Problems of Redevelopment

In 1971 Greve commented:

"The slow rate of slum clearance fails to keep pace with the emergence of new slums by a very wide margin (perhaps 50%). The condition of the housing stock is a problem towards which successive governments have shown a most scandalous complacency".²¹

* At the beginning of their term of office, Labour had emphasised the need for improved house completions and demolitions, noting that by comparison with most European nations, a target of 500,000 houses a year was not unreasonable.^f In 1964 they reached a target of 383,000 and hoped to achieve half a million by 1970. However, averaged over the decade house completions achieved a maximum of 350,000 and clearance rates also consistently failed to reach the targets:

CLEARANCE RATES 1961-70

1961-65	60,000
1966-68	71,000
1969	69,230
1970	67,800 ²²

This failure led to the change of policy outlined in the 1968 White Paper:

"The need for large new housebuilding programmes will remain for many years ahead. But the balance of 'need' between new housebuilding and improvement is now changing, so there must be a change in emphasis of local programmes. The government intend that within a total of public investment at about the same level it has reached, a greater share should go to the improvement of older houses".²³

The House Condition Survey had indicated that the scope for comprehensive renewal schemes was becoming restricted, with only some 50% of the unfit dwellings grouped in the city centres.²⁴ Under Part III of the Housing Act 1957, only 41.3% of the unfit

^f 1964-70 term

dwellings lay inside clearance areas within the conurbations and 47.6% in other areas.²⁵ The comment about 'public investment at about the same level', caused considerable disquiet on the labour left who felt, justifiably, that such a stipulation would sap the drive of the house building programme by diverting resources elsewhere. With hindsight this fear seems justified.

Besides this failure, evident from the completion figures, a considerable body of research had been done which pointed to the benefits of improvement on theoretical and empirical grounds. Individually, none of these appeared to change the course of policy but en masse they added weight to the trend towards renovation.

Rebuilding or Renovation.

The publication of the Report of the sub committee to the Housing Advisory Committee, 'Our Older Homes - A Call for Action', reiterated the need, "both for effective completion to improve and maintain the better houses and for more pressure for early clearance of the rest."²⁶ They went on to note "there is considerable scope for further research on the economic and social criteria affecting the allocation of resources between replacement and improvement of houses."²⁷ The White Paper, 'Old Houses into New Homes' specifically mentioned a number of academic studies that, "have shown the ways of rel-

ating the cost of immediate replacement to the cost of improvement with deferred replacement, according to the life of improved property, the prevailing interest rates and other factors."²⁸ Two of the studies which they obviously had in mind were the Deeplysh Study and the pilot survey in Reading.^{29 30} These were studies of the possibilities of area improvement in older urban areas and the results of both were generally optimistic. Similar studies were undertaken in Fulham and Bolton by private enterprise and these also had some influence on the policy change.^{31 32}

Besides these area studies, a variety of theoretical works also provided evidence in favour of rehabilitation. Stone emphasised the small role which new building could play in the overall policy situation and the need for greater emphasis upon the maintenance of older buildings.³³ Both Stone and Needleman characterised the process by one of two policies.³⁴ One was to replace unfit dwellings with council houses: the other was to improve general standards of amenity, having first removed them from private ownership. The arguments for improvement can be broadly categorised as economic/administrative and social in emphasis.

1. Economic/ Administrative Constraints

The policy of replacement has been equated with the problems of raising building standards to meet the higher standards of future generations. Needleman has argued that the rate of building under such a policy would be limited by the high cost of subsidies. He went on to say that:

"The inflationary effect on the rest of the economy of the high expenditure on rebuilding, will act as an additional break and that the physical and organisational limitations of the building industry and the administrative problems faced by local authorities in carrying out replacement and overspill schemes are perhaps more serious." 35

The argument concerning inflation was of considerable weight to a government that was facing devaluation and a financial crisis. Needleman's arguments in favour of improvement were that it could be completed quickly and that it was largely interior work that could be done by small local builders who were unable to take part in the construction aspects of housing policy. The main weight of Needleman's argument lies in the formula devised to assess the economic criteria involved. He defines three criteria relevant to the decision over which is cheaper, redevelopment or renovation. These were the rate of interest, the future length of life of renovated property and the running costs of replacement houses. Expressed algebraically, renovation will be economic if:

$$b = m + b(1+i)^{-\lambda} + \frac{1}{v}(1 - (1+i)^{-\lambda}) \quad 36$$

where b = cost of demolition and rebuilding

m = cost of adequate modernisation

i = rate of interest

λ = useful life of renovated property in years

v = the difference in annual repair costs

The formula assumes a number of things; principally, that areas of housing have already been isolated as below standard and that the cost of modernisation is assumed to be for the house alone,

including no environmental improvements. This problem is compounded by the wide variation in building costs between local authorities and therefore the wide range in the amount which it would be economic to spend on improvement. Stone has argued that the building industry should concentrate on improvement until the productivity of redevelopment improves.³⁷ Sigsworth and Wilkinson argue that although renovation has great advantages, many of the arguments in support of the policy ignore the environmental costs, as does Needleman's formula, and that with so little experience of the process, it is impossible to argue categorically that improvement involves less social costs than redevelopment.³⁸

In addition, the organisational and administrative factors involved were closely related to the idea that the backlog of older houses would take a long time to clear. This was founded on two arguments: Firstly, that the building industry is not geared to replacing dwellings for local authorities and that production is influenced by weather and other factors. The second problem was the difficulty of finding new land for houses and the long negotiations which this entailed. Proposals to redevelop an area are usually first mooted by the Public Health Inspectors under part V of the Housing Act 1957.³⁹ Evidence for this is provided by the number of unfit dwellings, lack of open space, census data on lack of amenities and other factors. Surveys of individual houses may be done by Public Health Inspectors, particularly if it seems that the area is suitable for slum clearance under part III of the 1957 Act.⁴⁰

Proposals are then presented to the council, the time scale involved being fairly predictable. Once the proposals have been approved for submission to the minister, the process can take any time up to a year before the public enquiry is initiated. Even when the scheme is started there are decanting problems. The date and pace of demolition depends to a large extent on the availability of alternative suitable accommodation for the residents in the area due to be demolished. Despite attempts to marry plans for demolition with plans for the completion of new dwellings, all types of delays can occur. Donnison and Chapmans study of Finsbury highlighted the huge variety of procedures, consultations and decisions that have to be completed before new buildings can be erected.⁴¹ Also, as the pace of redevelopment has accelerated, the problems of amassing enough land to support a full redevelopment project have become increasingly difficult for local authorities and private developers alike. Therefore, a redevelopment scheme might permit the reorganisation of the transport system, as well as the removal of slums, but over time it has become an administrative problem of some size. With these problems in mind, Donnison argues that it would be hard to increase slum clearance to keep pace with a building programme of half a million houses, as Labour originally intended:

"It normally takes five or six years to complete the replacement cycle, from the point at which the decision to acquire and demolish a block of property is announced, to the point where the keys of the new flats built on the site are handed over to the people living in them. Thus, to treble the rate of replacement by 1970 we must

get three times as many projects into the pipeline now. The government does not have the town planners, architects, housing managers, valuers and other staff to do that." 42

This raises two further points. At that time there appeared to be little chance of the building industry improving its record of completions but there was little empirical evidence to suggest that large improvement schemes would necessarily be less time consuming and socially disruptive than redevelopment. As originally envisaged, renovation would involve little or no land acquisition costs or service provision. This would avoid the problem of lengthy negotiations with landowners and was expected to circumvent the problem of compulsory purchase. This was one of the largest costs involved in redevelopment: however, the incidence of stress areas as improvement areas has indicated how housing acquisition plays a far greater role in improvement than was originally envisaged; and in fact the high costs of acquisition in these areas in most need means that improvement has few cost advantages over redevelopment.^f At the time of the Housing Act 1969 the situation was a little clearer: as redevelopment schemes progressed, the second phase of projects began to meet houses that were not so bad, frequently owner occupied and therefore demanding higher compensation for the loss of property. When these costs were added to the total bill for redevelopment, they appeared far greater than for improvement.

One other influence, already mentioned, was the building ind-

^f STRESS AREAS, DEFINED AS AREAS OF OBSOLETE HOUSING, WITH HIGH DEMAND AND ASSOCIATED SOCIAL PROBLEMS, RECENTLY RECEIVED OFFICIAL RECOGNITION IN THE WHITE PAPER 'BETTER HOUSING - THE NEXT PRIORITIES'.

ustry. At the time of the 1968 white paper, there appeared to be little chance that the building industry could adapt, in terms of size or productivity, to the change in policy. The consistent failure to meet targets through the 1960's was * blamed on the inflexibility of the industry. The only way out seemed to be the adoption of industrialised building methods, as used on the continent. The need to cut costs in England led to the rationalisation of site management and the growth of large firms, rather than the adoption of new techniques. Despite this trend, most of the British building industry remained hopelessly small and geared to repair rather than construction. That part of the industry that catered for improvement had a total of 40% of the labour force and 49% of the firms had fewer than 19 employees.⁴³ The government therefore accepted that little short term improvement could be expected in the building industry and that its role as an indicator and stimulator of the economy, could best be aided by improvement policies which would provide work for the small firms.

2. Social Constraints

* The government also recognised the broad social component ^(o) of such a change in policy. The Ministry of Housing and Local Government had asked local authorities to cooperate in voluntary improvement schemes as early as 1962.⁴⁴ This was intended as a build up to the Housing Act 1964, which established the first improvement areas, although powers were restricted to house improvement alone with a provision for compulsory improvement.⁴⁵ Between 1964-1968 only 400 improvement areas were established and this small number was blamed on the complex

administrative procedures involved in the act.⁴⁶ Most of these 400 improvement areas were started by authorities who liked the provisions under the act, especially the power of compulsory improvement. Birmingham was one of the authorities who made use of the act and the Chief Public Health Inspector has commented:

"I very seriously deplore the fact that in general improvement areas, we shall no longer have the power to get improvements done. The powers of compulsory improvement under section 19, Housing Act 1964, are better than powers of compulsory purchase, which are slow."⁴⁷

However, powers under part II of the act did not enable an authority to improve an area as a whole and this was seen as a major omission by government.

Yet another social consideration was raised by the Deerpish Study and the subsequent ones in Fulham and Haliwell.^{48 49 50} The main consideration here was the degree of social disruption avoided by improvement. The then Minister of Housing and Local Government said:

"The 1969 Act would enable many people living in old houses to have them brought up to the required standard, the improvement standard which we would like for everybody and at the same time enable them to live in the same district that they had got to know throughout the years."⁵¹

These reports and most subsequent studies emphasised the functional importance of these areas to people seeking entry to the housing market. Both Rothenburg and McKie note that the removal of such housing areas would only increase the pressure upon public housing, because of the inability of

these groups to buy a house or even to get a mortgage.^{52 53}

** read*
These findings have been supported by a whole range of studies, chiefly in the United States, (that have pointed to the anomaly of people in very poor housing who have no wish to move.)

Jacobs has stressed the traditional social behavior of areas of New York and its importance to the residents.⁵⁴ Hartman and Freid both note the danger of analysing a slum in purely physical terms and illustrate their case with reference to Boston, where over 60% of those in unfit dwellings had no desire to move.^{55 56} The functional importance of such areas has been stressed in England by Rex and Moore's study of Sparkbrook, Birmingham and by Burney.^{57 58} Crick and Green have commented that although a great deal of research pointed to the implementation of improvement policies on social grounds, it was not this that finally tilted the balance of policy.⁵⁹ The reason can rather be ascribed to the cumulative 'bandwagon' effect of government thinking and commitment, which over time becomes resistant to change.

By 1969 there was general agreement over the change of policy, although the objectives varied greatly. Some politicians, like the Minister Anthony Greenwood, favoured stressing the benefits to the residents whilst others, most notably the conservatives, saw it as a means to encourage people to invest in the 'property owning democracy'. With the four years of experience gained in the implementation of the act it is clear that not all the effects of the policy were anticipated and in the following chapter I wish to discuss these.

CHAPTER TWO: EFFECTS AND IMPLICATIONS OF THE HOUSING ACT 1969

So far we have seen how the change in emphasis from redevelopment to renovation was justified but so far there has been no consideration of the policies influence since 1969. In this chapter I wish to survey the ways that improvement policies have worked in practice. I have chosen to do this in two ways. From earlier critiques and wherever possible using recent figures, I have discussed the implications of the policy at a national level, whilst using the case of Birmingham as a specific case study. Before either of these it seems appropriate to outline the provisions of the legislation.

Provisions of the Housing Act 1969

The compulsory purchase powers for improvement in designated areas, which had been given to authorities by the Housing Act 1964, were repealed by the 1969 legislation.¹ This power was replaced by improvement areas, where local authorities would encourage the participation of owners in improvement work but where the only compulsory power would be that of purchase of houses for improvement by the authority, to be used as a last resort. However, the act made an exchequer subsidy available for environmental improvement work in landscaping, the construction of play areas and provision for cars in these areas. Besides this environmental grant, three other grants appeared, designed to replace the old standard and discretion-

ary grants. The discretionary grant was replaced by an improvement grant and could be given up to a value of one thousand or one thousand two hundred pounds, provided the house had a projected life of thirty years after improvement. The standard grant remained, to cover half the cost of basic amenity installation, if the house had a fifteen year life. Finally, a third category of special grants was introduced to cover the cost of basic amenity installation into multi occupied dwellings.

Under Section 28 of the housing Act 1969 local authorities now had the power to declare general improvement areas in areas of "predominantly residential property."² These were to be areas where, in the absence of plans for redevelopment or other major change, there was potential for the improvement of the houses themselves and their surroundings. As a general rule, a thirty year lifespan after improvement was to be considered the yardstick for selection. The report of proposals for the declaration of a general improvement area could be submitted to the local authority by any qualified person and not necessarily an officer of the authority. Ministerial approval was not required at any stage of the declaration process although consultation was possible. An allowance of two hundred pounds was given for environmental improvements of the type already mentioned, fifty percent of which was to be recoverable from the central exchequer. The act itself gave few guidelines for the administration of such schemes and the intentions of the act emerge more clearly from the subsequent circulars issued by

the Department of the Environment. Circular 65/69 noted that, "a too good area (for improvement) could be one which is already attracting considerable money into renovation and where further encouragement of public funds would not only be unnecessary but may well lead to drastic changes in the social composition of an area. A too bad area is hard to define but it is necessary to bear in mind that improvement is not an alternative to slum clearance."³ The circular then goes on to qualify this statement by noting that there are many inner city areas where problems of physical decay and multiple deprivation make improvement action imperative even if the economic prospects appear bleak. It therefore appears that the improvement area is to be used to encourage the takeup of grants over a whole area, since, as the people at Leeds seemed to appreciate, unimproved properties among ones already renovated could drag the area down again. The processes by which this occurs are discussed in chapter three. At the same time the act does recognise that in certain cases people are unable, for a variety of reasons, to take advantage of the grants available and that in these cases, the social imperatives should outweigh the economics of the situation. However, the basic approach is that in terms of rateable value to the authority and house price to the owner, these schemes should pay. It is therefore not surprising that public participation should play such an important part in the policy. In a very real sense the elements of participation and general improvement areas provide the basis for this act and this has been reflected in the advisory notes issued by the Department

of the Environment.

The Role of Participation

The Housing Act 1969 contained much stronger imperatives for participation than previous policies had done. The 1968 white paper had commented that "it is essential that the wishes and needs of the people in an area should be fully considered and the authorities plans for an area thoroughly explained."⁴ Proposals for an area have usually been presented at a public meeting of some kind, often supplemented by individual visits, the establishment of residents committees within the area and the use of consultants to sell the scheme. The main emphasis has been upon the public meeting and a great deal of criticism has been levelled at this method. The success of such meetings obviously depends on whether the local authority regards the exercise as a duty or a novel exercise. Many authorities have agreed with Buchanan's approach that, "to the extent that participation seeks to return to the electorate the decision responsibilities which have been traditionally entrusted to elected representatives, it (participation) seems far more dubious."⁵ This kind of consultative approach was broadly the one advocated by the Skeffington Report in 1969 and its central concept of the community forum has met with strong criticism.⁶ Dennis has recently attacked this part of the report on the grounds that it assumes that all the authority has to do is to present a reasonable scheme and opposition will disappear. The question raised by his study of Millfield is what happens when

public opposition increases as the planners spell out their intentions.⁷ Obviously the success of the scheme is dependent on the authorities initial attitude. However, not all local authorities have adopted this consultative approach. Some of the more active boroughs have managed to promote the establishment of residents groups who hold a brief for action within their area. This kind of approach has been used at Caerphilly, where the residents committee has control over the way the finite budget is allocated within the area.⁸ Obviously these groups are open to the criticism that they are non representative, probably excluding the old and other disadvantaged groups. In this case the best approach would seem to be the election of a council representative to the group to represent the minority interests. Other variants of this approach have been the task forces established in the Shelter projects in Liverpool, although the aims of this scheme went much further than simple improvement. Authorities that have not sought direct resident involvement in this way have used questionnaires and regular bulletins on the state of development. Norwich have adopted this type of approach, establishing project teams in the areas so that people can have immediate access to a council representative.⁹ In such a case the power of the officer to make decisions is crucial to his acceptance by the local people. The final method to be employed has been the demonstration house within an improvement area. This obviously has great impact if used sensitively, but Duncan has noted that many authorities have either over spent on improvements or have been insensitive in the cosmetic

improvements they have performed on the house.¹⁰

Improvement Goals and their Success

It is not possible to define the success of the policy until the objectives have been made clear. As the previous chapter indicated, a variety of objectives have been propounded and defined in physical and social terms, the improvement in physical condition being assumed to increase net welfare of the residents. There appears to be disagreement between those people who advocate the location of improvement areas upon need and those who would redistribute resources by demand. If the authority chooses an area with relatively good houses for improvement, costs are likely to be small, a fair measure of agreement is likely to be achieved and the job will go smoothly. By contrast, an area of borderline fit properties will probably require larger expenditure, will be faced with social problems that hold the process up and in the end result may continue to decline. Those authorities that concentrate on the better housing are going to find that houses that would have been recoverable, have after the delay become too decrepid to improve. One could say that in this case the poor and disadvantaged living in these houses would be made to suffer because of lack of action, but in the long term it would seem that after redevelopment of these properties, the authority would find itself within twenty or thirty years with a comparatively new housing stock, with questions of maintenance and regular improvement catered for. By contrast,

the local authority which tackles its worst housing first will relieve areas of stress quickly but will , over a similar time scale, find that the age and condition of its overall housing stock will be considerably lower than in the first example. Given that the improvement area is based upon the principle of cooperation between occupier and council and also that the government has proved firm over its attitude to compulsory purchase within improvement areas, it seems that improvement areas were envisaged as demand multipliers rather than as social agents. The recent white paper, 'Better Homes - the Next Priorities,' has conceded that the concept of the improvement area does not adapt to stress areas and has proposed the housing action area as an alternative.¹¹

Effects of Improvement

Since there was no specific guidance on implementation, there has been a wide variety of approaches adopted. Most of the information I have concerning implementation procedures nationally comes from two sample surveys, one conducted by Tom Duncan while at the Centre for Urban and Regional Studies;¹² The other by J T Roberts and D S Gunby from the Liverpool Polytechnic.¹³ There are some fundamental differences in the approaches used by these two studies which require stating. Duncans sample was divided into two groups, based on whether the authority had declared a general improvement area or no, while the other study simply used authorities with a declared general improvement area. The other major difference is that

Roberts and Gunby have attempted to draw statistical inferences from their sample whereas Duncan has generally avoided this. Because of these differences, it is hard to make comparisons between the results.

Size and Character of Improvement Areas

With regard to size, both studies agreed that the mean size of improvement area based on the number of houses, was smaller than the size recommended by the government, of 300-500 houses. Duncan noted a marked tendency for urban district improvement schemes to have between 50-150 houses, while those in county boroughs had between 200-300. The median for Roberts and Gunbys sample lay in the 100-200 range. As to the character of improvement areas, Duncan found that 59% were predominantly owner occupied, 28% were council properties and 13% were mixed. The size of the councils involvement is surprising but is apparently due to a large number of improvement schemes submitted before the act came into effect.¹⁴ An interesting regional distinction can be made here, which recurs later on: of the private improvement areas, the owner occupier median was 60% reaching a maximum of 80% in areas in the north and a minimum of 18% in some areas of London.¹⁵ Duncan has defined five categories of areas selected for improvement:

1. Council house areas
2. Bye law terraces - high density small terraces privately owned.
3. Villages or engulfed villages.
4. Areas of multi occupied dwellings.
5. Mixed category combining two or more of the above groups.

Details on the criteria for selection of areas is inadequate in both surveys since all the authorities would have been involved on the first wave of areas at the time of the surveys; very often these first areas were selected by historical accident rather than on any objective criteria. However, the stated objectives of the authorities are of greater interest and basically reflect the aims propounded in the white paper, 'Fair Deal for Housing.'¹¹ Most of the responses fell into groups related to housing aims, social objectives or action justified by a more rational land use pattern.

In terms of administrative organisation, larger authorities tend to have set up special working parties, while the smaller authorities have given the task to existing committee structures or officers. Roberts and Gunby used three parameters for the assessment of organisational structure.¹⁷ The first table assessed the committee structure used by the sample and it seems that there was little streamlining of the inter committee process. Most of the rationalisation that has occurred has been at officer level, as can be seen from the chief officers groups established, shown in the third table. As a general rule however, up to the time of the survey in 1971, improvement was still treated as a second class policy tool.

Improvement Grant Progress

As we have already seen, it is not at all easy to define what the results of improvement policies should be. In the

TABLE A

General Improvement Area Special Sub-Committee Involvement

	<u>RDC</u>	<u>UDC/BC</u>	<u>CB</u>	<u>ALL</u>
Councils with special sub-committees	-	4	7	11 (19%)
No. of committees involved				
1	2 (50%)	3 (12%)	1 (4%)	6 (11%)
2	-	4 (17%)	2 (8%)	6 (11%)
3	1 (25%)	9 (38%)	7 (27%)	17 (31%)
4	1 (25%)	4 (17%)	6 (23%)	11 (20%)
5	-	3 (12%)	6 (23%)	9 (17%)
6	-	-	3 (11%)	3 (6%)
7	-	-	-	-
8	-	1 (4%)	-	1 (2%)
Not known	-	-	1 (4%)	1 (2%)
				18

TABLE B

Department Organisation for General Improvement Areas

<u>Organisational Model</u>	<u>No. of Authorities</u>
1. Special Dept.,	-
2. Special Independent Sub Dept.,	6 (11%)
3. Inter Disciplinary Specialised	2 (4%)
4. Non Inter Disciplinary Specialised	4 (7%)
5. Specialised Inter Disciplinary	8 (15%)
6. Non specialised and non inter discip.	23 (43%)
7. consultants	4 (7%)
8. No Model Applied	2 (4%)
9. Dont Know	5 (9%)
	19

TABLE C

Methods of Inter Departmental Coordination in Improvement Work

<u>Organisational Model</u>	<u>No. of Authorities</u>
1. Junior officers, informal coordination	8 (14%)
2. Junior officers informal working party	8 (14%)
3. Junior officers Formal working party	9 (17%)
4. Chief officers group	22 (41%)
5. Improvement operational group	2 (4%)
6. Informal coordination, all levels	2 (4%)
7. Not Known	3 (6%)
	20

absence of more specific data, the success of improvement policies seems to be assessed by the number of improvement grants approved in a year. From 1960-1969 the total of grants actually fell from 130,872 to 108,000 but since then they have revived under the influence of the 1969 Act.²¹ 1970 was the first full year that the act had been in operation and it had not had a great deal of time to bite: nevertheless, there were 157,000 grants approved in that year, increasing to 198,000 in 1971. Comparing the first quarters of 1971 and 1972 there was an increase of 63% and this swift increase has been marked by a shift in the type of grants applied for, involving a marked swing to full modernisation.²² This has been initiated and encouraged by many local authorities insisting on improvement to the full twelve point standard when it is not required statutorily. Morton has also indicated that there is a substantial differential in the regional take-up of grants, with London getting less than its proportional share of the total.²³ Despite the proportionally worse situation in the private rented sector, landlords have only received 50% as many grants as owner occupiers.²⁴ To correct the regional imbalance the Housing Act 1971 provided exchequer subsidies of 75% up to June 1974 for intermediate and development areas: this appears to have achieved its purpose, since in 1972, 58% of all grants went to these assisted areas.

IMPROVEMENT GRANTS BY REGION: Sample House Survey 1971

	No of Grants %	%Dwellings Unfit
Northern, Yorkshire		
Humberside and NW	99,546 (44%)	10.1%
South East Region	46,694 (21%)	4.0%
Rest of England	78,879 (35%)	8.0%

Further estimates derived from the 1971 Sample House Condition Survey show that between 1967 and 1971, grants in England and Wales were distributed as follows:

1. 70% for dwellings built before 1919
2. 60% for terraced houses
3. 73% for houses in urban areas
4. 89% of standard grants and 83% of improvement grants for houses with gross rateable value before improvement of less than eighty pounds.

This clearly indicates that at the national level, the grants were going to the right areas and house types: however, these national figures hide abuses at the local level as I shall show later. Nevertheless, considerable encouragement was taken from the increase in grants and this led, in circular 50/72, to the development of strategies for comprehensive renewal, involving both elements of redevelopment and renewal.²⁵ Birmingham has recently published proposals for such a scheme.²⁶

Although the increase in grants appears healthy enough, there is room to question the success of the policy. I have already indicated the importance that was attached to the improvement area concept within the legislation, as a form of action area style of policy designed to focus attention on defined areas. By the end of 1971 a total of 188 general improvement areas had been declared, rising to 210 in 1972.²⁷ However, very few of the grants had been approved within these areas. From August 1969 to the end of 1972, 26,255 grants were approved within general improvement areas in England and Wales. During the same period, work had been completed on 10,787 houses. This means that only 15.36% of houses had improvement grants

approved in this period and only 6.31% of houses had actually been improved. In the same period only 21.86% of all grants approved were located within improvement areas. Unfortunately the figures were not broken down by region, so it is not possible to define which areas have made most progress within their improvement areas. However, the distribution map does give some idea of the regional concentrations of improvement areas and these obviously correlate closely with the areas of housing stress. Even with a regional breakdown of the figures, the question would still be how to judge the success of general improvement areas generally. Given the pragmatic approach adopted by the government, success can only really be measured by the number of properties improved within an area. Roberts and Gunby have adopted two measures of success for improvement; a proportion index, which measures the number of grants approved against the number of houses in need of improvement; and a rates index, which assesses the monthly rate of grant applications after declaration, again in relation to the number of houses in need of improvement.²⁸ Their proportion index was 11%, slightly lower than the figure for all improvement areas and clearly indicative of the low level of improvement activity within improvement areas. The rates index gave figures so small as to be meaningless, but when both measures were regressed against initial house quality, previous improvement grant record, publicity methods, expenditure on environmental improvements and other factors, only one parameter proved significant and this was the size of the area. They defined three groups of areas by size. The first

areas had less than 100 houses: group two ranged from 100-600 and group three over 600. Most of the larger and more successful areas were run by County Boroughs and would indicate that the success of these areas reflects the greater resources which these areas can devote. Nevertheless, the larger improvement areas do appear to have some advantage over the smaller ones in terms of grant takeup.

Regional Impacts

Improvement policies appear to have had two extremes of impact. The first is typified by the gentrification process and occurs where the landlord of tenanted property is allowed to raise rents or harass tenants, in order to improve the property and sell with vacant possession. In London especially, many grants have gone to developers interested in making profit from the conversions.²⁹ Councils have the powers to be selective, to withhold further grants from people or companies who have misused them but this has proved hard to apply in practice.³⁰ Despite severe manpower shortages, some London authorities have resorted to checking all grant applications and Hamersmith have restricted grants specifically to owner occupiers and landlords who agree to keep the original tenants after improvement.³¹ Under new legislation to stem from the recent white paper this will become statutory within the proposed action areas. In 1970, 78% of grants approved in Westminster went to developers and Shelter have suggested that as many as 4,827 of a London total of 7,108 grants in 1971, went to

developers.³² Over a sample of London improvement areas, Rice has suggested the following figures as indicative of rent increases due to improvement:

Average rent before improvement ~~£~~1-50 to £2-00 p/w
Average rent after improvement £5-00 to ~~£~~5-50 p/w³³

The private developer has not been the only one to profit.

In one instance in Hammersmith, an area that had been scheduled for redevelopment and bought compulsorily at two thousand one hundred pounds per house, was redesignated an improvement area after the original tenants had been removed and the houses eventually sold for twelve thousand pounds each.³⁴ Although a good proportion of this increase is certainly due to planning action, the overall increase has to be viewed against a backcloth of rapidly rising house prices and is therefore somewhat inflated. The act has also led to harassment on an increasing scale, since a landlord can expect to get only three thousand pounds for a property with sitting tenants but eight thousand for the same house in vacant possession.³⁵ With reference to London Blair has commented, "for the lower paid, the immigrant, the aged and the families under stress, rehabilitation is just one big notice to quit."³⁶ It is probable that this phenomenon is less significant than might be supposed from London based studies. The rampant gentrification that has occurred there presupposes a buoyant middle class which, so far, only applies to London. I know of only one case of this outside London and this occurred in Whitby, Yorkshire, where small guesthouses were being converted into flats for commercial reasons.³⁷ The reasons why this has only occurred in London presumably

relate to the increased congestion costs faced by the suburbanite when travelling into the centre of town. To compensate for this, people are apparently willing to sacrifice their more spacious, low density environment for the accessibility benefits at the centre. Obviously, the great size of London ~~plays~~ a significant role, for given equivalent congestion costs in Birmingham it is unlikely that the same process of gentrification would occur. In fact Birmingham seems to have exactly the opposite problem: The ease of access to the centrally located job market has led more and more people to move out beyond the city boundaries, thereby eroding the tax base. Nevertheless, gentrification has caused great problems in London, especially to those in need of most assistance.

At the other extreme, the declaration of improvement areas in what might be termed 'low stress' areas has had little or no effect whatsoever. Some of these areas can be identified in London, where the demands for improvement grants has been so low that compulsory purchase powers seem necessary to achieve anything in these areas. These low stress areas however, seem more typical of northern England than of London. Kirwan and Ball's study of improvement grant applications in the north west would seem to indicate that these areas of bye law terraces, most typically selected for improvement, are being improved by the young people who move into the area: in very few cases were houses improved by the older, longer stay residents.³⁸ In a very real sense, these areas are the exact

reverse of the stress areas of London, for they tend to be areas of out migration and decline but as with high stress areas, the influences upon the local residents are severe. There has been pressure to apply compulsory purchase powers to such areas but up to the 1973 white paper, the government had proved extremely reluctant to impose this power. To date there has been only one invocation of compulsory purchase powers, within the Shelter improvement area in Granby, Liverpool.³⁹ The Minister proved extremely reluctant to take this action and had to be convinced that the owners had resisted the persuasions of Shelter and the council for over two years and that their refusal was likely to cost other residents in the area. The concept of compulsion within the act is one of the chief policy contradictions mentioned by Roberts and Gunby.⁴⁰ Kilroy notes that the development of a comprehensive strategy for housing, as proposed under circular 50/72, is just not possible because, administratively, redevelopment and improvement operate on different terms:

"Redevelopment will always be preferred unless a more positive framework can be created within which local authorities are . . . encouraged by Whitehall to take a more active role of intervention by acquiring houses for rehabilitation as readily as if they were to be redeveloped."⁴¹

The government has conceded that within stress areas some more positive framework is required; the recent white paper, 'Better Homes - The Next Priorities' has conceded that improvement can have adverse effects in some areas and has proposed the alternative action area. These are areas, normally of 400-500 houses, where the government is "prepared to look sympathetically on the use of existing compulsory purchase powers under part V, Housing Act 1957, where no other action will succeed."⁴²

At the same time, the white paper has indicated that ordinary improvement areas will be subdivided into those declared in older residential districts, for which there will be a preferential grant, and other areas, presumably the better houses, which will receive the normal grant level. The government will also have the power to rescind any improvement area declared in areas of already high grant take up and at the same time is willing to look a little more leniently on the case for compulsory purchase within general improvement areas. There are measures designed to stop the misallocation of grants, one being the power to "attach conditions to the payment of grants to owners other than owner occupiers."⁴³ There has therefore been some recognition that the diversity of problems faced in the city cannot be solved by one blanket provision, such as the improvement area. However, the improvement area concept still stands and the white paper specifically emphasises the economic benefits of proceeding by way of rehabilitation rather than by redevelopment. In essence it seems that the government have conceded that some areas are not suitable for improvement, but for those that are, the economic aspects should still dominate. For the areas where the improvements are intended to act as grant stimulators, the environmental improvements play a very important role as the visible manifestation of the authorities faith in the area. It is therefore of considerable importance to examine how this provision has been used.

The Role of Environmental Improvements

Improvement areas were to be established in areas where there was insufficient investment in maintenance and conversion on the part of the owner. The role of environmental improvements was to state the authorities faith in the area by improving communal facilities. However, the blanket provisions in the act have caused as many problems as they did over the type of area to be improved. Most of the improvement notes issued by the Department of the Environment have emphasised a 'cosmetic design' approach and most local authorities seem to have adopted a visual interpretation of improvement.⁴⁴ It has been very important that environmental improvements be seen to be done and because of this, many authorities have produced normative lists of improvements to be applied across the board. This has been encouraged by the blanket financial provisions within the act: variations in housing density and the presence of non-conforming land uses can severely increase the expenditure required. Also, fixed grants of this type are particularly susceptible to erosion by inflation. This has caused a great deal of frustration on the part of the planners, who find their schemes rejected and the residents, who are offered little real choice.

The major element of conflict appears to have occurred over traffic provisions within the improvement areas. One of the chief problems in London has been the use of residential streets as 'rat-runs' by commuters. This and the high incidence of on-street parking because of a lack of garages, obviously clashes with the visual approach so often adopted.

In almost every instance, residents have to make some kind of a trade-off between one advantage and another; say between the removal of on-street parking and the loss of garden space to provide back access garages. The frustration arising from the rejection of an authority's plans is indicative of the wrong approach used to participation. Another factor that has led to considerable conflict has been the councils attitude to the demolition of houses within an area. As experience of the participation process has increased, councils have become increasingly aware that residents are not prepared to accept elaborate improvement schemes at the cost of demolished houses. In short, the more deterministic the scheme, the less support it is likely to achieve. Perhaps the most logical approach is illustrated by the Caerphilly example, where residents committees are given the budget and permitted to allocate it as they wish.⁴⁵

Given that these environmental improvements can be viewed as grant multipliers of some sort, it is necessary to define the extent of their success. Both Duncan and Roberts and Gunby have noted that, despite encouraging noises at public meetings, people are often apathetic about house improvements, which would argue that the environmental improvements have little impact. From their analysis, Roberts and Gunby were unable to establish any relationship between their two measures of success and the degree of environmental improvement carried out.⁴⁶ Their sample does not provide conclusive evidence but it does seem the environmental improvements not

only change the economic position of the area in terms of rateable values and house prices but changes the whole character of the area in visual terms. It seems that improvement policies have aimed to assist the houses and the people by implication. Indeed, improvement does seem to bring an increase in value to the houses in the area, although the increase is greatest in improved properties. The relationship between the change in value of an area and the social consequences of this in a market situation, seem not to have been appreciated.

At this stage I feel that it will be particularly useful to focus down from the general level onto the specific situation faced by Birmingham, where many of the problems already noted have been encountered.

Urban Renewal Policies in Birmingham

After the war, Birmingham was left with a huge stock of obsolete houses in the central areas. Most of these were constructed before 1875 and were reaching the end of their physical life. Beyond these areas there had been some decay but it had not reached a large scale, and beyond, the outer areas were largely problem free. It was the inner areas that required urgent attention and it has been these areas that have been concentrated on since 1945.⁴⁷

The first large scale redevelopment scheme had been proposed

by Manzoni in 1935, who described the land use problems of these inner areas thus:

"Nearly eleven miles of existing streets, mostly narrow and badly planned: 6,800 individual dwellings, the density varying up to 80 to the acre, 5,400 of these classified as slums to be condemned." 48

Redevelopment of such areas was delayed by the war, so that by 1946, Birmingham had 81,000 houses with no bath and 29,000 were back to back properties. 49 Under the 1944 Town and Country Planning Act, five redevelopment areas were declared in Nechells Green, Newtown, Ladywood, Lee Bank and Highgate. The general character of these slum areas aggravated their obsolescence, as Manzoni's comments illustrate. By the post war period, the council was Britains largest slum landlord. Some of the houses in proposed redevelopment areas had to be 'patched' because of the prospect that they would be standing for some time under the phased demolition programme. The extent of rehabilitation varied from a partial job to a complete re-wiring, depending on the length of time before demolition.

When redevelopment was made possible after clearance, the aim was to provide a totally ^{new} environment in these areas:

"The principles behind redevelopment were to segregate predominate land uses into well defined zones, formation of residential neighbourhoods and within these the grouping of social facilities to form centres of interest; redesigning the road layout to eliminate unwanted through traffic from residential areas and the provision of open space at four acres per thousand people. Because of the need to provide adequate land for new public open space and other social facilities, including schools and because of low housing densities, only about 50-60% of the dwellings can be replaced within the five areas." 50

This first phase of development was completed in 1970 but the council had decided in 1955 to institute a second phase affecting a further 35,200 houses, that were scheduled for completion in 1977. Because there was a constant overspill problem from these areas, the rate of clearance has been constrained by the availability of green sites to expand into: developments at Castle Vale and Castle Bromwich were built as rehousing areas for redevelopment populations. In terms of management organisation there can be little doubt that this process has been a great success, yet at the scale of the operation, there have been repeated criticisms of its inhumanity. The size of the work can be seen from the figures below:

COMPLETIONS AND DEMOLITION IN THE LAST 5 YEARS

YEAR	COMPLETED	DEMOLISHED
1968	8,019	5,743
1969	7,252	4,556
1970	5,890	4,020
1971	3,412	4,175
1972	1,444	2,716

51

The decline in numbers since 1970, in demolition, is due to clearance sites having in most cases been cleared. The short fall in completions from the figures estimated by the Architects Department have been due to the decrease in the supply of land and the strict interpretation of the cost yardstick by the government.

ESTIMATED POSSIBLE COMPLETIONS 1972-2977

1972	3,000	1975	3,000
1973	2,400	1976	2,700
1974	2,700	1977	1,900

52

This is the recommended cost for which the government will give grants. Within the last two years rapid inflation has outstripped increases in the yardstick and despite pleas from authorities to increase the rate, none have yet been given. It appears that this is being used by the government to redirect local resources towards improvement.

Improvement policies in Birmingham have closely paralleled the national legislation. Few grants were given under the 1949 discretionary grant legislation and not until the introduction of standard grants in 1959 did the policy begin to have an effect. After the Housing Act 1964 some attempt was made to utilise the improvement powers in the act and Birmingham used these provisions more than most other authorities. Between 1965-69, 29 areas were designated but there appears to have been little activity within most of them up to 1968, a total of only 300 houses having been improved.⁵³

With the national shift in policy towards improvement embodied in the Housing Act 1969, Birmingham also reappraised their policy. Their massive slum clearance programme was approaching completion and the adoption of improvement presented the opportunity for radical changes in resource allocations within the city. Prior to 1973, the implementation of improvement areas was the responsibility of the Health Committee but all proposals were first considered by an officers working party, representing the departments of Architecture, Estates, Housing, Public Works(Planning), Treasurers and Public Health. Since

1973 the arrangement has changed. An Urban Renewal Conference was set up by the General Purposes Committee of the council to co-ordinate the activities of the other committees involved. The committees now represented on the new body are General Purposes, Health, Housing, Public Works and Social Services. The working party presents proposals to the conference who in turn present these to the full council.⁵⁴ After an area has been designated as an improvement area and this has been accepted by the conference, a scheme of environmental improvements is drawn up. In 1970 over 1,400 grants were approved, rising to 1,700 in 1971. Most of these lay outside of the designated improvement areas and the total number of grants was still smaller than the 1965 figure.⁵⁵ The Health Committee hoped to see a total of 3,000 grants approved each year but have admitted that the shortfall is largely due to lack of confidence in the areas. This reflects the emphasis placed upon the early schemes, where environmental improvements played an extremely small part in the plans for improvement. The renovation of individual houses without the complementary improvement of the surrounding fabric seems to have done little to encourage the takeup of grants.

By August 1972 Birmingham had declared nine improvement areas. The first two areas were in Summerfield and were declared in January 1970. This area of one thousand houses had been considered as a possible redevelopment area in 1960 and again in 1967 and in its final form the plan for the area included both elements of improvement and demolition. As already noted,

schemes that involve demolitions have tended to be unpopular with the residents but in the Summerfield case this problem was compounded by the presence of intrusive industries, commuter traffic and the need to renew outmoded services. Far from being the soft option recommended for an authorities first experiment in improvement, Birmingham had selected an area with some of the very worst problems in physical and environmental terms.⁵⁶ It proved inordinately expensive to remove services and up to 1972 the area was in a worse state than at the time of implementation. However, the Summerfield experience led to a complete reappraisal of improvement area selection policies and in 1970 guidelines for selection were laid down by the Health Committee. This followed the advice given in circular 65/69 and attempted to focus on the 'soft options'.⁵⁷ This radical switch from a policy of improving the worst houses to improving the better ones is reflected in the type of areas selected since 1970. In search of better areas the second phase of improvement areas has leapfrogged the middle ring of poor houses and has tended to establish a line of buffer areas, aimed to contain these declining areas zones; this has diverted resources from the poorer houses but has also restricted the market for cheap housing in Birmingham and forced the inner city population to compete for accommodation. The change in emphasis is further stressed by the quasi-suburban character of areas like Broadway, which have relatively few houses lacking basic amenities:

	<u>TOTAL HOUSES</u>	<u>HOUSES LACKING AMENITIES</u>	<u>%</u>
Broadway	1428	300	27
Handsworth	1002	236	24 ⁵⁸

The highest proportion of unfit houses is found in Stirchley and even here it is less than 50%.⁵⁹ When compared with the distribution of houses lacking amenities within Birmingham, it is clear that these areas avoid the main problems of deprivation.⁶⁰ The working party was also asked to consider the case of small islands of fit houses within present redevelopment areas. The report noted that although these would require large cash inputs, almost 2,600 houses could be saved in this way. As the recent white paper has illustrated, the role of improvement areas is not as social policy tools but as grant stimulators. However, the adoption of improvement policies without an overall strategy for all housing areas can lead to inequities within the market as the Birmingham case illustrates.

Birmingham's schemes for environmental improvements were based on the following six principles:

1. To stop local streets being used as rat-runs.
2. To provide rear access and garage space to stop on-street parking.
3. Provision of garages for rent if required.
4. Landscaping of sitting and play areas.
5. Removal of non-conforming land uses.
6. Remedial works to existing trees, where needed.⁶¹

As we have already seen, the rate of grant applications has not been as high as hoped: as Roberts and Gunby indicated at the national level, most of the increase in grant applications has occurred outside improvement areas, which may well be due to the low levels of investment in environmental improvements and lack of liaison between council and people affected.⁶² Some councils have introduced officers into proposed areas to improve liaison, while Grove has illustrated the value of participation

in Caerphilly.^{63 64} In Birmingham the process has been that residents are invited to a public meeting for consultation and then hear nothing until work begins on improvements. This has led to frustration on both sides, since a number of the principles have been rejected by residents, while the council have appeared to be acting in a high-handed manner and not really interested in residents attitudes. However, the concentration of attention on activities in improvement areas is of secondary importance to the process by which one area is selected in preference to another. This latter point is crucial to an understanding of the resource allocations within the city and the degree to which these are planned allocations or second-order consequences.

The Selection Process

In Birmingham the selection process has been largely controlled by the Public Health Department, who have generally selected areas on a 'lifting' basis. Potential improvement areas are divided into two groups:

1. Pink areas with projected life of 10-15 yrs
2. Green areas with projected life of 15-30 yrs⁶⁵

This gives the initial breakdown by area and is done, based on the expertise of the public health inspectors, who claim to know the houses in their areas in great detail. However, Langstaff notes that many of the inspectors are admitting to finding the selection process a lot harder than it used to be, as the worst houses are removed.⁶⁶ The following statement précis the selection process:

"The public health officer has been carrying out surveys for slum clearance over many years and has a reasonably comprehensive record of conditions of houses in the city. My department and the surveyor get together and produce a plan, eliminating all areas of wholesale clearance and redevelopment. In this way potential areas are defined on the map informally. These are then visited, defined on a map and presented to the working party. This is not their final form; the working party may recommend a change in size or boundary . . ."67

The success or failure of improvement in Birmingham is therefore closely related to the attitudes of the public health department. There seems to have been a general pessimism over improvements because they no longer have the powers of compulsory improvement that existed under the 1964 legislation. There is also the constant fear that grants may be given to an area which continues to decay: to avoid this situation there appears to have been an implicit policy of withholding grants from those areas not considered to be a good bet for improvement, which has become a self-fulfilling prophesy. As a department, public health have a variety of other duties involving hygiene regulations that have diverted their attention from the housing area; and since 1969, with the administration of the new regulations, the department has had no increases in staff. It is therefore not surprising that the selection of areas for improvement should run into difficulties. There are, of course, other departments involved with the selection process but because of the concentration of power in one department their role to date has been a peripheral one.

The Role of Other Departments

Some of the other departments involved have had their interests

served by the present policy. The housing selection process judges levels of housekeeping as a guide to the allocation of properties. Inevitably there are those who drop off the end of the selection process scale and who have, up to now, been housed in patched properties awaiting demolition. Despite continual accusations that the housing department are creating concentrations of problem families and shifting them from one poor house to another, the process has continued. With the completion of the redevelopment schedule the number of such properties has become restricted and recent reports indicate that the housing management department is actually suffering from a shortage of space in which to place these people.⁶⁸

The Architects department have adopted an institution line, complaining at the lack of scope in most improvement schemes and the frequent changes that are necessary after public debate. The planners, as part of the public works department have had little say in the policy to date but have shown greater awareness of the problems than most. The most frequent complaint expressed by the planners has been the lack of emphasis on the environmental aspects of improvement which the public health department has adopted. The roles of the various departments may, however, change under the new structure.⁶⁹

Recent Developments

The Urban Renewal Conference was established to formulate a

policy for Birmingham's older houses and to reply to circular 50/72.⁷⁰ Throughout 1972 the working party met to estimate the rates of clearance of unfit dwellings and progress with improvement areas. This work was synchronised with work on the housing section of Birmingham's structure plan. To facilitate both, the public health department have updated information on the age, condition and tenure of dwellings: the recent report of survey estimates there are 86,000 dwellings over 70 years of age, most of which lie outside present schemes.⁷¹

It is clear now that the advice given in circular 50/72 was a prelude to the more comprehensive approach to housing policy which 'Better Homes- The Next Priorities' has outlined. To conform with government demands, the Urban Renewal Conference has recently prepared a programme of action for older housing in Birmingham and has recently published an explanatory document. The role of the conference is seen as fulfilling three objectives:

1. To develop a strategy for urban renewal
2. Co-ordinate all works in the implementation of urban renewal, relating to social and environmental development of communities.
3. Encourage public participation.⁷²

They appear to have recognised the inadequacies of the earlier policy and emphasised the role of improvement in preventing the lack of confidence engendered by 'neglect and untidiness', and the consequent reluctance of residents to invest in these areas. The strategy has three objectives:

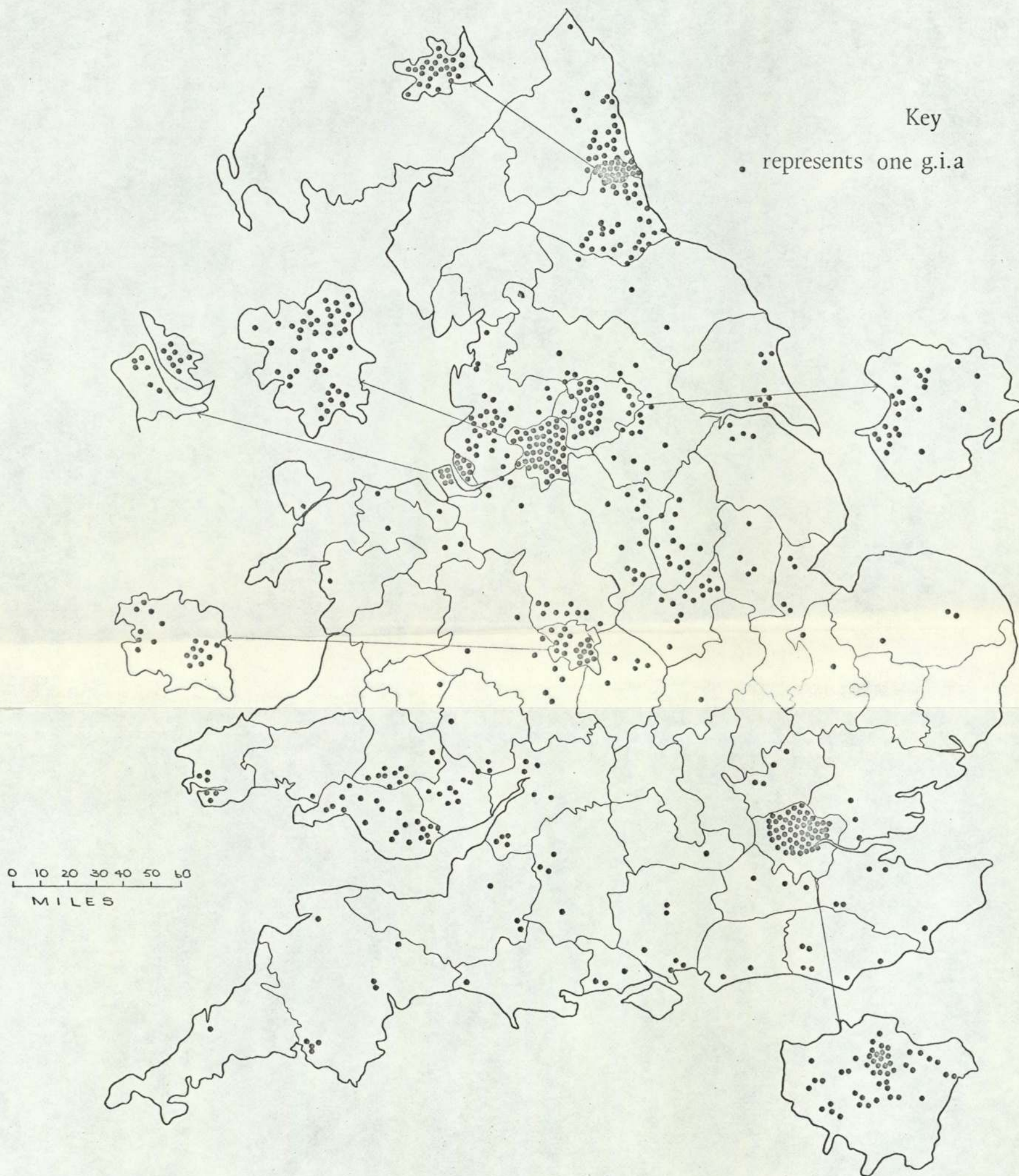
1. To raise overall standard of housing within areas identified in the programme.
2. To improve the physical environment of older houses.

3. To improve social facilities in older housing areas.⁷³

The only new concept within the strategy is the renewal area: the plan includes the continuation of the old redevelopment areas, the designation of 68 general improvement areas with 60,000 houses and the 'treatment' of 26 other areas which fall into neither of the above categories and which are to be called 'renewal areas'. Some 15,000 properties fall within these areas.⁷⁴ Of these 15,000, 60% are likely to be unfit by 1980. The development of this concept seems to owe a great deal to the Summerfield experience, with its mixture of redevelopment and improvement. It seems probable that these renewal areas will permit greater flexibility of policy than was possible under improvement area powers alone. These renewal areas are envisaged as stage two of the new plan commencing in 1976, after the completion of the improvement areas.⁷⁵ The new urban renewal scheme has gone some way to answering the criticism that they ignore the areas in most need since most of the middle ring areas are to fall within future improvement or renewal areas. However, the element of demolition which seems implicit in the concept of renewal areas is likely to meet as much opposition in 1976 as it does in improvement areas now. One thing does seem to have emerged from this experience and that is a greater awareness of the value of environmental improvements; an indication of this change of attitude is given by the decision to tidy up cleared sites prior to redevelopment. At current grant levels there seems little hope of keeping expenditure on improvements

within the limits, even on the modest scale envisaged by Birmingham.⁷⁶

Birmingham is illustrative of an authority which had fixed ideas on the meaning of improvement and which has had to face public opposition because of this doctrinaire stance. It also indicates how the implementation of a strategy of improvement in isolation from other aspects of policy can have severe consequences for other groups. Whether the new scheme works or not will depend, to a large extent, on whether the other departments involved get a greater say in the guidance of policy. Of course many of the problems met in Birmingham have occurred elsewhere and are not simply the result of institutional organisation locally. In one form or another improvement policies have produced unforeseen consequences, simply because they have been used in isolation from other sectors of the housing market.⁷⁷ Unfortunately, our knowledge of the mechanisms at work within the housing market is severely limited and the only practicable alternative is to continually monitor the effects of policies on the overall system.⁷⁸ However, this does not imply that it is necessary to rely entirely on empirical study: there is a substantial body of theory on the workings of the housing market which provides a framework within which to view the distributional effects of housing policy. It is these distributional effects which I wish to examine in the next chapter.



Distribution of Improvement Areas Declared by 31st December 1972 (DoE)



Kingsstanding

Short Heath

Erdington

Castle Vale

Birches Green

Nechotown

Nechells

KEY
● Origins
● Destinations

DISTRIBUTION OF SAMPLE

CHAPTER THREE: ALLOCATION PROCESSES WITHIN THE HOUSING
MARKET.

In this chapter I have examined some of the processes at work within the housing market. Most studies have been devised at the city scale, both because it provides a convenient conceptual unit and because it is the level at which strategic resource allocations have to be made. I have so far followed the line adopted by others, which says that policy is needed to correct imbalances produced by the workings of a free market. Ironically, there has been little empirical research into the effects of policy decisions on key issues like income distribution or access to a wider range of resources within the city. The result has been that policy decisions have often exacerbated the mal-distribution. The recent SNAP Report, 'Another Chance for Cities' has indicated the concentration of social problems in the central city and notes that, proportionally, these areas receive less than their fair share of the cities wealth to correct this imbalance:

"The really intractable nature of multiple deprivation is that to solve one problem is to succumb to another and since public action is always conceived in a fragmented fashion, resulting programmes have not been relevant to the real circumstances of the inner city."¹

The major role of government would seem to be to redistribute resources among the diverse social groups within any country or city. However, as improvement policies have indicated, knowledge of the consequences of action only occurs after the event and usually requires a policy of redistributive 'overkill' to correct the imbalance. Grants are not the only

mechanisms available to government for redistribution: taxes and subsidies fulfill a similar and more fundamental role and I wish to discuss their effects next.

The Role of Taxes and Subsidies

The development of taxation and subsidy policy in Britain has been extremely incremental, with government reacting to short term stimuli and creating a patchwork quilt of measures. It has already been noted that Britain has had a substantial element of public housing for most of this century and that the swift increase in their numbers, associated with the growth of the building societies, tended to squeeze the private landlord out of the market. Local Authority housing was given central government subsidy while owner occupiers were granted tax relief on mortgage interest repayments: there was then and still is, a basic inequality in the taxation of housing. The owner occupier with tax relief on mortgage interest is not charged tax on the imputed income he receives, that is the rent he does not have to pay. On the other hand someone who rents a property does not get tax relief on the rent that he pays and the landlord has to pay tax on his income from the property. As a result the real cost of occupying identical houses is lower to someone who owns it than to someone who rents it. The clearest way to represent the situation is to recognise the two roles of the owner-occupier. The owner occupier is in effect paying the market rent of the property to himself but since no money changes hands it cannot be taxed.

Prior to 1963 the situation was a little less unfair, because all owners of dwellings were taxed under schedule A on the imputed income from the property, called the gross annual value. This imputed income was obviously related to the market value of houses and the rate of increase in value over time: it was therefore planned to re-assess this imputed income every five years but the last valuation was carried out in 1935-36 and by 1960 inflation had undercut the amount collected. It was made more meaningless by the provision that the actual average cost of repairs could be deducted to produce the net annual value: of course the cost of repairs at actual prices almost covered the gross annual value for 1936 and the total payment was negligible. In addition the tax was expensive to collect and was not popular with owner occupiers who refused to see the logic of being taxed for something they had not received. Because of all these pressures the tax was abolished in 1963.²

Factors operating in other sectors of the market helped to lessen the inequalities which existed between the owner occupied and rented sectors of the housing market. Until recently, most local authority tenants were charged rents that were obviously much less than the interest an owner-occupier would have had to pay if he borrowed the capital at market prices. This was possible because of local and central government subsidies, because the original cost of the property was much less than its replacement cost or the market value and because the capital to build the houses had been borrowed

in earlier years at lower rates of money interest. Private tenants received no such subsidies but until 1957 they were protected by rent controls which prevented properties from being let at more than their pre-war rent; in effect, tenants were being subsidised by the landlord. These controls had not been completely phased out when the 'fair rent' system was introduced in the rent act of 1965. Under this, a tenant could be charged a fair rent, this being the market rent in long term equilibrium, with no element of short term scarcity. Only at the lowest end of the private sector have rents remained below the market equivalent. All this has caused the decline of the private rented sector because, on the demand side, tenants see themselves better off as either owner-occupiers or council tenants, while landlords have still been better off to sell their properties for owner-occupation because they can then realise the scarcity element in the value of their property.³ Thus only those who cannot or do not want to become either owner-occupiers or council tenants have remained in the private sector generally. Thus the proportion of people in the private rented sector fell from 24% in 1961, 19% in 1966 and to less than 15% in 1971.

The housing finance act of 1971 has now put local authority housing on a par with the private rented sector. In both sectors fair rents can be charged and the same levels of rent rebate apply. On the other hand, since the fair rent for local authorities is determined by what will give a fair return on capital and covers the interests on the value of

the property, it seems that an implication of fair rents is that the cost of owner-occupation will still be lower than the equivalent cost of renting. Since the act assumes that in most cases rents will be raised to the fair rent, the act has eliminated the inequalities between the rented sector but has increased the inequality between the rented and owner-occupied sectors.

A variety of methods have been proposed to remove this inequality in the tax system. It is often suggested that the inequality would be removed if payments of mortgage interest were disallowed as deductions from income for tax purposes. However, Evans has suggested that such a measure would increase inequality because the savings of home ownership accrue to people who do not need to borrow capital as much as to people who do.⁴ In fact, since the tax on investment income is greater than on property, the person who could pay outright would receive even greater tax benefits. Thus, while it is true that people who have to borrow most of the capital for house purchase will be on a par with renters, it will have no effect at all on the upper end of the owner-occupied sector.

Another alternative is that the imputed income from property should again be taxed under schedule A. Applied properly, this could be the most equitable system but would be politically disastrous to re-apply. Also the revaluation of the gross annual value would lag severely in times of rapid inflation, as we have experienced recently, and would then jump

at each revaluation. Nevitt has also pointed out that local rates are already one tax on the imputed value of property and concludes that schedule A should be avoided because it would, in effect, impose a double tax on the house.⁵ Evans has carried this argument further and noted that if taxes on owner-occupiers should not be imposed nationally and locally, then neither should the occupiers of any other form of property have to bear both sets of taxes, which they have to do at present.⁶

The occupiers of properties rented privately have to pay rates, while the landlord has to pay tax on the profits he makes. The local authority situation is much the same. Housing revenue accounts are not liable to income tax but the interest it pays is subject to tax in the hands of the recipients, the tax being paid directly to the inland revenue by the authority. Therefore, to the extent that housing is financed on borrowed capital the positions of the local authority and the private landlord are the same. Since their rents now have to be fair and equivalent to market rents, the rent levels are the same as if they had been paying tax.

Thus renters pay rates and income tax on profits accruing to landlords and are, in effect, taxed twice. Since most of the problems of multiple deprivation and housing stress are associated with the privately rented sector, it is politically and socially imperative to make the tax system more equitable. Evans has argued that there is a strong case to be made for

taxing houses more heavily than other goods but given that this is a politically sensitive area, it is necessary to find some way to relieve the tax burden on renters. One way would be to exempt the landlord from paying taxes, which would make housing a sound investment compared to other possibilities and could eventually lead to a fall in rents. However, this is also politically sensitive and on past performance, there is room to doubt that landlords would pass on the tax reduction to tenants in the form of lower rents.

The characteristics of an entirely rational system of financing would have the following characteristics:

1. Families with above average incomes would have housing without subsidy, while those below the mean would receive a subsidy.
2. One subsidy system that made no distinction between the tenure of the house.
3. One subsidy system that made no distinction between owners, housing associations and private landlords.
4. All taxes should be related to the flow of capital into the housing market-an increased capital flow should be followed by an increased supply of houses.

Nevitts guidelines rest on the practicability of using the concept of 'average income' as a threshold for subsidisation. This approach therefore attempts to direct the subsidy to the individual rather than the house, although in so doing it runs into a number of difficulties. There are advantages to the average income approach since builders construct houses with the average purchaser in mind: in fact only some 20% of people lie significantly above this average and it would seem that the distribution of income for housing is more equal than

would be expected from casual observation.⁹ Yet in the market the cost of accommodation is controlled by those with the greatest bid-rent power, who will tend to be those with above average incomes: as a consequence the people with below average incomes are squeezed out of the market. Subsidies to the individual should therefore seek to raise their total income to the average for the area.

Yet subsidies are hard to apply to commodities in fixed supply, such as housing. If all families with below average incomes were given a cash subsidy, then all rents would go up as would house prices and the only people to gain would be the landlord or landowner. The effect would be the same if interest rates were subsidised in some way; any attempt at an overall subsidy would simply increase demand without affecting supply and would cause inflation. This only applies within the private sector and some form of overall subsidy would be easiest to apply to the public sector. Local authority houses are already distributed on 'need' and this would be unaffected by a subsidy. In fact the system operated under the housing finance act has introduced this type of subsidy system, since there are strong financial arguments against giving all public sector tenants a subsidy. Not all council tenants are below the average income and it appears more rational to relate the subsidy to family responsibilities, level of rent and income which could then be paid through the social security system. Birmingham has been running its own scheme of rent rebates for some time and it has not been a great success. The

housing committee chairman has said, "After operating the Birmingham scheme for twelve months our first reaction is surprise at the small number of people who have taken advantage of it."¹⁰ Birmingham has estimated that of the authorities 60,000 private tenants, 6,000 would benefit from the allowance. In fact only 1,000 applications had been received, of which 250 were eligible. This poor rate of applications has been the experience with all other forms of means tested subsidy at local and national levels and is due in part to stereotyped reactions to the handout. However, the success of such local schemes could be improved if the authorities took a more realistic line over publication of these schemes. Even given a greater commitment to the success of such a policy it would do little to improve equality between rented and owner-occupied sectors.

The mechanisms by which subsidies could be applied to the owner-occupied sector are not so clear. Clearly, a subsidy would only be of value if it allowed people to buy into the owner-occupier market; at present the subsidy only operates once in the sector. If no tax relief were available on mortgage interest repayments, then the capital value of the house would be pegged to a greater degree. However, if one group can get tax relief they can discount some of the mortgage outgoing against the rebate and bid for houses of higher capital value, thus increasing the price of housing generally. This effectively excludes people from buying their house: however the removal of the rebate will tend to

advantage people who need no assistance. Given the necessity to maintain the rebate, the subsidy could be made more equitable if the building societies continued to give loans to 'credit worthy' people, while the government gave the housing allowance to people below the average income who wanted to buy into the market. The subsidy could not be a general one since we have already seen how this would increase prices. Even when given to people below average income there would be a general increase in demand that would push prices up unless the building societies voluntarily placed restrictions on the number of mortgages given and operated some form of priority system. The recent swift increase in prices is certainly due to the relative freedom with which the societies handed out mortgages, thus increasing the number of people competing for the same number of houses. The government option mortgage scheme is fulfilling the role of such a subsidy but unless something can be done to increase the rate of building to increase overall supply there can be no long term solution to this problem. The recent increase in mortgage interest rate to 10% without a commensurate increase in the investment interest rate indicates the strength of demand for housing in the context of rapid inflation.

The subsidy could be extended to the privately rented sector by the agreement of a fair rent for landlord and tenant. This obviously involves some consideration of the rate of return which the landlord gets, and the ability of the tenant to pay. The landlord, if he acts rationally, will only stay

in the market if he gets a better rate of return than he can get elsewhere and we have already seen that rent controls may stimulate him to move out of the market to maximise his investment. On the other hand, unless there is some control on the level of profit, some tenants will inevitably be exploited. Some means must exist which can guarantee the landlord a good rate of return and will be within the means of the tenant; those that could not meet the rent could then be given the subsidy. However, in the case of London, it is unlikely that the rate of return from renting under such liberal controls could equal the profit from selling in vacant possession and unless rents were set high with subsidies to the tenants it seems unlikely that the decline of the private rented sector will slow or stop.

The foregoing indicates the problems associated with the present system of financing houses and the consequences of proposing alternative approaches. One other alternative has been suggested which seems a good deal simpler than the subsidy system already outlined. If the burden of rates on rented property was reduced or eliminated altogether it would equalise the situation with the owner-occupier. Such a scheme would be politically feasible and since rates are paid separately from rent it would be easy to check that the tenant received the full benefit. This could be accomplished by a change in the accounting procedures. Evans suggests that this could be done by applying the principles of double taxation relief: that is, a landlord would be able to deduct the

rates he pays from the income tax bill he receives from central government.¹¹ The total tax payable would be the greater of the tax due to central government or the rates payable to local authorities. This means that where the rateable value is below the income tax level, the landlord and tenant will be indifferent to the level of rates. It is therefore possible that local authorities would exploit the situation by charging increased rates. Such a move would be obvious to central government, however, and they have a variety of ways to control the process.

There are, therefore, a variety of ways in which the tax structure can be made more equitable in the broadest sense. It is clear that subsidies to the individual are a lot more complex than subsidies to the dwelling but it seems that in the long term the distribution of resources is likely to be fairer, simply because people cannot or do not always occupy the most appropriate house. However, subsidies to the individual raises the contentious question of national priorities, which governments have preferred to leave to the workings of the market. This is precisely the dilemma they have been in over the decline of the private rented sector. Because of the disparity of treatment, the landlord is swiftly leaving the market and projected forward to 1980 the sector will have almost ceased to exist.¹² If the housing market were reduced to the two sectors of owner-occupied and public rental, the private sector would effectively support the public sector and this would be financially objectionable as well as socially divisive. If this sector is allowed to decline, the people

who remain longest in private rented accommodation will be the poorest and those least able to help themselves. Even if the whole population lived in owner-occupied housing there would still be problems and inefficiencies, since it is relatively easy to move from rented accommodation but difficult from housing that is owned. It is recognised that certain sections of the population require greater flexibility of accommodation than others and these people would be costed if they had to own their own dwelling. There are good reasons to maintain the diversity of tenure at present available to the population. A recent publication has advocated the 'social ownership' of privately rented accommodation as a means of improving the situation, by speeding and co-ordinating action on house improvement and area rejuvenation.¹³ It is proposed that this should be administered by the local authorities but be separate from their responsibilities for council dwellings. As a practical solution to the problems of the rented sector this seems a little inadequate, since the estimated cost of compensation would be over three thousand million pounds and to place all rented properties under the aegis of the councils would restrict many peoples housing opportunities; it is hard to envisage social ownership offering the diversity of choice at present available, or local authorities being able to present two attitudes to the public, one for council houses and one for other properties.

The subsidy and taxation structures outlined above all involve costs to central government but they would have to pay a substantial amount anyway. It either has to subsidise

local authority housing or it loses revenue as housing increasingly falls under owner-occupation. Whichever of the schemes suggested is adopted, it is obvious that a policy of redistributive overkill is required to even out the inequalities inherent in the present system. At the level of the individual house it is clear that the key to the problems of the housing system is the degree of maintenance which is carried out throughout the lifetime of the house. Unless some understanding is achieved of the processes of obsolescence and the incentives of individuals, then redevelopment will provide nothing more than an interim solution.

Obsolescence and the Housing System

A great deal of research has been done into the definition of the term 'obsolescence' but there has been little agreement to date. Medhurst and Lewis have commented:

"Be it defined in terms of physical condition, of the quality of the environment or of the state of a culture or civilisation, decay has to be related to change."¹⁴

There is therefore some confusion over the definition to be used; physical, functional or economic obsolescence. Medhurst notes that these various types of obsolescence may be symptoms of the same cause rather than separate causes and this view is reiterated by Kirwan.^{15 16} Kirwan's study defines only two types of obsolescence, physical and economic. Physical obsolescence is most typically identified within the transit-

ional/residual zones of the inner cities and is caused by a combination of time and the use to which the building is put; if time factors are isolated it appears that the rate of obsolescence accelerates as the age increases.¹⁷

Physical obsolescence can be prevented by maintenance or renovation and the effective extent of obsolescence at any point in time will be the effect of ageing minus repairs. Two houses built at the same time can have widely differing life spans ~~dependent upon~~ the degree of maintenance, although it is generally true that as buildings age the cost of maintenance increases. To understand the process of physical obsolescence the local authority must have data on the use of buildings and the relative levels of maintenance, to assess the speed at which buildings are likely to emerge from the system as unfit. This means that they have to have some knowledge of economic obsolescence, defined as the stage when the benefits of continuing to own or use a building for its present purpose and in its present state are less than the costs.¹⁸ In general it is this information that has been lacking in housing data, although a variety of measures have been devised as surrogates.

Measures of Housing Quality

The major source of data on housing has been the local authority returns. These have focussed on the individual dwelling unit and the process is still heavily based on the experience of the public health officer. This has tended to focus

attention on the worst dwellings and to locate them but has given no measure of the speed of decay or the deficiencies of individual dwellings. As in 1955 the standard of unfitness used is almost certain to reflect the number that can be dealt with in the plan period and as standards rise over time, the figure is likely to become increasingly unreliable.¹⁹ Finally, there is no measure of environmental quality included and Medhurst and Lewis's conclusions that there is a significant correlation between house quality and environmental quality would seem to highlight this deficiency.²⁰ The returns of unfit dwellings therefore involve an arbitrary judgement on the part of the official concerned. It has already been noted that a significant control on dwelling quality is use of buildings: to fill the gap left by local authority returns the 'Use and Condition of Buildings Survey' was started. This was to be in map form and to classify houses into three groups based on expected life span.²¹ It still remained a basically subjective process however, which made it difficult to compare one authorities returns with another.

The census provides the most consistent and objective data source but achieves this at the expense of avoiding questions relating to structural condition and environmental quality. In addition, the enumeration district as the smallest censal unit can often be too large to reveal small pockets of obsolete houses. It therefore provides a rather limited data source for housing.

It has already become clear that the age of houses provides a very crude measure of its quality. Rateable values have also been suggested as a measure of condition, as a market adjustment to a subjective measure. This does consider the influence of surrounding houses and the environment and has advantages over the other measures but it is still not clear what factors influence this value; it may be house size, poor condition or the gas works next door.

An alternative technique documented by Duncan, uses the index as a measure of house quality.²² The approach seems to have originated in the work on housing appraisal done by the American Public Health Association: this used a cumulative penalty score for individual aspects of the environment of each dwelling unit, with separate measures for facilities, maintenance, occupancy and a separate appraisal of the physical environment.²³ This included density, incompatible land uses, traffic on streets, the availability of public transport and community facilities. Based on the system of penalty points policy could be formulated. That is, if an area scored over 50% it was ripe for demolition, 30-50% renovation and so on. The only major drawbacks to this method were its time consuming nature and the implicit assumptions involved in the weightings given to the various factors to be considered.

This method provided the foundation for a series of techniques developed in England: these can be divided into two groups. Those that use the penalty point system devised by the American Public Health Association and those that allocate penalty

points based on the costs of raising standards to the statutory minimum. This avoided the problem of weighting the criteria involved but at the expense of other factors. The number of both types of study are large and their full range has been documented elsewhere.²⁴ Rather than repeat all this material I have proceeded by example, noting the overall advantages and weaknesses of this approach.

One of the most advanced of the techniques using a penalty points system was developed by the Nottinghamshire County Planning Department.²⁵ This used a three tier structure which sought to:

1. Evaluate the dwelling in terms of structural stability.
2. Examine its curtilage in terms of space, privacy appearance and ease of access.
3. Evaluate its environment in terms of amenity including freedom from traffic noise, air pollution and other factors.

The first stage of the analysis involved the definition of sub-zones based on the rear curtilage line of buildings, which tends to produce consistent and unbiased sub-zones of homogeneous character. These areas are then tested using the factors method of weighting and scoring. The sum of all the points for all factors was 100 and was divided into:

1. Appearance factors - 21 points
2. Provision factors - 13 points
3. Access factors - 29 points
4. Amenity factors - 37 points

The full range of factors included in each category are listed in table D. The relative weights given to these factors reflect the type of area the index was devised for.

TABLE D

APPENDIX A1.

THE ENVIRONMENTAL ASSESSMENT : deficiency points system

FACTOR		POINTS SCORE	
		Sub-Factor	Factor
TRAFFIC	0. Full separation of pedestrian and normal residential traffic	0	
	1. Very limited intrusion of through traffic/no intrusion of traffic of unsuitable character	1-2	
	2. Some - substantial intrusion of through traffic or traffic of unsuitable character	3-8	
	3. Excessive intrusion of through traffic or traffic of unsuitable character	9-11	11
NON CONFORMING USES (within or nearby)	0. Exclusively residential uses fully separated from other use zones	0	
	1. Limited infiltration, or local presence of, non-conforming uses	1-2	
	2. Some - substantial infiltration of, or local dominance by, non-conforming uses.	3-7	
	3. Excessive infiltration of, or local dominance by, non-conforming uses.	8-9	9
NOISE	0. Acceptable residential standard i.e. normal speech possible	0	
	1. Slightly above acceptable residential standard i.e. limited speech interference	1-2	
	2. Above acceptable residential standard i.e. normal speech difficult at some times	3-7	
	3. Excessively above acceptable residential standard i.e normal speech always difficult and/or sometimes prohibited	8-9	9
AIR POLLUTION	0. Negligible (or non-existent)	0-1	
	1. Light	2-5	
	2. Heavy	6-8	8

LANDSCAPING/ VISUAL QUALITY	0. Mature, good quality trees, constructively located, and well kept grassed spaces	0-1	
	1. Insufficient poor quality trees, defectively located, and/or unkempt grassed spaces	2-5	
	3. Total, or almost total, lack of trees/grassed spaces	6-7	7
ACCESS TO PRIMARY SCHOOL	0. Primary school within 5 minutes walking distance (600 yards) and involving no main road crossing(s)	0	
	1. Primary school within 5 minutes walking distance but involving main road crossing(s)	1	
	2. Primary school 5 - 10 minutes walking distance but involving no main road crossing(s)	2	
	3. Primary school 5 - 10 minutes walking distance but involving main road crossing(s)	4	
	4. Primary school more than 10 minutes walking distance (1200 yards) but involving no main road crossing(s)	5	
	5. Primary school more than 10 minutes walking distance and involving main road crossing(s)	7	7
ACCESS TO OTHER FACILITIES (shops, pub, doctor)	0. Shops, pub and doctor all within 5 minutes walking distance (600 yards)	0	
	1. Shops and doctor within 5 minutes walking distance	1	
	2. Shops and pub within 5 minutes walking distance	1	
	3. Shops only within 5 minutes walking distance	2	
	4. Pub and doctor within 5 minutes walking distance	4	
	5. Doctor only within 5 minutes walking distance	5	
	6. Pub only within 5 minutes walking distance	5	
7. No facilities within 5 minutes walking distance	6	6	

ACCESS TO CHILDRENS PLAYGROUND	0. Playground within 2 minutes walking distance and involving no main road crossing(s)	0	
	1. Playground within 2 minutes walking distance but involving main road crossing(s)	2	
	2. Playground 2 - 4 minutes walking distance but involving no main road crossing(s)	3	
	3. Playground 2 - 4 minutes walking distance but involving main road crossing(s)	5	
	4. No playground within 4 minutes walking distance	6	6
GARAGING/ PARKING PROVISION	0. Full provision of garaging/parking facilities	0	
	1. 75% - 95% provision of garaging/parking facilities i.e. limited on-street parking	1	
	2. 50% - 74% provision of garaging/parking facilities i.e. some on-street parking	2	
	3. 25% - 49% provision of garaging/parking facilities i.e. substantial on-street parking	4	
	4. 0% - 24% provision of garaging/parking facilities i.e. excessive on-street parking	6	6
TOWNSCAPE/ VISUAL QUALITY	0. Harmonious, attractive arrangement of 'hard' elements (within and visible from the study zone)	0	
	1. Some discordance or drabness within the 'hard' elements	1-3	
	2. Excessive discordance or drabness within the 'hard elements'.	4-5	5

ACCESS TO PARK/P.O.S.	0. Park/P.O.S. within 5 minutes walking distance (600 yards) and involving no main road crossing(s)	0	
	1. Park/P.O.S. within 5 minutes walking distance but involving main road crossing(s)	1	
	2. Park/P.O.S. 5 - 10 minutes walking distance but involving no main road crossing(s)	2	
	3. Park/P.O.S. 5 - 10 minutes walking distance but involving main road crossing(s)	4	
	4. No Park/P.O.S. within 10 minutes walking distance	5	5
ACCESS TO PUBLIC TRANSPORT- ATION	0. Public transport route within 3 minutes walking distance (350 yards)	0	
	* 1. Public transport route 3 - 5 minutes walking distance	2	
	* 2. No public transport route within 5 minutes walking distance	5	5
MICRO- CLIMATE	0. No discomfort from microclimatic factors	0	
	1. Some discomfort from microclimatic factors i.e. which minor improvements, e.g. tree-planting, could alleviate	1-2	
	2. Excessive discomfort from microclimatic factors	3-4	4
GARDEN PROVISION	0. Full provision of adequate gardens or communal/incidental open space: all requirements satisfied	0	
	1. Insufficient provision of adequate or inadequate gardens, or inadequate provision of communal/incidental open space	1-2	
	2. Excessive lack of garden or communal/incidental open space	3-4	4

APPEARANCE OF TRAFFIC STRUCTURES/ USES	0. No depreciation in visual quality (within or visible from study zone) by traffic structures/uses.	0	
	1. Some depreciation in visual quality by traffic structures/ uses	1-2	
	2. Excessive depreciation in visual quality by traffic structures/uses	3	3
PROVISION OF NEIGHBOURHOOD AMENITIES	0. Full provision of all neighbour- hood amenities	0	
	1. Insufficient provision of neighbourhood amenities or some amenities absent	1-2	
	2. Total or almost total lack of all neighbourhood amenities	3	3

Note: amenities include; street lighting, telephone kiosks,
post-boxes and bus shelters.

APPEARANCE OF GARDENS/ YARDS	0. Predominance of tidy/well-screened gardens and/or yards within the study zone	0	
	1. Some intrusion of unkempt/poorly screened gardens and/or yards	1	
	2. Predominance of unkempt/poorly- screened gardens and/or yards	2	2

Total factors 17 Total points 100

In addition, Rateable Value is coded as a preliminary indicator as follows:-

RATEABLE VALUE (broad assess- ment of housing conditions)	0. more than £100 average	0
	1. £56 - 100 average	3
	2. £31 - £56 average	6
	3. £23 - £30 average	7
	4. £0 - £22 average	9

A related study of Teeside reflected the greater problem of air pollution by giving that factor a much higher score.²⁶ Scored on all these factors the various sub-zones were then aggregated, to define existing environmental areas, future environmental areas and to define environmental management policies: this index was later used in both local and structure plan formulation. It has the advantage that scores can be compared between areas, provided the same weightings are applied. It is limited as a developing policy tool since it gives only a static view of the environment, a handicap common to all indexes. In addition, the weighting for one area is unlikely to reflect the situation in other areas, as the Teeside survey indicated. This problem can also be seen by comparing the factors included in two other studies, one in Manchester and the other in London.^{27 28} The former concentrated on physical criteria to a much greater extent than the latter. In this situation it is hard to disagree with the Dennington Committee Report, which concluded that most points systems were inadequate because they appeared objective while remaining essentially subjective.²⁹

The other group of indexes have been based on cost indicators and have attempted cost/benefit comparisons between redevelopment or improvement. One of the most influential of these was developed by the Ministry of Housing and Local Government after an examination of the American methods of appraisal.³⁰ The House Condition Index was used in the Deeplysh Study and set the cost of rehabilitation against the cost of building

a new house of the same floor area. The resulting figure was expressed as a percentage of the new house cost, or could be based on the actual cash value based on three elements, the house, the curtilage and the environment. The environmental factors could not be given a cash value since they have no market value. Nevertheless they were given an imputed value based on the assessments of a number of valuation officers who were asked to compare the values of two identical houses with different environmental contexts. A variety of situations were presented covering most of the probable combinations: from these a model was constructed giving the sort of percentage variation each environmental factor made. However, this assessment procedure has been proved suspect since research by Michelson has indicated the divergence of attitude between residents and 'elitist' groups.³¹ Drawing on economic theory, the index assumed that environmental factors could be traded off against one another: that is, that air pollution could be effectively swapped for traffic noise. All empirical research indicates that this is a vast oversimplification of the situation. A simplified form of this index was used in the 1967 House Condition Survey and found 1.8 million dwellings unfit. The degree of subjectivity in definitions would appear to be excessive, since the same index used in the 1965 survey found only 820,000 dwellings unfit.³²

Indexes of both types therefore have common deficiencies. They are all time static, open to considerable degrees of

observer variability and often bear no relation to local opinions. If the aim of such an analysis is to assess improvement potential, we have seen that it requires the co-operation of the residents and an understanding of their decision processes. This cannot be achieved by the use of the existing measures of housing appraisal.

To return to the definition of obsolescence used earlier, it would seem that economic obsolescence occurs when the net benefits that derive from undertaking maintenance to keep the house at a standard is less than the benefits of letting it continue in its present use with no maintenance.³³ The analysis is therefore concerned with the case where there is insufficient incentive to maintain the house. There are a variety of factors which may influence the context for decisions about maintenance or renewal and these can be defined as:

1. The cost of maintenance and improvement required to maintain a given standard.
2. The cost of operating the houses services.
3. The opportunity costs of a building on its site. That is, the value of the building or site in its best alternative use.
4. Availability of resources for purchase of accommodation.
5. Changes in tastes or preferences.
6. Changes in supply of alternative accommodation.³⁴

These fall into two groups related to factors of the household and the market constraints upon them. Thompson has noted that it cannot be assumed that the city is in a state of equilibrium as theory postulates and therefore that market constraints may be hard to assess.³⁵ The city is extremely

heterogeneous and groups within it react at different speeds to stimuli. In general, those with larger incomes are able to adapt to changes more easily than the poor. This is illustrated by the sharp increase in house prices in Britain; not only has it excluded large groups from home ownership who would have been able to afford it before. It positively favours the small group of people who are willing and able to move house frequently to capitalise upon their investment. The same is true of the mobility boom: Affluent groups have been willing and able to adapt to the car more readily than the poor. It is more accurate to describe the state of the city as being one of 'differential disequilibrium'³⁶

One other control on the renewal decision is the locational characteristics of housing. These are usually represented as externalities to the market process, although price does attempt to reflect the relative proximity and accessibility of the house. A large group of models have developed to explain house location in terms of accessibility to workplace. These have sought to relate the transport costs of the journey to centrally located workplaces to population densities via the distance related land value function; simply put, the net savings in commuting costs accrue to the landowner and the profitability of his land is reflected in the land value, which thus declines with distance from the city centre.³⁷ These models have their basis in work done by Hoyt, while recent studies by Muth and Kain have elaborated upon this framework.^{38 39}

So far the study has assumed that the market is not only in equilibrium but is also competitive. This is not true, for housing falls somewhere in the centre of a scale from purely private to purely public goods. A house can never be a totally private good because of the externalities related to its location. The very fact of location of a public facility, such as a school, means that there will be heterogeneous access to the school.⁴⁰ Other institutional influences on renewal result from the actions of public authorities, which may take the form of planning blight or the constraints of development control.

Yet another externality is the dependence of one property owner upon the actions of others. No individual can ever have perfect control over the price he receives for his house or land and there is therefore no way that the individual can guarantee that his profits will be maximised. This is especially relevant to plans for renewal. If the market value of housing is strongly affected by the conditions of neighbouring houses, each household may ^{be} _λ deterred from improvement by the condition of his neighbours house. There is therefore no way that an individual can maximise his utility in the housing market. There are only two mechanisms which can achieve this maximisation; group action or government intervention.

Group Action

Webber has suggested that the dominant problems of the next

decade will, "surround the equity issues raised by growing disparities in level of welfare among increasingly diverse publics."⁴¹ With reference to the city unit, it is clear that there are groups who function with different preferences and values and that these groups have tended to separate out. Davis and Whinston have provided a theoretical explanation of this process, whereby homogeneous groups are created to internalise the externalities between groups. In the American case this role is fulfilled by zoning controls.⁴² This would seem to give some theoretical justification to the empirically observed communities within the city; it will minimise the transaction costs between individuals with different preferences. This will have financial significance since it will tend to create sub-zones of housing where each owner knows that all the others have as much interest in maintaining property values in their area. Harvey carries this argument further and asks if the city cannot be partitioned on this basis in a rational way.⁴³ However, even given that such a partition could be achieved, there still remains the thorny problem of devising an effective regional or territorial organisation to co-ordinate these groups. This is essential for there would still be externality effects between groups in a situation of finite budgets; the resultant income distribution will inevitably reflect the relative power that any one group wields:

"This explains, in turn, why the housing market is so peculiarly susceptible to economic and political pressures, since it is only by organising and applying these pressures that individuals can defend or enhance the value of their property rights."⁴⁴

It can be shown that this action will tend to be to the benefit of the rich and the disbenefit of the economically and politically weak. A study of inner city agencies by McConnaghy noted:

"They (inner area politicians) are badly placed as innovators and comprise small minorities in their own council chambers. These councillors do not usually influence city budgets, which, regardless of party politics have regard to the majority of ratepayers. They cannot even depend on solidarity within inner areas, due to party alignments and competition between city wards."⁴⁵

It has been shown that there are two types of groups.⁴⁶ The situation reflected by McConnaghy represents what Olson has called a latent or large group. Such a group will have within it a spectrum of views that make its structure inherently unstable. It would appear that unless the numbers of individuals within a group is small or unless there is coercion, as with unions, rational self interested individuals will not seek to achieve the common or group interest. In the urban political process the small highly motivated group will tend to dominate the latent group over most issues. This has proved true in the United States and increasingly so here. The middle class amenity group can mobilise greater financial resources and probably have more time to do so than the latent group. This is further compounded by the fact that the privileged group will fight against a particular intrusion at any cost, while the latent group will accept a lower compensation payment for the nuisance. The result is that those least able to pay are costed the most by environmental intrusions.

The discussion of the use of indexes highlighted the problems of assuming that various groups of people hold the same set of preferences. The whole theory of welfare economics only has relevance if it can be assumed that such a cardinal utility function can be produced. Unless there is some definable objective which society as a whole seeks to attain it is rather pointless to enquire into methods of attaining it. The replacement of cardinal utility by ordinal utility provided more realism into measurements but created further problems. The principal one is that it is impossible to derive a social preference or welfare function from a set of individual ordinal utility functions. There are two ways out of this dilemma: One is to derive some measure of the intensity of an individual's preferences in a situation. The other assumes that everyone in the population has the same ranking of preferences, as with the index. The validity of this unanimity assumption can be severely questioned: the index used in Deeplysh resulted in a favourable attitude to improvement possibilities but the recent study by Kirwan has indicated that the take-up of grants has in fact been poor and that large numbers of people are unable to make the required investment in the houses.⁴⁷ This finding has also been supported by Davies.⁴⁸

If the housing system is to be viewed as an opportunity structure, it is clear that there are widely divergent constraints upon access to the structure. Although it is not valid to assume that the housing market is in equilibrium, since there are large groups observably dissatisfied with their accommod-

ation, there is an effective equilibrium imposed by factors peculiar to the housing situation. The major factor must be the high direct and indirect costs of moving, both financial and psychological. In addition, the consumer must be satisfied with the location as well as the other characteristics of the house. In the situation where demand for housing increases with income and where space is the most highly valued characteristic, upper income groups will tend to live further from the city centre under the constraints imposed by the amenity/accessibility ratio noted earlier.⁴⁹ Under this constraint the price of housing of constant quality will increase to the city centre as opportunity costs increase. Low income households will therefore be spatially constrained to the inner city where they will have to seek both the smallest and the meanest accommodation. Clark has indicated how the cost of travel and the availability of land for housing will influence the aggregate demand for space in the city.⁵⁰ In the United States the assumption that low income households locate to minimise transport costs can no longer be accepted. With industries greater awareness of the 'working environment' and the advantages to be gained by a pleasant environment, jobs have moved from the city centre, leaving the low income household paying relatively high rents for cramped accommodation plus bearing the travel costs involved. The obverse case can be seen in London where high income households have begun to favour a return to the city centre. This reflects increased travel times due to congestion and the availability of higher incomes restricting the market to the select few through large price increases.⁵¹ In this sense, the availability of low

income dwellings is dictated by the demands of the well to do. Within this market structure, the existence of physically obsolete houses must be explained in terms of the effective level and distribution of demands for low income houses. This may be due to the inability of residents to pay for maintenance or their lack of incentive. This may be because investment may be uneconomic due to redevelopment or because high rents can be obtained without regard to maintenance. The critical factor is that such low cost housing provides a market for those denied access to other housing. There is a basic inelasticity about the inner city housing market because, under existing controls, new housing on the same location would be both expensive and less profitable in terms of sub-letting and multi-occupation. By contrast, building at the periphery is extremely elastic and responsive to demand. Most theories of urban morphology have assumed this supply oriented approach basically linked to the concept of filtering.⁵²

As with obsolescence, there has been little agreement over the definition of filtering: it has two broad components. The first assumes that there will be a change in the price or rent of property and a concomitant change in occupancy. That is, houses filter down or people filter up. The second definition postulates that the real filtering process is the change in value of the dwelling unit on an absolute or relative scale and that the movement of people is caused by this change. Whichever definition is adopted there are associated spatial effects. As new houses are built at the periphery

and occupied by the suburbanite the lower income groups should be able to shift into better houses.⁵³ This process is likely to reduce incentive to renew older houses in the centre: the Chicago example usually quoted tends to exhibit this process. There successive waves of immigrants have been able to move up the socio-economic scale and thus improve their housing.⁵⁴ However, this alone is inadequate to explain the causes of the change for it relates only to factors concerned with the house and it is already clear the the environment and accessibility factors can play a large role in house investment. Land use theorists have attempted to incorporate this amenity factor into a general concept of land rent but have been unable to isolate dominant controls upon the levels of amenity.⁵⁵

An alternative demand oriented approach has been suggested by Muth.⁵⁶ The supply oriented approach assumes a relationship between the demand for low income housing and low aggregate demand level. Muth has pointed out that it is more realistic to postulate a very restricted supply of housing and a rapidly increasing demand for this cheap housing. In this situation households will be forced to seek cheaper and smaller houses and for residents to subdivide houses to create new dwellings. This will result in over use and consequent physical obsolescence. This process can be observed within most large cities but I have chosen to illustrate the case by reference to Birmingham.

Birmingham's Twilight Areas

Beyond the inner ring of rented properties which have now mostly been demolished, are the late Victorian and Edwardian houses designed for the large family with servants. These have either proved too large for one family or, if they are shared, make more housing units with inadequate facilities. Such areas as Sparkbrook and Handsworth were therefore vulnerable should the demand for rented accommodation increase, to be converted into lodging houses. Beyond this area the housing was largely owner occupied interspersed with council properties. To those with low incomes, house purchase was impossible and there was a severe waiting list for council accommodation. During the early 1960's there was a swift influx of over 50,000 immigrants who faced this barrier to housing. One reason for the huge formal waiting list was the emphasis being given to slum clearance which took precedence over new arrivals.⁵⁷ So for new households and immigrants there was little choice but to compete for privately rented accommodation.

Householders in the middle ring were able to sub-let rooms and as this practice spread, the respectability of the areas declined. This led to a lack of incentive for maintenance and the sweating of the houses: this meant charging the maximum rent with no maintenance or an absolute minimum. Burney notes that this occupation rapidly became dominated by the immigrant landlords exploiting their own people.⁵⁸

The spread of this multiple occupation was so rapid that in 1965 Birmingham received powers to decide who should be a slum landlord and where the house should be. The inevitable result of this has been the creation of ghettos of problem families as noted earlier, the use of improvement area as buffers to restrain these areas and the consequent rapid obsolescence of the central areas.

In general the process of housing obsolescence and renewal has to be understood within the context of the housing market and the way this allocates resources within the city. It must also be realised that most of the factors discussed, such as accessibility constraints, fall outside the valuation system in operation and that these externalities may be the critical stimuli for investment in housing. This has powerful implications for the discussion of housing policy in part I of this thesis, for it clearly supports the economic context of improvement policies. I noted earlier that there were only two practicable ways of maximising utility in the housing market; group action or government intervention. Given that we are already in a situation of extensive government involvement in housing, most research has aimed to improve the information available to government concerning individuals preferences. As yet no satisfactory method of measuring the impact of these externalities has been developed but a variety of complementary techniques have been tried. The isolation of key stimuli for investment in maintenance of housing is crucial for the success of improvement policies and I have reviewed the various approaches in the next chapter.

CHAPTER FOUR: THEORETICAL AND EMPIRICAL STUDIES OF CONSUMER

PREFERENCES AND ATTITUDES

The previous chapter highlighted the problems of allocation associated with housing policy and the limitations of market mechanisms for distributing those resources external to the economic process. The aim of most research has been to inform government policy making by isolating components of the environment which influence peoples preferences or attitudes. Wherever possible, these techniques have attempted to attach cash values to these components, since policy is always formulated within the budgetary constraint. However, there are a number of limitations to the derivation of such cash values which I wish to explore in this chapter.

House Prices as Environmental Indicators.

The theoretical work on residential location theory done by Muth and others has stimulated considerable interest in examining which attributes of housing the consumer derives utility from and whether these can be ranked in any meaningful way.¹ One group of studies has looked at how consumer valuations have been expressed in the market: the argument has been that if one house has more desirable attributes than another, this will be expressed in the market values.² Consequently, by examining prices of houses and their associated attributes some measure can be derived of how much, on average, each attribute has been valued. Considerable difficulty has risen in the empirical work in isolating and

quantifying some of these attributes, particularly those associated with environmental quality. This problem has been recently highlighted by the swift increase in house prices which has emphasised how dependent upon supply and demand the price can be. Ball has recently produced a critique of the empirical approaches that have used this technique and I will not duplicate his work. Nevertheless, there are common themes which it is possible to isolate.

Most empirical studies have attempted to define housing attributes by making house price the dependent variable of a multiple regression equation and sought to relate housing characteristics to these. Sample sizes have varied greatly from 83 to over 2000.^{3 4} Some studies have used simple house price, others the log of house price and yet others the mean property value. The majority of attributes considered have been locational or house related and few have included any environmental attributes. In the main the results of these studies have contradicted each other: one study found house floor area an important explanatory variable while another found it insignificant at the 5% level.^{5 6} Despite the absence of environmental attributes most of these studies have achieved exceptionally high regression coefficients ranging from .70 to .94.

Other studies have attempted to develop components of house quality using multivariate techniques. Wilkinson's survey of Leeds used mortgage advances as a data source and isolated four factors explaining 88% of the variance in total

house price. These were:

1. A locational factor explaining 45% of total variance, related to house type, age and distance from the city centre.
2. House factor explaining 28% of variance and related to floor area of the house.

A further two factors explained 15% more of the variance and were also related to the locational and house type factors.⁷ Unfortunately, the only really comparable study in terms of sample size and methodology failed to isolate the location parameter as significant; further study is needed to confirm the validity of these factors.

All house price studies have used one of two approaches. The first is to assume that all households are in equilibrium and that there is no preferable house on the market, otherwise they would have moved. The other approach is to assume that recent movers have expressed their true marginal valuations and have increased their total utility by the move. If the first approach is used there is no value expressed in the market and estimates by valuers have to be made. Most studies have therefore used the movers only approach as the easiest course. Unfortunately it cannot be assumed that everyone has equal knowledge or opportunity, as we saw in the last chapter: therefore, to rely on this approach alone will bias our knowledge of trade-offs towards the preferences of the least constrained. As Harvey indicates, it is not valid to assume similar utilities between groups on different income levels and with varied cultural backgrounds.⁸ Ball concludes that until some well formulated model of the housing system is

developed, the use of house price to isolate components of quality "seems only one step away from picking numbers out of the air."⁹

Experimental Approaches

Yet another approach to this problem has been the experiment. This avoids some of the problems of asking hypothetical questions but it suffers from expense factors and the lack of control of the situation. The Road Research Laboratories environmental simulator has produced reactions to noises experienced within a typical living room, to assess individuals responses. If the stimuli is an unexperienced one then this test has greater scope than a hypothetical question to do with reactions to intrusions, since it can be directly related to a decision.

The major problem with all techniques not related to market processes is that respondents decisions are not disciplined by the price system, within which resource allocations have to be made.¹⁰ Without this constraint many peoples responses become removed from reality. Many of the responses given at the Roskill Enquiry exhibited this tendency: when asked how much they would accept for the sale of their houses, many responded that no compensation would be large enough.¹¹ To minimise this problem most analyses have sought to model the market process in some way in the hopes of producing more meaningful responses. It is clear that although the experiment provides a useful tool, it has a limited range of application.

Game Simulation Approaches

One such approach that has sought to model aspects of the market has been the game simulation; this appears to have originated in the work done by Wilson in the United States.¹² This technique has attempted to simulate market processes by allocating participants a fixed income in the form of counters and asking them to spend this money on a range of environmental improvements: the feature common to all these studies is that the income given is not enough to remove all undesirable features of the environment, which forces the respondent to choose or trade-off improvement in one thing against another. The range of variables considered has varied from study to study: Wilson's survey included questions on general location decisions in an attempt to isolate significant residential environmental controls.¹³ By contrast, Chapin's study was used as a measure of preference of current behavior in conjunction with a time-budget study.¹⁴ More recent studies by Social and Community Planning Research have attempted to model the trade-off between increases or decreases in accessibility against the amount of traffic around the home or in the shopping centre, and relating this to monetary values by the inclusion of a money variable.¹⁵ This latter approach has used a priority evaluator device to model the decision process more exactly. It would seem that this technique yields relatively consistent trade-offs between variables but whether the experimental situation really models the decision processes is not yet clear. This is

crucial because the success of this approach depends upon the realism of the choice situation. It has been noted that some respondents have difficulty relating to this game approach in much the same way they would to questionnaire techniques. Hedges notes that although cash values can be achieved, "there is no really independent way of validating the end-product."¹⁶

Waller has suggested an alternative method which assumes that there is a constant relationship between the percentage of people annoyed by an intrusion and a fixed monetary value.¹⁷ This assumes that annoyance is a simpler concept than evidence would suggest. Annoyance percepts will be highly contextual and will therefore fluctuate between individuals. Nevertheless this approach was used by Roskill to relate sensitivity to noise from aircraft to cash values; although like the index method there was no a priori basis for assuming that a given increase in noise resulted in a given cash value in compensation.¹⁸

Behavioral Indicators

One other group of studies has attempted to use revealed behavior in conjunction with questionnaire surveys, to relate reasons for moving to identifiable environmental stimuli. Most studies have concentrated on the effects of urban road traffic and associated noise levels on this behavior. This is not as clear cut as it seems for there will be one group who move due to the intrusion, another group who stay and who's

only behavioral change may be to keep windows closed: and finally those who were going to move anyway and who may only lose the depreciation amount of their house.¹⁹ This is termed the householders surplus and represents the strength of attachment to their current accommodation and the decline in quality which will overcome their inertia and make other houses seem more attractive. That is, a household will only move when the measurable decline in the quality of their present house has become greater than the price of alternative houses plus the financial and psychological costs involved in moving. The validity of this approach depends on the way people name actual figures for compensation, if they are prepared to accept compensation. For some people it is impossible to specify an amount that has any real meaning. Hedges notes that considerable differences in results are achieved by different techniques and that the validity of the response is ultimately left to the interviewer to decide.²⁰ One of the most common problems is the tendency for respondents to adjust their evaluation to what they feel is the maximum figure possible. To avoid this bargaining situation, other studies have asked what a respondent would pay for a house and then asked how much influence specified disadvantages would have on this valuation. This could then be repeated over a range of situations to establish the influence of each upon the total value. The basic problem with this approach is the difficulty of representing house descriptions to people and the fact that by such a structured approach, it may induce attitudes to things which respondents would not have considered in a real decision situation. This is further

confused by the swift increase in house prices, which has tended to make people view property as an investment rather than as an essential expenditure.²¹

The only other approach adopted has been the unstructured hypothetical question. It would appear in general that this has even greater uncertainties than the hypothetical structured approach. This is especially true with regard to cash valuations, for acceptable compensation levels can vary greatly between individuals, implying that there is no common concept of cash values.²² The limitations of using market allocations and hypothetical market situations has led to greater interest in the public housing sector as a field for analysis.²³ The validity of this approach is dependent upon the allocative process adopted by the local authority which can vary greatly. It is almost certain that this will not be a situation of real choice for the individual and that consumer preferences will be disguised by the allocation mechanism adopted by the authority.

Studies of Public Housing

Tenants or prospective tenants of public housing may get the chance to express their preferences in three possible situations. These are:

1. When applying to enter the public sector.
2. When being re-housed within the public sector due to a clearance scheme or any other reason.
3. When requesting a transfer or a mutual exchange within the public sector.

This last category is likely to give the best expression of

preference since the incentive will stem from the occupation of a council dwelling and the request for a transfer or exchange is relatively simple, although the success rate is certain to be lower than the application rate. The basic research approach is that the number of transfers or exchanges from an area and to other areas within the public sector, will reflect the desirability of that area relative to all the others.²⁴ The price mechanism cannot be used to differentiate between dwellings since houses are allocated on a need basis; this has resulted in excessive demand in the form of queues. There are a variety of reasons why the situation may not be as clear as the register of exchanges and transfers may suggest. As already noted, the only objective criteria which can be used to measure housing satisfaction is the expressed desire to move again. Dissatisfaction will have various modes of expression:

1. Those people who have already moved.
2. Those who are trying to move.
3. Those who would like to move but are not actually trying.
4. Those who have tried to move in the past but are now settled.
5. Those who have never thought of moving again.²⁵

There will be a number of factors which distort the distribution of responses on this continuum. The local housing situation may be so tight that there is no real choice of a move. Perhaps at this point it would be wise to clarify the distinction between transfers and exchanges. The former are arranged by the authority and are based on a set of priorities which the council prepares. Exchanges are movements of people arranged either by the tenant or sometimes with the

assistance of the authority, based only on the ability to find someone prepared to swap. The business of finding a compatible partner involves advertising in local shops and newspapers and in Birmingham's case, in the exchange register. This can be a long winded and frequently unsuccessful process. Some exchanges are only approved where under or over occupancy will not occur. Norris indicates that a large proportion of people wished to move from flats to houses and those in category two above had usually been moved to flats and had little hope of an exchange.²⁶ There will also be a small group of people who are never satisfied and who will seek to ascribe their ills to the dwelling and area. Some may be extremely dissatisfied but either feel that they have no power in the face of the housing department or that the first move is so distressing that they will not contemplate another. The numbers in category four above will be related to the age of the area; as time passes more people will presumably give up the search.

Despite these limitations, the public sector has a number of advantages for study. In many instances there is a high degree of uniformity in house provision and the style of an area, where the only differential may be rent or some other observable factor. Unfortunately there is no way of attaching cash values to these factors, except in terms of the cost of provision of an amenity to the council or the expense of its removal. Finally, such studies have obvious implications for the actual choice mechanisms used by a public authority and their effects on community well-being.

Attitudinal Studies

The studies so far mentioned have generally adopted a form of market constrained analysis which has attempted to equate cash values to environmental attributes through house price. The very fact that there are large areas of council estate limits the value of this approach somewhat. Approaches to environmental evaluation do not fall into convenient categories and any division is bound to have overlaps. Yet it is possible at the broadest level to classify approaches under two headings: these can be called hypothesised utility and experienced utility. Most of the studies so far outlined have either assumed a trade-off on the part of respondents through market preferences or forced them to hypothesise a trade-off through the use of game structures. The second group of studies which deal with what could be called experienced utility, ask questions of things directly experienced and attempt to relate strength of reaction to these experiences.²⁷ If an individual's preferences can be weighted to reflect his intensity of feeling, then it is possible to derive some kind of social welfare function. However, we have already seen that this is meaningless unless cast in terms of an objective which society can agree upon: and that interpersonal utility functions mean that different people attach different values even to money. This problem is not simplified by resorting to attitude assessment since the heterogeneity of social cultural values plays havoc with any redistribution of resources, resources being a subjective

concept in this context. If it valid to assume that people construct an image of their experience, then this image has a number of notional components; Morris identifies the designative (informational), appraisive (emotional) and prescriptive (action tendency) components.²⁸ There will be a distinct division between the designative component, that is the form and extent of information held about spatial phenomena and the appraisive part of the image, that is preferences held by people for spatially occurring phenomena. Cognitive skills are learned and it has already been demonstrated with reference to the housing market, that opportunity for access to these skills is not equally distributed throughout society. This has implications for standards in general and for environmental intrusions in particular. Put simply, those who have to worry about the essentials of life are less likely to be concerned about noise or pollution levels, than those who have money.

The implications of this for measures of attitude and preference are manifold. The interview situation involves communication through symbolic languages of some kind. If we divide these languages into visual and verbal, it is possible to examine the influence which the designative component will have on the prescriptive component. The visual language perhaps highlights the problem, since it is likely that the respondent is not familiar with this form of presentation: the reaction to such a symbol and an environmental signal may therefore be totally unrelated. These visual symbols may be

maps, photographs or drawings. Harvey has emphasised the difficulty which can be caused by the use of maps when the respondent has no experience of the medium.²⁹ Certain people will be unable to interpret map symbols, which may bias survey results badly. Photographs have a variety of problems related to the way the object is presented. The exposure, distance and angle can all have significant influence upon the appearance of an object.³⁰ Also, it is hard to exclude other objects from the picture, which may introduce an element of 'random noise'.³¹ Drawings have sought to eliminate this random noise by emphasising the object to which the response is required but this may reduce the reality of the symbol and consequently influence the involvement of the respondent.

Verbal responses are no less ambiguous. Bernstein has demonstrated the disadvantage which certain groups can be placed in, by the use of concepts such as neighbourhood.³² The currency of such concepts in certain environments will therefore have an effect on its interpretation. This will be further confused by the selective effect of memory: this is especially true of environmental stimuli which tend to be ambient and therefore unnoticed. This leads to the problem that the structured response, that is a reaction to a specific stimulus, may create an attitude to a hitherto unimportant element. Conversely, the unstructured response may omit something vital. There are no easy ways out of this problem and many studies have attempted to combine these two approaches

as the best available solution.³³

A recent study by Menchik illustrates the difficulties of interpreting such verbal responses.³⁴ He asked residents to define the factors which made them decide to buy their houses and then carried out a content analysis of their replies to assess their relative frequency. This ranking he assumes gives some measure of their preferences and their relative influence. This evolved four preference variables, measuring the high quality natural environment, low population density accessibility to work and preference for a large house; all of these variables were found to correlate with the presence of all these factors in the sample environment. However, it is not adequate to assume that the preference ranking procedure used here produces individuals or groups actual preference rankings. Arrow has demonstrated that it is not possible for individuals to choose between more than two alternatives, while maintaining the two elements of connectivity and transitivity.³⁵ Connectivity means that the scheme will yield a relation of either social preference or indifference between every possible pair of alternatives: it will never fail to yield a result.³⁶ Transitivity means that if A is preferred to B and B to C, then A is preferred to C. Neither of these conditions can be fulfilled by the preference ranking technique used by Menchik. In addition, the reliance upon unstructured verbal responses will mean that results reflect the power of the group to achieve its aspirations and will tell us very little about the way they arrive at an

evaluation. As a policy guide, this approach would appear to tell us little that was not already known.

Cognitive Studies

Yet another definable group of studies are those that have sought to define visual images of the city. Reiser has divided these into two groups: first, those which have focussed on the relationship between urban images and the built environment, which he calls design oriented and secondly those studies which have concentrated on the relationship between the image and groups of people of definable cultural backgrounds, called socially oriented.³⁷ The design approach has sought to measure the effects of changes in the built environment upon the normative image, while the social approach has analysed group composition differences in image but has so far failed to explain the variation in preferences. The scale of the studies has obviously had a strong influence on the sample size, varying from sample frames covering the whole city to local areas studies that only refer to people who have experience of that area.

Lynch's study of the central city is perhaps the best known.³⁸ His approach was strongly design oriented, his aim being to isolate those components of the city that are noticed by most people. The respondents were chosen for their articulateness and the results can be seen to reflect their values. Other studies of these elite groups have identified the components

of city structure as paths, nodes, edges, districts and landmarks.³⁹ Work by Heinmeyer and Klein has indicated significant variations in image, correlated with age, sex, social status and usage of the environment but in the light of recent arguments concerning the social and resource allocation implications of the use of space, it is unlikely that this type of design approach will tell us anything new.⁴⁰ This is supported by Orleans study of Los Angeles.⁴¹ This indicated that usage of an environment had a dominant control upon the image but where this was not so, that cultural differences came into play. At the city-wide level, such studies merely tend to reflect the existing social structure and tell us little about the processes involved. It is only at the local level that they appear to have significant implications for planning.

The Community Attitudes Survey was the first large scale attempt to assess peoples concepts of community for administrative purposes.⁴² From a total of 2,000 interviews, 78% of respondents considered they had a home area of some kind, although the properties varied with socio-economic status, education, length of residence and the size of the urban area. The size of the perceived area was also closely related to these variables. It is difficult to assess the significance of these findings in a specific context, since the national sample meant that there was only a very small sample from each city. To see what influence a larger and more discrete sample would have, Hampton adapted the questionnaire used by the Community

Attitudes Survey and applied it to a group of people in Sheffield. In this case 85% of the sample perceived some home area but this varied so greatly with length of residence that it is probable that his sample were using more than one meaning of home area. One possible reason may be the heterogeneity of the samples which these studies were using, yet an attempt by Lee to isolate a stratified sample of women between the ages of 19-45 concluded that there was no consensus on neighbourhood concepts.⁴⁴ In subsequent studies Lee has proposed the concept of the individual 'socio-spatial schema' as a structure for spatial images. The problem is that the variable names are unknown in these highly unstructured survey situations. This was emphasised by Wilmott's study, which found a considerable degree of consensus on boundaries but no relationship to age, sex, or any of the other common explanatory variables.⁴⁶ Reiser postulates that the density of the respective urban areas may have been the controlling factor, which makes the temporal areas more explicit.⁴⁷

Studies by Ross and Firey in Boston have indicated the varied cultural conceptions of their area: the affluent residents of Beacon Hill emphasising the historical significance of their area and tending to use this background as a label for the area,⁴⁸ while the poorer East Siders had no dominant space concept and referred to their area by the respective street name, rather than by an area label.⁴⁹ This appears to reflect Pahl's comment that better educated groups tend to make active use

of space while lower income groups tend to be trapped by it.⁵⁰ Ladd has also indicated the divergence of image that can be created between varied ethnic groups within the city.⁵¹

Another group of works have attempted to isolate attributes which stand out in peoples perceptions of journeys.⁵² Appleyard has compared a number of studies that have attempted to isolate imageable factors along the roadside but as with the city centre studies, these have all tended to use biased samples representing the images of elitist groups and failing to control for knowledge of the area.

In general, studies of urban images have had a diversity of aims and techniques that has made it hard to draw general conclusions. It is clear that the image is a culturally controlled concept but most studies have generally failed to isolate the influences of cross-cultural comparisons or to isolate viable administrative areas based on these concepts. They have all agreed upon one point and that is the relationship between neighbourhood and the individuals degree of interaction with the environment. The next group of studies have all attempted to measure behavior and relate this to some attitudinal assessment.

Activity Patterns and Attitude

The measurement of behavior is not altogether straightforward for there a variety of levels of complexity that can be

assumed. There are those that seek to isolate specific journeys to shops or to work and to measure the relevant influences upon attitudes to this.⁵³ Others have attempted to separate out all journeys to shops, schools, relatives and so on and to measure behavior in these terms.⁵⁴ Most complex of all, there are the time-budget studies, which examine individuals allocations of time for varied activities in the context of their entire activity patterns rather than as specific components of behavior.⁵⁵ Each of these approaches has specific problems that I will discuss separately.

To illustrate the first type of study I shall use the example of shopping, since this exhibits all the basic problems of behavioral measurement. It is first essential to specify which type of shopping the study is interested in. Evidence indicates that patterns of shopping behavior vary between goods and between income groups.⁵⁶ It is quite possible that responses may conceal this type of difference in a sample group. In addition, there will always be the multi-purpose journey which will not fall easily into any of the categories devised. This problem will be compounded by the more general activity analyses: these have adopted what Ellis has called a 'community Linkage' approach that have adopted the view that reaction to the environment will be controlled by knowledge of it.⁵⁷ This means that peoples conception of their area is built up from the pattern of discrete journeys to facilities in the vicinity which they visit. Most studies of this type have dodged the problem of group definition by assumming the community to be the group which is impacted by the scheme.

Within this group definition, residential linkages are defined as "contacts between the home site of the house hold and other spatially distinct points which are of importance to the individual involved."⁵⁸ As a measure of behavior, it is clear that frequency alone provides an inadequate proxy for environmental measurement and that distance, time and other factors are bound to intrude.

The final study type that I wish to mention is the time-budget approach. Rather than concentrate upon specific journeys within an environment, the time-budget examines the behavior of the individual as a continuous series of events and attempts to point to ways in which the environment structures and constrains this behavior.⁵⁹ Individuals are asked to recall their sequence of activities extending back over two or three days: it is not possible to recall details accurately over a longer period for as the scale increases, the selectivity of memory comes increasingly into play. Most statements of the time-budget methodology have adopted the theory of consumer behavior as a starting point, assuming that individuals do seek to maximise their utility in a given situation. Yet despite developments in consumption theory to include valuations of time, it remains impossible to test empirically the utility ratings of all the individual activities or sequences of activities performed by an individual.⁶⁰ It appears much more probable that peoples consumption of time and space is fixed and routineised and that little choice is possible in most activity structures.⁶¹ The advantage of

this approach is that it measures behavior as a continual sequence of related episodes and therefore includes any inter-dependencies that are present. Its major disadvantage must be this general purposeness, with no guarantee of activity comparability between people and also its cost in terms of cash and time. So far I have only discussed the measures of behavior that have been used. The problem remains one of introducing a normative element into behavioral studies without attempting a preference ranking and without assuming utility maximisation. Obviously a simple descriptive study of behavior is a very poor guide to likes and dislikes. It can only succeed in measuring the existing distribution of resources and can give little clue to responses to this.

One way to intergrate attitudinal assessment with the behavioral data is to apply a 'weighting' procedure. A variety of techniques have been developed, not all of which have seen the limitations of preference ranking procedures. Ellis defines two ways in which his system of community linkages can be weighted: the first is by some measure of individual satisfaction, which he does not persue but which I have discussed in the next chapter. The second is by aggregating the linkages of all individuals in the defined community for origins and destinations by zones, to define the most frequent and therefore the most important journeys overall. If some development scheme has been proposed, the influence of this on the community in terms of linkages terminated and initiated

can be calculated and from this some net change in the communication costs can be calculated.⁶² He then points out that although most people will use shops more often than the church, this does not imply some preference ranking on their part. This community weighting procedure therefore suffers from the same disadvantages as Menchik's study.⁶³ Yet a large number of studies have assumed that the amalgamation of scales by frequency of response will give an implicit ordering of preferences or importance, particularly studies by the Ministry of Housing and Local Government and subsequently by the Department of the Environment.⁶⁴ This use of the 'unanimity rule' has been encouraged by its simplicity and cheapness but it remains theoretically unsound for the purposes of isolating environmental criteria.

Research has therefore been forced to seek for individuals weightings of specific factors. This has been done in two ways and can be characterised as indirect and direct methods. The first assumes that some of the elements of an individuals environment will be explicitly stressful to him and that this can be correlated with specific environmental attributes. Psychological theory has generally assumed that stressful elements in the environment are translated by some perceptual mechanism, which we can call the socio-spatial schema, before stress symptoms are generated.⁶⁵ Most of the analyses done have tested some unambiguous factors such as noise or sleep deprivation, since these are things that can be controlled in an experimental situation. In a field study, this type of

approach can only really be used in conjunction with a full time-budget study, since the stressor may be a highly complex time related event. This means that the full study will be both time consuming and expensive, two reasons why little use has been made of this approach to date. The second way to define individuals weightings, the direct approach, simply involves asking the person questions in some form, rather than assuming that a psychologist can interpret stressful behavior accurately. I have postponed discussion of this approach and its problems until the chapter on my questionnaire and the logic behind its construction.

Summary

At this point it seems essential to summarise the ground that has been covered in the last two chapters. Chapter three illustrated that although housing policy inevitably involved redistributive issues, it was necessary to be able to identify and quantify a far wider range of issues than were considered by economic theory or the workings of the market. This led in chapter four to the search for a technique which could accomplish this. The works reviewed here that have adopted a cash evaluation all indicate the problems of expressing opportunity costs when related to non-quantifiable factors. They have also illustrated how a simple weighting or ranking procedure is not logical for a community, a trade-off function being required. The inadequacies of economic studies for the evaluation of

residential environments led on to the search for other, psychological approaches to the understanding of the relationship between human attitudes and behavior.⁶⁶ It is this approach which I have pursued and which is developed in the next chapter. I do not wish to imply that the search for cash evaluations of environmental factors is a forlorn exercise, simply that no one approach is going to provide all the answers and that there is room for the tandem development of a system of social indicators which could measure the attainment of goals in terms other than money.

CHAPTER FIVE: A SOCIAL ACCOUNTING FRAMEWORK - SATISFACTION
AS AN URBAN INDICATOR

This chapter provides a link between the theoretical and empirical approaches outlined already and the survey which is reported here. Kirwan has postulated the need for environmental evaluation as the key to private investment in improvement.¹ This has in turn led to the cash evaluations of these non-quantified attributes, so as to make a rational decision over the distribution of resources. However, the discussion in the last chapter noted the limitations of this approach: because so many of the significant factors related to house improvement are external to the economic process and because economic studies have only achieved partial equilibrium models of the market, there has been an attempt to draw these non-quantifiable factors into some general evaluative framework. There have been a large number of these techniques, many reviewed elsewhere.² I therefore wish to mention only two, Lichfields planning balance sheet and Hills goals achievement matrix.^{3 4}

Lichfields approach groups the community into various homogeneous sectors distinguished by the type of operations they wish to perform. It then measures the advantages and disadvantages to each sector to measure the total net benefit. Some of these benefits and costs are likely to be in cash terms, some in units of time and some essentially non-quantifiable.⁵ It is this aspect of the balance sheet that has been critic-

ised by Hill, for a number of varied objectives will be included within the evaluation. Costs and benefits can only have meaning when related to the same objective and this condition is not satisfied within the balance sheet. Lichfields addition of all costs violates this requirement and would only be valid if it were possible to specify some form of social welfare function.

Hills method is less ambitious, in that it does not attempt an overall measure of the increase in welfare but only seeks the best way to satisfy a given objective. However, the results can no longer be used to represent opportunity costs and one is no longer in a situation where it can be assumed that the market will be correctly distributing resources. To correct this deficiency Hill has suggested the use of community weights, similar to those proposed by Ellis; We have, however, already seen that it is not possible to add individuals rankings to produce a rational community ranking.⁶ As they stand therefore, these evaluative frameworks have deficiencies which it is as well to be aware of.

Whether the objective be financial or otherwise, it appears impossible to relate all the facets of decisions to one simple objective. This has usually led to the adoption of a number of strategies for facility location which either bow to short term political pressures or consider only the simple financial aspects of plans. Murphy and Seley identify a minimum physical cost approach and a political placation

model.⁷ The first approach involves a full retreat from environmental measurement, while the second simply gives concessions to the groups in the city with most power. This is made manifest by the fact that facility location within the city has significant spatial variations, the costs and benefits of which are generally external to the economic process. Therefore the control of resources within the city is measured by control of these externalities. The result of this, as Baumol indicates, is that efforts at environmental improvement often cost those least willing or able to afford the burden and therefore weight the resource distribution against those in most need.⁸

The only way to avoid the continued mal-distribution of resources is to suggest some other value system that can be assumed to have a unanimous interpretation. This has so far not been developed but the influence of goal related evaluation has led to the development of the planning-programming-budgeting system within government.⁹ This can best be conceived as operations analysis applied to a wider range of factors. It involves the scrutiny of the budgets of entire departments and their reorganisation in terms of specific goals, rather than in terms of the inputs to the department. Yet this too has been criticised on the grounds that its practitioners tend to focus on the variables that are most easily measured and tend to neglect many of the broader considerations.¹⁰ Most of the goal measurement is defined in economic terms anyway, which excludes large numbers of factors from the start. One way to approach a broader valuation system is through the

development of a system of social indicators to complement the system of economic indicators already in use.

The Role of Social Indicators

To avoid the cardinal utility problem the development of a system of social indicators related to limited objectives had been suggested as an improved measure of policy performance.¹¹ The need for goal orientated measures is usually emphasised by highlighting the inadequacy of aggregate statistics such as gross national product as indicators of the quality of life.¹² The social indicator should therefore seek to express results rather than costs and express more definitive concepts than economic measures such as GNP or consumption per head.¹³ In this way it may be possible to develop a social accounting framework that can intergrate the work of economist and psychologist. The concept of social indicators grew from examinations of the external economies of the space programme, what Bauer calls 'second order consequences'.¹⁴ This has extended to the development of a model of social systems accounting which attempts to express concepts in broader social terms.¹⁵ An example of this type of measure can be taken from the field of education, where Schonfield notes that for a long time the numbers of students at school was taken as an adequate indicator of performance: this is not accepted now, since it gives no notion of the quality of the education given.¹⁶ In the housing field, the concentration upon the numbers of

grants approved for improvements provides a very inadequate indicator of environmental quality.¹⁷ Any system of social indicators will fall into two distinct but related parts: system structure and system performance. The elements of system structure will deal with the internal relations among the system parts, the elements of system performance with the acquiring of inputs and their transformation into outputs.¹⁸ Social systems accounting therefore draws heavily upon the work in partial systems modelling and attempts to draw the diverse variables together into a general systems framework.¹⁹ To date, the adaptation of cybernetic theories from the pure sciences has been made with too little adaptation to the soft data that are part of complex social structures. In addition, early proponents of social indicators tended to make exaggerated claims for the system. It is now agreed that no aggregate indicator at the national level is feasible and that social accounting is essentially a disaggregate process.²⁰ This raises another problem, for if the social indicator cannot be related to some form of welfare function, then the indicators proposed will all relate to different objectives and little advance will have been made on the model proposed by Hill.²¹ In addition, it is not clear from most of the works on indicators, how the model could be applied to an urban system. Nevertheless, it would seem possible to devise a system of indicators at the city level, to tell us how the system is doing and to relate this to one single objective.

Satisfaction as an Urban Indicator

The city exists to serve human needs and therefore the question of satisfaction is crucial to the planner. Satisfaction will be related to the individuals perception of himself and his status relative to others. It seems likely that many of the cities problems stem from the frustration of desires for status and self-expression of individuals and groups. A set of indicators that could focus on the frequency and intensity of satisfaction or dissatisfaction and be related to objective data would therefore be most effective.²² Satisfaction will be a measure of the output from a given input of resources, which might include talent, skill and energy. I am therefore postulating that indicators based on these psychological outputs will give some measure of goal achievement. This is defended on two grounds: Firstly, that consumer satisfaction is the aim, or at least one aim, of any design process and therefore a major systemic output from the city. Secondly because the indirect methods of assessment in terms of choice are not wholly satisfactory and perhaps never can be. Before going on to examine the value of this approach it may be as well to examine the theoretical justifications for it.

Each individual is conceived as striving for certain goals, some of which may be explicit, others implicit. The goal is a function of that persons position in society and his ability to transcend this through personal factors. Catell has

proposed a list of nine attributes which will vary the goals that individuals seek.²³ They have also been used to categorise individuals:

1. Morphological traits e.g. height
2. Physiological traits e.g. heart beat
3. Aptitudes
4. Skills and Achievements
5. Drives
6. Interests
7. Values
8. Attitudes
9. Traits of temperament.

To achieve his goal, the individual will find certain pathways open to him and others blocked. His final choice of strategy will be a function of the amount of information he has, the way he perceives different aspects of the problem and the perceived probability of success of each option.²⁴ In this way, the blockages he perceives will be uniquely his own and cannot be interpreted by elitist professional groups. At the same time, the individual is in a state of incomplete knowledge and his levels of satisfaction may not isolate the most important aspects of the situation; Now, it is possible to assume that reported dissatisfactions are not always aimed at the true cause of the problem. Generally, a complaint can only be accepted as a symptom which needs relating to an objective cause. In the housing field, there are many instances of people isolating one attribute for complaint when their dissatisfaction is a function of many small problems: the converse is also true, one major dissatisfaction distorting all other attitudes to an area.²⁵ The measure of satisfaction to be adopted is closely related to the way the objective data is collected, as we saw with refer-

ence to time-budget studies. Unstructured expressions of frustration can only be caught by such a comprehensive measure of behavior. Yet for planning purposes it would seem more immediately relevant to gather data on issues that fall within its aegis and to assess attitudes to these specific items. What is meant by satisfaction is obviously crucial to such a study: most of the work done has adopted definitions like 'I am satisfied' or 'I am happy with' and assumed that it has a common meaning.²⁶ There will obviously be more than one satisfaction for any one person: Most people will have a hierarchy of such concepts, culminating with a broad conception of satisfaction with life. It would be nice to know what this concept meant but it obviously has a colossal number of variables within it and few will be directly of concern to the planner. These can be conceived of as a pyramid of motives, ranging from the survival instinct at the base to concepts of self-expression at the apex.²⁷ As the basic needs are sated, the higher needs will take command and force people to seek new goals. This means that satisfaction is a function of relative deprivation rather than absolute deprivation, since an individual's expectations will be determined by his own past achievements and by the attainments of reference groups, which he uses as a yardstick. This has obvious implications for attitudes to inner city areas, the level of dissatisfaction being related to whether they use their neighbours as a reference group, or other areas of the city. At a more specific level it has important implications for understanding what factors give incentives to individuals

and what holds them back, in relation to investment in housing. In this way it will be possible for government to have information on the impact of development upon levels of satisfaction and the resource distribution issue. Stagner has called this a psychological balance sheet, which can define assets and liabilities for satisfaction in a given situation.²⁸

The use of such a balance sheet loses the disciplining effect of market constrained analysis and there are therefore problems with measurement techniques. In the previous chapter I made the distinction between direct and indirect methods of measurement and noted that I intended to use the direct approach. To adopt this approach means that an interview situation is unavoidable and as a great deal of research has shown, this can be a highly uncontrolled situation. There is the problem of what to include in the survey, whether the questions should be structured or unstructured and the media of presentation. One possible approach would be to ask respondents to comment on the things which they were satisfied or dissatisfied with and to relate this to objective criteria. There are a number of problems with this approach: principally, there will be no guarantees that the factors they remember will be the principal ones. Conversely, the structured approach is likely to artificially create an attitude to something that the respondent has not explicitly considered before.

There still remains the problem of what should be measured! As the last chapter illustrated, empirical studies have gener-

ally failed to isolate a conclusive list of attributes and it therefore seems justified to adopt a normative framework of factors, as suggested in the index methods noted earlier.²⁹ One of the recent studies to adopt this approach was done by Troy in Sydney and Melbourne and sought to relate satisfaction levels to four components of the environment.³⁰ These he defined as an assessment of the grounds and dwelling, physical factors such as noise and traffic, convenience to local amenities and the social environment of friends and neighbours. These were specified as the independent variables of a regression equation, to see which component had the most influence over total satisfaction and to assess the percentage of explained variance. The equation was of the form:

$$Q = f(\text{Dwelling} + \text{Physical} + \text{Convenience} + \text{Social})$$
³¹

These distinctions are normative ones but they provide a logical breakdown of residential environments and provide a starting place for analysis. Of the four, convenience emerged as one of the most important variables but because of the type of question asked it is not possible to identify which components of convenience are most significant. The eight factors which Troy used referred to journeys to shops, work, school, public transport, church, friends and relatives, pubs, clubs and out-door recreation.³² Overall, these journeys explained 66% of the total variance in overall convenience but because of the lack of any objective data the results could not be more specific. The activities which people performed were grouped by factor analysis into a family activity measure, related to convenience to shops,

schools and public transport and a social activity measure related to contacts with friends and relatives, pubs and outdoor recreation. It appeared that when regressed, these two components had roughly equal influence over the location decision and indicated that life style was a better measure. None of the respondents were able to specify what they liked about their new houses: in addition, this study included a measure of the elitist viewpoint by asking a group of students to rate the environments surveyed. It is interesting to note that there was considerable divergence between the two sets of values. The students scored most of the factors higher than the residents and their R^2 reached 0.69, while that of the residents reached only 0.34. This was attributed to the cognitive training of the students, which led them to assess the area in design terms while being unaware of the social networks within the area.

33

This type of study has a number of limitations. Firstly, it fails to relate the satisfaction measure to any objective factor and it is therefore hard to draw conclusions of relevance to the planner. Secondly, there are a variety of measurement scales involved here: some of the questions, like the one relating to house costs are easily assessed by the respondent on an interval scale; others, like degrees of privacy can only be measured in ordinal or nominal terms. In other words, it is impossible to derive a measure of privacy objectively, that can be compared with the response given by an individual, at the present time. Therefore,

even were it possible to compare perceived and objective scores for the various components, it would be impossible to decide which score was the most accurate. One other problem is that studies of this type have generally assumed that all the factors are lineally related when in fact they may be curvilinear in form. However, in this instance the coefficients were significant enough to indicate that perhaps they were lineally related.

Any evaluation of this type is bound to meet this problem of differential scales of measurement: but whatever scale is relevant, the indicator envisaged must measure three things:

1. The objective measure of an attribute
2. The perceived measure of the attribute
3. Satisfaction with that attribute.

The relationship of these will be of the form seen in the diagram on the next page: ideally, it should be possible to obtain a series of equations which would link the external variables with overall satisfaction, each satisfier with its external variable and the external and perceived variables together. As far as I know, no study has attempted such an ambitious project and must have concentrated on one component of the environment, usually the dwelling. There are a number of problems with this: firstly, although it would be possible for me to collect data on the internal specifications of houses, there would be no way to verify any statements about frequency of use of rooms, use of gardens and other things, that would not involve me in a massive ammount of work. Secondly, questions of house quality appraisal require a

considerable degree of experience to assess accurately and therefore my objective measures would be suspect. The only area where it is relatively easy to derive an objective measure of behavior, as well as perceived responses, is in the area of convenience. In addition, my interest throughout has been on those aspects of the environment external to the house. The concentration upon convenience factors is made easy because all activities are external to the house and because of the theoretical work that has been carried out into concepts of accessibility; throughout this section and the last two chapters I have used the terms convenience and accessibility synonymously, except that convenience is the perceived component while accessibility is the objective measure. If this type of study is to be useful in a practical sense, it has to be done in conjunction with studies of the house and the physical environment, since objectively these may be the areas in need of most attention. It is not always the most useful approach to exclude areas of study because they have certain difficulties, as I have done here but I feel that within the time and resource constraints imposed by a two year study, it was a justifiable attitude. Given greater resources it would be interesting to test the model of satisfaction on diverse groups, over the full range of criteria, possibly going on to examine the relationship between levels of household satisfaction and investment in the house. In this way it might be possible to build a model of investment characteristics to guide action in improvement areas. Despite the limitation of this study to aspects of

convenience I believe that it has value without the other aspects of the environment, simply because micro-environmental studies of convenience are rare, in a field which has otherwise been ploughed thoroughly.

Concepts of Convenience

Many of the components on which intra-urban travel decisions are made have been studied in great depth; for example, costs and times by different modes of travel and the relative attractiveness of different destinations. But in most cases the spatial dimensions of these studies have been stated in actual distances, or travel cost or time.³⁴ Whitbread has called the accessibility factor a 'sectoral objective' of a plan evaluation process, with particular relevance to the journey to work.³⁵ The trip will, by his definition, have two components: one will be the actual journey and will under normal circumstances be a cost. The second component will be the trip end benefits, which will vary according to the land use activity. A resident will therefore be better off with a plan which gives him the greatest differential between trip end benefits and the travel costs; this benefit he refers to as the 'net accessibility benefit'.³⁶ It is obvious that this definition of accessibility is inadequate for an analysis of environmental quality, for it measures only one of many dimensions and one not strictly related to the local environment. There is evidence to suggest that a husbands and wives evaluations of their local area will vary greatly and I believe

that the wives responses will be more valid than the husbands, since she is the chief user of the local environment. The husbands evaluation will be dominated by his journey to work and activities outside the home area.³⁷ What is required is a measure of intergral accessibility, or the accessibility of a given point with all other points on the same surface.³⁸ This is usually described as an additive function of individual relative accessibilities.

The distance between two points is often taken as a measure of accessibility because a number of studies have indicated the correlations between this and travel time and costs.³⁹ The simplest surrogate of accessibility is the straight line distance between two points, for this will maintain the rank order of distances with certain street patterns, particularly rectangular ones, although there can be distortions in certain areas. Where these distortions occur and where one way streets are found in large numbers, rectangular distance is often assumed.⁴⁰ Ingram found a 0.99 correlation between these two measures in his study of Hamilton.⁴¹ However, both these measures assume a linear relationship between distance and accessibility which is not supported by empirical evidence. Under the linear assumption, satisfaction with convenience will begin to decline immediately from the point x,y, yet there is a definable zone around the dwelling in which distance apparently plays little part: conversely, we know from casual observation that accessibility does not continue to decline irrespective of distance. There is a distance over

which people will not travel and whose accessibility is therefore zero. To account for this a number of functions have been suggested as better representing the decline in accessibility with distance.⁴² These curvilinear functions will all contain error factors of some kind, since it is an oversimplification to equate accessibility with distance alone. The factors of time, cost and mode obviously play an important part in the estimation of distance. Empirical studies have indicated a variety of distorting effects on people's perceptions of distance. These are:

1. Physical Effort - while walking, the effort of climbing a hill tends to stretch distance concepts.
2. Visual Clues - when travelling in a vehicle apparent speed can be confused with distance traversed e.g. in a tunnel speed appears to increase while on a plain little movement is discernible.⁴³
3. Motive for travel and attitudes towards journey - if the task is enjoyed the journey may seem shorter; the converse is also true.
4. Knowledge of actual distances - if the respondent has studied a map his responses are likely to be more accurate than otherwise e.g. the elitist group studied by Troy.
5. Memory of journeys - experience of previous journeys is likely to affect distance estimates for the respondent is likely to assume that circumstances will be approximately the same as before.

From this it would appear that distance is not a concept which people carry in their heads but interpret in terms of time and speed. The only really successful measurement technique used by Lowrey, involves the ratio-estimation of distance against a series of other distance estimates and this is a highly involved process that can prove too exhausting for some respondents.⁴⁴ On the other hand, there is considerable evidence that humans do have the physiological ability to measure time.⁴⁵ Many of the factors that applied to distance

also apply to time; for instance, the extra effort of climbing a hill will also have a time element. There is also evidence that time passes quicker if filled with an enjoyed activity and that it will be recalled as such.⁴⁶

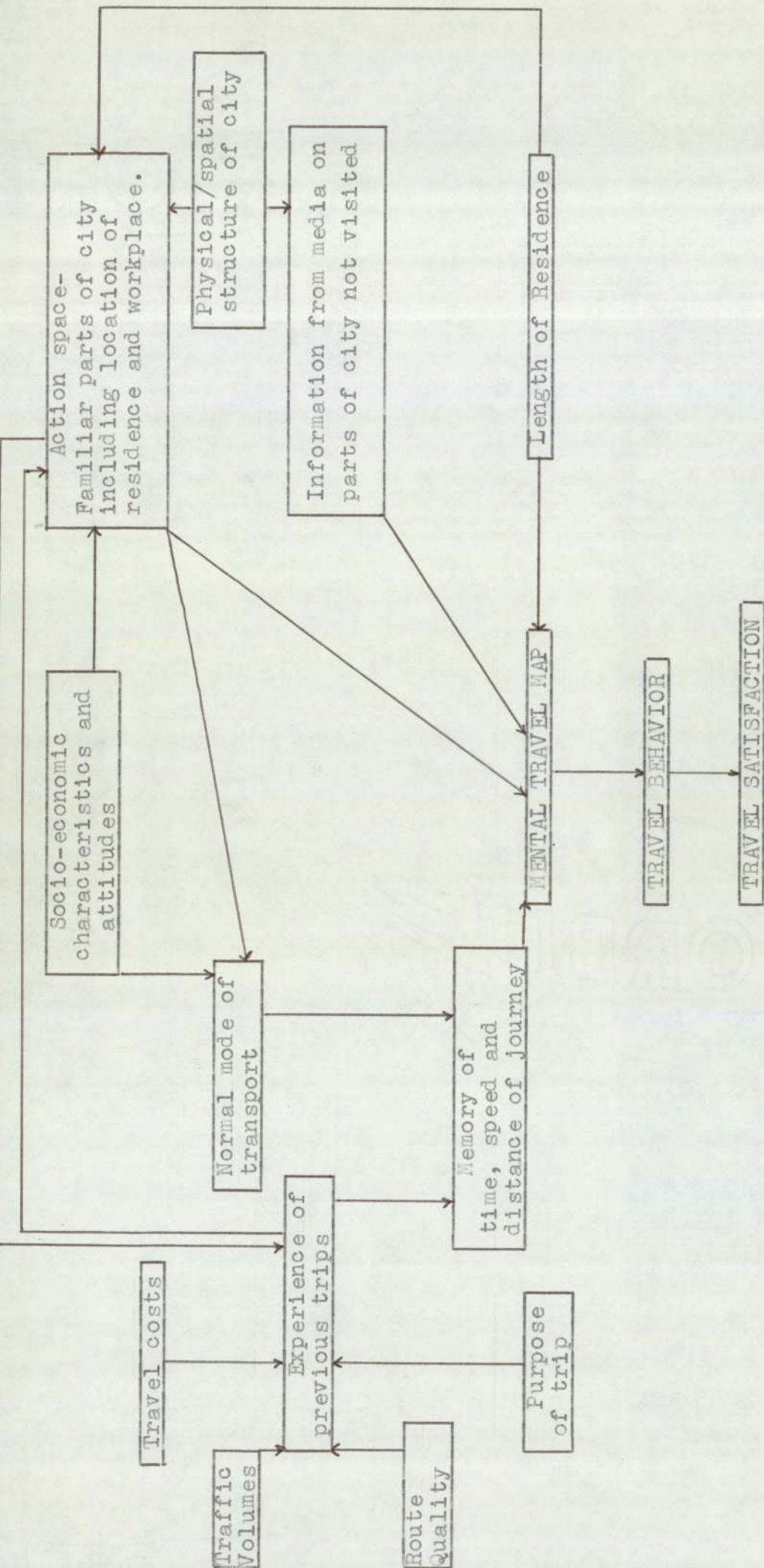
Location will also play a significant part in an individuals assessment of accessibility since it will control the list of available amenities. Length of residence will effect experience of journeys, which will have an influence on empirical estimates and therefore on satisfaction levels.⁴⁷

This learning process is likely to be swift initially, tailing off rapidly as knowledge proves adequate for daily routine.

Mode of transport will influence the concepts already mentioned but will also influence satisfaction in its own right, since most people dislike certain modes, the underground for example. This like or dislike will tend to be structured by the socio-cultural group to which the individual belongs.⁴⁸

The purpose of the journey will also distort distance and time concepts, as both Buckman and Lee have indicated.⁴⁹ ⁵⁰ This work has produced concepts like Brennans Law, which states that distance from the city centre will be overestimated while distances into the city centre will tend to be underestimated.⁵¹

Costs will provide a constraint upon the individual which will influence the frequency of trips completed and therefore the perceived estimates of distance. Studies by Kain and Quarmby have indicated the fact that car drivers, in particular, do



CONCEPTUAL MODEL OF INDIVIDUALS CONVENIENCE STRUCTURE

not perceive the full costs of travel, which will have an influence on their travel patterns and therefore on their levels of satisfaction. 51 52

All these factors will impinge upon the residents measure of accessibility and his concept of convenience. The relationship of all the factors mentioned is illustrated in the diagram opposite: in a sense these are all related to the construction of a mental map of the local area within the respondents head, in which case satisfaction and future behavior patterns are outputs from this conception and at the same time feedbacks into the experience of the journey.

From the framework established in this chapter, the next chapter derives a series of working hypotheses and attempts to relate individuals levels of satisfaction with perceived and objective measures of the local environment, in an attempt to isolate the most significant controls.

PART THREE

CHAPTER SIX: RESEARCH DESIGN AND POPULATION STUDIED

This chapter describes the design of the research and the characteristics of the people who took part: it is divided into three parts. The first examines the questions to be asked, the second looks at the sample group and their characteristics and the third and final section describes the advantages and disadvantages of the research design adopted.

Specific Hypotheses and the Interview Situation

As the last chapter noted, I wish to concentrate on the components of convenience, as important determinants of attitude to the residential environment. I have attempted to do this by relating perceived levels of convenience with objective measures of environmental stimuli. From these comparisons it will be possible to indicate the likely changes in levels of convenience due to planning action and conversely, those changes most likely to increase residents conceptions of convenience with an area and therefore their propensity to invest in the house. This has been done by postulating a series of working hypotheses relating to concepts of convenience, which have been divided into three groups:

1. Those factors relating to overall convenience
2. Those factors influencing specific convenience levels to amenities.
3. Inter-personal and institutional constraints.

Factors Relating to Overall Convenience

I have chosen to follow Ellis's approach to community linkages and have hypothesised that overall convenience with an area can be explained in terms of the housewives regular journeys, rather than the sum total of all journeys.¹

The proponents of the time-budget approach would argue that people do not perceive overall convenience in such structured terms, rather that convenience estimates are based on a dynamic continuum of activities.² However, it can be argued as I have done, that certain of these routineised activities have greater influence over convenience than others and that concentration upon these is possibly of more value to the planner. By regular, I mean all those activities which are repeated, at whatever time interval. This raises problems since the activities of individuals will not all be identical, which means that there are two effective choices. First to let the individual choose from a list of activities the ones performed regularly but this structured approach has a number of deficiencies. In some instances it may create responses to things of no significance but since the survey will also include a behavioral measure, this problem is not likely to arise. The second and more difficult problem is that by the presentation of a list of activities, the respondent may not perceive that activities important to her are missing. The best way to present the information is to combine the structured and unstructured approaches. The second presentation mode, the unstructures approach, involves asking the respondent to

list those activities which she performs. This does not face the problem of creating responses but may, as we have already seen, mean that in an interview situation people forget a large number of marginal activities that might have been revealed by a structured approach. In the event I opted for a combination of these two approaches and based on previous studies of activity patterns I included the following list of activities in the check-list and hypothesised that overall convenience could be explained in terms of individual convenience levels to these varied activities.³

1. Shops
2. Schools (accompanying young children)
3. Pubs
4. Clubs
5. Park
6. City Centre
7. Bus Stop
8. Church
9. Cinema
10. Relatives
11. Friends
12. Neighbours

The journey to work was deliberately excluded because I wished to focus on the housewives concept of the area.

This was done for three reasons. Firstly, because she spends more time in the area and is the user of the local environment, so that her journeys will radiate from the house. Secondly, from the practical viewpoint, it meant that interviews could be done throughout the day for the bulk of the sample and could therefore be done that much quicker. Finally because the husbands role as provider outside the local environment gives him a distorted and incomplete picture of conditions in the area, I felt that the wifes activities were of more interest. Nevertheless,

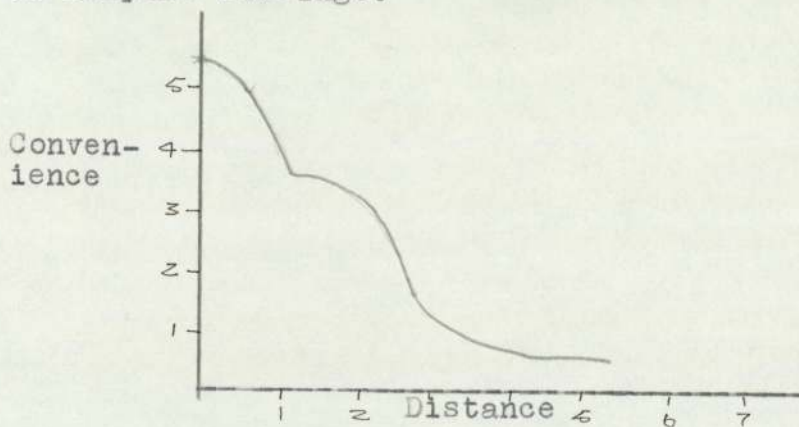
it was likely that some of the wives in the sample would work and that this would influence their convenience structure. Therefore an open question was included at the end of the check-list to catch responses of this type.

As I have already indicated, the level of provision between areas can vary greatly, as can the use made of facilities by different social groups. It would be nice to compare cross-cultural comparisons but in the first instance it is more important to control for as many factors as can be achieved. I have therefore hypothesised that overall convenience will be influenced by individual activity patterns: as I shall note later in this chapter, it is necessary to subject these individual activity patterns to change of some kind to verify cross-sectional observations.

Convenience to Specific Amenities

The second group of hypotheses relate to specific amenities which influence individual convenience levels. Based on the work into measures of accessibility, it is clear that other factors than distance influence concepts of convenience. It is therefore hypothesised that distance, time, cost, mode, frequency and importance will all have an influence on convenience levels. It is further hypothesised that the form of the relationship between convenience and distance, time and cost will be inverse. Lowrey's work has indicated that the relationship will be inverse and linear

and it is hoped that the survey should test this.³ Based on a priori reasoning it would seem likely that a respondents level of convenience related to distance would decrease curvilinearly over distances that were walkable, would hit a break-point beyond which people would not be prepared to walk and might actually increase as they began to use other transport modes. Finally that convenience would decrease with distance again, up to a point where distances were so great that they had no influence on convenience. The precise form of this relationship can be seen below: whether distance is perceived in this way is unproven, largely due to the problems of eliciting responses from people. It does, however, provide a conceptual representation against which to compare findings.



POSTULATED RELATIONSHIP BETWEEN DISTANCE AND CONVENIENCE

Importance was included as a weighting device for some of the amenities since previous studies had indicated what a significant component this could be. From this prior research it is clear that simple measures of the frequency of use of amenities prove inadequate indicators of the convenience of

an area.⁴ Although it is likely that shops will be used more often than the church, it does not imply a simple ranking of importance to the individual: it was therefore felt to be a significant question. However, the pilot survey indicated that for many amenities the question of importance was a meaningless one. This was particularly true with reference to the routineised activities like visits to shops and schools. For this reason, importance was not asked for all amenities.

Frequency of journeys appeared to be an important variable but it was not clear how it would relate to convenience. It seemed likely that a high frequency of trips would imply either a high level of convenience or an activity which was essential to the respondent; it was adopted as a working hypothesis that convenience would increase as the frequency of journeys increased.

Finally, time, cost and mode all play a part in the perception of convenience. It appeared logical to hypothesise that convenience would decrease as time and cost increased but since most of the activities on the list would be within walking distance, it was not clear to what extent other modes of transport would be used and it was therefore difficult to assess its influence.

In addition to all these individual factors, I wished to get some idea of the degree of explanation provided by all of the factors together and so defined them as independent variables of a regression equation, with convenience as the dependent variable. The results of such an analysis have to

be viewed with certain reservations since the regression of variables using different scales is not strictly valid; however, with this reservation in mind I felt the exercise would be of value.

Inter-personal and Institutional Differences

Besides these purely locational factors, there will be a group of factors related to the specific context of the survey and the character of the people sampled. Although previous research has indicated that socio-cultural factors will not provide the dominant controls upon convenience levels, they will influence them in some ways. Thus, it was considered necessary to gather data on the respondents age, family size and so on, since this was likely to affect circumstances and attitudes. With reference to the selection processes operated by some councils, it is clear that a sample of public housing occupants will be influenced by these institutional constraints. For a variety of reasons which I discuss later in this chapter, I have in fact used a sample of people in councilhousing and these selection characteristics therefore have an influence upon results. To summarise, the hypotheses developed were:

Factors Related to Overall Convenience

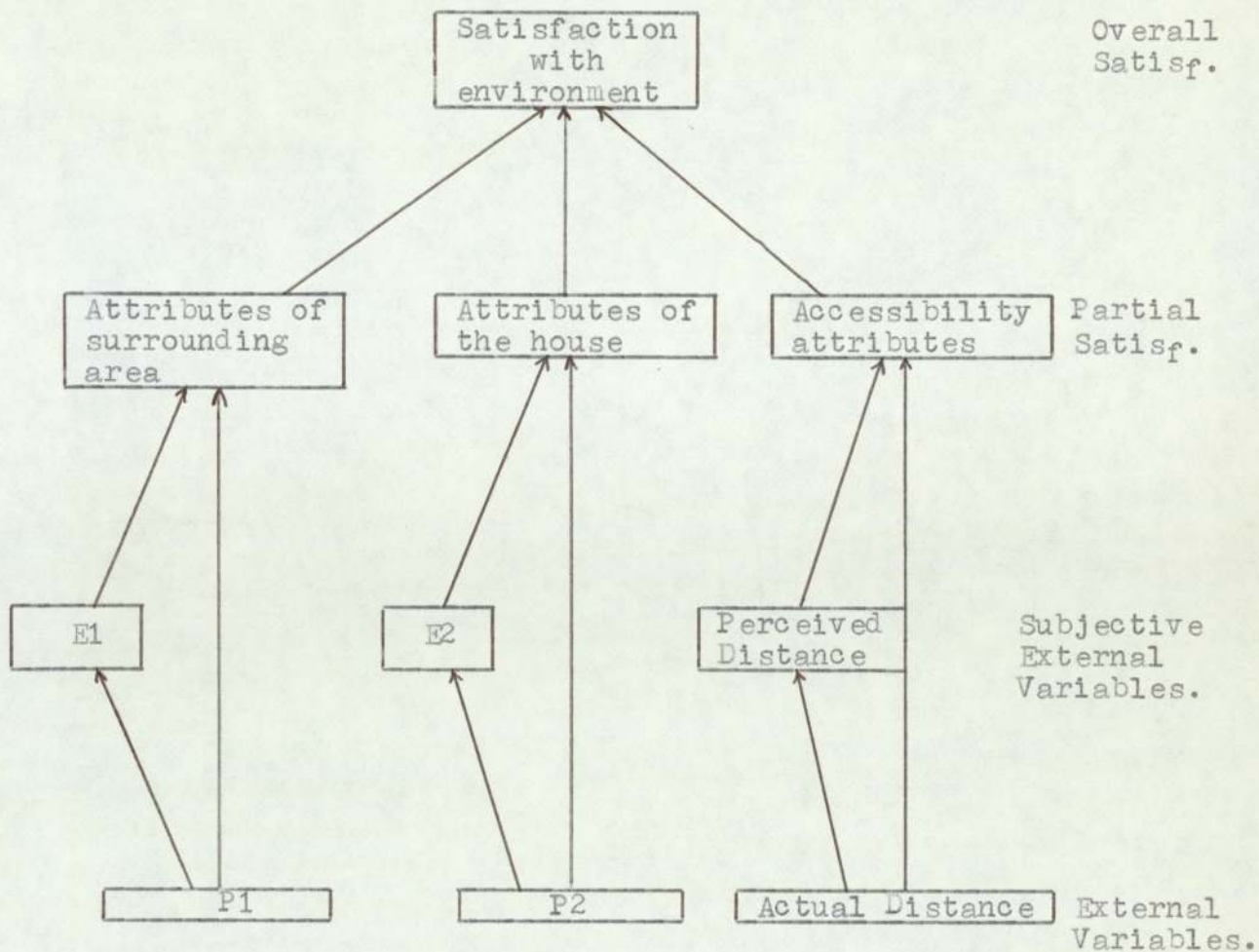
1. Individual levels of overall convenience depend upon regular trips to shops, schools, pubs, clubs, parks, bus stops, city centre, church, cinema, relatives, friends and neighbours.

Factors Related to Convenience to Specific Amenities

2. Individual levels of convenience depend upon perceived distance to amenities.
3. Individual levels of convenience depend upon perceived distance and time taken.
4. Individual levels of convenience depend upon the cost of travel
5. Individual levels of convenience depend upon the mode of travel.
6. Individual levels of convenience depend upon the frequency of travel.
7. Individual levels of convenience depend upon the importance of the journey.
8. That the relationship between distance, mode, time, and cost and levels of convenience will be an inverse one.

Inter-personal and Institutional Factors

9. That individual levels of convenience will depend upon the length of residence in their house or houses.
10. Individuals levels of convenience will depend upon the length of residence and attitude to the compulsory move.
11. Individual levels of convenience will depend upon the type of house occupied.
12. Individual levels of convenience will depend upon whether they refused offers of houses or no.
13. Individual levels of convenience will depend upon the respondents age.
14. Individual levels of convenience will depend upon family size and family structure.
15. That peoples percepts of distance, time etc., will correlate highly with objective measures but will not necessarily be accurate.
16. That from Brennans Law, distance percepts into the city centre will be underestimated while distances away from the centre will be exaggerated.



REPRESENTATION OF INDIVIDUALS SATISFIER STRUCTURE

NOTE: In practice, each partial satisfier will have a number of external physical variables associated with it, although this not shown

17. Individual levels of convenience will depend upon the possession of a car.
18. Individual levels of convenience will depend upon individual sensitivity to environmental factors.

The questionnaire was constructed around these hypotheses; before going on to discuss the questionnaire, I wish to discuss the reasons for the sample design that has been used.

Possible Research Designs

With a study of the type proposed here there are two designs possible. The first and most elaborate approach would be a time-series analysis or longitudinal study. This would be possible of one group of people, tracing changes within the group and attempting to relate these changes to objective data. This classic research approach permits the most controlled situation with regard to socioeconomic and experiential backgrounds and permits measurement of reactions to events as soon after the event as possible, thereby minimising the effects of memory. With the addition of control groups the no-action situation can be compared with the observed situation. For the type of study proposed here, this approach has a number of drawbacks. Although it permits the most detailed measurements between perceived and objective criteria, it is by nature a time consuming process. There is also the problem that repeated interviewing of one respondent, which is unavoidable in longitudinal studies, causes inaccuracies due to the growing sophistication of responses. In

addition, the use of a control group can introduce as many problems as it seeks to cure. Unless it can be shown that statistics relating to socio-economic status and family structure do have a dominant control upon peoples perceptions, then it becomes extremely difficult to control for significant variables in any meaningful way. However, the main drawback from my viewpoint was the time required for such a study; all the most suitable sample groups experienced change over a longer time period than was available here. The only other alternative was a cross-sectional study but as we shall see, this is of limited value for this type of study.

A simple cross-sectional analysis suffers from the disadvantage that it gives the situation at only one point in time. Although such a cross - sectional study can be of value when applied to a firm theoretical model it can be extremely dangerous to draw straightforward empirical conclusions from a study taken at one point in time. To achieve a degree of control over the situation, there are two possible ways to approach the method. The first is to study change between comparable groups with different histories. The main problem with this approach is that the definition of comparable implies knowledge of the relationship between perceived and objective measures, which in this case is what we are trying to find out. There is no certain way out of this dilemma: it is for this reason that it is not really practicable to define a control group, since we are rarely in a position to know upon what factors they are to be matched. For my purposes

this appears to be a dangerous approach to adopt.

The second option involves a study of one group of people at one point in time and asks them to compare and contrast their perceptions at time A and at time B. This appears to be the best compromise approach in a number of ways. It has most of the advantages of the longitudinal study in that one group alone is studied, thereby maintaining a degree of control over peoples perceptions and influences upon these. It is quick to administer and also requires that each respondent need be interviewed only once, thus avoiding the problems of respondent sophistication. Its major drawback is the effect of memory selectivity over time, which will tend to distort responses the longer after the event the survey is conducted. This can be minimised by the type and form of the questions asked but will remain as an uncontrolled influence upon responses. However, with the type of behavioral data to be collected this appeared to be a minor drawback when compared with the relative simplicity of the other aspects of the approach.

Sample Requirements

The basic requirement of the sample group was that they should have had fairly recent experience of two quite different environments, so that responses could be checked for consistency and any development over time observed. As I have already noted, environmental percepts are experientially

controlled and it is difficult to define groups on this basis: the only basis we have for defining such groups is traditional inter-personal data and this will be a crude measure. If possible it would be advantageous to combine similarity on socio-economic characteristics with a uniform environment and similar life styles. With these constraints, the best sample group seemed to be people moved by redevelopment, since they would be from a uniform environment in terms of house type and area characteristics and from restricted socio-economic groups. The data source was the local authority lettings lists for people moved from redevelopment areas in Birmingham. The lists included information on the peoples old and new addresses, as well as the family structure and the type of house they had been moved to. They had all been moved from relatively homogeneous areas and had been moved within a short time of each other. The big advantage of this sample group was the degree of control that was possible, with regard to housing standard and local environmental quality in general. These people deviate from the city mean in a number of ways according to the 1966 census. Within the five or six inner city wards, the population was overrepresentative of people in social classes four and five, semi-skilled and unskilled groups respectively. These areas similarly have a high fertility ratio and larger average family size, all of the six inner wards having above average scores for children under 15 years of age per hundred head of population. Within these areas, the next problem was to select a particular

group of people. This was effectively constrained by the nature of the available data. The lettings lists are catalogued by the years in which the respective moves were made and I decided that the best compromise would be to select a group of people moved during 1971: this would have given them time to settle into their new environment, while giving as little time as possible between the move and the survey. The lists of addresses within the lettings lists were in no particular area order by origin, destination or any other factor. It was therefore difficult to get an overall impression of the group moved in 1971. To overcome this I went through the lists using a random interval of ten to build up an impression of the total pattern of movement. What I looked for was a group of people moved from a relatively discrete area to a discrete area but most of the people moved appeared to be scattered around the city in no particular pattern. The only group who both appeared to come from a relatively discrete area and to have been moved en masse, came from the Aston/Nechells area and had been moved to various locations within the north east sector of the city. Of the 500 names which I had originally extracted from the lists, only 200 came from this area and these were selected as the sample group. They provided a fairly representative cross-section of ages but tended to under-represent people in the 40-60 age range and over-represent those between the ages of 25-40 and 60-75:

AGE STRUCTURE OF SAMPLE COMPARED TO FIGURES FOR
BIRMINGHAM AS A WHOLE (Birmingham Digest)

	<u>Sample (%)</u>	<u>Birmingham (%)</u>
15-29	10.0	21.5
30-44	23.0	16.6
45-59	12.5	19.4
60+	55.5	18.0

This tends to over-emphasise the proportion of the sample over 60; in fact, the sample group split almost evenly, 94 falling between the ages of 21-49 and 106 over 49. Although it would have been preferable to produce a factorial design, with equal numbers in the varied age ranges, there was no way to achieve this using the lettings lists as data source. The sample did in fact reflect a real distinction between people in the higher age groups who had lived in the area all their lives and the younger people who had moved into the area, some buying, some renting from the council, in streets soon to be cleared, in the hopes of being rehoused by the council.

Of the 200 names originally extracted, 147 interviews were completed. The shortfall of 53 was due to one of three reasons. 22 people were repeatedly out when I called, despite making between two and four visits to some addresses. 29 people refused to answer questions, generally because I failed to get across to them that I was not from the council or the social security. The final two people were unable to speak english well enough to make the interview worth while. I have already noted that I wished to interview the wife wherever possible, because she would have greater

knowledge of the local area than her husband. Of the 147 completed interviews, 145 were with the wife and only two were with the husband. In both these cases, the wife was ill and the husband was at home, essentially fulfilling the housewife role: on these grounds it was considered justifiable to include these two interviews. The following table shows the distribution of people among the 147 dwellings at the time of interview:

1 persons in	30 houses
2 persons in	33 houses
3 persons in	26 houses
4 persons in	21 houses
5 persons in	11 houses
6 persons in	10 houses
7 persons in	4 houses
8 persons in	6 houses
9 persons in	3 houses
10 persons in	2 houses
13 persons in	1 house
<u>TOTAL</u>	<u>147</u>

Of the total, only 13 had regular jobs. This may be because they were lothe to tell me of part time employment for tax reasons, or because they were out when I called. The latter factor probably contributed most to the low figure.

They had moved from an area that contained an inter-mixture of industry and residential properites. Most of the houses were ordinary terraced properties facing onto the road, although some of the sample lived in back-houses arrayed in terraces behind the roadside houses. By the time of the survey most of the houses originally occupied by the sample had already been demolished and it was not possible to

establish the precise nature of the house type. However, it was possible to reconstruct their activity patterns within the area. Before redevelopment began to affect the area, it was provided with a good shopping area along the Lichfield Road and at Aston Cross to the East: and at Six Ways and Lozells Road to the west. The Nechells area had a variety of small shopping areas scattered throughout the residential development and had Alum Rock not too far away. None of the sample were more than half a mile from a shop of some sort and most were considerably nearer. With the completion of Newtown Precinct, many of the shops at Aston Cross were offered sites in the new development but few of the small businesses appear to have accepted. The precinct has four supermarkets and the usual chain stores and has provided a vital replacement for the declining shopping area to the east. Nevertheless, at the time of survey the centre still had a large number of vacant lots and was a poor substitute for the older shopping areas.

In terms of social provision, both Aston and Nechells were amply provided with pubs, clubs and cinemas. Once redevelopment commenced the cinemas were converted to use by the Indian community and many of the clubs moved to other areas, at least according to the residents. Bus services into town were good from both areas. Aston was provided with services on the east along Lichfield Road and to the west along New Town Row. The Nechells area had buses running along the Parkway going into town and out to Alum Rock. On straight

line radius from the city centre, measured from the corner of New Street and Corporation Street, all of the sample lay within, or on, a mile radius from the centre.

Before redevelopment, the area was extremely crowded, with little open space: the only large area of public open space was provided by Aston Park and Aston Hall, lying to the north west of the Lichfield Road. In this respect, the Nechells area was definitely at a disadvantage, having possibly worse street conditions and no area of comparable open space to off-set the handicap. Of the total sample of 147, 28 fell within the postal area of Nechells and the remainder within Aston.

Selection processes and new home locations

At this point it would be as well to point out the processes of selection which work within the public housing sector. In Birmingham, the first contact is made by a welfare visitor who gathers data on family size, age, the rent they are prepared to pay, the area they would like to move to and to assess the standard of housekeeping of the people. Norris notes that this unannounced visit is designed to avoid prepared reactions but that it also influences the decisions which people make.⁵ Usually the wife will be at home alone during the day and if she feels pressured to make a decision on the spot, this may not meet with the approval of the whole family and may simply be a bad decision. Even where the

the person has adequate knowledge of all areas open to them, which rarely happens, it would still be a long winded process to assess the relative merits of the various areas. The husband may wish to locate near ~~near~~ his job, the wife close to her relatives. The basic decision process of redevelopment forces residents to make an on-the-spot decision which they may later regret. However, the situation is further confused by the restrictions of the local housing authority.

Residents are usually asked what rents they would be prepared to pay but their estimates will almost invariably be lower than the rents of prospective tenancies. The situation is similar to the consumer surplus problem, for the respondent will bargain for as low a rent as possible, while still retaining the preferred house type. There is a risk attached to this tactic, since they may be offered a house below their expectations. Of course, the rent will reflect the type of property and its age and the chances of achieving a desired rent are controlled by the proportion of that property type. However, there will also be restrictions imposed by the assessed standard of housekeeping, so that even ability to pay will not guarantee tenancy of a new house. In addition, the house sizes will dictate where certain families can go. The vast majority of Birmingham's housing stock are of the three and four bedroom type, so that to produce a good housing fit, large families are naturally guided into this type of house:

HOUSE TYPES OF BIRMINGHAM'S HOUSING STOCK

One Bedroom	20,094	15.82%
Two Bedroom	29,989	23.60%
Three room	1,840	1.45%

Four Rooms	71,681	56.42%
Five Rooms	3,366	2.65%
Bungalows	81	0.06%

These large houses tend to be located on inter-war estates around the periphery of the city, whereas the smaller one and two bedroomed properties have greater concentrations in the city centre; there is therefore a sorting process by area. Hutchinson and Brennan both indicated that children with young couples also tended to prefer to move to peripheral locations because of the traditional suburban advantages.^{7 8} This is probably too general a statement with reference to renewal populations, since although they are offered a choice of area they probably have no knowledge of large areas of the city. In addition, there may be no houses of the desired type in the area specified and although other choices are offered in the same general area they may not have the desired features. When a provisional choice has been made, the individual goes to see the place to make a decision. Unfortunately, he has no idea of what his other options are at that time and he cannot make a rational choice in these conditions. All of these factors will tend to sort the population so that those moved to peripheral areas will be a biased sample of the whole group.

There were other factors at work in this sample group. All the factors mentioned go towards a total points score for each household, which will indicate the ranking of priorities within the public sector. This sample group was also divided on the length of residence of the people. Some had lived in

the area all their lives while others were relatively new arrivals. The relative proportions of these two groups can be seen below:

LENGTH OF RESIDENCE OF SAMPLE IN 5 YEAR PERIODS

<u>Years</u>	<u>People</u>
1-5	47
6-10	24
11-15	17
16-20	4
21-25	12
26-30	7
31-35	3
36-40	8
41-45	4
46-50	5
51-55	8
56-60	2
61-65	4
66-70	1
70+	1

Of those in the 1-5 category, 12 had only moved into Aston in the period 1969-71 and had inhabited privately rented accommodation in the area in the hope that the council would accept the responsibility to rehouse. In most cases this appears to have been the case but it has influenced the type of housing they have been offered. In many instances these short stay residents were offered other accommodation in condemned properties within the area.

By area, the sample broke down into 87 going to peripheral locations and 60 to inner city areas. The distribution map of the sample indicates that they were not grouped on one area but 69 fell within the Kingstanding area, 11 from Castle Vale and Castle Bromwich and 7 from Shard End and Yardley. Of the inner city group 45 went to new properties

within the Newtown area and 15 had been moved into older properties, generally managed by the Barber Trust or the Public Health Department. The proportion of people out of the original 200 who were moved to older houses was probably larger than the number given here, since these people proved most suspicious of people with forms:

HOUSE*TYPE OF SAMPLE IN NEW AREA(Peripheral)

<u>House Type</u>	<u>Number</u>
Non-parlour 2 bedroom	5
Non-parlour 3 bedroom	60
Non-parlour 4 bedroom	1
Temporary Bungalow	6
One bedroom flat	5
Two bedroom flat	10

And for the Newtown inner city area as follows:

Two bedroom house	22
Three bedroom house	12
Four bedroom house	1
One bedroom flat	16
Two bedroom flat	10
Three bedroom flat	1

The greater proportion of people in flats in the central areas is reflected in the family sizes. The mean for the whole group before the move was 3.5 persons per household, dropping to 3.33 after the move. For the peripheral group the figure was 3.59 but the central areas had on average only 2.83 people per dwelling. This reflected the higher proportion of retired people housed in the smaller units near the city centre. Within the central areas 43% of the sample were retired and if this were expanded to include those people approaching retirement age, the figure would be higher still. For the peripheral areas the proportion of the sample who were retired was 31%.

The inner city areas of Newtown are fairly characteristic of the new development within the city. The area is literally just across the road from Aston and for some of the sample the move was a short one. It is a mixture of modern terraces, two and three storey flats and a number of high rise blocks amongst them. Locationally, it is as advantaged as Aston, with bus services along Summer Row and New Town Row and only two or three minutes ride from Snow Hill.

The peripheral areas contrast this picture strongly. Most of the 87 people are located in the north east sector of Birmingham, lying between one and a half and five miles from the city centre. The areas of council estate are distinguishable on the map from their road configuration. The basic street pattern is one of crescents, circles and symmetrical developments adjusted to the local topography. The post war housing areas have adopted a form of radburn layout, with closes running from the main traffic arteries and footpaths providing a large part of the internal communication need. As with the new development in the city centre there is a mix of unit types ranging from the modern terraced house, through the low and medium rise flats to the high rises that are visible from the M6. By contrast the inter-war areas are uniform in house types and appearance. The council have recently attempted to diversify the housing types in these areas, by converting basic two and three bedroom houses into two separate flats, for the use of childless couples and retired people living alone; this scheme has only

affected limited areas of housing to date but has been enthusiastically received.

The area has a number of shopping centres at Erdington, Kingstanding Circle, College Road, Hawthorn Road and Castle Vale Precinct centres. In most cases people were within easy reach of a shopping area but a few isolated cases had over half a mile to travel to do their major shopping. This problem was also faced with public transport provision. Buses tended to dissect the area along major roads, tending to leave certain areas of estate relatively isolated. This was especially true in the area of Kingstanding Beacon, where the hilliness tended to emphasise the paucity of public transport. There are therefore a priori reasons for hypothesising that peripheral areas will be less convenient than inner city areas.

The Questionnaire

The questionnaire used here is a revised form of one piloted in November 1972. At that time I was still hoping to cover questions relating to all four environmental components of physical and social environments, the dwelling and convenience. These interviews took on average 45 minutes each and were very involved. For reasons of workload, as well as the other reasons already mentioned, I decided to restrict my focus to convenience factors. The design of the questionnaire was critical to the success of the survey.

I needed data on behavioral aspects of both the old and the new areas and was in two minds whether to ask the questions in pairs or whether to design the questionnaire on a sequential basis. By this I mean that I would ask questions relating to the old area and once these were completed, to commence the section on their new home areas. I decided on this approach for a number of reasons: Firstly, since I was relying on peoples memories of their old homes it seemed more logical to deal with all aspects of life there in one section, to evoke memories and recall facts that might otherwise have been forgotten. The original questionnaire had used paired responses and in practice this proved a far less effective method. Before going on to discuss the findings of the survey it is essential to discuss the construction of the questionnaire in a little more detail.

The questionnaire was designed as the operational form of the hypotheses already developed. It aimed to examine the degree of influence which specific journeys had over peoples overall attitudes to an area and precisely how they conceptualised these journeys. As I noted earlier, there can be no standardised list of things which all people use: therefore, each section of the questionnaire began with a check-list so that people would be given some idea of the range of activities under question and those not used could be eliminated. The question on the length of time people had been moving from the area was included as a possible surrogate for their general attitude to the move. Although

not specified, the question relating to shops was concerned with the weekly shopping trip and not what is termed strictly convenience shopping to local corner shops. As the next chapter indicates, the diversity of behavior encountered made tight definitions rather difficult. The question relating to schools was aimed only at those women who took their youngest children to school and was not extended to all women with children at school.

Questions of importance and convenience were measured on a five point scale ranging from very important/convenient through an average/indifferent level to very unimportant/inconvenient. These scales were presented to the respondent on a flash card set, of which I produced two types. There appeared to be a tendency to make an instant and unthinking appraisal of the situation I presented to them, without them having considered all possible response categories. Although they all understood what I meant by convenience and found little trouble relating to it as a concept, they nevertheless tended to say very convenient more often when this was first on the list. It was therefore necessary to switch the categories around and present them in a random order spread over the card and for the full response range to be read out by the interviewer, before the respondent made his choice. There is no way to evaluate the residual effect of this tendency to make unthinking responses but I, as the only interviewer, felt at the time of interview that people had been made aware of their choices and that this applied

uniformly across the sample.

The measurement of distance was a major problem. In the last chapter I noted that the ratio estimation technique produces the most accurate responses. It seeks to establish a base line measurement of a distance and then to compare another distance with this: this second distance is then compared with another until all distances have been paired. This is an iterative and long-winded process that was beyond my scope. However, in the pilot questionnaire I attempted to use a shorthand form of the technique, using the shortest journey as the single base measure and judging all other distances against this. These were all on the same page and the distances from the base line were scaled, to aid estimates. This proved unmanageable for a number of reasons: Firstly, it was still a long winded process and with some people I had trouble getting the concept across. Without the scale lines people were unable to visualise the comparisons unless larger paper was used. Yet when the scale lines were used, distances inevitably clustered around the scale lines or actually on them. It therefore appeared that a visual representation of distance was out and that I would have to seek an alternative. I tried simply asking 'how far' things were but usually the response was in minutes rather than miles. This is understandable because of the short distances involved and people were more willing to give an estimate for longer journeys: the only way that appeared to give fairly accurate responses over the short distances and

was relatively speedy to administer was to categorise the distances into half and quarter mile units. These were presented on a flash card and once the respondent had selected a category he was asked if he could be a little more specific. In this way, after a number of iterations, a firm estimate was reached. This proved far easier to get across to the interviewees and was much swifter. However, this categorisation obviously had a smoothing effect on the data but in some circumstances this can be viewed as an advantage, since any trends that are observed will probably be underestimated by this form of presentation.

Questions relating to time, mode, frequency and cost were unstructured and left to the respondent to estimate. Where there was trouble estimating the frequency of journeys, the ping-pong approach used above was adopted. Although I defined 'regular' in a fairly loose way it still proved hard to interpret. In some instances people felt they had used amenities regularly for a number of years and then had discontinued it. In this case the obvious tendency was to average the frequency over the whole period. There was therefore a smoothing effect at work here that was largely unavoidable.

The interviews took approximately thirty minutes each. I tried to make the questionnaire as amenable to coding as possible, with no particular package in mind. Since the

analysis of findings a number of survey analysis packages have come to my notice that require their own specific data format to be most useful. The questionnaires were all ready for coding by the middle of January 1973 and were punched for use on the University of Astons ICL 1900 computer, using the ICL Statistical Analysis Package. The data was broken down by amenities used; that is, questions on shopping before and after the move compared and this was done for all the amenities, noting the inter-correlations between responses to distance, time, convenience and other factors. In addition, the convenience scores were included in a separate run, to see if there were any significant relationships between the use of amenities and to assess by multiple correlation their individual influence on measures of overall convenience. The precise results of this analysis are detailed in the following chapter.

CHAPTER SEVEN: ANALYSIS OF FINDINGS.

This chapter examines the responses that were given and the ways that these reflect upon the working hypotheses given in the last chapter. The analysis deals with each amenity individually, in three ways: the first deals with the pattern of responses and the degree of behavioral change after the move. The second section discusses the implications of the statistical analysis, with reference to the tables listed in Appendix 2. Finally, the implications of these findings for the hypotheses are discussed.

Behavioral Responses

The following table indicates the number and proportion of the sample using each amenity:

<u>AMENITY</u>	<u>OLD AREA</u>		<u>NEW AREA</u>		<u>DEGREE OF CHANGE</u>
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	
Shops	147	100	147	100	=
Schools	55	37	55	37	=
Pubs	42	28	35	23	-
Clubs	21	14	21	14	=
Parks	69	46	20	13	-
City Centre	93	62	95	63	+
Bus Stop	116	77	123	82	+
Church	31	21	28	19	-
Cinema	16	11	4	3	-
Relatives	86	57	78	52	-
Friends	94	63	78	52	-
Neighbours	124	83	124	83	=
Jobs	17	13	13	8	-

Only the use of buses and travel into the city centre have increased. Contact with neighbours, schools, clubs and shops have remained at the same level, while the remainder have

declined in the absolute numbers who use them. Only shops were frequented by all the group both before and after the move. Most of the things which declined did so modestly: the exception to this was the frequency of visits to parks. The proximity of Aston Park appeared to support a very high level of visits and although subsequent analysis will show that some of the sample were actually closer to a park after the move, they either did not know of them or they held little attraction for them. In terms of the activities listed above, the sample group experienced a general decline in the range of activities performed. However, these aggregate figures hide considerable variations within the group, by personal factors and locational attributes. Calculated on the basis of the numbers of links terminated, it became clear that those over 45 were the people who failed to re-establish activities after the move:

<u>AGE GROUP</u>	<u>LINKS TERMINATED</u>	<u>LINKS ESTABLISHED</u>
20-44	10	27
45+	112	0
TOTAL	122	27

This tells us little until we have some picture of the varied activity levels of the age groups. Generally, the lower age groups had a higher activity level in the first place and tended to maintain this level after the move. By contrast, the over 45 age group and especially those over 60, maintained a lower level of activity and were more affected by the move. The table opposite indicates the way behavior changed by age group. The first point to make is that, irrespective of age, the range of activities perfor-

	<u>SCHOOLS</u>	<u>PUBS</u>	<u>CLUBS</u>	<u>PARKS</u>	<u>CITY CENTRE</u>	<u>BUS STOP</u>	<u>CHURCH</u>	<u>CINEMA</u>	<u>KIN</u>	<u>FRIENDS</u>	<u>NEIGHBOURS</u>
TOTAL LINKS TERMINATED	-	7	-	49	-	-	3	12	8	16	23
TOTAL LINKS ESTABLISHED	-	-	-	-	2	7	-	-	-	-	-
STECHFORD	-	3	2	6	7	3	1	5	8	7	11
1 Terminated	-	-	2	-	11	9	1	2	7	5	8
2. Established	-	-	-	-	-	-	1	-	9	2	-
CASTLE VALE	8	1	-	9	6	4	1	2	9	7	10
1	8	-	-	-	8	11	1	-	8	2	2
SHORT HEATH	5	9	5	6	16	15	7	3	16	12	22
1	5	7	5	-	6	10	7	1	14	8	17
2	-	-	-	-	-	14	-	-	11	9	14
BIRCHES GREEN	7	5	3	8	6	10	2	2	11	9	14
1	7	5	3	1	14	14	2	-	10	8	10
2	-	-	-	-	-	-	-	-	27	20	32
KINGSTANDING	20	6	8	12	3	38	12	2	25	18	22
1	20	5	8	1	28	33	11	-	10	25	22
2	-	-	-	-	-	-	-	-	10	18	36
NEWTOWN	7	10	2	13	12	28	7	1	10	25	40
1	7	10	2	8	12	28	6	-	10	24	36
2	-	-	-	-	12	18	1	-	10	14	40
ASTON/NECHELLS	8	8	1	15	16	18	1	1	5	14	21
1	8	8	1	11	16	18	-	1	4	13	24
2	-	-	-	-	-	-	-	-	-	-	-

LINKS TERMINATED AND INITIATED BY AREA OF DESTINATION

med is reduced after the move. The 20-44 age group can be seen to have decreased their contact with parks, cinemas, relatives, friends and neighbours and jobs and to have increased their use of public transport and contact with the city centre. By contrast, the over 45's have suffered a greater decrease in activity range, links being terminated to pubs, parks, city centre, bus stop, cinema, relatives, friends and neighbours and jobs. As a group they established no new links after the move. Columns 7 and 8 of the table indicate the total numbers of people using amenities within these age groups. Although without a control group it is not possible to say definitely that the changes were induced solely by the move, it is safe to say that the move has had a large impact upon behavior and that this has been particularly true of the over 45 age group.

As I noted earlier, the councils selection process has tended to sort the sample by certain factors and this has meant that responses related to age have also had a locational component. As the map of the sample distribution shows the group fall into two fairly distinct components; namely, those people within two miles of the centre and those beyond. The concentration of smaller units within the first area and the larger houses in the second mean that the sample is biased towards single person households near the city centre and to larger families in the peripheral areas: this can be seen from the table. However, by comparing the family sizes

	SCHOOLS	PUBS	CLUBS	PARKS	CITY CENTRE	BUS	CHURCH	CINEMA	KIN	FRIENDS	NEIGHBOURS	JOB
<u>TOTAL NO. LINKS TERMINATED</u>	-	7	-	49	-	-	3	12	8	16	23	4
<u>TOTAL NO. LINKS ESTABLISHED</u>	-	-	-	-	2	7	-	-	-	-	-	-
<u>LINKS TERMIN.</u>	-	-	-	11	-	-	-	4	2	3	8	-
<u>20-44</u>	-	-	-	-	-	-	-	-	-	-	-	-
<u>LINKS ESTAB.</u>	-	-	-	-	-	-	-	-	-	-	-	-
<u>45+</u>	-	-	-	-	-	-	-	-	-	-	-	-
<u>LINKS ESTAB.</u>	-	-	-	-	12	15	-	-	-	-	-	-
<u>20-44</u>	-	-	-	-	-	-	-	-	-	-	-	-
<u>LINKS TERMIN.</u>	-	7	-	38	10	8	3	8	6	13	15	4
<u>45+</u>	-	-	-	-	-	-	-	-	-	-	-	-
<u>NO. USING AMENITIES</u>	55	22	14	30	57	70	10	7	24	36	26	12
<u>20-44</u>	55	22	14	19	69	85	10	3	22	33	18	12
<u>NO. USING AMENITIES</u>	-	20	7	39	36	46	21	9	62	58	121	5
<u>45+</u>	-	13	7	1	26	38	18	1	56	54	106	1

BEHAVIORAL CHANGE BY AGE GROUP

with behavioral change by area, it becomes clear that the location has the dominant control upon the number of links terminated or established. The inner city groups in Aston and Nechells managed to maintain their activity levels at approximately the same scale. Use of schools, pubs, clubs, city centre, buses and cinemas was maintained at about the same level. The use of parks declined substantially in both Newtown and Nechells, despite the fact that Aston Park was still close at hand. Only two of the people moved to peripheral areas maintained any contact with parks, one in Birches Green and one in Kingstanding. Contact with the city centre increased at Stechford, Castle Vale and Birches Green, remained the same at Nechells and Newtown and decreased at Short Heath and Kingstanding. Both Short Heath and Kingstanding were relatively well provided with shopping facilities, whereas Castle Vale, Stechford and Birches Green were poorly provided, which may well account for the increase in numbers shopping at the city centre. Newtown and Nechells maintained use of the city centre at the same level. Use of buses increased at Stechford, Castle Vale and Birches Green, remained the same at Newtown and Nechells and decreased at Short Heath and Kingstanding. There is obviously a close relationship between use of public transport and visits to the city centre, although the increase in bus use is also related to other behavioral changes after the move. The use of churches was uniformly low but those who attended regularly were not easily deterred. By contrast, cinema

PEOPLE IN HOUSEHOLD	STECHFORD	CASTLE VALE	SHORT HEATH	BIRCHES GREEN	KINGSTANDING	NEWTOWN	ASTON/NECHELLS	INNER CITY	PERIPHERAL GROUP
1	-	4	5	-	7	13	11	24	16
2	2	3	5	4	4	9	6	15	18
3	2	2	4	3	4	1	3	2	15
4	3	-	1	2	6	4	-	4	12
5	1	1	1	2	6	4	-	4	11
6	-	-	3	1	2	2	-	2	6
7	2	-	1	1	1	1	1	1	5
8	1	-	1	1	2	2	3	5	4
TOTALS	11	10	21	14	32	36	21	60	87

SIZE OF FAMILY BY AREA OF DESTINATION

use proved particularly ephemeral, with 12 people ceasing to visit them. However, the decline was fairly even over all areas and it must be noted that had the sample remained in situ there would still probably have been a decline in attendance, since most of the local cinemas had either become bingo halls or Indian cinemas. After the move there was little opportunity to visit cinemas and even where people were close to a suburban cinema, they were often unaware of its presence. Contacts with relatives declined in all areas except Newtown but the figures show that the decline was small in all cases. There appeared to be no relationship between the decline and the age of the person concerned, except in one case where visits ceased due to the death of a relative. There was a larger drop in the numbers of people visiting friends, the largest fall occurring amongst those going to Castle Vale. Again, the dominant control appeared to be distance rather than age, since the two people who maintained contact were over thirty years apart in age. The final pattern of responses to questions relating to friends and relatives will obviously be associated with the responses they gave for accepting the offer of accommodation. Over the whole group 30 people said they chose their accommodation for reasons relating to relatives or friends and these were heavily concentrated in Newtown and Kingstanding. The reasons related to the fact that friends or relatives in the old area had agreed to apply for the same areas and had frequently been successful. Of the 30, 12 were located in Newtown and 18 in Kingstanding. Contacts with neighbours declined in all

areas except Newtown ,Aston and Nechells where the sample was closely grouped and therefore where people would tend to find their old friends as neighbours. This situation was reported five times in Newtown and twice in Nechells and this probably underestimates the frequency of occurrence. In Kingstanding the opposite could be true: the decline in people who have contact with neighbours is probably minimised by the number of women who had friends in the area who could possibly be called neighbours as well.

Job frequency declined drastically in all the peripheral areas and in fact only one woman, at Stechford, maintained a job after the move. The inner city picture provided a total contrast for here the numbers of women with jobs increased, both for Newtown and Nechells. These were mainly restricted to the young and middle aged couples with no children, or with small families, who found the rents near the centre a problem and who were tempted by the relative abundance of jobs in the area.

There had therefore been a considerable change after the move, most of which could apparently be attributed to the locational change rather than inter-personal variations. Yet beyond the locational control, age appears to have imposed its own constraints, so that we can say that distance and the other factors appear to have an influence on the change of activity levels but that the ability of people to overcome this barrier decreases with age. The figures

for Newtown show no such decline in activity despite the concentration of people of pensionable age in the area; however, this can be attributed to the masking effect of the younger people in the area who appear to have increased their activity levels. The foregoing analysis refers to the minimum use of amenities and does not discuss the frequency with which people use them. I therefore wish to detail the responses that were given for each amenity and to see how this was affected by the move. I have dealt with them in the order in which they occur in the questionnaire.

Shopping Behavior

Taking the sample group as a whole, the following table gives a breakdown of shopping behavior by centre for the Aston/Nechells area.

<u>SHOPPING AREA</u>	<u>NO. OF PEOPLE</u>
Lichfield Rd/ Aston Cross	83
Newtown	24
Alum Rock/Nechells	22
Lozells Road	7
City Centre	6
Six Ways	2
Sycamore Road	1
Perry Barr	1
Erdington	1

Of these, 127 walked to the shops and the remaining 20 went by bus. Those who went by bus were either going to Alum Rock or to Newtown from the east side of Aston. As a group they estimated distance to shops as follows:

123	thought shops were within $\frac{1}{2}$ mile
18	thought shops were within $\frac{1}{2}$ -1 mile
6	thought shops were within 1-2 miles

The 16% who thought themselves further than half a mile from their shops were particularly grouped amongst the people along Victoria Road who tended to use Newtown centre and those on Long Acre, who were some distance from Lichfield Road. It obviously becomes a great problem to objectively assess these judgements for a number of reasons. In the case of Lichfield Road, an essentially linear shopping centre, people tended to make assessments measured against the shops they used and not the nearest shops; in this way distances became inflated. For the objective measure I attempted to estimate the rectangular distance, that is the shortest distance by foot-path, but because of the lineality of the centre, the estimate varied greatly depending on which shops were used. However, in this instance the general proximity of shops to the sample group meant that distances were too small to assess accurately and as I shall show later, had little influence upon the measures of convenience given. Using these rectangular measures there was total agreement between peoples estimates and my assessments.

Time taken to shops was the easiest assessment people could make and produced the following table:

PERCEIVED TIMES TO SHOPS BEFORE MOVE

<u>TIME</u>	<u>NO.</u>
0-5	80
6-10	54
11-15	7
16-20	5
21-25	0
26-30	1

This tended to be closely related with the age of the person

and the longer times generally came from old ladies who walked to the shops and who found it difficult to distinguish between time taken to shops and time taken shopping. As with the distance estimate, this question called for a number of approximations on the part of the respondent. The question was related to the weekly shopping and this often became a multi-purpose excursion, thus making it difficult to assess the time taken. However, the fact that the bulk of the responses fell within the 0-10 minute range encouraged me to believe that most people understood the question.

Cost really does not enter into the shopping situation, since 127 people walked and of the 20 who went by bus:

11 payed 6 pence
 7 payed 12 pence
 2 payed 10 pence

Frequency however was a more important indicator. I was concerned with the major weekly shopping wherever possible but as the table indicates, the sample group did not fall into convenient categories: most of them regarded the visit to the shops as a social event and often planned to spread the weeks purchases over a number of visits. The result was a wider distribution of frequencies than anticipated:

FREQUENCY OF JOURNEYS TO SHOPS

<u>FREQUENCY</u>	<u>NO.</u>
1x week	12
2x week	25
3x week	27
4x week	25
5x week	25
6x week	32
7x week	1

Age appeared to bear little relationship to this distribution except where the individual had some specific disability. In fact it was the higher age groups who typically shopped from 3-6 times a week and the younger women who used the local supermarkets once a week:

<u>FREQUENCY OF VISITS BY AGE</u>					
Visits	21-30	31-40	41-50	51-60	60+
1	6	2	1	1	2
2	10	6	5	2	2
3	5	6	6	10	-
4	-	7	8	6	4
5	2	5	9	9	-
6	1	4	-	15	12
7	-	-	-	-	1

Finally, the convenience estimates they gave tended to reflect the generally high level of convenience they had experienced before redevelopment. Of the total:

<u>CONVENIENCE TO SHOPS: ASTON/NECHELLS</u>	
<u>CONVENIENCE</u>	<u>NO.s</u>
Very Convenient	58
Fairly Convenient	43
Indifferent	22
Inconvenient	19
Very Inconvenient	5

When broken down by age this again showed a number of variations:

<u>CONVENIENCE TO SHOPS BY AGE GROUP</u>					
CONVENIENCE	21-30	31-40	41-50	51-60	60+
V Conven	5	19	5	11	18
F Conven	4	7	3	4	26
Average	6	5	3	-	8
F Inconven	5	6	4	2	2
V Inconven	3	-	1	-	1

This shows quite a strong tendency for the higher age groups to say that the old area was more convenient. This is explicable in terms of the allegiance they felt with Aston and Nechells, in contrast to the younger women who

having moved to the area simply to be rehoused, had little attachment to the area. There was a slight variation in convenience scores between Aston and Nechells, although the variation did not appear to be caused solely by location; houses that should have rated lower than others on the map assessments failed to do so and although it was not possible to verify this, it appeared that this was due to the effect of multi-purpose trips which fell outside the scope of the questionnaire. The convenience scores divided by area in the following way:

<u>CONVENIENCE TO SHOPS BY AREA</u>		
<u>CONVENIENCE</u>	<u>NO. ASTON</u>	<u>NO. NECHELLS</u>
V Convenient	49(40%)	9(32%)
F Convenient	34(27%)	9(32%)
Indifferent	18(15%)	4(14%)
F Inconvenient	13(14%)	6(22%)
V Inconvenient	5(4%)	-

It is therefore likely that responses received from people in Nechells under-rate the convenience of the area because of these dual and multi-purpose visits. It is interesting to speculate over the reasons why this should occur in Nechells and not in Aston. The most likely explanation is that their behavior was not dominated by one or two large shopping centres and thus became more diffuse than in Aston.

The dominant impression of shopping before the move is one of extreme uniformity. The same cannot be said after the move. The following breakdown of the sample by shopping centre after the move indicates the greater range of centres used:

<u>CENTRE</u>	<u>NO. OF PEOPLE</u>
Newtown	29
Kingstanding	
Circle	17
Erdington	19
College Road	10
Lichfield Road	9
City Centre	8
Lozells Road	8
Nechells	8
Kingsbury Road	6
Alum Rock	5
Perry Common	
Circle	4
Hawthorn Road	4
Lea Village	4
Soho Road	3
Castle Vale	8
Castle Bromwich	2
Aston Cross	1
Wylde Green	1
Perry Barr	1

The inner city areas have been dominated by the proximity of Newtown shopping centre and this has been aided by the continued decline of Lichfield Road, Aston Cross and the other old centres. Of the total group, 107 still walked to shops, 37 went by bus and three by car. By area they divided thus:

MODE OF TRANSPORT TO SHOPS BY AREA

<u>AREA</u>	<u>WALKED</u>	<u>BUS</u>	<u>CAR</u>
Stechford	9	1	1
Castle			
Vale	7	3	-
Short			
Heath	13	9	-
Birches			
Green	6	8	-
Kingstanding	15	15	2
Newtown	35	1	-
Aston/			
Nechells	22	-	-

There was a definite tendency to go to the shops by bus at the periphery, even over distances that were considered walkable in Aston. Distances had increased considerably in

the eyes of the sample:

<u>DISTANCE TO SHOPS AFTER MOVE</u>	
<u>DISTANCE</u>	<u>NO</u>
0- $\frac{1}{2}$ mile	92
$\frac{1}{2}$ -1 mile	31
1-2 miles	13
2-3 miles	5
3+ miles	4

Only 36% of the sample estimated they went further than half a mile to shop and by area they broke down in the following way:

<u>DISTANCE TO SHOPS BY AREA AFTER THE MOVE</u>					
	<u>0-$\frac{1}{2}$</u>	<u>$\frac{1}{2}$-1</u>	<u>1-2</u>	<u>2-3</u>	<u>3+</u>
STECHFORD	1	4	3	1	-
CASTLE VALE	8	1	-	1	-
SHORT HEATH	10	12	-	-	-
BIRCHES GREEN	9	-	2	1	2
KINGSTANDING	13	7	8	3	2
NEWTOWN	31	5	-	-	-
NECHELLS	20	2	-	-	-

For the peripheral group the mean distance increased from 1.22 to 1.78, an increase in distance on my scale from just over half a mile to just under a mile. I therefore expected to see some increase in the time and possibly the cost of shopping and a consequent decline in the perceived level of convenience. This is reflected in the following tables:

<u>TIME TAKEN TO SHOP AFTER THE MOVE</u>	
<u>TIME</u>	<u>NO</u>
Less than 1 min.	2
1-5 minutes	61
6-10 minutes	49
11-15 mins.	16
16-20 mins.	11
21+ minutes	6

By area of destination these figures show some significant variations. Most of the responses in the higher categories occurred in the peripheral areas and only two of the sample from central areas considered the journey took any more than

fifteen minutes:

	<u>TIME TAKEN TO SHOPS BY AREA OF DESTINATION (Minutes)</u>					
	<u>1-5</u>	<u>6-10</u>	<u>11-15</u>	<u>16-20</u>	<u>21-25</u>	<u>26-30</u>
STECHFORD	2	3	-	3	1	2
CASTLE VALE	6	1	2	2	-	-
SHORT HEATH	4	11	6	1	-	-
BIRCHES GREEN	6	5	1	1	-	-
KINGSTANDING	10	9	5	2	-	3
NEWTOWN	20	15	1	-	-	-
NECHELLS	13	5	1	2	-	-

The six respondents who said that the journey took over twenty minutes were all over sixty and two were partially disabled. In the circumstances it seemed that their estimates were probably not exaggerated.

The frequency scores for the new areas reveal tendencies already noted in the data already discussed. The increased distances and times appear to have restricted the activities of those who shopped a number of times a week. Overall, the mean frequency dropped from 3.88 to 3.18 times a week. The figures for numbers of visits per week appeared as follows:

<u>FREQUENCIES OF JOURNEYS TO SHOPS</u>	
<u>VISITS PER WEEK</u>	<u>NO</u>
1x week	27
2x week	46
3x week	25
4x week	20
5x week	10
6x week	19

This was seen to vary substantially by area of destination and age. By area the tendency was for people to do one or two weekly shopping trips at the periphery, where centres were scattered and small. Most of those that maintained a high level of shopping activity were located in the central areas:

FREQUENCY OF VISITS BY AGE OF RESPONDENT

	<u>TIMES PER WEEK</u>		
	<u>1-2</u>	<u>3-5</u>	<u>6+</u>
<u>20-44</u>	22	33	11
<u>45+</u>	51	22	8

The numbers of people who paid to travel to shops had increased slightly to 34 but none of these paid more than 16 pence return fare:

<u>COST OF JOURNEY TO SHOPS</u>	
<u>FARE</u>	<u>NO</u>
Nothing	113
6 pence	17
12 pence	12
16 pence	5

Finally, convenience to shops had decreased from a mean of 4.67 for the whole group to 3.87 after the move, measured on the 1-5 scale used for convenience. This aggregate figure conceals a substantial difference between the mean figures for the central and peripheral groups:

<u>MEAN CONVENIENCE SCORES</u>		
	<u>BEFORE MOVE</u>	<u>AFTER MOVE</u>
<u>PERIPHERAL</u>	4.75	3.51
<u>CENTRAL</u>	4.55	4.38

Those moved into central areas appeared to be below the mean convenience for the area but their drop in mean convenience was not as great as for the people moved further out. The overall figures were:

<u>CONVENIENCE TO SHOPS AFTER MOVE</u>	
<u>CONVENIENCE</u>	<u>NO</u>
Very Convenient	58(105)
Fairly Convenient	43(33)
Indifferent	22(7)
Fairly Inconvenient	19(-)
Very Inconvenient	5(-)

Figures in brackets indicate the convenience scores before the move. After the move there was far less concentration of scores at the favourable end of the scale and 24 people

gave negative responses to the question. The dominant control again, was area:

<u>CONVENIENCE TO SHOPS BY AREA</u>					
	<u>V. CON.</u>	<u>F. CON.</u>	<u>INDIF.</u>	<u>F. INCON.</u>	<u>V. INCON.</u>
<u>STECHFORD</u>	2	4	1	3	1
<u>CASTLE VALE</u>	2	4	2	2	-
<u>SHORT HEATH</u>	8	3	4	5	2
<u>BIRCHES GRN.</u>	7	2	1	3	1
<u>KINGSTANDING</u>	6	14	7	4	2
<u>NEWTOWN</u>	21	11	5	-	-
<u>NECHELLS</u>	12	5	2	2	-

Those who had moved to inner city areas appeared substantially more satisfied with convenience than those groups moved to peripheral areas. The two people who found the Aston area fairly inconvenient were both pensioners who bemoaned the decline in the area generally and the shopping facilities in particular; their responses could therefore be said to undervalue the convenience of the area. Convenience scores by age group again revealed a trend for the higher age groups to find the new location less convenient but this was partially masked by the fact that they had often been moved to more convenient areas. In the cases where old people had been located on peripheral estates, their convenience estimates were considerably lower than for the other age groups. Taking 44 as the threshold age, the pattern of responses broke down as follows:

<u>CONVENIENCE SCORES BY AGE GROUP</u>		
	<u>20-44</u>	<u>45+</u>
V. Convenient	37	21
F. Convenient	23	20
Indifferent	11	11
F. Inconvenient	7	12
V. Inconvenient	1	4

So far I have only dealt with individuals perceived responses. Certain things, like where they shop, mode of transport

frequency, importance and convenience are things I have no means of verifying. Others, like distance and time I am able to produce estimates for, with no guarantees that they are correct. Time measures proved to be particularly related to the age of the respondent, degree of disability and other personal factors, which meant that to correlate estimates with some group standard was prone to difficulties, particularly where the mode of transport was on foot. It seemed that it would only be feasible to develop an objective measure from map distances, as the best available surrogate for the other components of time, mode, frequency and possibly importance. From shopping behavior before the move there was a correlation of 1.00 between respondents perceived distances and my estimates of these from the map. After the move the correlation between perceived and map distances dropped to 0.81 as distances increased and became more varied. This correlation is probably inflated by the form of the data; that is, grouping of responses in half mile units gives people a greater chance of being correct. What was really fascinating however was the tendency to underestimate distance to shops: in the discussions on the other amenities we shall see that this was a consistent bias, the reasons for which are discussed in the conclusions. Most of the distances to shops were too short to show any definite trend between journeys to or away from the city centre but again, subsequent sections will show the tendency for estimates to be closer to the map distance away from the city centre, thus giving support to Brennans findings.

Shopping Correlation Matrix

This includes the data for the sample before and after their move. The statistical analysis of shopping behavior was divided into three stages: first the overall correlation matrix was constructed to observe the relationships between members of the whole sample group. Secondly, the observations were divided into peripheral and central groups, along the lines suggested by the earlier analysis and the correlation and regression scores calculated for these individually.

Shopping Correlation Matrix(Table 1)

This indicates that the correlations between the various aspects of shopping behavior are uniformly high. Concentrating initially upon convenience scores before the move it is clear that all the hypothesised factors of distance, time, mode and frequency relate strongly to the convenience estimates. Only cost with a coefficient of 0.34 appears to have little influence upon convenience estimates and this pattern is repeated after the move. This is understandable, since we have already seen that only a small proportion of the people go to shop by bus. The relationship between time, distance and convenience proved to be a negative one as hypothesised, as it did for frequency and cost also. Again, this pattern is repeated after the move. Distance, mode, time and frequency produce the highest coefficients and when regressed against shopping convenience produced a very high

level of explanation indeed. Although the regression scores dropped after the move they remained very high and I could only conclude that the uniformity of responses produced the inflated figures (Table 2). Mode, cost and frequency prove significant at the 5% level before the move but only frequency is still significant at this level after the move: this would seem to reflect the change in frequency which occurred in peoples shopping trips because of the move. Overall, the hypothesised factors produced a high level of explanation for convenience but to test the earlier hypothesis that the relationship between distance and convenience is curvilinear, the distance variable was transformed to the exponential form. In all cases this produced lower correlations than under the linear assumption. However, it was still not possible to abandon the hypothesis because distance produced low partial correlation coefficients when regressed against convenience indicating its lack of explanatory power over such short distances. Time and frequency emerge as the two most powerful indicators upon convenience estimates: at this micro-level distance has little influence and we must therefore conclude that there is a zone around the journey origin where distance has no effect and cannot therefore be lineally related to convenience. This means that the measures available are so crude that this non-linearity is effectively concealed.

To attempt to improve upon the a priori categories of things likely to impinge upon convenience estimates, a principal

components analysis was carried out. This isolated five components explaining 63.12% of the total variance:

SHOPPING BEHAVIOR: PRINCIPAL COMPONENTS

<u>% Total Variance</u> <u>Accumulated</u>	<u>Component Name</u>
---	-----------------------

22.18	Related to distance, mode, time and cost before and after move.
35.61	} Related to no. of people in household before and after move.
48.13	
56.41	Related to frequency of trips before and after move.
63.12	Related to convenience scores before and after move.

The last component emphasises something interesting in the correlation matrix: that is the 0.77 correlation between peoples estimates of convenience before and after the move. It would appear that people do have the tendency to give related responses to questions of convenience and that this also appears in their estimates of distance, time and all the other factors. There is therefore a strong element of consistency in the responses given, from which we may conclude that people will tend to be consistently inaccurate or consistently biased in one direction. It is also interesting that frequency emerges as a separate component from the other variables. This again stresses the influence that the move appears to have had upon traditional behavior patterns and consequently upon convenience scores. When the total group are disaggregated into their two components by location, a number of variations appear.

The basic pattern of principal components remains similar to that for the old area. For the central group, the first five

factors explain 65.75% of the total variance and can be described as follows:

PRINCIPAL COMPONENTS: CENTRAL AREA SHOPPING
% Total Variance Accumulated Component Name

20.28	Length of residence at Aston and distance, mode, time and cost after the move.
36.63	Distance, mode, time and cost before the move.
48.62	No. of people in house before the move.
58.13	Frequency before move.
65.75	Distance, time and frequency before move.

Convenience again emerged as a component descriptor but was far less significant than for the whole group. Distance, time, mode and cost again emerged as one component but for the central group this divided between the old and new areas. This points to a radical change in convenience structure for this group, larger than for the total sample. Frequency to shops before and after the move emerges as an important component of peoples convenience levels. However, in contrast to the overall correlation matrix, the central area group matrix shows few large correlations (Table 4). For this group, distance estimates before the move correlate well with mode and cost but with little else. The only other large correlation is between mode and cost, with negative relationships between frequency and time, frequency and cost and convenience and time. There were no other coefficients for the group larger than 0.253. Areas after the move showed broadly similar results. There are strong correlations between distance and mode, cost, frequency and convenience, the last two being

negatively related. There was a weak negative correlation between cost and convenience and stronger positive correlations between mode and cost, time and cost and finally, household size and cost. Compared to the overall matrix, few factors correlate highly with people estimates of convenience. The multiple correlations confirmed this fact. Before the move, the only factor significant at the 5% level was time, which showed a negative correlation. The overall multiple correlation for central area groups was 0.476 before the move: after the move, the only variable contributing at the same level of significance was distance, again negatively and the multiple correlation had dropped to 0.347, about a third of the size of the R for the whole group.

By contrast, the peripheral group show patterns of responses closer to the pattern for the aggregate group. The first five principal components show a similar pattern to those for the whole group. They are:

<u>PRINCIPAL COMPONENTS: PERIPHERAL AREA SHOPPING</u>	
<u>%Total Variance Accumulated</u>	<u>Component Name</u>
25.44	Distance, mode, time and cost before and after the move.
40.18	No. of people before and after the move.
51.11	No. of people, distance and mode before move.
59.21	Frequency before and after the move.
66.55	Convenience and years of residence before and after move.

Although the correlation matrix again has few really large correlations, most are larger than for the central group.

There are high correlations between distance and mode, time and cost and a negative relationship with frequency. In addition, before the move cost and mode show strong correlations, while time and frequency are negatively correlated. Frequency has the highest correlation with convenience, at 0.234.

After the move strong correlations are exhibited between distance estimates and time, mode and cost. In addition, cost is significantly related to mode and the time taken. It is the multiple regression coefficients which exhibit the greatest contrast with the central area scores (Tables 2 & 3).

As table 2 indicates, mode, time, cost and frequency are all significant at the 5% level before the move and distance, cost and frequency after the move: in addition, the multiple correlation for this group before the move is higher than for the aggregate group. Since the regression scores highlight such a large difference between these groups, in their responses before as well as after the move, then it is fair to assume that the influences upon their satisfier structures are related to the variables used by the council to sort families. One of these influences will be family size and this indeed proves significant at the 5% level for the aggregate and peripheral groups after the move. Another factor appears to be length of residence. However, the probable reason for the large difference between responses of the two groups lies in the nature of the responses in the central area. I have already noted the greater uniformity of responses to central area environments and this apparently applied to these people before they were moved, although their responses were submerged

in the aggregate sample. This reflects the fact that other influences tended to infect the responses of this group, possibly related to the type of accommodation and the strength of emotional attachment to the area before the move. In addition, areas of high shopping convenience such as these are unlikely to isolate cost or mode as significant factors. Also, the isolation of components representing distance, time cost and mode before the move and the concentration upon time factors, would indicate that the relative weakness of the stimuli connected with convenience, meant that people were unable to specify exactly which things had most influence on their measures of convenience.

Appraisal

In terms of the hypotheses already proposed, the following relationships can be observed. Both before and after the move and for both groups, distance, time and cost are negatively correlated with convenience but frequency is positively related. This means that as distance increases, convenience will decrease; the same is true for time and cost as well. However, as frequency increases, convenience will also increase and vice versa. This could mean that infrequent journeys are perceived as being further or taking longer, which seems valid in the light of earlier discussion. Distance proved to be lineally related to convenience, although there were indications that the measures used were too crude to give conclusive results. Percepts of distance related highly

to my map estimates but were consistent underestimates of them. Distance before the move was insignificant but mode, time, cost and frequency all proved significantly related to measures of convenience. I hope to show later in the analysis that distance estimates tend to become surrogates for time, cost and mode and that there tends to be an element of double counting because of this. The decrease in convenience to shops after the move is related to the increased significance of costs and the influence upon frequency and the general pattern of shopping behavior of perceived shop quality. This falls outside the scope of the questionnaire but is bound to have an effect upon convenience estimates. In general, time seems to have had the greatest control on convenience levels because of the uniformly short distances involved in travel to shops and where this had led to the adoption of a new mode of transport a steep decline in convenience was observed. Although there was no change in the absolute numbers using shops there was a considerable change in the pattern of shopping and the degree of satisfaction which people gained from the exercise. Before the move it appeared to be as much of a social function as an essential one but this social function disappeared almost totally after the move.

Convenience to Schools

Overall we have already seen that there was no change in the total number of linkages to schools after the move. Of the 55 women in the sample who took young children to school, they

broke down by destination in the following manner:

SCHOOLS ATTENDED BEFORE MOVE

<u>School</u>	<u>No</u>
Upper Thomas St.	17
Manor Park	10
Aston Hall	10
Devon St.	6
Lozells Rd.	5
Park Lane	2
Alfred St.	2
Other	3

Of these, 48 estimated they travelled the journey because it was less than half a mile, five said between half and one mile and two between one and two miles. There was no significant difference between distances in Aston and Nechells, both having a number of junior schools in the area. These distances were again compared with map estimates and agreed in every instance. This group fell entirely within the age group 20-44 and there was no observable variation between their distance estimates and age. The times they estimated were as follows:

TIME TO SCHOOL: BEFORE THE MOVE

<u>Minutes</u>	<u>No</u>
1-5	29
6-10	19
11-15	6
16-20	1

Most people were within easy reach of a school and the times shown above indicate this. Of the total only one woman who had lived on Tower Road felt that her child took longer than 15 minutes to get to school and she was something of a special case, since her son attended a special school in Nechells. She was the only one to travel to school by bus, as the figures for mode of travel indicate. Consequently, she was the only person to incur travel costs to school and this only amounted

to a six penny return fare. From casual appraisal it would appear that most of these families were very conveniently located for schools; despite this fact, their convenience estimates show a surprising degree of variation:

CONVENIENCE TO SCHOOL: ASTON/NECHELLS

V. Convenient	33
F. Convenient	15
Indifferent	5
F. Inconvenient	2
V. Inconvenient	-

It would appear that for this amenity they were unable to separate ideas on the quality of the provision in terms of teachers, buildings etc., from the strictly convenience aspects I wished them to concentrate upon. Again, there was no variation between area and convenience levels. Only six of the women from Nechells took their children to school and they all used the one on Devon Street. There appeared to be no relationship between age and convenience, the correlation coefficient being -0.04 for the total sample.

This pattern does not change substantially after the move. Although I did collect data on the schools attended after the move, it proved extremely laborious to estimate the map distances since practically every child attended a different school. However, there was little change from the previous pattern of responses. Only 46 people estimated they travelled less than half a mile to school, 8 said they went half to one mile and one said between three to four miles. This isolated case was due to a mother insisting that her child still attend the Roman Catholic School it had attended before the move.

Again, their distance estimates proved accurate within the half mile zones used: if anything, distances had improved after the move and by area they group as follows:

<u>DISTANCE TO SCHOOL BY AREA AFTER MOVE</u>			
	<u>0-$\frac{1}{2}$ mile</u>	<u>$\frac{1}{2}$-1 mile</u>	<u>3-4 miles</u>
<u>Stechford</u>	8	1	-
<u>Castle Vale</u>	3	-	-
<u>Short Heath</u>	8	2	1
<u>Birches Grn.</u>	4	1	-
<u>Kingstanding</u>	8	3	-
<u>Newtown</u>	8	1	-
<u>Nechells</u>	7	-	-

Times to schools showed a slight increase, although not of great proportions. The numbers in each of the five categories was as follows:

<u>TIME TAKEN TO SCHOOL AFTER MOVE</u>	
<u>Time in minutes</u>	<u>No</u>
1-5	25(29)
6-10	21(19)
11-15	4(6)
16-20	3(3)

The figures in brackets indicate the comparable times before the move. These would indicate that although there has been no substantial increases in distance, distances within the half mile categories have increased slightly. This is also reflected in the mode of travel, six people taking their children to school by bus after the move. Of these, 4 paid 6p return, one 12p and one 16p. Under these circumstances it will be improbable that mode or cost have an influence upon convenience in general, yet it is likely to effect specific levels quite strongly. Their responses to the question of convenience were as follows:

<u>CONVENIENCE TO SCHOOL AFTER MOVE</u>	
V. Convenient	26(33)
F. Convenient	18(15)

Indifferent	2(5)
F. Inconvenient	7(2)
V. Inconvenient	2(-)

Again, the figures before the move are in brackets. There is the same tendency to say that convenience has declined but I feel that the numbers of people who were positively dissatisfied were influenced by the school quality as well as the accessibility aspects. By area the responses showed the following pattern:

	<u>CONVENIENCE SCORES BY AREA AFTER MOVE</u>				
	<u>Very</u> <u>Conven</u>	<u>Fairly</u> <u>Conven</u>	<u>Indiff-</u> <u>erent</u>	<u>Fairly</u> <u>Incon</u>	<u>Very</u> <u>Incon</u>
<u>Stechford</u>	4	2	1	2	-
<u>Castle Vale</u>	-	2	1	-	-
<u>Short Heath</u>	4	3	-	3	1
<u>Birches Grn</u>	3	1	-	1	-
<u>Kingstanding</u>	5	4	-	1	1
<u>Newtown</u>	5	4	-	-	-
<u>Nechells</u>	5	2	-	-	-

Those who thought journeys to schools positively inconvenient were those who had been moved to the periphery. At the other end of the scale there was a definite tendency for larger numbers to be satisfied with convenience in the inner city areas. However, because of the small numbers of the sample using schools in this way, it was not considered to be of value to divide the total up into inner city and peripheral components. Therefore, only the aggregate figures were analysed statistically; the results of this analysis follow this section.

Statistical Analysis of Convenience to Schools

The correlation matrix includes the data for the sample both before and after the move. I shall deal with the internal

relationships in the same order as the earlier tabulations, namely by discussing the change in a correlation before and after the move (Table 5)

As already noted, perceived and map distance estimates were identical and produced a correlation of 1.00 before and after the move. The relationship of distance to time increased from 0.36 to 0.76 after the move, possibly pointing to an increase in the accuracy of the distance estimates within the half mile zones after the move. Distance and mode decreased from 0.55 to 0.41, again probably connected to the same slight change in distance perception not connected with mode of transport, possibly due to the frequency with which the journey had been made. The correlation between distance and cost increased from 0.25 to 0.42, indicating the increased frequency of people having to pay after the move.

Before the move there was a negative correlation of -0.18 between time and mode but this changed to 0.26 after the move. This means that those people taking their children to school by bus before the move, considered they did this in less time than those who walked, a situation that changed after the move. However, their awareness of the increased costs of bus travel is illustrated by the increased correlation between time and cost. This rose from 0.10 to 0.55. There was also an increase from 0.01 to 0.12 between mode and cost but this is attributed to the greater variety of responses after the move, rather than to any significant relationship

The table below indicates the correlations which each of the variables had with convenience scores before and after the move:

<u>CONVENIENCE SCORE CORRELATIONS</u>		
	<u>Before Move</u>	<u>after Move</u>
<u>Dist.</u>	-0.46	-0.78
<u>Time</u>	-0.55	-0.59
<u>Mode</u>	-0.09	-0.49
<u>Cost</u>	-0.25	-0.21

All the relationships were negative and as hypothesised there was an increase in the significance of all of them, except convenience and cost. This was due to two things. First, that the frequency of bus journeys after the move had increased substantially and that relatively people had become immured to paying fares: and secondly, that women dropped the children off and carried on the journey to shops or work. Both these factors seemed to dilute the significance of cost after the move. The increase in the correlation between distance and convenience is greater than would be expected from the objective estimates and again points to some deviation between perceived and real distance that was concealed by the categories used. I tested for this in two ways: Firstly, by correlating actual map distances with no reduction to half mile categories with convenience. This achieved a correlation of 0.58, which in turn indicated that these women were slightly underestimating distances after the move. The correlation between perceived and map distance was now 0.821 but this was not improved by assuming an exponential curve rather than a linear one.

Regression scores of distance, time, mode and cost against convenience resulted in only perceived distance and time being significant at the 5% level before the move. The coefficient of multiple determination explained 38% of the total variance, based on these two variables. However, after the move distance and mode were alone significant at the 5% level, achieving an R^2 of 0.645. It is more than a little hard to interpret such results when as we have already seen, the independent variables have a high degree of auto-correlation. Nevertheless, it is logical that time should have been the most important variable before the move and that distance should also have influenced time estimates. (Tables 6 & 7). After the move distance is again significant at this high level but now time only achieves a partial correlation of -0.03 being overtaken by mode as the next most significant variable. Since distances had increased only slightly and peoples percepts of this were generally under-estimates, it is puzzling why time becomes so relatively unimportant. It appears that despite the fact that people had become immured to the cost of bus journeys to school, they nevertheless felt proportionally dissatisfied with having to use the bus and that therefore the R^2 tends to over-emphasise this group within the sample. Mode of transport therefore emerges as a critical indicator of convenience to schools, in conjunction with distance.

Appraisal

The pattern of responses is similar to the findings related to shops. Of the hypothesised variables it appears that up to a threshold distance, time works as an important indicator of convenience but beyond the point where people felt impelled to use the buses it ceased to become significant and mode of transport takes over. For most of this sample the threshold distance lay just under a mile, beyond which most people used the bus. Those that did not use public transport, despite being beyond the threshold distance, appeared to be the people who underestimated distances most, possibly reflecting the fact that they did not consider the walk an inconvenience of the same order as other people. Distances were underestimated slightly over the whole group and again appeared to be lineally related to the other variables. Distance, time, mode and cost were all negatively correlated with convenience before and after the move but there was no tendency for people to give related responses to questions of convenience before and after the move. The correlation was -0.09 , indicating that people had tended to give a considered verdict of their convenience, based on perceived criteria and had not just responded unthinkingly. In absolute terms the move had little effect upon school behavior but people appeared to be very sensitive to increases in distance and found it hard to separate the accessibility aspects from the questions of amenity quality with regard to schools.

Assessment of Convenience to Pubs

This proved to be a highly influential activity within the sample group, especially before they were moved. It also proved difficult to assess because there were so many pubs within the Aston/Nechells area, most demolished by the time of the survey and few indicated on the map. Therefore the only way to establish distances was to ask people to give approximate locations and to work from this. The significance of the activity is indicated by the numbers using the pubs: 42 women, over 27% of the sample made regular visits to the local. Two groups of reasons were given: Firstly, the more established Aston/Nechells residents said they met their friends and acquaintances there while the more recent arrivals said that it was a means of getting away from the poor condition of the houses in which they lived (Tables 8 & 9). Of the total of 42, 40 estimated that they travelled less than half a mile to the local and two said between a half and one mile. From the map estimates there were only two errors, one woman overestimating and one under-estimating the distance. They all walked to the pub but they produced a considerable variety of times:

<u>TIMES TO PUB BEFORE MOVE</u>	
<u>Minutes</u>	<u>No</u>
1-5	31
6-10	10
11-15	1

Although there was little overall difference in numbers of people using pubs by age group, times taken were closely related to age, as the following table indicates:

TIME TO PUB BY AGE GROUP

	<u>Age Group</u>				
	<u>20-29</u>	<u>30-39</u>	<u>40-49</u>	<u>50-59</u>	<u>60+</u>
1-5	9	8	7	3	4
6-10	1	3	2	2	2
11-15	-	-	-	-	1

Cost did not enter into the situation since everybody walked. Frequency of visits ranged from once to seven times a week, with the largest number going twice a week:

FREQUENCY OF VISITS
No of times per week

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
4	15	6	9	5	1	2

Broken down by age group it was the 30-45 section of the population who tended to go most frequently with the over 50's coming second. The higher age groups said they would have gone more often if they had not been constrained by their incomes.

FREQUENCY OF VISITS TO PUBS BY AGE GROUP

	<u>20-29</u>	<u>30-49</u>	<u>50+</u>
1	1	2	1
2	6	6	3
3	2	3	1
4	1	5	3
5	-	2	3
6	-	1	-
7	-	1	1

It was generally the people between 20-39, those who moved into delapidated housing, who sought escape by going to the pub. But whatever the reasons, these were important institutions within the community structure before redevelopment. This was an aspect of peoples activity pattern that it seemed valid to ask how important they considered it. However, it proved to be a hard concept for these people to relate to and produced some peculiar responses. No-one said they considered their visits very unimportant but four people rated the

visits fairly unimportant, 11 said they were indifferent, 18 said it was fairly important and 9 said very important. It proved hard to reconcile some responses to frequency with peoples estimates of importance: it was obvious that some people did not grasp the concept despite attempts to elaborate the idea to them. Responses to this question were therefore considered of limited value. Finally, the convenience question reflected the pattern of responses already outlined. All of the group considered the area positively advantaged for pub convenience; 14 said it had been fairly convenient for pubs and the remainder said very convenient. There appeared to be no significant differences between age groups on this question.

However, after the move a number of changes occurred. The numbers going to the pub regularly declined by 7 to 35 and 5 of these 7 were in the over 60 age group. As with visits to shops it appeared to be the older people who failed to re-establish links broken by the move. Distances also increased substantially, only 27 now estimating that they went less than half a mile, 5 between half and one mile and 3 further than a mile. These last three were particularly enthusiastic pub goers since all three travelled by bus or car into the city centre or to their old local in Aston or Nechells, usually at week-ends. The majority still walked however, with only five going by bus and two by car. Despite these increases in distance, times had-increased hardly at all. 23 people now said it took them between one to five minutes

nine said between six and ten minutes and three said over ten minutes. The maximum time of 18 minutes was registered by one woman who travelled by bus into Aston. There was no significant variation in time by area but all three of those maintaining contact with a pub in Aston had moved to Kingstanding. Costs had increased substantially over the pre-move situation but were still relatively small. 30 people paid nothing, one paid 6p, three paid 12p and one was an old aged pensioner with a bus pass. There was a noticeable adjustment in the frequency of visits to pubs:

FREQUENCY OF VISITS TO PUBS AFTER MOVE

<u>Frequency</u>	<u>No</u>
1-2	21
3-5	11
6-7	2
Less than 1x week	4

There was a strong tendency for people to make only one or two visits per week rather than six or seven times a week and two people said that they still reckoned they went regularly but less than once a week. Again it proved to be the elder members of the group most severely affected by the move:

FREQUENCY OF VISITS TO PUB BY AGE AFTER MOVE

	<u>Age Groups</u>		
	<u>20-29</u>	<u>30-49</u>	<u>50+</u>
Less than one	-	10	1
1-2	8	7	3
3-5	2	1	2
6-7	-	-	1

Generally their responses to frequency were consistent with the importance estimates, with the notable exceptions already emphasised. Only a few people said pubs were important to them and then discontinued visits after the move. In no case

was anyone more than half a mile from a pub; so in cases where visits to pubs ceased entirely, I can only conclude that the expression of convenience is measuring the degree of dissatisfaction with the move as well as accessibility to pubs after the move. Convenience scores reflect the continued good provision of pubs after people had moved. Of those still going to the pub, 17 said it was still very convenient, 13 said fairly convenient, 2 said indifferent and 2 fairly inconvenient. There was some variation by area, those people going to Kingstanding and Short Heath generally finding the area poorest for pubs. As a group however, more people continued to go to the pub in Kingstanding than the other areas, so the trend is concealed somewhat:

<u>CONVENIENCE SCORES BY AREA</u>					
	<u>V. Convenient</u>	<u>F. Conven.</u>	<u>Indifferent</u>	<u>F. Incon.</u>	<u>V. Incon.</u>
	1				
Stechford	1	4	-	-	-
Castle Vale	1	1	-	-	-
Kingstanding	-	5	2	1	-
Short Heath	2	4	1	1	-
Birches Grn	6	2	-	-	-
Newtown	1	-	-	-	-
Nechells	5	-	-	-	-

Again because of the relatively small group using this amenity the analysis was only done at the aggregate level. The principal components analysis of the data matrix supported the conclusions drawn from the tabulations. The first five components explained 99.44% of the total variance and could be described as follows:

PRINCIPAL COMPONENTS OF PUB CONVENIENCE

<u>%Total Variance Accumulated</u>	<u>Name</u>
99.02	Location factor post move
99.53	Time and cost post move
99.76	Time before and after
99.88	Time and frequency before
99.94	Frequency and importance before move, time and cost after move.

The first component relates to the area of destination and is a composite measure which it is hard to break down. The other four factors are more valuable for this analysis. It appears that time and frequency are separate components of convenience before the move and that time and cost take over after the move. From the simple correlation matrix this pattern can also be discerned (Table 8, Appendix II). Before the move only time, frequency and importance produced significant correlations with convenience. Mode produced zero correlations since there was complete uniformity of mode throughout the sample. There was a 0,58 correlation between distance and time but distance was not effectively related with any other variable. Before the move time was only related to convenience, while frequency related to importance and convenience only. The 0.60 correlation between importance and convenience would indicate the tendency of people who found the activity particularly important to find it convenient also. After the move distance estimates and percepts of distance diverged slightly usually with people underestimating slightly. I again transformed the distance variable to the exponential form to see if any of the correlations improved but as table 9

indicates, this occurred in only a few cases and the conversion made no overall improvement. There was a 0.96 correlation between perceived distance and map distance but generally perceived distance produced higher correlations with the other variables than did map distance. Distance in linear form related highly to all other variables except frequency, where a small negative correlation indicated the tendency of people to go less often with increased distance. Mode became significant after the move and produced a correlation of 0.74 with perceived distance, indicating the greater sensitivity of people to distance after the move. There was a tendency for people to go more often if they walked and also for them to consider their convenience to pubs greater. Time proved to have the strongest correlation with convenience at -0.73 but frequency was only weakly related to convenience. When regressed against convenience estimates, only time and importance were significant at the 5% level before the move, producing an R^2 of 0.47. After the move time and cost proved to be the most significant variables, producing an R^2 of 0.64. This result bears out the findings of the principal components scores, in that distance has little influence on its own, with time as the dominant control, while time and cost became the best indicators after the move. This reinforces what was found for schools and shops, inasmuch as there appears to be the same threshold distance at work; for my sample most peoples pubs lay within the threshold. Within this distance, time emerges as the dominant indicator, while beyond it cost assumes the measure of inconvenience.

Appraisal

Pub behavior appears to be related to shop and school use, in that their concepts of convenience are structured in the same ways. Here again the range of distances was not large enough to be conclusive about the form of relationship that distance had with other variables but here also there are the same indications of the area around the house where distance has no influence. This would indicate that the correlation was not completely linear but that the measure was too crude to be conclusive. Of all the variables, time emerged as the best indicator over the relatively short distances involved.

Convenience to Clubs

Of the total sample only 21 people attended clubs of any kind and they all maintained the link with their club after the move. The definition of club was purposely left as loose as possible to cover the wide range of activities that it included. Of people attending clubs before the move, 14 said they went to bingo sessions while the remainder went either to church or working mens socials of varied kinds. Both Aston and Nechells appear to have been well provided with clubs, many left over from the days when the area was a fairly 'posh' residential area. Because of the small numbers involved, no statistical analysis was done but certain conclusions can be drawn from the tabulations.

Before the move, frequent attendance at bingo games was common to all age groups but the social groups tended to be the preserve of the older residents:

CLUB ATTENDANCE BY AGE GROUP

	<u>Age Group</u>		
	<u>20-39</u>	<u>40-59</u>	<u>60+</u>
<u>Bingo</u>	6	2	2
<u>Social</u>	2	4	5

Distances were all fairly low with ten people estimating the journey at less than half a mile, nine between half and one mile and two going further. All those estimating the distance between zero and one mile were accurate in their judgments but the two who said they went further were both inaccurate. One went to a club over on Soho Road and estimated the distance at twice my map estimate. The other attended the bingo sessions at New Town but felt that it was more than a mile for her to walk. In both cases, the over-estimation would seem to be due to the circuitous routes involved. The one going to Soho Road had to change buses three times in the process while the second case had to walk a considerable distance out of her way to get to the club.

Despite the relatively short distances, mode of transport was quite diverse. The ten people within half a mile all walked while the rest over half a mile went by bus, except for one woman who went by car and who ferried a whole group of friends in the car with her.

Times indicated a similar grouping to mode, in that most of

the people within half a mile estimated the time as under five minutes and the rest said just over five minutes. Grouped into five minute periods the following pattern emerged:

<u>TIMES TO CLUBS BEFORE MOVE</u>	
<u>Times in minutes</u>	<u>No</u>
0-5	6
6-10	6
11-15	7
16-20	2
21-25	-

The two who said it took over 15 minutes were the same people who exaggerated the distance to clubs; it would therefore appear that distance estimates are controlled by the times taken to a large measure. People appeared to judge distance using time as a ratio-estimation basis, comparing times to known distances and extending these to unknown journeys. It also appeared that people were successfully estimating the total time taken to clubs and where public transport was used not just the time on the bus. This becomes clear when the times are compared with the relatively short distances involved. As a consequence of the short journeys there was little variation in the cost. Five people said they paid a 6p return fare five paid 12p and one paid 16p. The one paying the highest fare was the individual who went to Handsworth and had to change buses. The woman who went by car said she paid 6p a trip for petrol. The price of the journey appeared to have little influence within the group upon the frequency of visits. Eight women said they went once a week, 12 said twice a week and one four times a week. This last respondent was paying a 12p return fare each time but justified the expense by the amount she won. Frequency was in no way related to age but was rather associated with the type of activity. The majority of those going twice a week were going to bingo

whereas the social clubs typically met only once a week. From the small sample size involved it is not possible to make further inferences on behavioral controls except to note the relationship between attitude and behavior.

Importance was asked since this was not a highly routineised activity in the same sense as shopping. Despite the lack of control which cost of transport appeared to have, it was clear that overall cost was a constraint upon the frequency of visits; in a number of cases this was explicitly stated. It was therefore likely that the activity would be disrupted after the move. Of the whole group visiting clubs, five said they considered it very convenient and these all fell within the half mile zone. They were also the older members of the group attending social clubs rather than bingo. Nine said fairly convenient and these were all bingo club attenders. Five were indifferent and constituted a mixture of the two types and two said fairly unimportant. Both of these said they attended bingo sessions once a week and it appeared that this fact was difficult to reconcile with their alleged attitude. It appeared from the survey that frequency and importance were quite closely related and a spearman's rank correlation of the sub-group using clubs resulted in a coefficient of 0.75. Despite a few aberrations, it would therefore appear that the majority of responses to importance are consistent ones. Convenience scores reflect the general proximity of the sample to clubs of varied kinds. Eight people said they considered it very convenient and again these were all within the half

mile zone. Six said fairly convenient, four were indifferent and three said fairly inconvenient. There appeared to be a close relationship between distance and convenience and convenience and time and rank correlations confirmed this, with coefficients of 0.691 and 0.884 respectively. Within the limitations of such a small sample group it would therefore appear that time had the greatest control over distance and convenience estimates and that cost was a constraint that they operated within but a constraint of which accessibility costs were only a small part.

As I noted earlier, it was expected that this type of activity would be most affected by the move, since they were in a relatively well provided area before the move and almost certainly would meet increased costs if they were to continue their activity. Surprisingly, there was little change overall even among the older people, who so far have proved most vulnerable to changes in behavior patterns. Although little significance can be placed on the variations by area since such small numbers are involved, it can nevertheless be noted that the Newtown and Nechells areas had the largest numbers of people going to clubs. Despite the fact that there was no overall change in linkages, there was a change in the type of linkage. After the move only eight people continued to go to the bingo clubs, seven of which came from Newtown and the inner areas and one from Stechford. One said they attended the community centre at Castle Vale and the remaining twelve said they maintained their contact with their old

clubs or socials in Aston or with local facilities. The distances reflect this change: only five people said that they still lay within half a mile of the club and one of these proved to have underestimated the distance. Five more said between half and one mile and my map estimates agreed with this. Six said they went between one and two miles and all were going to their old clubs. Two came from Birches Green and were travelling to Aston and they estimated the distances correctly. However, the other four were located in the Newtown area and two of these under-estimated the distance by almost a quarter of a mile. Four said they went two to three miles and these were all located in the Short Heath and Kingstanding areas and travelled back into Aston for the British Legion and the Villa Lions social clubs. Their distance estimates agreed with my map estimates: only one person said she went further than three miles and this proved to be an over-estimate by half a mile. She was also located in Kingstanding and went by bus to the bingo club on New Town Row. As with the other over-estimates of distance there were peculiarities in relation to the journey: she had a considerable walk to the bus stop from her home and had to change buses once and this had some effect upon her distance estimates.

Thirteen of the group now went by bus and only five, those within half a mile, continued to walk. Three went by car, and this increase in the use of cars reflects a change in

the nature of club activity after the move. In Aston and Nechells, visits to the bingo had been exclusively womens activities, while social club visits tended to be male or family activities. We have already seen that after the move less people went to bingo, substituting other club activities in its place. These new activities tended to be family affairs often with the children in attendance and requiring the use of a car wherever possible.

Times tend to reflect the mode of transport as much as distance:

<u>TIMES TO CLUBS AFTER MOVE</u>	
<u>Minutes</u>	<u>No</u>
0-5	4
6-10	7
11-15	2
16-20	4
21-25	4

Those within five minutes all went to local facilities within half a mile; only one person within the half mile fell within the 6-10 minute category. Five of those in the 6-10 minute category went by bus and one went by car, as did the two people taking from 11-15 minutes. The remainder were bus users and despite the considerable differences in times, six of the final eight people taking between 16-26 minutes travelled a shorter distance than the car users. It is to be expected that mode of transport will extend a considerable influence over the final convenience score.

Costs had increased but not as much as distances. This reflects the relative economy of longer journeys on public transport. Only two people said they still paid 6p, five said 12p and

four 16p. Only one of these using public transport had a free bus pass for retired people, although seven were apparently eligible. Costs seem to have been the major constraint upon behavior after the move and induced a change in the frequency of visits. Now only one person went more than three times a week and she lived in Newtown, close to the bingo hall. Only three people continued to go twice a week and these were both associated with the Villa Lions who apparently had mid-week and weekend sessions. The remainder were reduced to one visit per week, usually because of the cost of transport and associated charges for use of facilities. The rank correlation between importance and frequency after the move had dropped to 0.37, indicating the degree of constraint imposed by increased fares. In these circumstances it would be surprising if overall convenience did not decline. However, the results indicate less of a decline than would appear objectively justified. Only five people said they still considered themselves conveniently located for clubs and these were all in the inner areas. Five said fairly convenient and these all fell within the half to one mile radius. The number registering indifference had increased from four to seven while the people who said fairly inconvenient increased from three to four. Despite the considerable change in provision no-one said they felt the area to be very inconvenient and it seems to me that this is due to the change in nature of club activity. Whereas frequencies and costs would indicate some constraint on the level of activity and therefore on convenience levels, the change to an essentially family

activity has changed the attitude to frequency as well. Although no age group changed activity levels absolutely, the seven people over 60 were the ones who felt most impact. In all cases their frequency of visits were reduced to once a week and they accounted for the total change in convenience levels. Three who had considered Aston very convenient, now said they were indifferent and one who said she was fairly convenient now said fairly inconvenient.

Appraisal

It is necessary that no firm conclusions should be drawn from such a small sub-group. It is possible to identify trends within the data that have been observed for the activities so far discussed. While people walk to the club, time is apparently the chief influence on convenience estimates; when distance increases this is superceded by mode of transport and cost. Behavior is relatively consistent, with levels of importance but it appears that the nature of the activity changes after the move and is not simply due to my measuring something entirely different; before the move family excursions were fairly rare but they increased substantially after the move. Distance would appear to be judged in terms of time, rather than as a separate concept, this being consistent with earlier findings. Finally, the older age groups would again seem to have been affected more the other groups despite the fact that there was no overall

change in the level of activity. Regular visits to clubs of any kind therefore emerges as a minority activity but one which has considerable influence on the satisfier structures of those involved.

Convenience to Parks

This was an important activity for the Aston group. Before the move 69 people said they used the park regularly, 46% of the sample. It was a little difficult to assess frequency since park use tended to be highly seasonal. Distances were uniformly low, with 59 of them falling within half a mile, 14 between half and one mile and five between one and two miles. All of those up to one mile had assessed the distance correctly but the five people who said they went further, who all came from Nechells underestimated the distance. By road they all travelled just over two miles. This produced a correlation between perceived and map distance of 0.94 and this reflects the fact that the variation between percept and map estimate is relatively small and due to an underestimate of distance. Times were correspondingly low, with most of the sample making estimates less than fifteen minutes. This tended to vary considerably with the age group involved:

TIME TAKEN TO PARKS BY AGE GROUP

	<u>Age Groups</u>		
	<u>20-39</u>	<u>40-59</u>	<u>60+</u>
0-5	4	5	4
6-10	19	4	2
= 11-15	6	4	8
16-20	2	2	5
21+	-	1	2

Given that the distance to the park was randomly distributed by age group, as it appeared to be, then age had a considerable effect on the estimates of time involved. In fact a rank correlation produced a coefficient of 0.77 between age of respondent and time taken. Five of these people came from Nechells but four of these used alternative means of transport and so did not produce the longest times. Of the total group 64 walked to the park three went by bus and one went by car. Of the people from Nechells all five said they took between 16-20 minutes even by bus or car; this seems credible for people using public transport but it is unlikely that by car anyone could contrive to take longer than ten minutes. However, this ignores the possible influence of the A 38 and the considerable flow of traffic it carries. In most instances peoples journeys also involved stopping en route to pick friends or relatives up. The three people taking longer than twenty minutes all lived around the Tower Road area and all walked to the park: considering that they were all over fifty, the time is not an unreasonable one.

Frequencies were generally high and they also covered a wide range. People were no longer able to say that they went to the park just once a week but they nevertheless still felt that they went regularly. There were 13 people who said they went less than once a week and these went as low as one visit in a month. It was clearly a problem for them to estimate frequencies in any meaningful way because of the seasonal use.

Frequencies therefore relate to summer use only since a minority of people used the parks during the winter. Those who visited the parks less than or once a week had no critical reason for visiting the park and in general they appeared to have been the older people who went when the weather was fine. The 37 who went once or twice a week included an element of the older groups but were in general the families with children, who played football in the park or used the swings. The final 19 who went more than three times a week were families with children to an extent but again appeared to consist mainly of the higher age groups who went either to walk dogs or chat with friends:

FREQUENCY TO PARKS BY AGE GROUP BEFORE MOVE

	<u>Age Group</u>		
	<u>20-39</u>	<u>40-59</u>	<u>60+</u>
<u>less than 1x week</u>	4	4	5
<u>1-2x week</u>	22	8	7
<u>3+ times a week</u>	6	4	9

Importance produced a wide range of responses, with 15 of the sample stating that visits to the park were very important to them. These tended to be the people who went most often, producing a correlation of 0.38 between frequency and importance. 27 people said they considered their visits fairly important, 24 said they were indifferent, usually the mothers who had to let the children out in fine weather and were compelled to supervise them: three said fairly unimportant and these were all people who went less than once a week. In general therefore, responses to importance were consistent with responses to other questions. Cost was of little significance since 66 people paid nothing, two paid 6p and one 12p in fares.

This generally favourable picture is reflected in the convenience scores. 31 and 29 people found their old homes very convenient and fairly convenient respectively, 7 were indifferent and one said fairly inconvenient. This last person was over 60 and took over twenty minutes to get there. Convenience did not appear to be closely related to any one factor however. Distance, mode, time and cost were all negatively related as hypothesised but the correlations were uniformly low, with distance and time as the most significant at -0.28. Frequency and importance were positively related to convenience but of the two, frequency was the most important at 0.27. Apart from this there were few large inter-correlations. Time and distance correlated at the 0.72 and 0.74 levels, for perceived and map distances respectively. Cost was positively related to mode, specifically to use of public transport, at 0.59 but there were no other significant relationships (Tables 11 & 12). When the behavioral factors such as distance, time etc., were regressed against convenience, perceived distance, time, cost, frequency and importance were all significant at the 5% level and between them produced an R^2 of 0.28. Considering that the inter-correlations between the independent variables should tend to inflate the final R^2 , this is a rather low figure and indicates that the inferences drawn from the tabulations can only be accepted as tentative results.

After the move the situation changed rapidly, with the total number regularly using a park dropping to 21. Because of the small number of the responses and the tendency for these to be

split up between areas, correlation and regression coefficients were computed for the aggregate group after the move, although the tabulations will show specific differences between areas or by age, where these are significant. After the move 19 people still walked to the park and two went by bus. Of the total before the move, this residual group tended to be the people in higher age groups, a result which agrees with the importance scores given for the old area. 12 of the 21 over 60's continued to visit parks and the remaining 9 were all from the 40-59 age group. The reasons for the decline in park use among the 20-39 group are hard to determine. It did not appear to be due to the lack of open space in their new locations. In many cases however, people were ignorant of the presence of a park in the locality. One woman noted that the park had particular importance to her in Aston because it provided a safe play area, whereas the new suburban location had larger gardens and quieter streets. Those that knew of parks in the area generally considered them inferior to Aston Hall Park and gave this as a reason for not using the amenity. Distance appears to have played a part in the change of behavior. Only nine of the group were now within half a mile of the park, six within a mile and four between one and three miles. Their distance estimates were in total agreement with my map estimates and produced correlations of 1.00. On the whole people had to go slightly further to parks than they had at Aston but the change was not great. The areas apparently worst off for parks were the inner city areas of Newtown and Nechells, where people were between one

and one and a half miles from Aston Park.

Distances had increased slightly and so had times. The table below indicates the new times, with the previous times in brackets:

<u>TIME TO PARKS AFTER MOVE</u>	
<u>Minutes</u>	<u>No</u>
0-5	5
6-10	5
11-15	4
16-20	3
21-25	1
26-30	3
31+	-

The proportionate increases in times is only to be expected, since the people involved are all in the higher age groups. The two women going by bus fell within the 11-15 minute category, while the three people taking more than 26 minutes were all avid dog exercisers and did not always hurry a great deal.

Frequencies declined substantially, with only five people going more than three times a week, ten going 1-2 times and five going less than once a week. Compared with the previous figures and expressed as percentages, the proportion of people going over three times a week fell from 30% to 26%; those going once or twice a week fell from 52% to 50%, while those going less than once a week increased from 18% to 25%. There was still a 0.24 correlation between importance and frequency after the move but the decline in correlation would indicate a degree of dissatisfaction caused by the disruption of the activity. This assumes of course that people were

able to interpret the meaning of importance.

Convenience decreased after the move. Of the total of 21 people, only 4 said the area was convenient for parks and 11 more said fairly convenient. The proportionate changes are as follows: those considering the area very convenient declined from 45% to 19% of the sample while those saying fairly convenient increased from 42% to 52%. Those who said they were indifferent remained approximately equal with 11% and 10% before and after the move, with those who thought the area inconvenient increasing from 2% to 19%. People were more willing to say that this amenity was inconvenient than for the other amenities so far discussed; this would seem to be due to the advantaged position they had been in before the move contrasting with the post-move situation. There was no substantial variation between areas by convenience, a result of the small numbers who were located in any one area.

Distance had the highest correlation with convenience at -0.74 . Mode correlated with convenience at 0.42 which indicates that those going by bus were more convenient than those who walked; however, this is based on only two observations and so has to be taken with a pinch of salt. Time was correlated highly with convenience at -0.41 and was therefore an important variable. The coefficient of $+0.24$ between cost and convenience is related to the mode results and would imply that as convenience increases, so does cost. This is clearly not the general case and is the result of the exagger-

ation of these two observations, which show that in these specific cases people were better satisfied to go by bus. In fact, they both rated visits to parks as very important and one of them at Birches Green, rode the bus into Aston to visit Aston Park. Finally, the correlation between frequency and convenience had increased from 0.27 to 0.36 as a result of the increased difficulties encountered after the move, which tended to leave only the stalwart few.

In addition, there were strong correlations between distance and time at 0.56 and distance and frequency at -0.48 but the former had declined while the latter had increased slightly. The relationship between distance and time apparently weakened because a wide range of transport modes were used which tended to distort distance perception. The improved correlation between distance and frequency merely reflects the frictional effects of travel to parks after the move. This is reinforced by the correlation of -0.46 between frequency and time. Of all the variables, distance, mode and time related to frequency most strongly. It is clear that after the move, the increased diversity of distance and therefore time and cost have all had an effect on convenience scores. The regression equation identifies distance, mode, cost and frequency as significant at the 5% level specified but time achieves a partial correlation of only 0.11. It is necessary to recall however, that only two observations used an alternative mode of transport and that the significance of the

simple correlation matrix is probably inflated. The same is probably true of the regression scores, which tend to inflate significance scores anyway and are probably dual causes of the much larger R^2 achieved after the move, reaching 0.77.

Appraisal

The use of parks proved to be one of the activities hardest hit by the move and reflects the high level of provision of parks which the majority of the sample experienced before the move. In this instance it is the older groups who appear to have maintained their use of parks and not the young. Their distance estimates were again fairly accurate but as with the other activities discussed so far there was little overall change in actual distances and therefore in the percepts of respondents. The decline in overall convenience from a mean of 4.3 to 3.9 reflects the lack of knowledge and lack of attractiveness of other parks, as much as the increased accessibility constraints. As with the other activities, time was conceived as the major influence upon convenience before the move but cost began to become more important after the move despite its minimal effect. However, the relationship between cost mode and convenience indicates that the people who went by bus were better satisfied and would seem to be based upon the great importance which a minority of people attached to the use of parks, overcoming cost constraints. Yet again distance appeared to be

lineally related to all the other variables for none of the correlations were improved by assuming an exponential curve.

Convenience to the City Centre

Of the amenities discussed so far, this emerges as the one for which the objective factors had changed most radically. Not essentially a local neighbourhood activity, I justified its inclusion on two grounds: firstly, the pilot survey indicated that this had an important influence upon peoples convenience percepts, since it placed the local area in its city wide context. Secondly, that the longer distances involved allowed greater potential error and would probably reveal trends in the estimates better than the amenities discussed so far.

Measured from the junction of New Street and Corporation Street, the whole group lay between radial distances one and two and a half miles. The group from Nechells were just over a mile from this point, while some of the people in north Aston, along the Lichfield Road were over two miles from the centre. Specific map estimates are a little inaccurate because I had to assume their routes into town, most of the sample having a considerable choice of routes and modes. I took the total rectangular distance for the shortest route possible as my measure and this produced distances of the following magnitudes. 74 people fell between one and two miles, with 18 of these just over one mile and the remaining

56 lying just within the two mile arc. A further 17 proved to be beyond two miles but generally they clustered around the two mile mark. However, residents estimates proved to be wildly inaccurate when judged against my map measures. 29 people, the whole group from Nechells and some from Aston, considered it less than one mile to the city centre, if only just. 52 estimated the distance at around $1\frac{1}{2}$ miles, while only 12 thought they were over two miles from the centre. Individuals responses continually underestimated the the distances into the centre and no-one overestimated at all. Two of the people from Nechells said they walked to the centre of town but the other 91 went by bus. There was no appreciable difference between the distance estimates of different groups but it appeared that the people furthest from the bus routes came closest to being accurate. There was a definite tendency for people to discount part of the distance between home and bus stop and this probably accounts for the under-estimates. Why they did this is not so clear, since I specifically asked for the total distance. Possibly it is due to distance having little influence over convenience at close range, as prior analysis has indicated, and with most bus stops within this threshold the total distance is misjudged. This would explain why those further away from bus stops gave better estimates. . Times covered quite a wide range compared to distances but the majority of people estimated the total journey between 1-10 minutes. 13 people said it took less than 5 minutes, 51 said between 5-10 minutes, 13 between 11-15 minutes and 16 said more than 16 minutes.

The bus took on average 8-12 minutes to get to the city from Aston Cross and Lichfield Road and about the same from Nechells. It would therefore seem that their time estimates are all slightly less than the actual times although this cannot be proved. It is no surprise to find that distance and time correlate at 0.66 since here again, distances appear to be judged in terms of time estimates. The only valid reason I can conceive for this constant under-estimation of time is the pleasure and anticipation involved in this particular journey. Most of the women interviewed used the visits to the city centre as an entertainment as well as a necessary trip and previous research has indicated the effects of attitude on concepts of time and distance.

Costs fell into two main groups: the people in Nechells generally paid a 3p fare into the centre, while the Aston group paid 6p each way. Five of these using the bus travelled on their free passes and so paid nothing, 29 paid 6p return, 55 paid 12p return and three paid 16p return. There was no significant variation in cost by age group since age was randomly distributed between the two areas. There was a slight tendency for frequency to decrease as costs increased, with a correlation of -0.33, but again this tended to apply most to the higher age groups.

Frequencies were high in general, with only 8 people saying they went less than once a week to the city. Three of these fell within the 40-49 age range and the remainder in the 30-39

group. Most appeared to be mothers who had to go to the centre occasionally, for certain items that were not available locally or were too expensive. 63 people said they went once a week and these came from all age groups; 15 went twice a week and again, there was little variation by age.

FREQUENCIES TO CITY BY AGE GROUP

	<u>Age group</u>		
	<u>20-39</u>	<u>40-59</u>	<u>60+</u>
Less than 1x week	5	3	-
1x week	22	21	20
2x week	5	6	4
3x week	4	2	1

However, it was predominantly the younger groups who went three or four times a week, except in one isolated case where one old lady with a bus pass used to go into the city to sit on the benches in cathedral square and watch the people. Overall, it appeared that very few of the old people who were eligible for these passes actually possessed one. In addition most of them found the city centre very difficult to negotiate.

Importance questions isolated the varied groups among people going to the city centre. There were 28 people who said it was very important and these tended to be the women who travelled into the centre to do the grocery shopping, as well as for clothes and other higher order goods. There were also four old aged pensioners who went for social reasons. The overall breakdown was as follows:

IMPORTANCE SCORES BY AGE GROUP

	<u>Age Group</u>		
	<u>20-39</u>	<u>40-59</u>	<u>60+</u>
V. Important	-	-	-
F. Important	1	6	1
Indifferent	6	8	11
F. Unimportant	10	13	9
V. Unimportant	19	5	4

Most of the other figures proved pretty uniform, except that the middle aged groups tended to have larger numbers prepared to say the journey was important: this resulted in a 0.29 correlation between frequency and importance.

Convenience scores reflected the groups general satisfaction with convenience to the city centre. 55 people said the area was very convenient for the city centre, 29 said fairly convenient, 5 were indifferent, and four were slightly inconvenienced by the journey. There was little significant variation of convenience by age:

<u>CONVENIENCE BY AGE GROUP</u>				
	<u>Age Group</u>			
	<u>20-39</u>	<u>40-59</u>	<u>60+</u>	
V. Convenient	24	14	17	
F. Convenient	9	15	5	
Indifferent	2	1	2	
F. Inconvenient	1	2	1	
V. Inconvenient	-	-	-	

There were few variables that correlated with convenience; importance at 0.31 and time at -0.22 were the most significant. The correlation between importance and convenience would indicate a variation in reaction to the variables dependent upon the degree of motivation. The weakness of the correlation between time and convenience would seem to be due to the general lack of variation in times and perhaps the more significant factors of cost and mode. However, in the regression equation only time and importance emerged as significant at the 5% level (Tables 15 & 18), producing a very low R^2 of 0.14. It would seem therefore that other variables are involved besides those explicitly related to accessibility. In the

light of the inaccuracies noted in peoples responses to distance and time it would appear that, subject to some overall cost constraint, peoples convenience to the city is controlled by the purpose of the visit rather than explicit accessibility factors.

There were few large inter- correlations in the matrix (Table 13). Distance and time and distance and cost are highly related as we have seen before. There was a correlation of 0.78 between perceived distance and my estimate of map distance. The correlation between these two increased to 0.84 when the distance was transformed to the exponential form but all other correlations were lower (Table 14). I therefore had to conclude that distance was again conceived as a linear variable. There was therefore a low level of explanation provided by the hypothesised variables.

After the move the situation changed radically since the larger proportion of the group were moved much further away from the city centre. Of the total of 93 before the move, 32 went to the inner areas and the remainder to the periphery. In addition, two people started to go to the city centre who had not bothered before and these were located in the outer areas. Of the 63 in peripheral areas, 31 were located in Kingstanding, 17 in Short Heath, 10 in Birches Green, 7 in Castle Vale and 8 in Stechford. The two who commenced using the city after the move both came from Kingstanding. Because of the larger group using the city centre I dealt with the

analysis in two stages, dividing the group by area and analysing them as a whole and then as peripheral and central city groups. Without repeating much of the demographic detail that was given earlier, it is enough to say that most of the people now using the city centre from peripheral areas were of mixed ages, while those in the city centre tended to be older people.

AGE OF PEOPLE USING CITY CENTRE AFTER MOVE

	<u>Age Groups</u>		
	<u>20-39</u>	<u>40-59</u>	<u>60+</u>
Stechford	3	4	1
Castle Vale	2	3	2
Kingstanding	9	9	3
Short Heath	6	8	3
Birches Grn	4	4	2
Newtown	11	3	11
Nechells	1	3	3

Overall, their distance estimates had increased substantially and the accuracy of these estimates increased, achieving a correlation of 0.89. I estimated that of the whole group, 56 people were still within the 1-2 mile range of the city centre but only 49 said they fell within this range. The shortfall was due to people in the inner areas who were close to the mile mark underestimating the distance. Another 29 estimated they lay between 2-3 miles of the centre and my estimates agreed with this. However, the remaining 8 all said they had to travel distances ranging from 3-6 miles and three of these were wild over-estimates. The most distant respondent lay approximately five miles from the centre but thought the real distance might be closer to six miles. In the upper ranges there was therefore a tendency for people to over-estimate distance but this only occurred in three cases and the majority of people closer to the centre tended to under

estimate in the way we have observed before.

The whole group now went by bus whenever they went into the city and overall times had increased substantially:

TIMES TO CITY CENTRE AFTER MOVE

	<u>Time in minutes</u>					
	<u>0-5</u>	<u>6-10</u>	<u>11-15</u>	<u>16-20</u>	<u>21-25</u>	<u>26-30</u>
Stechford	-	-	-	-	-	7
Castle Vale	-	-	-	-	-	8
Kingstanding	-	-	-	3	11	7
Short Heath	-	-	5	10	2	-
Birches Grn	-	-	6	4	-	-
Newtown	3	12	10	-	-	-
Nechells	4	3	-	-	-	-

Despite the considerable increases in distance the times had not increased commensurately, since even at the city boundary the buses could reach the centre in half an hour. However, these estimates are all considerable underestimates of the actual times. All 8 of the people at Castle Vale going to the city said it took between 26-30 minutes. The buses are timetabled to take 30 minutes and allowing for travel to the bus stop and a possible wait once there, these time percepts must be 5-10 minutes out at least. This is even more true for Kingstanding, which also lay 30 minutes from the centre but where perceived times ranged as low as 16 minutes and no higher than 30. In some instances it appeared that people could be up to 15 minutes out in their estimates. Times correlated most strongly with perceived distance at 0.76, cost at 0.62 and convenience at -.58. The increased strength of the relationship between time and perceived distance is most likely due to the greater uniformity of mode of travel. The relationship between time and cost is explicable when considered

in relation to the use of public transport.

Costs increased substantially after the move. Seven people now used bus passes and paid nothing, 4 paid 6p, 42 paid 12p, 44 paid 16p and 3 paid 18p. The 0.76 correlation between cost and distance indicates that the inner group paid the lower fares and the peripheral group paid up to 18p per journey. I expected that there would be a strong negative correlation between cost and frequency but it was only -0.05 and entirely insignificant. In fact frequency did not appear to be greatly affected by any of the other variables involved. Of the total 17 said they now went less than once a week, compared to 8 before the move, and 67 now went once a week. Only four went twice a week and 6 three times a week. There had therefore been a definite cut-back in the frequency of visits, particularly of the group who used to go twice a week.

FREQUENCY OF VISITS TO CITY BY AGE GROUP

	<u>Age Group</u>		
	<u>20-39</u>	<u>40-59</u>	<u>60+</u>
Less than 1x week	9	5	3
1x week	22	25	20
2x week	3	1	-
3x week +	2	2	2

There was a shift among all groups to less frequent visits but again this seems to have affected the over 60 group most. Frequency proved to be weakly correlated, negatively, with all the variables and it therefore appeared that the convenience visits for social or entertainment reasons were the ones to suffer. I therefore expected to see a correlation between frequency and importance since this had previously provided some measure of the purpose of the trips. However,

there was only a 0.01 correlation between these two factors. It therefore appeared that the frequency of journeys was entirely independent of most of the variables considered here and was related to the basic necessity of the trips. However, when I examined the correlation matrices for the central city and peripheral groups it became that there was quite a distinction between the two (Tables 16 & 17). The peripheral group showed much the same pattern of responses as for the aggregate group, with no significant correlations. However, the central city group showed significant correlations between distance, time, cost, frequency and convenience. For them at least it appeared that these variables imposed some constraints. It would therefore appear that the peripheral groups lay at a distance where these variables had no influence, whereas closer to the centre people became more sensitive to time and cost considerations. This would again indicate that distance was not lineally related to these factors, yet again the curvilinear transformation of the data produced lower correlations in most cases (Table 14).

Finally convenience scores had changed considerably, in line with the environmental changes we have observed. The number who considered that their position was very convenient had declined from 55 to 25, fairly convenient increased from 29 to 31, those saying indifferent increased from 5 to 11, those saying fairly inconvenient rose from 4 to 18 and finally those who were highly inconvenienced rose from 0 to 9. These convenience scores were highly related to the area of location:

CONVENIENCE SCORES BY AREA OF DESTINATION

	<u>V. Conven</u>	<u>F. Conven</u>	<u>Indiff</u>	<u>F. Incon</u>	<u>V. Incon</u>
Stechford	1	3	1	1	-
Castle Vale	2	4	2	-	3
Short Heath	2	3	3	7	4
Kingstanding	1	6	3	4	4
Birches Grn	4	2	1	3	12
Newtown	-	-	-	3	3
Nechells	-	-	1	3	-

This tendency to vary by area is emphasised by the -0.60 correlation between distance and convenience. Because of this relationship there was also a distinct variation between convenience scores by age group, since the older people tended to be clustered in the central areas. Convenience proved to be highly correlated with distance, mode, time, and cost. The correlation of $-.58$ between convenience and time and $-.60$ between distance and convenience stems from the high inter-correlation of distance and time: the tendency to under-estimate both variables indicates this factor. As with the other amenities discussed to date, I would say that time estimates had a considerable influence upon distance percepts and not vice versa, since time was much the easiest variable for people to estimate. There was little variation between the correlations for the central and peripheral groups except that the central groups had a higher level of significant correlations. It is significant that whereas for the whole group the degree of explained variance in response increases from 14% to 40%, it actually decreases for the peripheral group, from 27% to 22%: by contrast, the degree of explained variance for the central group increased from 20% to 55%. For the whole group only distance and time were significant at the

5% level and only distance was so significant for the peripheral group. However, the central group had distance, mode and frequency all significant at the 5% level. This reemphasises the fact that for those people at great distances from the centre, accessibility factors become of little significance since their visits are reduced to essential ones. The fact that two people used the city centre for the first time after the move reflects dissatisfaction with the local shops on the grounds that they carried limited ranges of products and their prices were high. On a number of occasions women said it almost cheaper to go into town than to shop locally, even with the cost of travel.

Appraisal

A number of salient points emerge; firstly, that time and importance provided the best indicators of convenience before the move and distance and time after the move. Secondly, despite indications that an upper limit exists beyond which distance has no influence, distance still appears to be linearly related to all the other variables. It also seems that people consistently under-estimate both time and distance but that these errors are fairly consistent, since map estimates and distance percepts correlate quite well. As anticipated, the increased distances involved, permitted clearer developments of trends in the data, especially with the distinction between inner city and peripheral groups,

Convenience to Public Transport

This was considered important because of the reliance of the sample upon public transport and the significance for other amenities of the use of buses. In the last section it emerged that the actual distance to the bus stop was something which was undervalued in most cases and it is therefore of considerable interest to examine the reasons why. Use of public transport was one of the few activities to increase in frequency: before the move, 116 people said they used public transport regularly and this had increased by 7 to 123 after the move. Although some of the sample were near to railway links, all the people used buses and it is therefore safe to assume that throughout this section, public transport means buses.

In Aston and Nechells 114 of the people had a bus stop within one road's distance and therefore fell within half a mile. I asked them for the bus stop they most frequently used and measured the distance subjectively after the interview. In only two cases were people more than half a mile from the stop and then only just. There was therefore a correlation of 1.00 between residents' percepts and map estimates of distance. As with distance to pubs, it was expected that with such a uniformity low distance involved, it would not emerge as a critical indicator of convenience.

Time proved to be a more sensitive indicator than distance but it was not possible to arrive at some normative time

estimate as it had been for distance. To avoid this problem, I calculated the mean distance and time and measured the deviations from this. This produced the following pattern by age group:

<u>DEVIATIONS FROM MEAN TIME BY AGE GROUP</u>			
<u>Deviation in</u>	<u>Age Group</u>		
<u>Minutes</u>	<u>20-39</u>	<u>40-59</u>	<u>60+</u>
Equal	4	9	-
0-1	16	12	2
2-3	20	7	17
3+	4	11	14

From the mean of 3.85 the older people generally took longer and the younger group equalled or took less time than than the mean. The overall distribution shows that responses clustered around the mean; only one person took less than one minute, 9 took from 1-5 minutes, 17 took between 6-10 minutes and 5 took over 10 minutes.

Frequencies were more varied. Five people said they went less than once a week and they were all in the over 60 age group. 71 said they used the bus between once and twice a week and these constituted sections of all groups, covering the convenience journeys to shops and city centre. 19 said they used buses between 3-5 times a week, with people going to work at the upper end and convenience journeys at the lower. 20 said they went by bus between 6-10 times a week and these were mainly the women with full time jobs and the pensioners with passes, who made good use of the facility,

The importance of these bus rides was generally rated high-

ly, although ten people, principally old aged pensioners, considered it unimportant. I think this was due to a misunderstanding, they thinking I was referring to the essential quality of the journeys they made. 12 more were indifferent and these all fell within the 40-59 age range and they generally disliked the city centre and used the bus principally for visits to relatives and friends. 46 said fairly important and 48 very important; these were the people who visited the city centre and generally used the buses most frequently; however, this was not a strong relationship since there was only a correlation of 0.26 between frequency and importance.

Convenience also tended to reflect the pattern of importance scores, producing a correlation of .32 between the two variables. Only 2 people rated the old area fairly inconvenient. six were indifferent, 40 were fairly convenient and 68 very convenient. The 2 who said the area was inconvenient for buses were those two who had to go over half a mile to the bus stop. In their cases, distance would seem to have had considerable effect but overall it produced a correlation of only .07 with convenience and was not of importance. However, since time was related to convenience at $-.26$ it was fair to say that within this half mile zone people perceived variations in distance and therefore convenience but could not express them as such. To verify this I again estimated distances to the bus stops used from the map and this time did not cluster

them at all. When correlated with convenience, this measure of distance produced a coefficient of $-.31$. As the correlation matrix indicates there are few inter-correlations in the data (Tables 19-23). Only time and importance are related to convenience and the only other significant correlation is between frequency and importance. A regression equation using convenience as the dependent variable only isolated time and importance as significant at the 5% level and produced an R^2 of $.11$. This low level of explanation is principally due to the crude measure of importance used; obviously this relates to the type of activity for which the bus is required and as we have seen, this can vary widely. It is therefore not too surprising that importance provides a poor surrogate.

After the move the pattern changed considerably. The number using buses regularly increased from 116 to 123 and they broke down by area in the following way:

NUMBER OF PEOPLE USING BUSES BY AREA OF DESTINATION

<u>Area</u>	<u>No</u>
Stechford	8
Castle Vale	8
Short Heath	24
Kingstanding	28
Birches Grn	13
Newtown	23
Nechells	19

This merely illustrates that over 75% of the people in each area used buses. When I first asked this question I was surprised by the number of women who claimed never to use public transport. The increase of 7 people all fell within the Stechford, Short Heath and Kingstanding areas, so these would seem to be the areas of least satisfaction regards

shops and other local amenities. However, distance to bus stops had increased hardly at all. 116 people now said they had a bus stop within half a mile and 7 between $\frac{1}{2}$ -1 mile. Once again their estimates proved accurate when judged against my map estimates and the two measures produced a correlation of 1.0. Yet times had increased slightly, indicating that distance had probably also increased within the half mile zones. One other cause for the increased times might well have been the considerable gradients in some of the areas, like Kingstanding; these proved particularly trying to the old people in these areas, who went out of their way to avoid these. Thus times varied considerably by area:

TIMES TO BUS STOP BY AREA OF DESTINATION

	<u>Times in minutes</u>			
	<u>Below 1</u>	<u>1-5</u>	<u>6-10</u>	<u>11-15</u>
Stechford	-	3	3	2
Castle Vale	-	8	-	-
Short Heath	-	11	12	1
Kingstanding	1	9	15	3
Birches Grn	-	4	8	1
Newtown	-	22	1	-
Nechells	1	18	-	-

The importance of public transport had now increased, with 72 and 38 people rating it very and fairly important respectively. I decided to ask them for their importance estimates after the move, since the use of public transport had no intrinsic value alone and the need for it could change so radically after the move. Those registering it very important had increased by 24 and these consisted of the 7 people who started using the buses after the move, who all fell between the ages of 35-45. The other 17 all fell between the ages of 30-39 and 19 of them had children. In a number of instances

the reason for the increased importance was given as the inadequacy of local shops for childrens clothes and toys. There was a considerable change in the strength of some peoples responses, as indicated by the 0.28 correlation between importance before and after the move. Importance was also related to frequency at .30 and would indicate that the importance of a specific journey had an over-riding effect on the other constraints involved.

The number of people who felt that their new area was inconvenient for public transport had increased considerably. One person they considered the area very inconvenient but they happened to be in a particularly disadvantaged position, with almost half a mile to walk to the bus stop and much of it over hills. The 20 who said fairly inconvenient all came from peripheral areas, 7 coming from Kingstanding, 8 from Castle Vale, 3 from Stechford and 2 from Short Heath. The number of people who said they were indifferent had increased from 6 to 19 and these people came largely from Birches Green, with a few others from the Lichfield Road area. The overall breakdown was as follows:

CONVENIENCE SCORES BY AREA

	<u>V. Incon</u>	<u>F. Incon</u>	<u>Indiff</u>	<u>F. Conven</u>	<u>V. Conven</u>
Castle Vale	-	8	-	-	-
Stechford	-	3	-	5	-
Short Heath	-	2	-	15	7
Kingstanding	1	7	-	4	16
Birches Grn	-	-	13	-	-
Newtown	-	-	-	1	22
Nechells	-	-	6	1	12

Although there appeared to be a high correlation between

convenience and area, the correlation between distance and convenience was only $-.22$ and it was time and frequency that proved the most significant. When regressed against convenience however, only time was significant at the 5% level and produced an R^2 of $.25$ (Table 23). Both distance and time were negatively correlated with convenience but frequency increased as did convenience. Importance now had little significance for convenience scores but there was a correlation of $.66$ between frequency and convenience, before and after the move respectively. This implied that those who had used the bus service most regularly and had got used to the travel to the bus stop and the waiting, were most likely to find public transport convenient after the move. Distance and time show a low correlation because of the uniformly low distances travelled. Frequency was also negatively correlated with time, indicating that people nearer to bus stops tended to use public transport more than those further away. However, this relationship only produced a correlation of $-.26$ and when time to bus stop was correlated against visits to the city centre there was only a correlation of $-.38$, which was not very strong. Nevertheless, for those people who had to weigh the costs and benefits of shopping locally or at the centre, distance and time to bus stops proved quite a critical factor.

For the whole group convenience scores means declined from 4.49 to 3.66 on the five point scale devised but this drop hides considerable local variations. Again, the major differences occur between the central and peripheral groups.

Firstly, convenience for the peripheral group declined from 4.59 to 3.66 after the move, while in contrast, convenience scores for those in central areas rose from 4.35 to 4.38. This indicates the quite substantial change in circumstances between the two groups. Only time was significantly related to convenience for the peripheral groups while time, frequency and importance exhibited quite high correlations for the central group. However, when regressed only time was significant at the 5% level for both groups, while importance was significant at the 5% level for the central group. Despite these generally higher correlations, the R^2 achieved for the central group was .34 compared to .40 for the peripheral groups. It would therefore seem that time is the most fundamental constraint at the periphery while other variables tended to intrude when time became less dominant.

Appraisal

The use of bus stops and public transport is intimately related with the use of other amenities and this makes it rather hard to interpret observed trends with any accuracy. However, given other things being equal, it would appear that simple distance, measured with more precision than was done here, would provide a good indicator of convenience to bus stops. Clearly, any house that lies further than a quarter of a mile from a bus route is severely disadvantaged. It is necessary to add that time is not always closely related to distance, as we saw for the peripheral group and that this can distort

distance estimates considerably. However, from all the previous amenities discussed, we have seen that distance is always defined in terms of time and that therefore a more accurate ratio-estimation of distance would incorporate the time factor into the measure. In this study however, time is the best measure over the short distances involved and has been under-estimated fairly consistently. Although the correlations of distance with other factors proved quite satisfactory, I again tested to see if the exponential form would provide a better fit to the data but there was little or no overall improvement in the strength of the correlations (Table 20).

Convenience to Church

Of the total sample only 31 people went at all regularly to church and it was felt that this was too small a number for statistical analysis. The inferences made about peoples behavior in relation to church attendance are therefore drawn from the counts and tabulations only.

Before the move, distances to church were uniformly low. 17 people said less than half a mile, 9 said half to one mile, 4 said one to two miles and one said over two miles. My map estimates again indicated that these distances were under-estimates, since I calculated only 13 of the group within the half mile zone and 13 more within half to one mile of the church, Of these people, 26 said they walked and 5 used the

bus. The people using church's proved to be an interesting sub-group of the sample. By far the largest proportion of the group were over 50 and none were younger than 30:

AGES OF PEOPLE ATTENDING CHURCH

<u>Ages</u>	<u>No</u>
20-39	5
40-59	10
60+	16

Attendance at church proved to be a very routine activity, with people using only one church. Although I did not ask specifically what religion was involved, it emerged in the course of the interviews that over two thirds of this group were Roman Catholic.

Because of the ages of people attending church, the times taken to church had a wider distribution than would otherwise be the case. 8 said it took them less than 5 minutes and these all came from the areas around Lichfield Road, which was well provided with churches. 11 said it took between 6-10 minutes and these came mainly from Lichfield road and Nechells. 7 said it took up to 15 minutes and 5 said over 15 minutes. These tended to come from the Tower Road, Victoria Road area and travelled to churches in Witton Lane and even in one case, into the city centre. Of the 5 who went by bus, two fell within the 6-10 minute range and three between 11-15 minutes: all five estimated that the journey was greater than one mile and all were over 60. The five people who said it took over 15 minutes were all walkers and all over 50. Of those using public transport, the two who said it took up to 10 minutes by bus paid 6p return fare and

the other three paid 12p. There appeared to be some correlation between these two variables and using a rank correlation procedure did indeed produce a coefficient of .43.

Frequency was typified by one visit per week, with only four people going more often than this and only one saying she went less than once a week. This visit was usually made on a Sunday but 8 of the group said they went mid-week usually. Only in two specific cases did frequency appear to be constrained by any of the physical variables: in both cases the restriction was infirmity through old age and in both cases the frequency of visits was reduced to once a week. The major constraint in the other cases appeared to be time and enthusiasm.

This lack of enthusiasm is only partially reflected in the importance scores since few had the courage of their convictions. 26 people said visits to church were very important, one said fairly important and 4 were indifferent. This latter group were the most interesting: it transpired that they were all regular attenders at the same church and had all been put off by the arrival of a new incumbent. This illustrated the rather peripheral control which accessibility factors had over church attendance. 16 people said they thought the area very convenient; 8 said fairly convenient, 6 were indifferent and one said positively inconvenient. This turned out to be the woman who went less than once a week; overall there did seem to be some relationship between convenience and frequency and between convenience and importance. Although the responses to

importance tended to reflect what people thought I wanted to hear, it became clear that the importance issue and the degree of motivation was the controlling factor, rather than the accessibility variables hypothesised here. In other words, given a situation of relatively good provision in terms of numbers within a certain distance, convenience will depend more heavily on the perceived quality of the churches than upon the accessibility constraints.

After the move, very few of the people were located in such favourable areas for churches. No one gave nearness to a certain church as the reason for refusing or accepting a particular house and it therefore seemed likely that convenience to church would be reduced after the move. In fact only three people gave up going to church and these were all due to increased physical disabilities. These linkage breaks were obviously encouraged by the greater friction of distance but were also caused by the difficulty of finding a 'suitable' church. Of the 31 who had attended before the move, the three who stopped going were all over 50 and two were over 60: the latter had been moved to Newtown along with ten others of the over 60's. The remaining 4 had gone to Birches Green and Short Heath. Of the 10 between 40-59, 7 had gone to Kingstanding and 3 to Stechford. The 5 between 20-39 had gone to Kingstanding, Castle Vale and Nechells. Although the numbers to each area were small, it was possible to discern a difference in the mean scores for the inner city and peripheral groups and these

will be discussed later. Yet again, distances were underestimated considerably: map estimates resulted in 9 people being within half a mile of their church and 14 between half and one mile. However, peoples percepts resulted in 19 people being within the half mile range and 4 between a half and one mile. Five of the group, specifically those who had gone to church by bus before the move, still went to their old churches and estimated the distance between 1-3 miles. Two of these proved to be inaccurate and had in fact underestimated by almost a mile. In these two instances the inaccuracies appeared due to the circuitous route taken by the bus, thus deviating from the obvious shortest road distance. There had been a small drop in the numbers walking to church, from 26 to 20 and the numbers going by bus increased from 5 to 8. The three people using the bus to get to church locally, all came from Short Heath and all were over 60. There was therefore a tendency for the older people to resort to public transport, even when the distances had not increased greatly.

Four people now paid 12p, one paid 16p into the centre and one other paid 18p. The two others travelled on the free bus pass and continued to go to their old church. The frequency of visits was reduced in all cases to one time a week. When asked why they had decreased the frequency of their visits, most gave two reasons: the increased difficulty of getting to the church was one factor but the prime reason was because they could not find a church to meet their standards. Despite the considerable determination to keep up church attendance,

it seemed likely that given a few more years, the total numbers still attending would have declined still further. The decline was all due to the people travelling to their old church who were reluctant to make the journey more than once a week. Over these distances, time and cost apparently had a frictional effect upon attendance.

The whole group now said that visits to church were very important; convenience had not changed as greatly as I anticipated. The number saying very convenient had declined from 16 to 11, those saying fairly convenient remained constant at 8, the people who expressed indifference declined from 6 to 4, while those who considered the area fairly inconvenient rose from 1 to 5 people. By area the breakdown was as follows:

CONVENIENCE SCORES BY AREA OF DESTINATION

	<u>V. Incon</u>	<u>F. Incon</u>	<u>Indiff</u>	<u>F. Conven</u>	<u>V. Conven</u>
Stechford	-	1	2	-	-
Castle Vale	-	1	-	1	-
Short Heath	-	2	-	-	-
Kingstanding	-	1	2	1	1
Birches Grn	-	-	-	1	1
Newtown Nechells	-	-	-	5	7
Nechells	-	-	-	-	2

Those registering inconvenience generally came from the peripheral areas while the level of satisfaction in the inner areas was uniformly high. It would seem from these results that the combination of change in accessibility and in quality had a considerable impact on the peripheral group who were generally too far away from their old church to continue using it. It would therefore seem that the quality of the amenity and the strength of motivation prove the dominant

controls and that accessibility considerations only enter into the situation as a secondary effect.

Convenience to Cinema

This was the least important activity, in terms of numbers that was covered in the survey. Before the move only 16 people, or 11% of the sample said they went to the cinema at all regularly. This was an activity that most people used intermittently but few regularly and those who were faithful attenders were extremely disrupted by the move. Of the 16, only 5 went to local cinemas and the remainder went to the city centre. This reflects the paucity of suburban cinemas and the trend for conversion of the few there are to Indian use or into bingo halls. Many of the older people said they used to go to the cinema in their area but had not been for some years. Most of those that continued to go to the cinema were young people.

<u>USE OF CINEMA BY AGE GROUP</u>	
<u>Age</u>	<u>No</u>
20-39	9
40-59	4
60+	3

The distances perceived reflect the pattern of cinema use. Those going to the cinema locally tended, naturally enough, to travel less than half a mile; a further 8 said they went between $\frac{1}{2}$ -1 mile, 4 said between 1-2 miles and 2 said over 3 miles. These again appeared to be under-estimates, since the two who said less than half a mile both appeared to go further by map estimate; only 6 lay between $\frac{1}{2}$ -1 mile and 8

went further than one mile; the two people who said they went further than two miles had, in contrast, over-estimated the distance. Six of the people walked and one of these did so from Nechells into the city centre. The ten others all went by bus. Times varied between one and twenty five minutes, with two people taking less than 5 minutes, 6 taking 6-10 minutes, 5 taking 11-15 minutes and 3 taking 21-25 minutes. There seemed to be little relationship between mode and time since the people who went by bus took between 11-20 minutes. Of the 10 going by bus, 6 paid 12p and 4 paid 6p. Six of the 16 said they went less frequently than once a week and the other 10 went once a week regularly. It became clear at this point that these people were not always using the same cinema but were following the films: this in turn meant that distances and times could well be referring to different journeys, or people were producing some 'average' or typical journey time, probably based on the most recent visit. In this situation it was not valid to ask about importance, since they would be unable to relate to it.

Only 3 people said the activity was very convenient in their old areas and they all lay within half a mile of the cinema. So did the 5 who thought themselves fairly convenient. 6 said they were indifferent and 2 said they were fairly dissatisfied. There was therefore some relationship between distance and convenience and between distance and time but I had to assume that frequency was vastly inflated with reference to one particular cinema. The 2 people who said the area was inconvenient

were also the ones who took the longest time getting there, so there appeared to be a relationship between convenience, time and cost, and distance. It was obvious that this activity was in no way an essential one and that an increase in the accessibility constraints would reduce its proportions even further.

This was most markedly illustrated, for after the move only 4 people, or 3% of the sample continued to go to the cinema regularly and these all came from Newtown and Nechells. All 4 went by bus and estimated the distance as between $\frac{1}{2}$ - $1\frac{1}{2}$ miles. The distance decline is explicable if we note the shortage of suburban cinemas; even the 4 who still went regularly used city centre cinemas. All 4 now took between 11-25 minutes and only 2 said they went regularly once a week: the other two said they went once a fortnight. These two felt the area was inconvenient for cinemas and expressed resentment that all the local cinemas now played Asian films. The other 2 said the area was convenient for city centre cinemas but it was obvious that their weekend trips to the cinema were in effect multi-purpose journeys.

Appraisal

From such small numbers it was not possible to make definite statements about the relationship between the hypothesised variables. The use of cinemas was an activity that had been in decline for a number of years before the move and was only assisted in its decline. Nevertheless, there appeared to be

an element of frustrated demand in most of the suburban areas.

Convenience to Relatives

This activity emerged as a particularly important component of peoples behavior before the move. The term relatives covered anyone from parents to second cousins but parents and immediate blood relations dominated the selection. There was a strong tendency for families to live close together and most of them considered they were closer than the map would indicate:

<u>DISTANCE PERCEPTS AND MAP ESTIMATES</u>		
<u>Miles</u>	<u>No</u>	<u>Map Estimate</u>
Less than $\frac{1}{2}$	28	19
$\frac{1}{2}$ -1	12	7
1-2	12	16
2-3	17	13
3+	17	31

The degree of under-estimation was considerable, especially where the larger distances were involved. For journeys of over 3 miles it was not uncommon for people to be over one mile out. It was clear that distances of this magnitude ceased to have any real meaning for the respondent. Despite this consistent under-estimation, there was a correlation of .98 between the two distance measures. This was reduced to .90 when distance was transformed to the exponential form and most of the other correlations declined as well. 36 people walked to their relatives and these were usually the people within 1 mile of them. 46 went by bus and 4 by car. These last were all old people who were picked up by children or other relatives and taken out for the day. Of the 86 people who

visited relatives regularly, 41 were over 50 and 45 were between 20-49. these figures conceal the considerable concentrations of people in ages 30-39 and 55+ who visited relatives. It was typically an activity of the married couple with family or the old parent: the youngest groups, typically those who had only recently moved into Aston did not seem very active in this area. In addition, there was a considerable distinction between the distance which the younger groups and older groups tended to travel. Generally the older people had relatives in the area while the younger people were typically the ones who travelled over 3 miles:

DISTANCE TO RELATIVES BY AGE GROUP

	<u>Age Group</u>		
	<u>20-39</u>	<u>40-59</u>	<u>60+</u>
Less than $\frac{1}{2}$	1	8	10
$\frac{1}{2}$ -1	1	4	2
1-2	3	1	12
2-3	9	2	2
3+	19	10	2

Most of those within a mile of their relatives estimated that it took them about 10 minutes to get there; to be precise, 35 people said they took 10 minutes or less, 20 said between 11-20 minutes and 31 said over 20 minutes. These last estimates were closely related to distance, with a correlation of .81 and they tended to over-state the times. At least 12 of the people within one mile of their relatives were over 60 and they stood little or no chance of walking a mile in 10 minutes. Time was also related to mode and cost positively, implying that time provided some surrogate measure for distance. There was also a tendency for frequency to decrease as times increased, with a correlation of -.43, so time and therefore

distance did have a frictional effect upon movement in this instance.

Costs were considerably higher than had been found with any other of the amenities; 36 people paid nothing because they walked, 23 people paid 12p, 19 paid 13-24 p and 8 paid 24p or more. Costs related highly to all other variables, especially to distance at .72, mode at .72 and time at .57, and also had an impact upon convenience scores. For the longer journeys to relatives, cost also proved to have a frictional effect on the journeys made.

Frequency had a wide range, from people who said they went regularly once a month to people who went three times a week. Both distance at $-.47$ and time at $-.43$ influenced the frequency of visits, with the number of visits increasing as distance decreased. Overall, 25 people said they went less than once a week and these were typically the younger people who generally had further to go. 45 people said they went 1-2 times a week and these were the people with relatives in or near the area. Those who went more than 3 times a week were either lucky, in that they were only doors away from their relative, or the person needed constant attention and so had to be visited frequently.

This was considered to be an important activity by most people, with 33 saying very important, 27 fairly important, 20 indifferent and 6 fairly inconvenient. These last were all young people who had considerable distances to travel but nevertheless

felt that the journey was a duty and did not rate it as important. As we would expect, there was a negative correlation between importance and distance, time and cost but we cannot be entirely sure if the increases in distance directly influence the levels of importance or whether people simply did not locate close together because they were not on good terms. As we shall see later, nearness to relatives was considered an important factor when choosing the new dwelling, so the process is obviously a complex one.

Convenience scores covered a very wide range. 31 people said they were very satisfied, 27 said fairly convenient, 10 were indifferent, 16 were fairly dissatisfied and 6 were very inconveniently located. Distance correlated with convenience at $-.65$ and there was therefore a tendency for convenience estimates to fall with distance, which affected the young age groups most of all. In contrast to some of the other amenities, everything correlated well with convenience. Mode was related at $-.50$, time at $-.65$, cost at $-.52$ frequency at $.39$ and importance at $.42$. It is noticeable that distance and time produced the same correlation coefficient, emphasising the inter correlations between these two variables. The relationship between convenience and frequency illustrated the frictional effect of all these variables upon the levels of activity. It is noticeable that there appeared to be no defined cut-off point between distance and the stage where other variables ceased to have effect. This is perhaps due to the compensatory effect of cost, which by public transport over some of the

distances travelled is expensive, compared to the longer journeys within the city boundary. Although distance becomes a little meaningless beyond, say, two or three miles, cost retains its differential affect. When regressed against convenience, distance, time and importance all emerged as significant at the 5% level and produced an R^2 of .53; cost most probably was absorbed by time and distance within the equation, since as we have already noted, none of them are truly independent (Tables 24-29).

As a group we can say these people had strong ties with relatives and that they fall into two distinct groups. The younger people with relatives at a considerable distance are likely to find little difference, or even less difference after the move; while the older people with relatives closer by will find the difference much greater proportionally. For the one group, time and distance costs appear to be the major constraints, while time and distance provide more sensitive indicators when distances are less.

After the move the two groups already identified were separated to a greater extent. There was also a total decline in the numbers of people going to see relatives, from 57% to 52% of the sample. The decline was principally associated with the older age groups who had lived relatively close to their kin before the move but now found fairly frequently that both they and their relatives had been moved and that it was hard

to assume the old roles again. Of the 8 who ceased to visit relatives, 5 were over 60 and 3 were between 40-59. The move seems to have done little to the longer range and looser kinship ties of the younger people. By area these 78 people were now located as follows:

VISITS TO RELATIVES BY AREA OF DESTINATION AND AGE

	<u>Age Group</u>			<u>Total</u>
	<u>20-39</u>	<u>40-59</u>	<u>60+</u>	
Stechford	2	3	1	6
Castle Vale	3	1	1	5
Short Heath	8	-	3	11
Kingstanding	14	4	2	20
Birches Grn	2	4	2	8
Newtown	2	6	9	17
Nechells	2	4	5	11

Distances again fell into two groups; those up to 2 miles and the longer range journeys up to 8 mile and further. Again, there was a .96 correlation between map distances and residents percepts of it but this time there were errors in both directions. The table below indicates the number of people in each distance category by percept and map estimate:

MAP DISTANCES AND PERCEIVED DISTANCES

	<u>Percept</u>	<u>Map</u>
Less than $\frac{1}{2}$ mile	12	10
$\frac{1}{2}$ -1	16	14
1-2	20	23
2-3	8	9
3-4	12	13
4-5	6	5
5+	4	4

Up to the 1-2 mile category people were under-estimating distance but it was noticeable that some of the longer distances were over-estimates. So far, this is the only indication that Brennans Law hold good, especially since the shorter journeys are all into the city centre and the longer ones away from it. However, the proportion of distances that

were over-estimated was small, as was the number of longer journeys in relation to the shorter ones. The mean distance before the move had been just about one mile and this had decreased slightly after the move. However, this disguises the fact that the peripheral group found their mean distance increased slightly, while the means for the central group decreased. Since the population was so mixed within each group it was hard to get an overall impression of who was over-estimating and who under-estimating. To clarify the situation I introduced a dummy variable to measure the degree of variation from the mean and relate this to age. It resulted in a correlation of .54 which I took to indicate that there was a tendency for the older groups to over-estimate slightly.

After the move only 18 people still walked to relatives and these were widely distributed by area:

<u>MODE OF TRANSPORT BY AREA</u>			
	<u>Walk</u>	<u>Bus</u>	<u>Car</u>
Stechford	2	3	1
Castle Vale	2	3	-
Short Heath	1	8	2
Kingstanding	3	14	3
Birches Grn	2	6	-
Newtown	5	11	1
Nechells	3	8	-

Considerably larger proportions of people going to Kingstanding and Stechford used public transport and the use of cars to visit relatives was also largely confined to the peripheral areas. It seems therefore that those going to peripheral areas were on the whole further from their relatives than they had been. Mode correlated with distance at .41 and

frequency at $-.45$ only, the latter correlation indicating that mode and therefore distance and time, still imposed frictional effects on the frequency of these visits.

Times had not increased substantially. 31 people still said it took less than 10 minutes, 20 said between 11-20 minutes, 10 between 21-30 minutes and 17 over 31 minutes. The responses broke down by area in the following way:

TIMES TO RELATIVES BY AREA OF DESTINATION

	<u>Times</u>			
	<u>0-10</u>	<u>11-20</u>	<u>21-30</u>	<u>31+</u>
Stechford	1	2	-	3
Castle Vale	1	1	-	3
Short Heath	1	4	-	6
Kingstanding	5	7	5	3
Birches Grn	2	2	3	1
Newtown	13	2	1	1
Nechells	8	2	1	-

The correlation between time and distance was $.78$ and this is illustrated in the table above. The peripheral areas consistently have people travelling over half an hour to visit relatives. Age as well as location had some influence, for in Kingstanding, the two people over 60 visited relatives near the city centre and so were not typical of the group. The figures for the people in the city centre are slightly better than the reality because there was the tendency for people to alter allegiances within the family and visit other relatives, if they happened to be closer. Very often, those that were moved to the periphery ceased to be of interest for visiting. This occurred in 8 cases and therefore had a significant effect on the pattern of responses in the central areas. Time also correlated with cost at $.76$ and frequency at $-.26$ and in the latter case it appeared that time had declined in

influence over frequency of visits. To understand this I shall have to examine the changes in frequency induced by the move.

Costs had likewise increased very little. 52 people now paid 12p, 16 paid between 1-25p, and 10 paid over 25p. There had been a decline of 7 people paying the 12p fare and had ceased to visit relatives, as had one of the people paying 24p. The remaining 2 who used to pay 24p now found the fares increased substantially; these both came from Kingstanding. Costs proved to be related to distance at .70, times at .76 and frequency at -.32. Cost also had a frictional effect on frequency of visits but it was becoming clear that other things were also influencing responses. It seemed that the actual move, often involving the relocation of both parties simply made the procedure too difficult and not only reduced the overall numbers visiting relatives but decreased the frequency as well.

It was particularly the people who went more than three times a week who were affected. They declined from 16 before the move to 14 afterwards; of these, two had simply ceased to visit their relatives. The number going 1-2 times a week had declined by 4, also due to people no longer visiting relatives. Those going less than once a week had also decreased by 2: it is important to note at this point that although I measured frequencies down to once a month, it seemed likely that some of the sample made regular journeys at longer time

periods than this. The change in use was rather one of declining relative frequency. Frequency was influenced by distance, mode, time and cost and all were negatively related as hypothesised (Table 24). There was only a .23 correlation between frequency before and after the move, so it is clear that a considerable change has occurred. Particularly in relation to cost was this change noted: Before the move, time and distance appeared to be the major constraints but after it people became more aware of the costs involved; but unlike other amenities, this was not accompanied by any great change in distance or time.

Convenience exhibited the biggest change in response, declining from a mean of 3.63, on the five point scale before the move, to 3.20 after it. Convenience scores showed a similar areal distribution to time:

	<u>CONVENIENCE SCORES BY AREA OF DESTINATION</u>				
	<u>V. Conven</u>	<u>F. Conven</u>	<u>Indiff</u>	<u>F. Incon</u>	<u>V. Incon</u>
Stechford	2	1	2	1	-
Castle Vale	1	1	1	2	-
Short Heath	2	4	4	-	1
Kingstanding	2	8	7	3	-
Birches Grn	1	3	3	-	1
Newtown	-	-	3	4	10
Nechells	1	-	1	2	7

This is supported by the correlation of $-.60$ between distance and convenience. The central areas are relatively better off and it is noticeable from table 27 that mode of transport has little influence over convenience or anything else. All the other variables related with convenience very highly in the overall matrix. All the coefficients were negative as hypothesised, except for frequency, which tended to increase

with convenience. Distance, time and cost appeared to be the most significant factors but when regressed, it proved to be distance, time and frequency which emerged as significant at the 5% level, producing an R^2 of .44 (Table 28). Considering the degree of inter correlations between the independent variables and the inflationary effects this should have, the results are not very impressive. Clearly inter-personal differences have an important influence upon overall results. For such an activity as this it is difficult to get an overall impression of the physical situation and peoples responses to this. Clearly, one of the major distinctions drawn by this survey is the variation between the groups of people related to the distances they travel. The higher proportion of older people in central areas tended to travel less far and usually had other relatives on hand to use as substitutes, if one moved too far away. Their journeys were either across the city or away from the city but only in two cases where people travelled over 4 miles, was there any tendency to over-estimate distance. Distance, time, cost and frequency all correlated highly with convenience and yet only distance proved significant at the 5% level. By contrast, the peripheral group had a greater range of responses, with a larger group of people travelling further but also a second group who had moved to be closer to relatives and achieved their ambition. Distance emerged as a more sensitive indicator over these longer journeys but time and cost appeared to be the critical constraints that I was aware of during the course of the survey.

Appraisal

This activity proved to be very difficult to examine because of the changes in location of both parties and the fundamental behavioral change which the move appears to have induced. Distance emerges as the best indicator of convenience but time cost, frequency and mode are also significant. There appears to be a point at which distance ceases to have any influence and where costs take over. Yet again, time emerges as the most precise indicator over short journeys but despite the fact that people do not consider distance too important over short trips, it still emerges as a dominantly linear variable. In essence, the situation appeared to be that over short journeys, time was the metric used to judge convenience, over middle range distances, ground distance appeared to be the control and over longer journeys cost became predominant. The intermediate distances seemed to range over the 3-4 mile area but beyond this point they were only able to differentiate distances through costs, times becoming increasingly unreliable as distances increase. Times over 10 minutes by foot had a big impact on convenience scores: for the older groups this was not so pronounced but the younger people tended to have a degree of overlap between their use of transport modes. Most of the group appear to have changed mode somewhere between 10-15 minutes walk from the house and to have been reluctant before this point to contemplate using the bus. Their convenience estimates therefore appeared to drop progressively as this threshold was reached and to

increase only slightly after the change of mode, presumably because of the cost factor. Generally speaking, all of the hypothesised variables had an impact here but over restricted distances and differentially between groups.

Convenience to Friends and Neighbours

This aspect of visits to friends and neighbours did not emerge until the pilot survey, when it became clear that such visits played an important part in the satisfier structure of the sample. Before the move, 94 or 63% of the sample said they visited friends: convenience to neighbours had been contemplated as a measure of the social accessibility of the area rather than as a measurable distance and it seemed probable that there would be a degree of overlap between the two categories, because a friend could quite easily also be a neighbour. There was no attempt to measure the distance and time taken to neighbours, since at the micro-scale used here these would be negligible. The only variables I considered of importance were the number and frequency of contacts in relation to neighbours but it appeared that distance and time did play a role in the measurement of convenience to friends. As with the other linkages so far discussed, there was a considerable change in the behavior of the group after the move.

The friendship network fell into two components: those people with friends locally and those with contacts outside the area.

Before the move this distinction can be seen from the distances people travelled. Of the total of 94, 69 said their friends lived within half a mile of their home. Where it became obvious that the friend was, strictly speaking, a neighbour I classed them as neighbours. In addition, 14 people said that they thought the distance between $\frac{1}{2}$ -1 mile and these effectively fell into a group with the previous people. another 5 said they travelled between 1-2 miles, 3 said between 2-3 miles and 3 between 3-4 miles. These final 11 people emerged as a substantially different group from the people with proximate friends:

DISTANCE PERCEPTS BY AGE GROUP

	Age Group		
	20-39	40-59	60+
Below $\frac{1}{2}$	22	31	16
$\frac{1}{2}$ -1	3	4	7
1-2	3	2	-
2-3	3	-	-
3-4	3	-	-
4-5	-	-	-

The younger women generally had friends who had been moved to another area or who they had known before moving to Aston. These were generally their only friendship contacts, although they had many people who they called neighbours. The older age groups typically had their friends close by and usually these were not the only contacts. Frequently I had to ask them to evaluate which of many was their best friend and where this was impossible, to pick from them at random. There was therefore a considerable difference in behavior pattern between the age groups, related to the years of residence.

This distinction is based upon their distance estimates, which

were generally underestimates of the map distances to friends. I estimated that only 61 of the group were within $\frac{1}{2}$ mile of their friends and the 8 who had under-estimated were all from the 20-39 age group; by map estimate they all fell within the $\frac{1}{2}$ -1 mile range. 10 of the people who had estimated the distance as between $\frac{1}{2}$ -1 mile had also under-estimated and actually travelled just over a mile. 8 more of those who had guessed between 1-2 miles actually travelled over two, while 7 actually travelled over 3 miles. This produced the following comparison of distances:

<u>DISTANCE PERCEPTS AND MAP ESTIMATES</u>		
<u>Miles</u>	<u>Distance Percepts</u>	<u>Map Estimates</u>
0- $\frac{1}{2}$	69	61
$\frac{1}{2}$ -1	14	12
1-2	5	7
2-3	3	7
3-4	3	7

The overall correlation between percepts and estimates was .98, so the majority of people were accurate and the few that were not were only slightly out. However, this correlation tends to hide the fact that people could be out as much as half a mile and not influence the coefficient in any way. From separate examination of individuals specific responses it appeared that people were not out by more than a quarter of a mile, yet they were all under-estimates again. There appeared to be no relationship between the degree of under-estimation and age. Again, I tried to improve some of the correlation coefficients by transforming the distance variable to the exponential form but it failed to improve any of the relationships. Distance related highly with all the other variables except frequency; here there was only a -.37 tend-

ency for people to go less often with increased distance. Although distance did not have a strong control on frequency, it influenced convenience scores to a greater degree, achieving a correlation of $-.65$. This is not fully explicable without some knowledge of the mode of transport adopted.

Of the total group, 79 people went on foot and 14 by bus. Only one went by car. All of those going by foot fell within the one mile zone and only 4 people of all ages went by bus within this distance: these 4 were all over 60. Those who went by bus and car covered the other distances. The person going by car was a special case, for her relatives came and gave her a lift over to the friends house each week. Times tended to be under-estimated for the whole group. Because of the age, distance relationship already outlined, age and time were also closely related:

TIMES TO FRIENDS BY AGE GROUP			
Minutes	20-39	40-59	60+
1-10	23	33	20
11-20	3	2	3
21-30	2	1	-
31+	6	1	-

I had no way of proving if some of these estimates were inaccurate but it seemed highly likely that women over 60 would not be able to walk over a mile in less than 20 minutes. In two cases I walked the routes taken to friends and covered about three quarters of a mile in 9 minutes; based on this I think it safe to assume that many of these responses are under-estimates. This tendency seems to have been aggravated by peoples tendency to round off their distance estimates at 10 minutes. Times were again closely related to distance and despite the

probable under-estimates, provide a more accurate measure than distance. There was a correlation of .70 between times and mode but this did not appear linear; over the shortest bus journeys there was a decrease in time over the longest walked distance. Individually, there appeared to be a break point in the relationship between time and mode and distance but again the correlations were lowered by assuming the exponential form to the data. Times did not have a strong influence upon frequency at $-.27$ but was a stronger influence on convenience at $-.52$. It seems likely that the correlation between distance and convenience is an inflated one since time provided the most sensitive measure overall. Comparison of the distance and time tables indicates a tendency for the over 60's to have generally shorter times than the 20-39 age group; their under-estimates appeared to bear no relationship to age, however, but were generally distributed.

Because of the uniformity of the responses to mode, there were few people who paid bus fares; in fact 76 people paid nothing because they walked and a further two paid nothing because they travelled on passes. Of the remainder, 19 paid 12p, 4 paid 18p and one paid more than 24p. As we would expect, costs were related to distance at $.49$ and with mode at $.32$. However, it appeared to have had little influence over frequency of visits, with only a $-.20$ correlation. This was supported by comments in the actual interviews, when people noted that cost was not the dominant control, although a factor to be considered. It had a slightly stronger correlation with

convenience at $-.36$ and therefore tended to reduce convenience at the greater distances. This however, was only typical of a very small proportion of the sample. Because of the tendency for the younger people to travel further, it was they who bore the brunt of the costs described here.

Frequencies also illustrated the the considerable differences between these two groups. Related to age the following pattern emerges:

<u>FREQUENCIES BY AGE GROUP</u>			
	<u>Age Group</u>		
	<u>20-39</u>	<u>40-59</u>	<u>60+</u>
Less than 1x week	4	2	1
1-2x week	23	17	3
3+ x week	7	18	19

The older people tended to visit more frequently, partly because they lived closer, often within the same street; however, the younger people have already indicated their lack of concern with cost, so one would expect a greater frequency than this. There could be two reasons for this: the first being that although cost did not impose a constraint of major proportions, the mere fact of having to go by bus did cause a drop in frequency and in convenience. Secondly, it was likely that the frequency pattern of the older groups, who had lived in the area longest, were in equilibrium between desired frequency and accessibility. This equilibrium condition was unlikely to apply to the more recent arrivals, who had probably not re-established links with amenities outside the area or to forge new ones in the locality. Despite these trends, frequency was not greatly affected by any of the physical variables.

It correlated with distance at $-.37$ but only at $-.34$ with the map estimate. It was related to mode at $-.36$, so the form of transport obviously had some effect if not the cost. The only other correlation of import was with convenience at $.39$. Time was only correlated with frequency at $-.27$ but probably had a stronger relationship concealed by the under estimates. Overall, it would seem that people's contacts with friends are even more opportunist than with relatives. If the physical variables had such an influence over such relatively short distances, then it is likely that frequencies would be changed greatly by the move.

Overall, people considered themselves to be convenient for friends. When tabulated against age the convenience scores exhibited the same tendency already noted in relation to distance and time:

	<u>CONVENIENCE SCORES BY AGE</u>				
	<u>v. incon</u>	<u>f. incon</u>	<u>indiff</u>	<u>f. conven</u>	<u>v. conven</u>
20-39	-	4	3	7	20
40-59	-	1	2	8	26
60+	-	1	-	9	13

Most people found the contact convenient but a larger proportion of the younger people felt the journey inconvenient. Convenience scores were influenced by all the hypothesised variables. Distance was best related but as already noted it is likely that this correlation of $-.65$ is inflated by the broad distance categories used. Mode was related at $-.52$ and indicates the considerable dislike people had for going to friends by bus. Time also had an influence at $-.46$ as we have

already seen. Cost proved to have the lowest correlation of all and indicates that it was not an important factor for most of the group (Tables 29-35). For those it was important for, they had adjusted their frequency levels to approach some equilibrium state. When regressed against convenience scores the physical variables produced an R^2 of .56 with both distance estimates, cost and frequency significant at the 5% level specified. In this case the regression score has over-emphasised some of the minority responses and made time insignificant. In this situation, the simple correlation matrix is of more value than the regression scores (Table 35).

After the move things changed rapidly. Distances increased a great deal but this merely reflects the diverse areas to which the group went. There had been an overall decline of 16 people visiting friends after the move. However, not all were due to the move, for two people had lost contact with friends who had moved out of the West Midlands entirely. One woman's friend had died before the move and only 13 said they no longer kept in contact with friends because of the general accessibility problems. These came predominantly from the over 40 groups:

As already noted, distance showed a slight variation by area:

DISTANCE TO FRIENDS BY AREA OF DESTINATION

	0-1	1-2	2-3	3-4
Stechford	2	1	1	1
Castle Vale	3	1	1	-
Short Heath	4	2	2	1
Kingstanding	4	3	5	-
Birches Grn	3	3	2	-
Newtown	8	7	-	-
Nechells	7	5	1	-

This was caused by the relative concentration of older people in the centre, quite often living close to an old friend.

Although almost 60% of the peripheral group had maintained that friends had already been moved to Kingstanding and other peripheral areas and that they had located to be close to them, the distance still seems to have had an influence on the number of contacts. In a number of cases these friendships appeared to be important but not with one specific person. As the linkage chart at the beginning of the analysis indicates, there were a number of people who changed linkages after the move but these appear to have been in a minority. Most people's contacts remained remarkably durable.

Distance had again been under-estimated except in a few isolated cases. The following table gives some impression of the distance variations between percepts and estimates both before and after the move:

<u>DISTANCE PERCEPTS AND MAP ESTIMATES BEFORE AND AFTER THE MOVE</u>				
<u>Miles</u>	<u>Distance percepts</u>	<u>Estimates</u>	<u>Percepts</u>	<u>Estim.</u>
	<u>Before</u>	<u>After</u>	<u>After</u>	<u>After</u>
0- $\frac{1}{2}$	69	61	29	24
$\frac{1}{2}$ -1	14	12	22	20
1-2	5	7	10	11
2-3	3	7	13	13
3-4	3	7	2	8

Distances were more evenly distributed after the move and this time there was a tendency for the error to vary with age. Previously, because the younger people had covered longer distances this had increased their margin of error.

More people now went by bus to visit friends and this correlated with distance at .86. The numbers going by the varied

modes had changed significantly:

MODE OF TRANSPORT TO FRIENDS BEFORE AND AFTER MOVE

	<u>Before</u>	<u>After</u>
<u>Walk</u>	79	34
<u>Bus</u>	14	40
<u>car</u>	1	4

Most of the increase in bus use had occurred among the peripheral group since they tended to travel further; in only one instance did a respondent use the bus when she estimated herself to be within one mile of her friend. All the rest estimated the distance between one and four miles and all went by bus. The 3 extra people going by car were all younger families who had acquired a car after the move and they were all located in Kingstanding. Mode correlated with distance, time, and frequency and had a significant influence upon convenience estimates at $-.59$.

Time again proved to be the most sensitive measure, displaying greater variation than distance in every instance. Overall times had increased significantly and this varied by area in a similar way to distance:

TIMES TO FRIENDS BY AREA OF DESTINATION

	<u>Times</u>			
	<u>0-10</u>	<u>11-20</u>	<u>21-30</u>	<u>30+</u>
<u>Stechford</u>	4	2	-	1
<u>Castle Vale</u>	5	1	-	-
<u>Short Heath</u>	5	3	1	1
<u>Kingstanding</u>	3	5	3	4
<u>Birches Grn</u>	7	2	1	-
<u>Newtown</u>	11	4	-	-
<u>Nechells</u>	14	2	-	-

Any tendency for certain groups to under-estimate time was well concealed now. The younger people in peripheral areas should have indicated some degree of under-estimation but their times overall now seemed to be more accurate than before the move. I can only speculate that the general increase in times, coupled with the move, had now made people

conscious of this variable. It proved to be highly correlated with distance at .86, as was indicated above. The correlation between time and mode had increased to .77 which may indicate that people were more conscious of travel time because they had to take a bus, pay the fare and make the journey a much more structured affair. Time was not closely related to cost since long journeys did not cost proportionally as much as the shorter ones. Time was also related to frequency at -.45 indicating that the time taken to friends did exert some influence over the relative frequency of visits. Finally, time related to convenience at -.65 and again had a negative correlation. As with distance, time did not appear to have a uniform influence upon convenience scores; convenience decreased slowly up to a point at about 10 minutes from the home, at which point it dropped rapidly to about an hour from the house, beyond which it evened out again. This relationship is based on subjective impressions gleaned from the survey and is not found from the statistical analysis. As with distance, when transformed to the exponential form, the correlations were uniformly lower.

Cost was significant for more people after the move. It had however declined in statistical significance over convenience. Of those who paid anything, 26 paid 12p, 13 paid 16p and 3 paid over 25p. Overall, it was only correlated with distance at .27 and time at .30 but when disaggregated into the central and peripheral groups already identified, cost relationships

with the other variables improved considerably. It therefore seemed that the overall figures had diluted the relationship down, for the correlation between distance and cost for the central group increased to .88 and for the peripheral group to .87. This increase was due totally to the different mode patterns between the two areas, with most people in the central areas still within walking distance, while those at the periphery generally catching the bus. Cost was correlated with frequency at -.34 for the whole group but this increased to -.49 and -.43 for the central and peripheral groups respectively. Cost was therefore not a major control on visits to friends and at -.35 overall and -.70 and -.71 for central and peripheral groups, it had a slightly stronger effect on convenience scores. It seems that cost alone is not enough to cut down the frequency of contacts but is enough to significantly influence the levels of convenience for this activity.

Frequencies had changed considerably after the move. The number of people visiting friends less than once a week had increased from 7 to 22 and these were largely among the people in peripheral locations, both young and old:

	<u>FREQUENCY OF VISITS TO FRIENDS AFTER MOVE</u>		
	<u>Visits per Week</u>		
	<u>Less than 1x week</u>	<u>1-2x week</u>	<u>3+x week</u>
Stechford	3	3	1
Castle Vale	3	1	2
Short Heath	5	4	1
Kingstanding	4	10	1
Birches Grn	3	5	2
Newtown	2	7	6
Nechells	2	8	5

This is most noticeable among the people who maintained the frequency of visits at three or more times a week. Distance, mode, time and cost were all negatively related to frequency with perceived distance having the most effect at $-.53$ and mode and time equal in effect at $-.45$. All of these correlations were significantly higher for the central group than for those at the periphery and would point to the greater sensitivity of the higher age groups to changes in levels of accessibility.

Mean convenience had dropped from 4.47 before the move to 3.61 afterwards, so there had been quite a change in attitude. As with the other variables, this showed considerable fluctuation by area:

	<u>CONVENIENCE SCORES BY AREA OF DESTINATION</u>				
	<u>v. incon</u>	<u>f. incon</u>	<u>indiff</u>	<u>f. conven</u>	<u>v. conven</u>
Stechford	1	3	1	1	1
Castle Vale	1	2	1	1	1
Short Heath	1	3	3	2	1
Kingstanding	2	4	3	3	3
Birches Grn	1	1	2	4	2
Newtown	-	-	-	8	7
Nechells	-	-	1	7	8

The people from central areas were generally more satisfied with convenience than the peripheral groups. Overall correlations between distance, time, mode, cost and convenience were higher after the move than before and in fact varied little between central and peripheral groups. Perceived distance again emerged as the dominant indicator at $-.72$, followed by map distance at $-.70$. Time came next at $-.65$ and then frequency at $+.63$. Mode and cost produced the lowest coefficients, $-.59$ and $-.35$ respectively. All of the accessibility

variables had a frictional effect upon convenience as they had on frequency and all had increased in influence after the move. When regressed, only distance and frequency were significant at the 5% level, producing a coefficient of determination of .62. The hypothesised variables produced a better explanation after the move, probably because people were more aware of the accessibility constraints and generally less accessible after the move.

A principal components analysis of the data matrix identified time and cost as one significant component and would indicate that in this case one of the measures is redundant. This is supported by the inter-correlations between the physical variables; to clarify the nature of this inter relationship, I regressed time, mode and frequency against distance(Table 34). It seemed that distance estimates were closely related to time and that both were influenced by the mode of transport used. Of the three variables, time and mode were significant at the 5% level before the move, producing an R^2 of .70. In other words, the samples distance estimates were composed of elements of time and mode and to a lesser extent, the frequency of their journeys. This would indicate that a further study using an improved measure of distance, could fairly accurately predict the convenience levels of the population concerned. As we have seen however, the relationship of perceived distance to the actual distance can vary a great deal and this could make explanation rather difficult unless the other variables were also included.

Appraisal

Like visits to relatives, this activity was hard to analyse because it represented only a small part of most peoples actual friendship network and because quite often both parties had moved; this tended to cause greater disruption than if just one party had been relocated. There were some notable break-points in peoples awareness of distance and time, although the analysis of data did not reveal this. The analysis revealed the distinction between the older groups who had more proximate friends and more frequent contacts and the younger people who had friends further away and saw them less often. All of the hypothesised variables had an influence upon levels of convenience and on frequency of contacts and the analysis indicated how individual perceptions of distance were quite adequate surrogates for both time and mode.

Convenience to neighbours was closely related to friendship ties as I have already noted. Since it was not possible to ask questions of distance I focussed upon their social accessibility and measured the number of neighbours they were on close terms with and the number of times they visited them each week. As I have already noted neighbours could quite easily be friends as well, although I purposely excluded the Corrolary. It transpired that everyone on the sample had some minimal contact with neighbours both before and after the move. In reply to the question 'how many of your closest neighbours do you know by name', 115 people said 5, 9 said 4

8 said 3 and 7 said 1. This was closely related to the age of the respondent and also to the length of residence:

<u>CONTACT WITH NEIGHBOURS BY AGE GROUP</u>			
<u>No of neighbours known</u>	<u>Ages</u>		
	<u>20-39</u>	<u>40-59</u>	<u>60+</u>
1	4	2	1
2	3	3	2
3	5	2	1
4	3	3	3
5	38	27	50

Despite the fact that the older women tended to have more contact with their neighbours in an unstructured way, there was no correlation between this and the number of visits per week made. There appeared to be two distinct neighbouring patterns before the move. As the correlation of .06 indicates, there was not even a negative correlation between the number of neighbours known and the number visited, so there was little systematic variation by age; yet one group of women tended to visit neighbours to have tea and a chat very frequently, while another definable group disliked the idea of visiting in this way and looked on it as a slum syndrome, with women chatting in doorways. The attitude taken seems to have depended upon aspirations rather than length of residence. The pattern of responses was as follows:

<u>VISITS PER WEEK TO NEIGHBOURS BY AGE</u>			
<u>Visits per week</u>	<u>Age Group</u>		
	<u>20-39</u>	<u>40-59</u>	<u>60+</u>
0	19	9	20
1-3	13	11	10
4-7	16	10	13
8+	5	7	14

The women who scorned this formal contact with neighbours had generally lived in areas where it was prevalent or increasing and had associated it with the declining status of the

area. The other group, who were in and out of each others houses frequently, scorned these people as snobs and in fact there was little communication between the two groups. Since people of both types tended to achieve an equilibrium position with regard to visits to neighbours, in that if they didn't like visiting they simply avoided contact, the majority of people said they were satisfied with convenience to neighbours. The largest correlation with convenience was .16 for the number of neighbours known and this is too low to be relied upon. There was therefore no significant variation of convenience by age group but the overall distribution was as follows:

<u>CONVENIENCE SCORES BY CATEGORY</u>	
<u>Category</u>	<u>No</u>
V. Inconvenient	2
F. Inconvenient	5
Indifferent	13
F. Convenient	26
V. Convenient	101

The situation did not change greatly after the move. Overall, the number of people who said they knew one neighbour had increased from 7 to 41, the number naming 2 from 8 to 48, three from 8 to 28, four had decreased from 9 to 4 and people knowing all five neighbours had decreased from 115 to 26. There was no correlation between the number known before the move and after, so I concluded that either the process of familiarisation was a random one which the group had not had time to complete in just over a year, or the people in the new areas were actively disinterested in making friends or neighbours. From comments made during the interviews, the latter case seems to have been closer to the truth, although both

mechanisms were probably at work.

Likewise, the number of women making no visits to neighbours increased from 48 to 95, the number going between 1-3 times a week increasing from 34 to 36, while those going 4-7 times decreased from 39 to 8 and those going more than 8 times a week decreased from 26 to 8. This time there was a correlation between these two variables of .37, which indicated that the more gregarious women were both successful at establishing new contacts and establishing new visiting relationships. There were only one or two cases where people who were neighbours before the move were in close proximity after it, so most of these contacts were new ones.

Finally, convenience had dropped significantly from a mean of 4.45 to 3.40 for the whole group, as the table reflects:

CONVENIENCE SCORES BY CATEGORY

<u>Category</u>	<u>No</u>
V. Inconvenient	11
F. Inconvenient	26
Indifferent	48
F. Convenient	43
V. Convenient	29

Again, there appeared to be no variation of convenience level by age alone but the 37 women who said they were conveniently located for neighbours after the move tended to come from central locations. People moved to the periphery complained of the stand-offish attitudes adopted by the older and longer stay residents. For the aggregate group nothing had a strong correlation with convenience to neighbours after the move but the pattern changed when dis-aggregated into central and peripheral groups. For the central group, there was a marked

correlation between convenience to neighbours before and after the move at .34, while the numbers of neighbours known after the move had a .41 correlation with convenience: after the move the peripheral groups exhibited a very different pattern. The only factor which had any influence upon convenience scores after the move was visits to neighbours before the move. It therefore appeared that people at the periphery were genuinely concerned by their lack of contact with neighbours and that once established, this contact had a strong influence on convenience. By contrast, the central groups who tended to be the older, longer stay group of the sample, found visits to neighbours relatively insignificant at .24. This is entirely consistent with the conclusions already drawn. The regression equations reveal little that has not already been observed. For the aggregate group both visits to neighbours and neighbours known were significant at the 5% level before and after the move. When the figures were disaggregated into the two groups going to central and peripheral locations, only neighbours known was significant at 5% after the move. This reflects the fact that only a minority of women, generally those who found it easy to make friends before the move, had established any kind of contact with neighbours afterwards. In addition, my two parameters of convenience to neighbours explained only 12.9% of the variance for the peripheral group but 46.9% for the central group. It therefore appeared that my hypothesised variables had relatively little influence over convenience structures of people moved to the periphery. The only likely reason

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I could think of for this drop in explanatory power was that the people moved out from the city centre were in an entirely new type of environment. The very contrast of the old and new environments appeared to frighten many women and they looked especially to their neighbours for help and guidance, rather than the more superficial type of contact I had in mind. I do not believe the lack of explanation was due to the inappropriateness of convenience for measuring this type of social contact, since the central area groups appeared to understand the concept. I can only conclude that the people moved to the centre found themselves in a familiar neighbouring environment, while those moved to the periphery had to radically adapt their conception of contact with neighbours. This was one aspect of the new areas which few people had considered when moving but which, as I shall show later, had an important impact on overall convenience scores.

Convenience to Jobs

This activity was not originally included in the check-list but it emerged as quite an important minority activity and therefore worthy of analysis. Only 17 responses included details of work journeys but as I noted at the beginning of this chapter, this number is probably an under-estimate of the true total of women working within the sample. Since the overall numbers involved here were so small, no statistical analysis was performed and conclusions were drawn from the tabulations.

Before the move, distances were, typically, within $1\frac{1}{2}$ miles of the home and most women travelled less than one mile. There was a tendency for people to under-estimate the middle range distances:

<u>DISTANCE TO JOB: PERCEPT AND MAP ESTIMATE</u>		
<u>Distance</u>	<u>Percept</u>	<u>Estimate</u>
0- $\frac{1}{2}$	7	7
$\frac{1}{2}$ -1	5	3
1-2	3	4
2-3	1	2
3-4	1	1

All of the group fell within the 20-59 age range, with the majority in their 30's:

<u>JOBS BY AGE GROUP</u>		
<u>Ages</u>	<u>Have</u>	<u>Have no</u>
	<u>Jobs</u>	<u>Jobs</u>
20-39	11	42
40-59	6	31
60+	-	57

As one would expect over intermediate distances like this, the mode of transport tended to be either on foot or by bus. 6 people walked and these were the people who perceived themselves to be within $\frac{1}{2}$ mile of their workplace. Beyond this $\frac{1}{2}$ mile range, people tended to take the bus. There was a minor aberration in mode because two of the older women went to work by bicycle but both travelled less than a mile. Before the move, most of them travelled into the Lister Street area of Nechells where a large pool of jobs existed. The bus service to this area was good: 8 people said it took them less than 5 minutes, 6 said between 6-10 minutes and three said between 11-20 minutes. The people who estimated the time below 10 minutes generally lay within one mile of their job, while those taking longer travelled anywhere between 1-3 miles.

These times appeared to be under-estimates, particularly in the higher ranges. One woman said she worked at Wylde Green and estimated the distance between 2-3 miles, when in fact it was closer to four.

Bus costs were small, all of the group paying 12p returns. However, since there was a considerable variation in distance it seems likely that some of the costs were inaccurately assessed. Although they had all been moved after the conversion to decimal coinage, many of them could only think of the fare in pounds, shillings and pence and if the mental impact of the fare was any indication of its importance, then this was not a very significant factor for this group.

Frequencies were not something they had control over. Only one of the 17 worked part-time and she went three days in the week. The other 15 people went 5 times a week and one worked a 6 day week. Only two of the group had pre-school children and one of these was the part-timer, while the other worked a full week and sent the child to a nursery.

Convenience estimates were generally high, with 8 saying very convenient, 5 fairly convenient and 4 indifferent. Both distance and time were closely related to convenience but this did not appear true of costs. In contrast to other local activities people seemed to bear no resentment about having to catch a bus and it had little apparent influence upon convenience scores. The influence of both time and

distance are more clearly illustrated after the move.

Distances increased considerably after the move and were again under-estimates. The table below gives the pattern of responses by area:

	<u>DISTANCE TO JOB AFTER MOVE</u>				
	<u>Distances</u>				
	<u>0-$\frac{1}{2}$</u>	<u>$\frac{1}{2}$-1</u>	<u>1-2</u>	<u>2-3</u>	<u>3-4</u>
Stechford	-	-	-	1	-
Castle Vale	-	-	1	-	-
Short Heath	-	-	1	2	-
Kingstanding	1	-	2	1	-
Newtown	3	-	-	-	-
Nechells	-	1	-	-	-
Birches Brn	-	-	-	-	-

As this indicates, the overall number of women with jobs had decreased by 4 to 13. All the decline occurred among people moved to Short Heath and Kingstanding, apparently because of their increased accessibility problems. Only 4 people now walked and these were all within a $\frac{1}{2}$ mile of their job. 8 now went by bus, 4 paying 12p and the others between 12-24p and they all lay between 1-3 miles. The woman who continued to go to work by bicycle came from Aston and still travelled less than one mile. Frequency had changed only slightly, the part time worker still maintaining contact with her firm because she had been move to Newtown. However, no-one worked a six day week after the move. Convenience had decreased, with only 5 women saying very convenient, three fairly convenient, 2 indifferent, 2 fairly inconvenient and 1 very inconvenient. As with distance, convenience varied considerably by area:

CONVENIENCE SCORES BY AREA OF DESTINATION

	<u>v. incon</u>	<u>f. incon</u>	<u>indiff</u>	<u>f. conven</u>	<u>v. conven</u>
Stechford	-	1	-	-	-
Castle Vale	-	1	-	-	-
Short Heath	-	-	2	1	-
Kingstanding	-	-	-	2	1
Birches Grn	1	-	-	-	-
Newtown	-	-	-	-	3
Nechells	-	-	-	-	1

After the move both distance and time imposed constraints but now cost became of significance also. On a number of occasions the combination of travel cost and time caused too much resistance and people either gave up work or were attempting to find a job and had yet to succeed. Although only 5 of the group had changed jobs, it was obvious that most of the others at the periphery were seeking to follow their example. By contrast, the central group had easy access to jobs and their pattern of behavior changed very little.

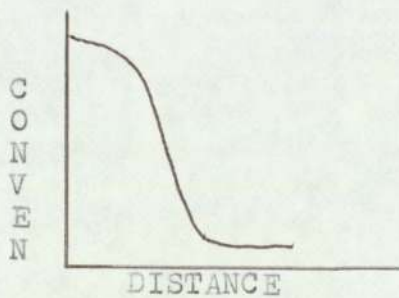
Appraisal of Convenience to Amenities

The tabulations and analysis have drawn some interesting contrasts between the sample population sub-groups, particularly between those resident in Aston for some time and the more recent arrivals. In general it seems that this divergence has been more one of activity type and behavioral response than of attitude to convenience. The two groups have tended to adopt different norms of behavior which have had little influence on convenience. For this reason, the correlations for the central and peripheral groups when separated, proved to be of more significance than the overall correlations. To sum up the influence of the physical variables, I would

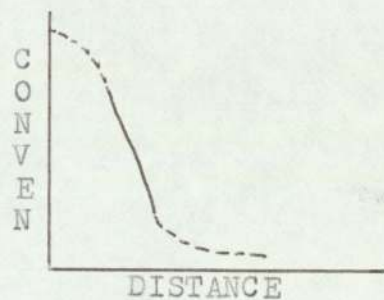
say that time proved to be the best indicator of convenience over short distances and that within $\frac{1}{2}$ a mile of the house distance had little control over convenience levels. As map distances increased, perceived distances proved the better indicator up to a threshold, beyond which peoples estimates became so wild that it was of little predictive value. At these long range distances, cost became the major indicator. For certain amenities, such as schools and church, it proved virtually impossible for the respondents to separate out the convenience aspects from the quality of provision but for all the rest convenience appeared to be a valid dimension of peoples attitudes to their environment.

The two major controls upon behavior and attitude proved to be location and the age of the respondent but unfortunately the sample was not controlled for either of these variables, although there was a tendency for the younger people to go to the periphery and for the older people to stay near the centre. This lack of control meant that the pattern of responses was obscured to some extent. However, it was still possible to discern broad trends from the data. Perhaps the major one was the tendency for people to under-estimate both time and distance. With distance, this may have been due to the measurement method used but it still remains puzzling why so few people erred in the other direction. Time was more difficult to estimate objectively and in fact I could not say for certain that the tendency was always to under-estimate. In fact only the people making the longest journeys consistently tend-

ed to do so. Over the shorter journeys, estimates were so variable in terms of time, with age and other physical conditions, that estimates were impossible. Only in a number of instances was it possible to discern any systematic variation in estimates by age group. Generally, the older people took longer to make journeys and therefore tended to consider the distance longer: however, the distance measures were too rough and ready to be able to isolate the full extent of the deviation. On the whole, the physical variables were negatively related to convenience as I hypothesised but frequency was positively related. Although it was hypothesised that distance or time would require transformation to some curvilinear function to maximise the correlations between variables, this proved not to be the case. At least, an exponential curve did not improve many of the correlations and I only used this function for two reasons. One was that it seemed to best represent the likely form of the relationship with the relatively level portions at the extremities and the steep rise over the central portion. What may have happened is that, as we saw, distance had little effect at close range but when it did have an effect it increased lineally up to a certain point and then lost effect again:



Hypothesised
Relationship



Possible form of observed
relationship

All that can be said for certain is that over the middle range distances, perceived distance and time appear to be lineally related to convenience, although there are grounds to be suspicious of the estimation methods used.

Finally, one of the most interesting findings relates to the relative strength of attachment to various activities and the way this influences the overall numbers using the amenity before and after the move. As a group, the old aged pensioners appeared to have proved least adaptable and to have suffered most, despite their relatively advantaged position of being located in the inner areas. But despite the differential impact of the move between groups, there appeared to have been little substantive change in the satisfier structure of the group. The hypotheses that were proposed in the last chapter, relating to convenience to specific amenities, have nearly all held good over the change, although the survey has indicated that the relationship between distance, time, mode, cost, frequency and importance is not as simple as is often thought.

Overall Convenience and Institutional Factors

As the final stage of the research it was proposed to examine the relationship of the individual activities already discussed to an overall measure of convenience. I noted earlier that it is somewhat artificial to categorise peoples activity patterns into discrete episodes in this way. The limitations of

this approach are clearly illustrated with reference to the definition of friendship patterns. So far the analysis has indicated that the varied physical variables connected with accessibility all have an effect on convenience scores, at varied levels for one amenity and at varied levels between amenities. However, this gives no indication of the relative importance of each activity for peoples overall levels of convenience. If any form of action plan is to be based on the observed relationships between peoples perceptions and the measurable physical stimuli, then some system of priorities among the activities discussed has to be developed. However, before discussing the significance of the individual convenience estimates for overall convenience, it is necessary to consider the influence of three of the institutional variables included in the survey.

The Influence of Car Ownership

As we have seen, most of the women in the sample used public transport if they did not walk, except for the activities which they performed as as families. Therefore, although 8 families in the sample had cars before the move there were few women who could use them, either because they could not drive or because the husband went to work in it. Before the move, car ownership was restricted to the established families, covering the group over 40 generally. After the move, distance from the husbands job seems to have been the prime reason for the acquisition of a car and 5 families did this, making

13 people with cars after the move. Four of these new cars were bought by people in peripheral locations and one by a man in Newtown who had a considerable drive to work. There was a correlation of .68 between those who had had cars before the move and those with them after. However, the possession of a car seems only to have influenced the levels of convenience of those going to the cinema before the move and was therefore not considered a highly important factor.

House Type

The second question related to the type of house occupied after the move. Since it was primarily on the grounds of improved accommodation that they were moved, it seemed quite probable that it might influence their convenience levels as an exogenous variable. I concluded that they would be interpreting 'convenience' the wrong way if this factor had any influence on convenience scores. The five categories of house type used were fairly basic but it proved rather hard to classify some dwellings. For instance, many of the houses in Newtown were modern terraces, while those in Aston were nineteenth century terraces. In the end I distinguished between new houses, old houses, the varied types of flats and the few prefabs that were included. The results were as follows:

	<u>HOUSE TYPE BY AREA OF DESTINATION</u>				
	<u>New Houses</u>	<u>Old Houses</u>	<u>Low Flat</u>	<u>High F.</u>	<u>Engl</u>
Stechford	9	-	-	-	-
Castle Vale	1	-	3	6	-
Short Heath	18	-	1	2	2

Kingstanding	29	-	-	-	-
Birches Grn	14	-	-	-	-
Newtown	13	7	7	10	-
Nechells	3	9	5	0	-

There proved to be a .40 correlation between house type and age and length of residence, which simply indicated that those people who had lived in Aston longest and who were generally the oldest, tended to live in flats or purpose built accommodation. This proved to be the only significant correlation with house type and I therefore inferred that the type of accommodation they had received had not coloured their entire attitude to the area.

Attitudes to the move

The third question related to the attitude to the move, since it appeared probable that someone who had not wanted to move would look with a jaundiced eye upon the new environment. Overall, 79 people said they were unhappy about the move, 5 were indifferent, and 63 were happy about the change of area. This correlated with length of residence at $-.32$, indicating that the older residents were least enthusiastic about the move and the young most keen. This also related to length of residence, since this was cross correlated with age. The only other things which seemed to influence this attitude were convenience to public transport at $-.25$, convenience to friends at $-.21$ and overall convenience at $-.36$, although none of these correlation are very large. Obviously the attitudes to the move are closely related to attitudes to the

old area and the total amount of explained variance is probably larger than these simple correlations would indicate.

A number of other factors were hypothesised to have some influence over convenience scores. One of these was the time the people had lived in their new areas. Although they had been there between 1-2 years, it seemed likely that the length of residence would control the development of attitudes to the area. However, the correlation matrix revealed that the only variable it was remotely related to was the location of the new house, at .25. For the sample group the length of residence therefore appeared to have no control over the perceived levels of convenience. This may be due to the relatively short time scale; or rather, that linkages to common amenities like shops were established early, while links to new friendship networks would not be fully established in so short a space of time.

Years of residence before the move was proposed as an important variable and it fulfilled its promise. The correlation of .24 with convenience to neighbours would indicate that the older age groups were more convenient overall. It correlated with attitude to move at $-.35$ as I have already noted. It was related to house type at .40 and the age of the woman at .61, indicating the degree of inter-correlation between these variables. In fact there was a correlation of .35 between house type and the wives age, reflecting the housing departments attempts to fit people to the available accommodation.

In general, peoples convenience estimates appeared relatively independent of these exogenous variables. Neither house type or the possession of a car seemed to have any influence on convenience estimates individually or collectively. However, attitude to move did have a $-.24$ correlation with overall convenience after the move, so it did tend to colour peoples attitudes somewhat. One thing that had particularly worried me was the possibility that people would give unthinking responses to questions of convenience and it was because of this that the questionnaire was arranged sequentially. Judging by the convenience scores before and after the move, there was no inter-correlation between the two responses (Table 37). This therefore refuted the hypothesis that people would tend to respond in similar ways before and after the move. The only exception to this was convenience to parks, where a correlation of $-.25$ occurred, indicating that those people who found it particularly pleasant and convenient before the move, found provision in the new area particularly bad.

As was expected there appeared to be little relationship between convenience scores for amenities and where there was a correlation, it was generally low. There was a correlation between shops and use of public transport that increased from $.22$ before the move to $.29$ afterwards, indicating a certain degree of dependence of some people on buses. Some of the other correlations, such as those between park and school and between relatives and visits to pubs, could not be adequately explained from the data. Others, like convenience to the city

centre appeared to be highly significant. This was correlated with convenience to buses at .24, church at .25, relatives at .25 and friends at .26. These were obviously due to its inter correlation with bus use and in fact after the move this correlation had increased to .50, with shops and pubs also highly related. The correlation of .32 between convenience to neighbours and to shops appeared to stem from the fact that the local shops provided a gossip forum and was where most of the contact between neighbours actually took place. This had dropped to .15 after the move but the correlation between shops and friends had increased to .32. This was corroborated by comments from respondents who stated that they frequently met friends at the shops, even after the move, as a form of social activity.

Finally, a number of the variables appeared to influence convenience estimates before the move. Overall convenience was correlated with convenience to shops at .32, bus convenience at .36 and convenience to relatives, friends and neighbours at .28, .28 and .34 respectively. To assess the degree of overall explanation I regressed the individual convenience scores against overall convenience. This was seen to have a stronger theoretical justification than had been the case for regression of physical variables against individual convenience levels, since the scales were now in the same metric and as the simple correlation matrix showed, there were few large inter-correlations between the variables. There was therefore more validity in calling the independent

variables by their name. However regression does not avoid the assumption that the variables are lineally related, which they may not be. Nevertheless, when regressed, convenience to shops pubs, public transport, friends and neighbours all emerged as significant at the 5% level, producing an R^2 of .98. This is remarkably high for an empirically tested relationship and leads me to suspect inter-correlations among the independent variables, although the correlation matrix did not indicate this. Another possible cause may have been the very uniform pattern of responses before the move causing the observed variance in response to be too low for the regression technique to pick up valid relationships. Whether inflated or no, the degree of explanation provided by the hypothesised activities is high and it would therefore seem valid to assume that such routine activities do explain a good deal of the variation in peoples overall convenience levels:

<u>CONVENIENCE SCORES OVERALL BEFORE MOVE</u>	
<u>Category</u>	<u>No</u>
Very Convenient	99
Fairly Convenient	41
Indifferent	6
Fairly Inconvenient	1
Very Inconvenient	-

In the light of what has already been said about individual activities, the only really surprising conclusion was the one related to convenience to pubs. A greater proportion of the sample visited pubs regularly than I had expected, either as a social activity or to escape their home environment and this seems to have had an effect on overall convenience estimates. At the level of significance specified it is unlikely

that these activities emerged by accident. Shopping is understandably important to women who do most of the household purchasing; public transport is similarly an essential to a group of people without alternative means of transport. The surprising factors are friends and neighbours. I suspect that had the questions been asked before the people were moved, these two aspects would not have emerged. Only in the post-move situation, when they have become painfully aware of what they lost through the move, did these factors emerge as significant.

After the move the pattern again changed drastically. Overall convenience fell considerably, as the table indicates:

<u>OVERALL CONVENIENCE SCORES AFTER THE MOVE</u>	
<u>Category</u>	<u>NO</u>
Very Convenient	52
Fairly Convenient	42
Indifferent	27
Fairly Inconvenient	20
Very Inconvenient	6

There was a $-.24$ correlation between overall convenience before and after the move, which would imply that those people who found the old areas particularly attractive, tended to react unfavourably against their new locations. There was some variation in overall convenience by the size of household, with a correlation of $.23$ and since the size of household tended to vary by area, overall convenience was related to the area of destination:

CONVENIENCE OVERALL BY AREA OF DESTINATION

	<u>v. conven</u>	<u>f. conven</u>	<u>indiff</u>	<u>f. incon</u>	<u>v. incon</u>
Stechford	2	3	1	2	1
Castle Vale	1	1	2	3	1
Short Heath	9	9	8	3	2
Kingstanding	11	3	6	6	1
Birches Grn	2	4	4	3	1
Newtown	15	12	3	2	-
Nechells	12	10	3	1	-

Of the individual convenience estimates, 7 had some correlation with overall convenience. In descending order of correlations, these were neighbours at .39, shops at .35, relatives at .30, bus stop at .29, city centre at .26, pub at .21, and school at .20. There were not so many inter-correlations after the move. There was some association between shop convenience and convenience to the city, at .29, bus at .29 and friends at .32, and as we have already seen, shopping convenience was highly related to overall convenience. School convenience appeared to be related to nothing but overall convenience. Convenience to clubs correlated with attitude to parks at .38 and it appeared that this was due to the central city groups who still had access to Aston Park and to most of their old clubs. As already noted, convenience to the city correlated highly with convenience to public transport at .50 but it also had an effect on neighbours which I could not explain. Convenience to public transport was also related to neighbours at .32 and this may indicate that for those women who visited most frequently and travelled into town, contact with neighbours was that much easier than for women with less gregarious habits. Church and cinema convenience were related to nothing but it is probable that there were too few observations to

establish definite relationships. Relatives correlated with neighbours at .34 and reinforced the idea that some women were both more gregarious and apparently more satisfied with their contacts in the area. I therefore expected to see a similar relationship between friends and neighbours but none existed. Apart from the already discussed correlation with overall convenience, friends correlated with attitude to the move at .24, which implied that those people happiest with the move, that is the younger people, were the ones who reckoned it was most convenient for friends after the move. This clashes with the conclusions drawn from the breakdown of convenience responses by area and appears to be due to the greater numbers in the peripheral areas having a disproportionate influence upon the overall convenience correlations.

Because of the lower level of inter-correlations after the move, it was likely that the R value would have declined slightly. For the whole sample it emerged that after the move convenience to shops, pubs and neighbours were alone significant at the 5% level, producing an R^2 of .91. The partial correlations for convenience to bus and friends had both dropped to insignificant levels after the move. This may seem a conflicting result with the obvious need of these people for public transport but I think it reflects the fact that in their new environment they were less concerned with external linkages and more interested in the local problems related to shopping, social provision and the like(Table 36).

Appraisal

It appears that there is little correlation between convenience estimates for varied amenities and logically we would not expect a relationship, except perhaps between use of public transport and amenities like journeys to the city centre. Yet the regression scores indicate that overall convenience estimates are significantly affected by individual convenience measures and that variation in the levels of provision of these can significantly influence overall convenience attitudes. In terms of the hypotheses originally postulated, this survey has indicated that this group of people were able to interpret the meaning of overall convenience and felt that convenience to routine activities had a powerful control over their attitude to the area. The implications of these findings for making improvements in residential environments will be discussed in the next chapter.

CHAPTER EIGHT: CONCLUSIONS

At this point I wish to draw all the threads together and to assess the implications of this survey, and surveys of this type, for measuring environmental quality and seeking ways to improve it. I have illustrated some of the weaknesses of adopting an economic approach in the search for environmental indicators and suggested that a social indicator, based on behavioral and attitudinal data could provide information to complement existing measures. Attributes of dwellings have been divided into convenient groups by researchers concerned with house price studies and dwelling satisfaction studies. I have adopted a four-fold division of attributes, namely attributes of the dwelling, of the environment around the dwelling, the attributes relating to the accessibility of other land uses to the dwelling and finally attributes relating to the social networks within the area. These last two I have amalgamated as the social and physical components of convenience. For reasons already outlined, I have only discussed the accessibility attributes here but were such an approach to be used to monitor an improvement area, then all of the attributes would require study. The survey was done at two points in time in order that relationships observed at one point could be verified under different conditions. By choosing accessibility characteristics for people moved by redevelopment, I limited the study to aspects which either remained at the same convenience level or got worse. From the analysis, it is therefore possible to observe how

a change in stimulus decreased convenience but it is not clear how an improvement in the objective measures would affect attitudes. For instance, from the survey it emerged that old people have different perceptions to the young and that a decrease in convenience caused a sharp drop in the diversity of their linkages and the frequency of visits. However, it is not valid to assume that an increase in accessibility would increase their frequency of visits or perceived levels of convenience. In most cases, the disengagement process had been accelerated by the move and it seems doubtful that people who had achieved an equilibrium level of activity would be willing or able to increase their activity levels. It can therefore be dangerous to assume the corollary of an observed relationship. However, for the majority of the young people it appeared that an increase in accessibility would result in a commensurate increase in convenience and activity.

This survey has produced data on the physical influences upon individuals levels of convenience and the influence of specific activities upon overall convenience. Perhaps the major conclusion is that individual convenience levels overall can be explained by changes in activity to specific amenities.. Although the number of variables significant at the specified level fluctuated between areas, the degree of explained variance remained remarkably high and the model appeared to be very robust. In a sense, the relative strengths of the partial correlation coefficients indicate a ranking of the importance of variables as indicators and can therefore be

used to indicate priorities for action:

<u>RANKED CORRELATION COEFFICIENTS BEFORE MOVE</u>	
<u>Amenity</u>	<u>Correlation</u>
Friends	.29
Bus stop	.28
Neighbours	.27
Shop	.21
Pub	.21

In terms of planning action, there is little that can be done with regard to friendship networks. However, the significance of local amenities like bus services and shops means that action in these areas could substantially increase peoples overall convenience with their areas and give the greatest returns on investment, assuming consumer satisfaction as a prime goal. The coefficients listed above indicate the settled nature of the area, emphasised by the relative uniformity of many of the variables, which has tended to underestimate their importance. After the move the situation has changed considerably. Ranking the correlations this time produces the following pattern:

<u>RANKED CORRELATION COEFFICIENTS AFTER MOVE</u>	
<u>Amenity</u>	<u>Correlation</u>
Neighbours	.35
Pub	.32
Shop	.31

Although both the use of public transport and visits to friends had declined in importance, it appeared highly likely that over a longer time scale these two factors would again begin to exert a greater effect. The type of change involved after the move is extremely important, since it is obvious from the rankings produced above that the use of indicators without reference to the context of the decision can be highly misleading.

Having identified the most significant variables, it is then possible to focus down onto each of these individually and to examine the relationship between perceived and objective measures of convenience to the various amenities. This survey has pinpointed some of the variations in the convenience models that appear to operate for the different amenities. Distance appeared to be a significant variable but was found to be a composite measure related to time, mode and frequency. Peoples perceptions of distance were generally fairly accurate but tended to be under-estimates of the map distances. However, this error appeared to be fairly uniform for most of the group and for most of the amenities. It is probable that a more sophisticated measurement technique would randomise this error and produce better overall correlations. The method I used failed to specify any relationship between convenience and distances less than half a mile. An improved measure could probably observe such a relationship and be able to specify whether it was curvilinear or linear, which I was unable to do. By the use of this technique it would be possible to specify the most significant amenities and then to identify the major controls upon individual convenience levels. For instance, with reference to public transport, it is first possible to identify it as a significant component of overall convenience and then to be able to establish the type of distances which the married age groups find convenient. In this way areas of poor provision can be identified and rectified. However, the aim of most research is to establish conditions in which prediction can be made, thus avoiding the

costly business of data collection. It is obvious from what has been said so far that prediction is not possible, based on empirically observed relationships for one specific group in society. An obvious check on the general findings of main survey work into peoples preferences for residential improvement, such as environmental improvement, would be to trace the fortunes of residents affected by an improvement scheme. Any case of substantial change in the characteristics of an area would be satisfactory, as was used here, but general improvement areas are an obvious source of evidence. Local Authorities have the responsibility of surveying residents before, during and after improvement schemes in any event. By adding a few appropriate questions the validity of other research findings might be tested. A great deal of attitudinal research would have to be done under these circumstances before any consistent trends could be isolated for predictive purposes. Such a study of convenience would be able to isolate components of residential accessibility that would be classed as trivial in an economic study but which play an important role in the decision to invest in property and in the area. Given that environmental improvements can be viewed as public statements of confidence in an area and that the authority operates within a tight budgetary constraint, it is necessary for the planner to know which activities have most influence on levels of satisfaction, to allocate resources in the best possible way. However, the survey approach adopted here has the weakness of all empirical research, in that results inevitably reflect a conservative bias. It

may well be that some innovative measure, such as the provision of an entirely new amenity within an area, would increase satisfaction more than some rearrangement of the old amenities. Unfortunately, there is no way of assessing this without trying the idea out and measuring its success. However, it would be possible, even when limited to the convenience aspects discussed here, to see ways in which peoples satisfaction with an area could be improved by improvement of public transport to a defined area.

In essence therefore, the technique proposed here aims to specify the various components of the residential environment that influence resident satisfaction and to suggest ways in which this satisfaction can be improved. This can be done by intergrating the survey approach used here with the monitoring of an improvement scheme. It is probable that such a process will isolate a variety of different controls for the varied age and socio-economic groups and that a large number of the significant variables isolated will not be within the planners control. However, with further research I feel that such an approach will eventually build a more comprehensive list of environmental indicators that can only lead to better informed and more sensitive planning decisions.

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APPENDIX I

THE QUESTIONAIRRE



THE UNIVERSITY OF ASTON IN BIRMINGHAM

Department of Architectural Planning and Urban Studies
Head of Department:
Professor D J Hinton, MSc, AADipL(Hons), FRIBA

GRID REFERENCE _____

Joint Unit for Research on the Urban Environment
Gosta Green, Birmingham B4 7ET / Tel: 021.523 9151

Director: F E Joyce MA, DipSocAdmin

THE ANALYSIS OF RESIDENTS SATISFACTION AS AN INDICATOR OF ENVIRONMENTAL
QUALITY: THE CASE OF CONVENIENCE: HOUSEHOLD SURVEY NOV& DEC 1972

Address of Interview _____

Interview Commenced _____ Finished _____

Date _____

Number _____

I want the wifes responses in all cases and this may entail calling back.
Where the response is a simple number this can be coded directly, otherwise
note the full response. Five point scales are used to estimate distance,
importance and convenience and mode of transport is categorised thus:

- | | |
|---------|-------------------|
| 1. Walk | 4. Train |
| 2. Bus | 5. Cycle |
| 3. Car | 6. Other(Specify) |

Q37 - Remind them of the things they travel to and help them but do not
prompt. If there are glaring inconsistencies point them out and ask them to
reassess their measurement. Cost of journey is the return fare.

THIS RESEARCH IS DONE THROUGH THE UNIVERSITY
THERE IS NO CONNECTION WITH THE LOCAL AUTHORITY
ALL DETAILS WILL BE STRICTLY CONFIDENTIAL

1. Sex of the respondent? 1. Female 2. Male	1
wish to ask you some questions about your old home and area. To do this, I would like you to think back to the way things were before redevelopment.	
2. What was the address of your old home?	2
How many years had you lived there?	3
How many people lived there?	4
3. How long had people been moving from Aston before you were moved?	5
4. Answer 1. Yes or 2. No if you ever frequented any of these things before you moved?	
1. Shops	6
2. Schools	7
3. Pubs	8
4. Social Clubs	9
5. Parks	10
6. City Centre	11
7. Public Transport	12
8. Church	13
9. Cinemas	14
10. Relatives	15
11. Friends	16
12. Neighbours	17
Is there anything we have not mentioned?	18
	19
5. Where did you go to shop?	20
How far do you estimate you travelled?	21
What mode of transport did you use?	22
How long did it take to get there?	23
How much did it cost you?	24
How often did you go?	25
How satisfied were you with convenience to shops?	26
6. Which school did your youngest school age child attend?	27
How far did he/she have to travel?	28
How long did it take normally?	29
How did he/she travel there?	30
What was the fare?	31
How satisfied were you with convenience to schools?	32
7. Which pub did you use most regularly?	33
How far do you estimate you travelled?	34
How did you get there?	35
What was the fare, if any?	36
How often did you go?	37
How important to you are visits to the pub?	38
How satisfied were you with convenience to pubs?	39

8. Which social club did you most frequently attend? _____	40
How far did you have to travel? _____	41
How did you get there? _____	42
How long did it take? _____	43
How much did it cost you? _____	44
How often did you go? _____	45
How important to you are visits to social clubs? _____	46
How convenient was your old home for such activities? _____	47
9. Which park did you most frequently visit? _____	48
How far away was it? _____	49
How did you get there? _____	50
How long did it take? _____	51
What was the fare, if any? _____	52
How often did you go? _____	53
How important to you are visits to the park? _____	54
How convenient was your home for parks? _____	55
10. How far was it to the city centre? _____	56
How did you travel there? _____	57
How long did it take? _____	58
How much did it cost? _____	59
How often did you go? _____	60
How important to you are visits to the city centre? _____	61
How convenient was your home for the city centre? _____	62
11. How far away was the bus stop you most frequently used? _____	63
How long did it take you to get there? _____	64
How frequently did you use the bus? _____	65
How important was public transport to you? _____	66
How convenient for public transport was your home? _____	67
12. Where was your church located? _____	68
How far did you have to travel? _____	69
How did you get there? _____	70
How long did it take? _____	71
What was the fare, if any? _____	72
How frequently did you go? _____	73
How important to you are visits to the church? _____	74
How convenient was your home for the church? _____	75
13. Which cinema did you most frequently attend? _____	76
How far away was it? _____	77
How did you get there? _____	78
How long did it take? _____	79
How much did it cost? _____	80
How frequently did you go? _____	81
How convenient was your home for the cinema? _____	82

14. Where did the relatives you most frequently visited live?	83
How far do you estimate you travelled?	84
How did you travel there?	85
How long did it take to get there?	86
What was the fare, if any?	87
How frequently did you see them?	88
How important to you are your visits to relatives?	89
How convenient was your home for visiting your relatives?	90
15. Where did your best friend live?	91
How far did you have to go to see her?	92
How long did it take?	93
What was the fare, if any?	94
How did you get there?	95
How often did you visit her?	96
How convenient was your previous home for visiting friends?	97
16. How many people in the five closest houses did you know by their first names?	98
How often did you visit a neighbours home?	99
How convenient was your old home for visiting neighbours?	100
17. If there were things that were not included in the checklist, note details on the penultimate page and then ask: Thinking of all these things, how convenient would you say your old home and area were?	101
18. When you were informed your house was to be in a redevelopment area were you 1. Unhappy you would have to move 2. Indifferent or 3. Happy that you would be moving?	102
19. Did you refuse any offers of accommodation before accepting this? 1. Yes 2. No.	103
If yes, where was the other offer and why did you refuse?	104
Why did you accept here?	105
How long have you lived here now?	106
How many people live here now?	107
20. Answer 1. Yes or 2. No if you use any of these things here?	
1. Shops	108
2. Schools	109
3. Pubs	110
4. Parks	111
5. City Centre	112
6. Public Transport	113
7. Church	114
8. Cinemas	115

9. Clubs	116
10. Relatives	117
11. Friends	118
12. Neighbours	119
Is there anything we have not mentioned already?	120
21. Where do you shop now? _____	121
How far do you have to travel now?	122
How do you get there?	123
How long does it take?	124
What is the fare, if any?	125
How often do you go?	126
How convenient is it here for shops?	127
22. Which school does your youngest school age child attend? _____	128
How far does he/she have to travel?	129
How does he/she travel there?	130
How long does it take?	131
What is the fare, if any?	132
How convenient is your home for schools?	133
23. Which pub do you visit most regularly? _____	134
How far away is it?	135
How do you travel there?	136
About how long does it take?	137
What is the fare, if any?	138
How frequently do you go?	139
How convenient for pubs are you here?	140
24. Which social club do you most frequently attend? _____	141
How far is it to this club?	142
How do you get there?	143
How long does it take?	144
What is the fare, if any?	145
How frequently do you attend?	146
How convenient for clubs are you here?	147
25. Which park do you visit most regularly? _____	148
How far away is it?	149
How do get there?	150
How long does it take?	151
What is the fare, if any?	152
How frequently do you go?	153
How convenient are you here for parks?	154
6. How far is it to the city centre?	155
How do you get there?	156
	157

How long does it take?	158
What is the fare, if any?	159
How frequently do you go?	160
How convenient are you here for the city centre?	161
27. How far to your bus stop is it?	162
About how long does it take to get there?	163
How frequently do you use the bus?	164
How important is public transport to you now?	165
How convenient is this house for public transport?	166
28. Where is your church located?	167
How far do you have to go?	168
How do you get there?	169
How long does it take to get there?	170
What is the fare, if any?	171
How frequently do you go?	172
How convenient are you here for the church?	173
29. Which cinema do you most frequently attend?	174
How far do you have to travel?	175
How do you get there?	176
How long does it take?	177
What is the fare, if any?	178
How frequently do you go?	179
How convenient is it here for the cinema?	180
30. Where do the relatives you most frequently visit, live?	181
How far do you go to see them?	182
How do you get there?	183
How long does it take?	184
What is the fare, if any?	185
How often do you see them?	186
How convenient for relatives are you here?	187
31. Where does your best friend live?	188
How far away is she?	189
How long does it take?	190
What is the fare, if any?	191
How do you get there?	192
How often do you go?	193
How convenient is it here for visiting friends?	194
32. How many people in the five closest homes do you know by first name?	195
How frequently do you visit a neighbour's house?	196
How convenient is this house for visiting neighbours?	197

33. Note details of anything not already mentioned on the back sheet. Thinking of all the things we have discussed, how convenient do you feel this house and area are?	198
34. How many cars did your household own before? How many cars do they own now?	199 200
35. Thinking of this area and your previous home, which do you feel is most convenient?	201
36. Interviewer note the type of dwelling they live in: 1. Detached 2. Semi-detached 3. Terrace 4. Low rise flat 5. High rise flat.	202
37. Would you please rank the distances you travelled to things, for your old and present addresses, starting with the shortest trip and going through to the longest.	
<u>A FROM</u>	1. 203
	2. 204
	3. 205
	4. 206
	5. 203 207
	6. 208
	7. 209
	8. 210
	9. 211
	10. 212
	11. 213
	12. 214
	13. 215
	14. 216
<u>HER E</u>	1 217
	2 218
	3. 219
	4. 220
	5. 221
	6. 222
	7. 223
	8. 224
	9. 225
	10. 226
	11. 227
	12. 228
	13. 229
	14. 230

If in answer to question four (4) there are things not already mentioned please include them here.

38. Old Area

Where did you go to _____	231
How far did you travel?	232
Mode of transport	233
Travel time?	234
Travel cost?	235
Travel frequency	236
Convenience?	237

39. Where did you go to _____

How far?	238
Mode of transport?	239
Travel time	240
Travel cost	241
Travel frequency	242
Convenience?	243

40. Here

Where do you go to _____	244
How far?	245
Mode of transport-	246
Travel time?	247
Travel cost?	248
Travel frequency	249
Convenience?	250

41. Where do you go to _____

How far?	251
Mode of transport?	252
Travel time?	253
Travel cost?	254
Travel Frequency?	255
Convenience?	256

	1	2	3	4	5	6	7	8	9	10
Relation to head of household	Head									
AGE										
SEX										
Level of schooling										
Employment status										

Relation to head of household
 1. Wife
 2. Child
 3. Brother
 4. Sister
 5. Parent

Level of schooling
 1. High School
 2. Primary
 3. Secondary
 4. Left at #
 5. Left at #

Employment status
 1. Employee
 2. Employer
 3. Self-employed
 4. Unemployed
 5. Retired
 6. Homemaker

Sex
 1. Female
 2. Male

APPENDIX II

TABLES AND CORRELATIONS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Years Reside	1.0															
2. No of People	.43	1.0														
3. Distance A	.62	.76	1.0													
4. Mode a	.67	.77	.97	1.0												
5. Time A	.57	.77	.86	1.0	1.0											
6. Cost A	.14	.27	.61	.57	.44	1.0										
7. Often A	.68	.75	.79	.85	.68	.22	1.0									
8. CONVENIENCE A	.71	.82	.90	.95	.82	.34	.92	1.0								
9. People B	.38	.98	.75	.77	.28	.75	.73	.76	1.0							
10. Years B	.65	.74	.82	.85	.80	.31	.79	.73	.73	1.0						
11. Distance B	.53	.76	.86	.84	.76	.41	.77	.74	.74	.76	1.0					
12. Mode B	.57	.75	.88	.87	.76	.44	.80	.74	.74	.77	.92	1.0				
13. Time B	.55	.74	.82	.81	.75	.40	.74	.72	.72	.73	.88	.81	1.0			
14. Cost B	.18	.48	.53	.49	.46	.37	.37	.49	.49	.41	.76	.68	.67	1.0		
15. Often B	.57	.71	.79	.80	.71	.33	.82	.71	.71	.76	.66	.76	.66	.31	1.0	
16. CONVENIENCE B	.69	.79	.88	.92	.84	.33	.94	.77	.77	.86	.78	.81	.72	.37	.83	1.0

TABLE 1: SHOPPING CORRELATION MATRIX

	Overall Scores				Peripheral Scores				Central Scores			
	Aston		Post Move		Aston		Periphery		Aston		Central	
	Partial	Multiple	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Distance A	.05	.99	.33	.94	.13	.99	.21	.93	.12	.48	.26	.42
Mode A	.77	.96*	.46	.94	.81	.97*	.36	.94	-.0	.48	.24	.42
Time A	.16	.99	.25	.93	.30	.98*	.12	.93	-.48	.00*	.21	.40
Cost A	-.50	.98*	-.03	.93	-.65	.98*	.04	.93	-.02	.48	.19	.39
Often A	.43	.98*	.24	.93	.52	.98*	.25	.93	-.06	.48	-.14	.37
CONVENIENCE	-	-	.55	.95	-	-	.51	.95	-	-	-.16	.38
Distance B	.13	.99	.12	.93	.05	.99	.39	.91*	.05	.48	-.35	.00*
Mode B	.14	.99	.14	.93	.05	.99	-.20	.93	.10	.48	.07	.35
Time B	.05	.99	-.10	.93	-.06	.99	.05	.93	-.03	.48	-.15	.37
Cost B	-.06	.99	-.12	.93	-.12	.99	-.29	.92*	-.02	.48	-.09	.36
Often B	.09	.99	.33	.92*	-.01	.99	-.39	.91*	-.21	.51	.09	.36
CONVENIENCE	.24	.99	-	-	.25	.99	-	-	-.09	.48	-	-
Years A	.38	.98*	.34	.94	.10	.99	.27	.93	.06	.48	.10	.36
People A	.20	.98*	.15	.93	.11	.99	.22	.93	.21	.51	-.13	.36
Years B	.37	.99	.47	.91*	.40	.99	.31	.92*	.00	.48	.08	.36
People B	.05	.99	.18	.92*	.11	.99	.33	.92*	.17	.50	-.11	.36
MULTIPLE R	.985		.927		.988		.927		.476		.347	

* 5% Significance

TABLE 2: SHOPS REGRESSION SCORES

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Years A	1.00														
2. People A	-.42	1.00													
3. Distance A	-.22	.06	1.00												
4. Mode A	-.22	-.12	.79	1.00											
5. Time A	-.13	.35	.47	.28	1.00										
6. Cost A	-.29	-.05	.81	.91	.35	1.00									
7. Often A	.16	-.11	-.42	-.32	-.47	-.32	1.00								
8. CONVENIENCE	.17	-.13	-.13	-.11	-.15	-.10	.23	1.00							
9. People B	-.48	.95	.06	-.07	.37	.01	-.08	-.10	1.00						
10. Years B	-.06	.07	.01	.29	-.05	-.11	.27	.09	-.08	1.00					
11. Distance B	-.18	.11	.42	.23	.21	.22	-.19	-.12	.06	.02	1.00				
12. Mode B	-.18	.02	.48	.14	.29	-.13	-.15	.04	-.03	.27	.66	1.00			
13. Time B	-.10	.14	.38	.27	.26	.22	-.18	-.12	.11	-.01	.67	.38	1.00		
14. Cost B	-.01	.14	.43	.28	.24	.26	-.22	-.20	.15	.03	.82	.67	.63	1.00	
15. Often B	-.14	.08	.12	.01	.06	.07	.21	-.09	.12	.06	-.19	.15	-.17	-.11	1.00
16. CONVENIENCE	-.13	.21	-.01	-.07	.16	-.02	-.08	-.11	.16	.02	-.12	-.10	-.37	-.09	.21

TABLE 3: PERIPHERAL GROUP - SHOPS CORRELATION MATRIX

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1. Years	1.00															
2. People	-.38	1.00														
3. Distance	.08	-.11	1.00													
4. Mode A	.14	-.17	.87	1.00												
5. Time A	-.02	.07	.25	-.01	1.00											
6. Cost A	.11	-.10	.78	.87	.12	1.00										
7. Often A	.09	.00	-.24	-.01	-.43	-.25	1.00									
8. CONVEN A	.06	.15	-.22	.00	-.48	-.07	.16	1.00								
9. People B	-.49	.95	-.10	-.17	.05	-.17	.06	.13	1.00							
10. Years B	.19	-.13	.01	.03	.05	.03	-.21	-.02	-.14	1.00						
11. Distance	.21	.23	.18	.15	-.12	.14	.16	.10	.26	-.18	1.00					
12. Mode B	-.14	.18	.22	.23	-.13	.19	.25	.15	.22	-.17	.86	1.00				
13. Time B	-.04	.23	.06	.00	.09	.02	.06	-.07	.20	-.08	.27	.13	1.00			
14. Cost B	-.22	.39	.17	.01	.03	.15	.04	-.03	.42	-.03	.79	.64	.36	1.00		
15. Often B	.05	-.03	-.12	-.05	-.22	.04	.25	-.08	-.01	-.32	-.26	-.16	-.29	-.14	1.00	
16. CONVEN B	.16	-.20	.16	.17	.24	.13	-.18	-.19	-.19	.14	-.35	-.26	-.23	-.33	.19	1.00

TABLE 4: CENTRAL GROUP SHOPS CORRELATION MATRIX

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Perceived Dist	1.00															
2. Real Distance	1.00	1.00														
3. Time A	0.36	0.36	1.00													
4. Mode A	0.55	0.55	-.18	1.00												
5. Cost A	0.25	0.25	0.10	0.01	1.00											
6. CONVENIENCE A	-.46	-.46	-.55	-.09	-.25	1.00										
7. Percvd Dist B	-.02	-.02	0.05	-.06	-.33	0.01	1.00									
8. 'Real' Distance	-.02	-.02	0.05	-.06	-.33	0.01	1.00	1.00								
9. Time B	0.04	0.04	-.04	-.04	0.43	-.04	0.76	0.76	1.00							
10. Mode B	0.05	0.05	0.37	0.00	0.09	-.10	0.41	0.41	0.26	1.00						
11. Cost B	0.22	0.22	0.06	0.00	0.93	-.22	0.42	0.42	0.55	0.12	1.00					
12. CONVENIENCE B	0.13	0.13	-.09	0.11	-.13	-.09	-.78	-.78	-.59	-.49	-.21	1.00				
13. Years A	0.38	0.38	0.20	-.08	-.02	-.03	0.14	0.14	0.16	0.03	0.03	-.17	1.00			
14. People A	0.16	0.16	0.23	-.10	0.14	-.27	0.16	0.16	0.09	0.40	0.13	-.26	0.06	1.00		
15. Years B	0.10	0.10	0.04	0.10	0.21	-.14	0.10	0.10	0.22	-.19	0.29	-.06	0.10	0.08	1.00	
16. People B	-.04	-.04	0.13	-.08	0.10	-.17	0.17	0.08	0.29	0.10	-.15	-.23	0.79	0.10	1.00	

TABLE 5: SCHOOL CORRELATION MATRIX

	<u>Aston</u>			<u>Post Move</u>		
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
Perceived Distance A	1.00(1.00)	1.00	1.00	-.05(-.02)	-.05	
Map Distance A	1.00(1.00)	1.00	1.00	-.05(-.02)	-.05	
Mode A	0.25(0.55)	0.25	0.25	0.04(0.05)	0.04	
Time A	0.65(0.36)	0.65	0.65	-.05(-.06)	-.05	
Cost A	0.14(0.25)	0.14	0.14	0.33(-.33)	0.33	
CONVENIENCE A	-.34(-.46)	-.34	-.34	0.02(0.01)	0.02	
Perceived Distance B	-.05(-.02)	-.05	-.05	1.00(1.00)	1.00	
Map Distance B	-.05(-.02)	-.05	-.05	1.00(1.00)	1.00	
Mode B	0.01(0.05)	0.01	0.01	0.76(0.76)	0.76	
Time B	0.03(0.04)	0.03	0.03	0.41(0.46)	0.41	
Cost B	0.13(0.22)	0.13	0.13	0.42(0.42)	0.42	
CONVENIENCE B	0.12(0.13)	0.12	0.12	-.78(-.78)	-.78	
Years A	0.48(0.38)	0.48	0.48	0.11(0.14)	0.11	
People A	0.09(0.16)	0.09	0.09	0.17(0.16)	0.16	
Years B	0.07(0.10)	0.07	0.07	0.09(0.10)	0.09	
People B	-.12(-.04)	-.12	-.12	0.18(0.17)	0.18	

EXPONENTIAL TRANSFORMATIONS OF DISTANCE TO SCHOOL: Figures in brackets indicate the comparable linear correlations: TABLE 6

Variable	Aston		Post Move	
	Partial	Multiple	Partial	Multiple
Perceived Distance A	-.34	0.55*	0.22	0.81
Map Distance A	0.00	0.62	0.22	0.81
TimeA	-.46	0.46*	0.03	0.80
Mode A	0.01	0.62	0.13	0.81
Cost A	-.18	0.64	0.21	0.82
CONVENIENCE A	-	-	-.17	0.81
Perceived Distance B	0.03	0.62	-.73	0.49*
Map Distance B	0.03	0.62	0.00	0.80
Time B	-.06	0.62	-.03	0.80
Mode B	0.11	0.63	-.29	0.78
Cost B	-.16	0.63	0.20	0.81
CONVENIENCE B	-.11	0.63	-	-
Years A	0.25	0.65	-.10	0.81
People A	-.16	0.63	-.12	0.81
Years B	-.12	0.63	0.08	0.80
People B	-.16	0.63	0.06	0.80
MULTIPLE R	0.619		0.803	

*Significant at 5% level

TABLE 7: SCHOOL REGRESSION SCORES

	Aston Distance	Post Move Distance
Perceived Distance A	1.00(1.00)	-.04(-.04)
Map Distance A	1.00(1.00)	-.04(-.04)
Mode A	0.00(0.00)	0.00(0.00)
Time A	0.58(0.58)	0.58(0.58)
Cost A	0.00(0.00)	0.00(0.00)
Frequency A	0.12(0.12)	0.02(0.02)
Importance A	0.06(0.06)	0.06(0.06)
CONVENIENCE A	-.08(-.08)	0.15(0.15)
Perceived Distance B	-.04(-.04)	1.00(1.00)
Map Distance B	-.03(-.04)	0.96(0.96)
Mode B	-.05(-.05)	0.48(0.68)
Time B	-.08(-.07)	0.72(0.74)
Cost B	-.03(-.02)	0.89(0.89)
Frequency B	-.13(-.13)	-.05(-.16)
CONVENIENCE B	0.09(0.08)	-.61(-.64)

* Figures in brackets indicate comparable linear correlation taken from table 8

TABLE 9: EXPONENTIAL TRANSFORMATION OF DISTANCE TO SCHOOL

	BEFORE		POST MOVE	
	Partial	Multiple	Partial	Multiple
Perceived Distance A	0.13	0.69	0.11	0.80
Map Distance A	0.13	0.69	0.11	0.80
Mode A	0.00	0.69	0.00	0.80
Time A	-.41	0.60*	0.05	0.80
Cost A	0.00	0.69	0.00	0.80
Frequency A	0.04	0.69	0.13	0.81
Importance A	0.63	0.35*	0.34	0.83
CONVENIENCE A	-	-	0.14	0.81
Distance B	0.12	0.69	0.20	0.81
Map Distance B	0.07	0.69	0.19	0.81
Mode B	-.15	0.69	0.15	0.81
Time B	0.13	0.69	-.51	0.77*
Cost B	0.18	0.70	-.40	0.76*
Frequency B	-.01	0.69	0.17	0.81
CONVENIENCE B	-.20	0.70	-	-
MULTIPLE R		0.685		0.802

*. Significant at 5% level

TABLE 10: PUB REGRESSION SCORES

	Aston		Post Move	
	Partial	Multiple	Partial	Multiple
Perceived Distance A	-.29	0.58	0.10	0.88
Map Distance A	0.40	0.37*	0.03	0.88
Mode A	0.05	0.56	0.61	0.79
Time A	-.47	0.27*	0.23	0.88
Cost A	-.25	0.48*	0.00	0.88
Frequency A	0.27	0.47*	-.06	0.88
Importance A	-.02	0.53*	-.03	0.88
CONVENIENCE A	-	-	-.12	0.88
Perceived Distance B	0.13	0.54	0.27	0.89
Map Distance B	0.08	0.53	-.83	0.48
Mode B	-.56	0.71	0.61	0.79
Time B	0.42	0.64	0.11	0.88
Cost B	-.47	0.66	-.46	0.84
Frequency B	-.17	0.54	-.23	0.88
CONVENIENCE B	-.28	0.57	-	-
MULTIPLE R		0.524		0.875

* Significant at 5% level

TABLE 12: PARK REGRESSION SCORES

	F Dist A	MapDistA	P DistA	MapDistA
Perceived Distance A	1.00(1.00)	0.84(0.78)	0.12(0.20)	0.03(0.20)
Map Distance A	0.84(0.78)	1.00(1.00)	0.11(0.15)	0.04(0.17)
Mode A	0.09(0.25)	0.05(0.10)	0.01(-.02)	0.03(0.02)
Time A	0.66(0.66)	0.54(0.61)	0.05(0.12)	-.01(0.14)
Cost A	0.02(0.29)	-.03(0.19)	0.19(0.23)	0.03(0.20)
Frequency A	-.04(-.08)	0.05(-.05)	-.04(-.02)	0.06(0.01)
Importance A	0.05(0.01)	-.04(0.04)	0.24(0.26)	0.16(0.28)
CONVENIENCE A	-.08(-.15)	-.14(-.12)	0.02(0.01)	0.08(0.09)
Perceived Distance B	0.12(0.20)	0.11(0.15)	1.00(1.00)	0.79(0.89)
Map Distance B	0.03(0.20)	0.04(0.17)	0.79(0.89)	1.00(1.00)
Mode B	-.02(0.02)	-.02(0.01)	0.47(0.22)	0.75(0.29)
Time B	0.20(0.26)	0.14(0.18)	0.56(0.76)	0.31(0.67)
Cost B	0.15(0.16)	0.10(0.13)	0.24(0.46)	-.03(0.36)
Frequency B	0.05(-.01)	0.15(0.09)	-.08(-.08)	-.05(-.05)
CONVENIENCE B	-.15(-.16)	-.10(-.11)	-.53(-.60)	-.39(-.59)

Figures in brackets indicate the comparable linear correlations

TABLE 14: EXPONENTIAL TRANSFORMATION OF DISTANCE TO CITY

	Peripheral Group				Central Group			
	Astons		Post Move		Astons		Post Move	
	Partial(1)	Multiple(2)	(1)	(2)	(1)	(2)	(1)	(2)
Perceived Distance A	0.05	0.52	-.14	0.48	-.04	0.45	0.13	0.74
Map Distance A	-.27	0.46*	-.06	0.47	0.35	0.29*	0.03	0.74
Mode A	0.28	0.45*	0.04	0.46	0.00	0.44	0.00	0.74
Time A	-.08	0.52	-.09	0.47	-.43	0.13*	-.01	0.74
Cost A	-.34	0.41*	-.10	0.47	-.00	0.44	0.01	0.74
Frequency A	-.19	0.54	0.08	0.47	0.08	0.45	0.16	0.75
Importance A	0.40	0.35*	-.00	0.46	0.24	0.50	0.12	0.74
CONVENIENCE A	-	-	-.16	0.49	-	-	0.27	0.76
Perceived Distance B	0.00	0.52	-.14	0.48	-.19	0.48	-.43	0.67*
Map Distance B	0.05	0.52	-.46	0.00*	-.07	0.45	0.15	0.75
Mode B	0.00	0.52	0.00	0.46	0.02	0.44	-.46	0.65*
Time B	-.12	0.53	-.20	0.50	-.29	0.51	-.14	0.75
Cost B	-.00	0.52	-.18	0.49	-.08	0.45	0.03	0.74
Frequency B	-.21	0.55	0.17	0.49	0.08	0.45	-.29	0.71*
CONVENIENCE B	-.25	0.56	-	-	0.24	0.49	-	-
MULTIPLE R	0.515		0.463		0.444		0.739	

* Significance at 5% level

TABLE 15: CITY REGRESSION SCORES - peripheral and central groups

	<u>ASTON</u>		<u>POST MOVE</u>	
	<u>Partial Corr.</u>	<u>Multiple Corr</u>	<u>Partial Corr</u>	<u>Multiple Corr</u>
Perceived Distance A	0.09	0.39	-.02	0.63
Map Distance A	0.03	0.38	-.00	0.63
Mode A	0.14	0.40	0.01	0.63
Time A	-.27	0.27*	0.03	0.63
Cost A	-.12	0.39	0.00	0.63
Frequency A	-.13	0.39	0.06	0.64
Importance A	0.29	0.25*	0.05	0.64
CONVENIENCE A	-	-	-.17	0.65
Perceived Distance B	-.07	0.38	-.34	0.57*
Map Distance B	0.03	0.38	-.14	0.64
Mode B	0.01	0.38	-.15	0.65
Time B	-.14	0.40	-.21	0.61*
Cost B	-.03	0.38	-.01	0.63
Frequency B	-.09	0.39	0.05	0.64
CONVENIENCE B	-.09	0.38	-	-
MULTIPLE R		<u>0.375</u>		<u>0.634</u>
* Significant at 5% level				

TABLE 18: CITY REGRESSION SCORES

1. Perceived Distance A	1.00												
2. Map Distance A	1.00	1.00											
3. Time A	0.07	0.07	1.00										
4. Frequency A	-.08	-.08	0.06	1.00									
5. Importance A	-.02	-.02	0.08	0.26	1.00								
6. CONVENIENCE A	0.07	0.07	-.26	-.03	0.32	1.00							
7. Perceived Distance B	0.37	0.37	0.07	-.13	-.09	-.05	1.00						
8. Map Distance B	0.37	0.37	0.07	-.13	-.09	-.05	1.00	1.00					
9. Time B	-.12	-.12	0.12	-.12	0.11	0.05	0.27	0.27	1.00				
10. Frequency B	0.28	0.28	-.01	0.31	0.01	-.01	0.15	0.15	-.26	1.00			
11. Importance B	-.05	-.05	-.15	0.28	0.15	-.09	-.09	-.15	0.30	0.12	1.00		
12. CONVENIENCE B	0.07	0.07	-.13	0.66	-.11	0.04	-.22	-.22	-.50	0.20	0.06	1.00	

TABLE 19: BUS CORRELATION MATRIX

	<u>Perceived Distance A</u>	<u>Map Distance A</u>	<u>Perceived Distance B</u>	<u>Map Distance B</u>
Perceived Distance A	1.00(1.00)	1.00	0.37(0.37)	0.37
Map Distance A	1.00(1.00)	1.00	0.37(0.37)	0.37
Time A	0.08(0.07)	0.08	-.01(-.07)	-.01
Frequency A	-.08(-.08)	-.08	-.12(-.12)	-.12
Importance A	-.02(-.02)	-.02	-.01(-.09)	-.01
CONVENIENCE A	0.07(0.07)	0.07	-.05(-.05)	-.05
Perceived Distance B	0.37(0.37)	0.37	1.00(1.00)	1.00
Map Distance B	0.37(0.37)	0.37	1.00(1.00)	1.00
Time B	-.12(-.12)	-.12	0.27(0.27)	0.27
Frequency B	0.28(0.28)	0.28	0.15(0.15)	0.15
Importance B	-.05(-.05)	-.05	-.09(-.09)	-.09
CONVENIENCE B	0.08(0.07)	0.08	-.22(-.22)	-.22

* Figures in brackets indicate linear correlations

TABLE 20: EXPONENTIAL TRANSFORMATIONS OF DISTANCE TO BUS STOP

1. Perceived Distance A	1.00																			
2. Map Distance A	0.00	1.00																		
3. Time A	0.00	0.00	1.00																	
4. Frequency A	0.00	0.00	0.13	1.00																
5. Importance A	0.00	0.00	0.11	0.18	1.00															
6. CONVENIENCE A	0.00	0.00	-.04	-.23	0.33	1.00														
7. Perceived Distance B	0.00	0.00	0.08	-.10	-.09	0.55	1.00													
8. Map Distance B	0.00	0.00	0.78	-.10	-.09	0.55	1.00	1.00												
9. Time B	0.00	0.00	0.09	-.19	0.13	0.20	0.41	0.41	1.00											
10. Frequency B	0.00	0.00	0.03	0.48	0.01	-.17	0.07	0.07	-.25	1.00										
11. Importance B	0.00	0.00	-.24	0.18	0.23	0.02	0.01	0.01	-.18	0.32	1.00									
12. CONVENIENCE B	0.00	0.00	0.25	-.02	-.22	-.11	-.18	-.18	-.52	0.15	0.02	1.00								

TABLE 21: BUS CORRELATION MATRIX - PERIPHERAL GROUP

1. Perceived Distance A	1.00																			
2. Map Distance A	1.00	1.00																		
3. Time A	0.11	0.11	1.00																	
4. Frequency A	-.12	-.12	-.03	1.00																
5. Importance A	-.01	-.01	0.06	0.35	1.00															
6. CONVENIENCE A	0.13	0.13	-.54	0.20	0.29	1.00														
7. Perceived Distance B	0.70	0.70	0.05	-.18	-.11	-.24	1.00													
8. Map Distance B	0.70	0.70	0.05	-.18	-.11	-.24	1.00	1.00												
9. Time B	-.16	-.16	0.17	-.02	0.06	-.16	-.02	-.02	1.00											
10. Frequency B	0.52	0.52	-.02	0.03	0.02	0.23	0.34	0.34	-.27	1.00										
11. Importance B	-.04	-.04	0.01	0.07	0.29	0.23	-.34	-.34	-.19	0.28	1.00									
12. CONVENIENCE B	0.08	0.08	-.11	0.20	0.10	0.40	-.28	-.48	0.35	0.41	0.41	1.00								

TABLE 22: BUS CORRELATION MATRIX - CENTRAL GROUP

	<u>OVERALL SCORES</u>				<u>PERIPHERAL SCORES</u>				<u>CENTRAL SCORES</u>			
	<u>Aston</u>		<u>Post Move</u>		<u>Aston</u>		<u>Periphery</u>		<u>Aston</u>		<u>Central</u>	
	<u>Part.</u>	<u>Multi.</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>
Perceived Distance A	0.08	0.33	0.02	0.50	0.00	0.44	0.00	0.52	0.25	0.66	0.03	0.5
Map Distance A	0.08	0.33	0.02	0.50	0.00	0.44	0.00	0.52	0.25	0.66	0.03	0.5
Time A	-.31	0.44*	0.22	0.53	-.05	0.44	0.35	0.60	-.59	0.29*	-.06	0.5
Frequency A	-.13	0.35	0.01	0.50	-.31	0.33*	-.14	0.53	0.10	0.64	0.21	0.6
Importance A	0.32	0.00*	-.06	0.50	0.39	0.23*	-.17	0.54	0.39	0.55*	0.04	0.5
CONVENIENCE A	-	-	0.07	0.50	-	-	0.05	0.52	-	-	0.33	0.6
Perceived Distance B	-.02	0.33	-.10	0.51	0.07	0.44	0.04	0.52	-.23	0.66	-.21	0.6
Map Distance B	-.02	0.33	-.10	0.51	0.07	0.44	0.04	0.52	-.23	0.66	-.21	0.6
Time B	0.01	0.33	-.50	0.00*	0.11	0.45	-.51	0.00*	-.11	0.64	-.45	0.4
Frequency B	-.01	0.33	0.08	0.50	-.03	0.44	0.03	0.52	0.27	0.67	0.18	0.6
Importance B	0.06	0.33	-.02	0.50	-.02	0.44	-.09	0.52	0.19	0.65	0.38	0.4
CONVENIENCE B	0.08	0.33	-	-	-.04	0.44	-	-	0.40	0.71	-	-
MULTIPLE R	<u>0.325</u>		<u>0.499</u>		<u>0.440</u>		<u>0.515</u>		<u>0.634</u>		<u>0.583</u>	

* Significant at 5% level

TABLE 23: BUS REGRESSION SCORES

1. Distance A	1.00																	
2. Map Dist A	0.98	1.00																
3. Mode A	0.72	0.73	1.00															
4. Time A	0.81	0.80	0.46	1.00														
5. Cost A	0.72	0.71	0.57	0.72	1.00													
6. Frequency A	-.47	-.48	-.48	-.43	-.37	1.00												
7. Importance A	-.25	-.26	-.10	-.26	-.22	0.47	1.00											
8. CONVEN A	-.65	-.64	-.50	-.65	-.52	0.39	0.42	1.00										
9. Distance B	0.47	0.48	0.29	0.45	0.28	-.16	-.04	-.23	1.00									
10. Map Dist B	0.50	0.49	0.28	0.46	0.33	-.16	-.06	-.26	0.96	1.00								
11. Mode B	0.15	0.16	0.17	0.10	0.02	-.06	0.02	0.02	0.41	0.44	1.00							
12. Time B	0.47	0.48	0.23	0.59	0.35	-.16	-.15	-.42	0.78	0.77	0.20	1.00						
13. Cost B	0.32	0.33	0.12	0.43	0.41	-.02	-.11	-.27	-.70	0.71	0.13	0.76	1.00					
14. Frequency B	-.11	-.12	-.10	-.14	-.05	0.23	0.29	0.09	-.42	-.42	-.45	-.26	-.32	1.00				
15. CONVEN B	-.06	-.11	-.04	-.09	-.08	0.01	0.11	0.11	-.60	-.58	-.31	-.55	-.49	0.47	1.00			

TABLE 24: RELATIVES CORRELATION MATRIX

	<u>P Dist A</u>	<u>Map Dist A</u>	<u>P Dist B</u>	<u>Map Dist B</u>
Perceived Distance A	1.00(1.00)	0.90(0.98)	0.29(0.47)	0.62(0.50)
Map Distance A	0.90(0.98)	1.00(1.00)	0.25(0.48)	0.47(0.49)
Mode A	0.24(0.73)	0.39(0.73)	0.24(0.29)	0.17(0.28)
Time A	0.60(0.81)	0.50(0.80)	0.10(0.45)	0.20(0.50)
Cost A	0.34(0.72)	0.52(0.71)	0.29(0.28)	0.40(0.33)
Frequency A	-.15(-.47)	-.18(-.48)	-.10(-.16)	-.14(-.16)
Importance A	-.10(-.25)	-.18(-.26)	-.02(-.04)	-.06(-.06)
CONVENIENCE A	-.18(-.65)	-.26(-.64)	-.26(-.23)	-.28(-.26)
Perceived Distance B	0.29(0.47)	0.25(0.48)	1.00(1.00)	0.77(0.96)
Map Distance B	0.62(0.50)	0.47(0.49)	0.77(0.96)	1.00(1.00)
Mode B	0.17(0.15)	0.14(0.16)	0.23(0.41)	0.19(0.44)
Time B	0.11(0.47)	0.08(0.48)	0.25(0.78)	0.58(0.77)
Cost B	-.02(0.32)	-.01(0.33)	0.66(0.70)	0.58(0.71)
Frequency B	-.09(-.11)	-.08(-.12)	-.22(-.42)	-.16(-.42)
CONVENIENCE B	-.05(-.06)	-.05(-.11)	-.44(-.60)	-.30(-.58)

* Figures in brackets indicate linear correlations

TABLE 25: EXPONENTIAL TRANSFORMATIONS OF DISTANCE TO RELATIVES

1. Perceived Distance A	1.00																		
2. Map Distance A	0.97	1.00																	
3. Mode A	0.66	0.66	1.00																
4. Time A	0.77	0.77	0.42	1.00															
5. Cost A	0.79	0.76	0.65	0.69	1.00														
6. Frequency A	-.43	-.44	-.46	-.37	-.39	1.00													
7. Importance A	-.16	-.18	0.07	-.12	-.06	0.41	1.00												
8. CONVENIENCE A	-.67	-.65	-.53	-.66	-.75	-.34	-.29	1.00											
9. Perceived Distance B	0.34	0.35	0.17	0.38	0.21	-.15	0.07	-.15	1.00										
10. Map Distance B	0.38	0.38	0.15	0.35	0.24	-.15	0.03	-.19	0.96	1.00									
11. Mode B	0.08	0.10	0.01	0.09	-.09	0.01	0.10	0.56	0.57	0.56	1.00								
12. Time B	0.34	0.37	0.20	0.48	0.25	-.09	0.07	-.33	0.77	0.74	0.21	1.00							
13. Cost B	0.14	0.18	0.07	0.25	0.23	0.05	0.04	-.17	0.71	0.66	0.29	0.71	1.00						
14. Frequency B	-.04	-.05	-.02	-.02	0.07	0.29	0.23	0.06	-.38	-.38	-.57	-.17	-.31	1.00					
15. CONVENIENCE B	0.17	0.08	0.12	0.15	0.24	-.07	-.05	-.10	-.50	-.46	-.38	-.45	-.38	0.44	1.00				

TABLE 27: RELATIVES CORRELATION MATRIX - PERIPHERAL GROUP

	<u>OVERALL SCORES</u>				<u>PERIPHERAL SCORES</u>				<u>CENTRAL SCORES</u>			
	<u>ASTON</u>		<u>POST MOVE</u>		<u>ASTON</u>		<u>PERIPHERY</u>		<u>ASTON</u>		<u>CENTRE</u>	
	<u>Partial (1)</u>	<u>Multiple (2)</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>
Distance A	-.28	0.70*	0.34	0.71	0.00	0.81	0.40	0.66	-.22	0.75	0.23	0.78
Map Dist A	0.09	0.73	0.28	0.70	0.04	0.81	0.31	0.62	-.21	0.75	0.22	0.78
Mode A	-.18	0.74	0.19	0.68	-.17	0.81	0.23	0.60	-.26	0.76	0.19	0.78
Time A	-.25	0.71*	0.39	0.72	-.30	0.79*	0.43	0.67	-.54	0.59*	0.10	0.77
Cost A	0.01	0.73	0.14	0.67	-.57	0.70*	0.37	0.64	0.10	0.74	0.04	0.77
Frequency A	-.04	0.73	-.20	0.70	-.14	0.81	-.26	0.61	0.06	0.74	-.04	0.77
Importance A	0.34	0.69*	-.04	0.66	0.35	0.78*	-.11	0.58	0.49	0.63*	0.25	0.78
CONVENIENCE	-	-	-.14	0.67	-	-	-.21	0.59	-	-	0.24	0.78
Distance B	0.14	0.73	-.20	0.65*	0.08	0.81	-.40	0.44*	0.02	0.74	-.05	0.77
Map Distance	0.12	0.73	0.01	0.66	0.05	0.81	0.09	0.57	-.01	0.74	-.76	0.00*
Mode B	0.12	0.73	-.03	0.66	0.10	0.81	0.00	0.57	-.03	0.74	0.02	0.77
Time B	-.07	0.73	-.21	0.64*	-.18	0.81	-.09	0.59	-.13	0.74	-.13	0.77
Cost B	0.00	0.73	-.03	0.66	0.03	0.81	-.02	0.57	-.04	0.74	-.08	0.77
Frequency B	-.09	0.73	0.33	0.61*	0.05	0.81	0.31	0.50*	-.17	0.74	0.24	0.78
CONVENIENCE	0.05	0.73	-	-	0.15	0.81	-	-	0.18	0.74	-	-
MULTIPLE R	<u>0.728</u>		<u>0.663</u>		<u>0.806</u>		<u>0.568</u>		<u>0.735</u>		<u>0.765</u>	

* Significant at 5% level

TABLE 28: RELATIVES REGRESSION SCORES

1.	Distance A	1.00																		
2.	Map Dist A	0.98	1.00																	
3.	Mode A	0.80	0.83	1.00																
4.	Time A	0.86	0.84	0.70	1.00															
5.	Cost A	0.49	0.46	0.32	0.50	1.00														
6.	Often A	-.37	-.34	-.36	-.27	-.20	1.00													
7.	CONVEN A	-.65	-.58	-.52	-.46	-.36	0.39	1.00												
8.	Distance B	-.01	-.01	0.10	-.02	0.02	-.16	-.03	1.00											
9.	Map Dist B	-.01	-.01	0.09	-.01	0.01	-.17	-.03	0.97	1.00										
10.	Mode B	0.14	0.14	0.18	0.14	0.07	-.08	-.11	0.80	0.86	1.00									
11.	Time B	0.16	0.13	0.21	0.18	0.10	-.16	-.17	0.86	0.85	0.77	1.00								
12.	Cost B	0.09	0.05	0.13	0.10	0.08	-.10	-.12	0.27	0.25	0.15	0.30	1.00							
13.	Often B	-.10	-.09	-.13	-.08	-.08	0.22	-.02	-.53	-.51	-.45	-.45	-.34	1.00						
14.	CONVEN B	0.10	0.10	-.02	0.11	-.13	0.07	0.01	-.72	-.70	-.59	-.65	-.35	0.63	1.00					
15.	Neybor A	-.17	-.18	-.07	-.09	-.07	0.02	-.13	-.13	-.11	-.07	-.19	0.05	0.04	0.02	1.00				
16.	VisitNeyA	-.17	-.17	-.14	-.16	-.22	0.10	0.14	-.13	-.15	-.10	-.15	0.00	0.07	0.07	0.06	1.00			
17.	NeyCONVENA	-.25	-.26	-.19	-.27	-.12	-.01	0.05	-.10	-.11	-.20	-.17	0.07	0.06	0.02	0.16	0.05	1.00		
18.	Neybor B	-.17	-.15	-.09	-.12	-.09	0.11	0.10	-.09	-.08	-.09	-.13	-.03	0.07	0.10	0.08	0.15	0.25	1.00	
19.	Visit NeyB	0.01	0.01	0.04	0.05	-.04	0.02	-.05	-.04	0.01	0.10	-.01	-.03	0.21	0.10	-.07	0.01	0.58	0.37	1.00
20.	NeyCONVENB	-.12	-.11	-.14	-.16	-.13	0.08	0.09	-.12	-.09	-.08	-.18	-.04	0.20	0.19	-.12	0.10	0.17	0.14	0.00

TABLE 29: FRIENDS AND RELATIVES CORRELATION MATRIX

	<u>P DIST A</u>	<u>MAPDIST A</u>	<u>P DIST B</u>	<u>MAPDIST B</u>
Perceived Distance A	1.00(1.00)	0.87(0.98)	-.02(-.01)	-.02(-.01)
Map Distance A	0.87(0.98)	1.00(1.00)	-.02(-.01)	-.02(-.01)
Mode A	0.77(0.80)	0.65(0.93)	-.03(0.10)	-.03(0.09)
Time A	0.39(0.49)	0.70(0.84)	-.04(0.02)	-.04(-.01)
Cost A	0.91(0.49)	0.31(0.46)	-.04(0.02)	-.11(0.01)
Frequency A	-.20(-.37)	-.09(-.34)	-.12(-.16)	0.06(-.16)
CONVENIENCE A	-.42(-.65)	-.24(-.58)	0.05(-.03)	0.99(-.03)
Perceived Distance B	-.02(-.01)	-.20(-.01)	1.00(1.00)	1.00(0.97)
Map Distance B	-.02(-.01)	-.20(-.01)	0.99(0.97)	0.50(1.00)
Mode B	0.18(0.14)	0.10(0.14)	0.55(0.80)	0.42(0.86)
Time B	0.17(-.16)	0.03(0.13)	0.51(0.86)	0.02(0.85)
Cost B	0.07(0.09)	-.06(0.05)	0.05(0.27)	-.14(0.25)
Frequency B	-.10(-.10)	-.04(-.09)	-.19(-.53)	-.31(-.51)
CONVENIENCE B	0.09(0.10)	0.09(0.10)	-.36(-.72)	-.10(-.70)

* Figures in brackets indicate linear correlations

TABLE 30: EXPONENTIAL TRANSFORMATION OF DISTANCE TO FRIENDS

	OVERALL SCORES				PERIPHERAL SCORES				CENTRAL SCORES			
	ASTON		POST MOVE		ASTON		PERIPHERY		ASTON		CENTRAL	
	Part1	Mult2	1	2	1	2	1	2	1	2	1	2
Visit NeighboursA	0.53	0.37*	-.01	0.58	0.32	0.52*	-.14	0.38	0.80	0.00*	0.20	0.69
Neighbours Known A	0.29	0.57*	0.01	0.58	0.44	0.43*	0.12	0.37	0.10	0.81	-.06	0.67
CONVENIENCE A	-	-	0.06	0.59	-	-	-.12	0.37	-	-	0.35	0.72
Neighbours Known B	-.08	0.62	0.40	0.46*	-.04	0.59	0.36	0.00*	-.12	0.81	0.51	0.51*
Visit NeighboursB	-.06	0.62	0.47	0.39*	-.19	0.61	0.20	0.41	-.02	0.80	0.58	0.41
CONVENIENCE B	0.02	0.62	-	-	-.17	0.60	-	-	0.18	0.81	-	-
MULTIPLE R	<u>0.620</u>		<u>0.583</u>		<u>0.588</u>		<u>0.357</u>		<u>0.803</u>		<u>0.672</u>	

* Significant at the 5% level

TABLE 33: NEIGHBOURS REGRESSION SCORES

	OVERALL SCORES				PERIPHERAL SCORES				CENTRAL SCORES			
	ASTON		POST MOVE		ASTON		PERIPHERY		ASTON		CENTRAL	
	Partial	Multiple	1	2	1	2	1	2	1	2	1	2
Time A	0.77	0.49*	-.12	0.84	0.94	0.98*	-.21	0.85	0.87	0.66*	-.09	0.90
Mode A	0.41	0.80*	-.09	0.84	0.79	0.00*	-.16	0.84	0.71	0.85*	0.18	0.91
Often A	-.12	0.84	-.09	0.84	-.22	0.80	-.08	0.84	0.27	0.92*	-.21	0.91
CONVENIENCE	-	-	0.11	0.84	-	-	0.32	0.86	-	-	-.18	0.91
Time B	-.01	0.83	0.77	0.53*	0.02	0.79	0.82	0.31*	-.04	0.93	0.90	0.00*
Mode B	-.05	0.83	0.18	0.83*	0.04	0.79	0.44	0.80*	-.16	0.93	-.16	0.91
Often B	0.03	0.83	-.26	0.83*	0.01	0.79	-.17	0.84	0.01	0.93	-.21	0.91
CONVEN B	0.25	0.85	-	-	0.25	0.80	-	-	0.10	0.93	-	-
MULTIPLE R	<u>0.834</u>		<u>0.838</u>		<u>0.785</u>		<u>0.839</u>		<u>0.928</u>		<u>0.903</u>	

* Significant at the 5% level

TABLE 34: REGRESSION OF TIME, MODE AND FREQUENCY AGAINST PERCEIVED DISTANCE

	OVERALL SCORES				PERIPHERAL SCORES				CENTRAL SCORES			
	ASTON		POST MOVE		ASTON		PERIPHERY		ASTON		CENTRAL	
	Partial	Multiple	1	2	1	2	1	2	1	2	1	2
Distance A	-.53	0.62*	0.20	0.79	-.78	0.58	0.25	0.83	0.03	0.75	0.14	0.82
Map Dist A	0.35	0.70*	0.18	0.79	0.63	0.76	0.23	0.82	0.04	0.75	0.10	0.82
Time A	-.14	0.75	0.13	0.79	-.28	0.85	0.10	0.82	-.50	0.65*	0.24	0.83
Cost A	0.26	0.72*	0.19	0.79	0.60	0.78	0.28	0.83	-.47	0.66*	-.12	0.82
Mode A	-.08	0.75	-.14	0.79	-.07	0.86	-.18	0.82	-.07	0.75	-.20	0.83
Often A	0.18	0.73*	-.14	0.79	0.10	0.87	-.10	0.82	0.15	0.76	-.23	0.83
CONVENIENCE	-	-	0.02	0.79	-	-	-.12	0.82	-	-	0.16	0.82
Distance B	0.00	0.75	-.62	0.61*	0.07	-.86	0.06	0.81	-.15	0.76	-.45	0.77*
Map Dist B	-.01	0.75	-.12	0.79	0.05	0.86	-.69	0.59*	-.13	0.76	0.27	0.80*
Time B	-.04	0.75	-.09	0.79	-.01	0.86	0.06	0.81	-.12	0.76	-.01	0.82
Cost B	-.07	0.75	-.14	0.79	0.03	0.86	-.10	0.82	-.28	0.78	-.22	0.83
Mode B	-.03	0.75	-.07	0.79	0.20	0.87	0.09	0.81	-.06	0.75	-.35	0.79*
Often B	-.16	0.75	0.39	0.74*	-.30	0.88	0.41	0.77*	0.14	0.76	0.28	0.80*
CONVENIENCE	0.07	0.75	-	-	-.12	0.87	-	-	0.31	0.78	-	-
MULTIPLE R	<u>0.745</u>		<u>0.785</u>		<u>0.863</u>		<u>0.813</u>		<u>0.752</u>		<u>0.819</u>	

* Significant at the 5% level

TABLE 35: FRIENDS AND NEIGHBOURS REGRESSION SCORES

	ASTON		POST MOVE	
	Partial	Multiple	Partial	Multiple
Shop	0.21	0.99*	0.31	0.95*
School	-.06	0.99	0.10	0.96
Pub	0.21	0.99*	0.32	0.95*
Club	0.10	0.99	-.04	0.96
Park	0.09	0.99	0.04	0.96
City	0.01	0.99	0.08	0.95
Bus	0.28	0.99*	-.10	0.96
Church	-.02	0.99	0.12	0.96
Cinema	0.18	0.99	-.03	0.96
Relatives	0.16	0.99	0.14	0.96
Friends	0.29	0.99*	-.00	0.96
Neighbour	0.27	0.99*	0.35	0.96*
OVCON	-	-	-	-
Move	-.24	0.99	0.10	0.96
Length of Stay	-.22	0.99	-.27	0.96
No of People	0.07	0.99	-.16	0.96

* Significant at 5% level

TABLE 36: CONVENIENCE REGRESSION SCORES

