ENVIRONMENTAL QUALITY IN RESIDENTIAL

AREAS: A SOCIAL SURVEY

APPROACH TO IMPROVEMENT PRIORITIES

SIMON CANE

A Thesis submitted in partial fulfilment

of the degree of

DOCTOR OF PHILOSOPHY

Department of Architectural, Planning and

Urban Studies (J.U.R.U.E.)

The University of Aston in Birmingham

MAY 1977

CONTENTS

VOLUME TWO

APPENDIX C

        THE QUESTIONNAIRES AND SURVEY SHEETS

CONTENTS

VOLUME ONE

VOLUME II: INTRODUCTION

The object of this second Volume is to supply the details which, in
the interests of brevity and comprehension, were left out in the first
section. It is not intended that this volume should be entirely self-
contained, as this would involve the repetition of much of the background
to the survey which was covered in the first Volume. The emphasis is there-
fore upon reporting the methodological aspects of the research and the full
description of the analysis, rather than on the contextual issues.

This Volume is arranged as follows: the first chapter continues the
research review (chapter 3) and concentrates upon the methodologies which
have been used in the research centreing on the residential environment.
The next chapter amplifies the discussion of research strategy first taken
up in chapter 4; concentrating particularly on the research model, the
choice of environmental dimensions and the physical measures and finally
the scaling procedures used in the survey. Following this discussion of
the research strategy, the characteristics of the sample and the data are
dealt with along with the implications these have upon the research model
assumptions.

The three subsequent chapters (chapters 11 to 13) report the results
of the analyses made of the responses to the survey. The concluding
chapter does not attempt to repeat the main research conclusions which are
made in chapters 6 and 7 (Vol I), but concentrates on some of the issues
arising from the analysis such as the implications of pre-selecting the
environmental dimensions and the effects which the assumption of ranked
data have had upon the research.

8.1 INTRODUCTION

8.1.1 This chapter continues the review which was commenced in chapter 3. The emphasis in this second part is upon the definition of the concepts used in research on environmental values, and upon the methodologies by which these concepts are measured, rather than upon the results themselves which was the concern of chapter 3. There is inevitably a large degree of overlap between the two chapters as the results of any research cannot easily be separated from the methodology which has produced them.

8.1.2 This review is important because:

a) the underlying concepts used in a study affect the results obtained; hence there is a need to understand the concepts used,

and

b) it is necessary to base any research upon good theories or models.

8.1.3 The first part of this chapter attempts to outline the meaning of the main concepts used in the reviewed research. To do this is not easy as firstly there is commonly disagreement on the definition of concepts between different workers, and secondly in many cases there is a complete lack of definition. The lack of common definitions is extremely important as it limits the comparability and generality of results. This part of the chapter therefore seeks to put the different definitions of the concepts within a framework, so that although no common definition may be possible, the differences can be made evident.

8.1.4 The second part of the chapter examines the alternative methodologies available. It will become clear in this section that the meanings of the

concepts must also be seen in relation to the methodologies which have been used to measure them. There is thus a need to examine the assumptions implicit in each particular method.

8.2 CONCEPTS AND DEFINITIONS

8.2.1 Central to all the work on residents' values and attitudes with respect to the environment is the idea of man as a goal-directed being (Ackoff R. and Emery F., 1972; Harvey D., 1969; Canter D., 1973; Simon H.A, 1967). This implies that a person, once motivated, directs his behaviour towards achieving that person's goals. Canter, for example, defines man as a "conscious goal-oriented open adaptive system" (Canter D., 1973). This definition is useful because it implies that the goals, and the values, attitudes, etc. resulting from them are not rigid but can be influenced by external influences. An important part of this model of man is the comparisons which are made between the desired or expected conditions (goals), and the conditions which actually exist (Canter D., 1973).

Simon has suggested that when 'performance' falls short of the level of aspiration two things happen simultaneously (Simon H.A., 1967). Firstly, behaviour is induced towards better performance levels, and secondly the level of aspirations begins to adjust itself downwards until the goals reach attainable levels. If these two processes operate too slowly "stress" may occur (stress is a concept frequently used in migration studies where behaviour i.e. moving has many constraints (Clark W.A.V. and M. Cadwallader, 1973; Yeates M., 1972)) and emotional behaviour will replace adaptive behaviour.

This conception of man as a goal-oriented being provides a useful framework for examining the meanings of the terms commonly used in the research.

8.2.2 Values

"Values" is a commonly used concept often with little attempt to define it. There appear to be two interpretations of its meaning. The first interpretation holds that "values" are basic criteria by which things are evaluated (as desirable or not, etc.). In this interpretation values can be considered to be close, if not identical, to an individual's goals, and from which attitudes are derived. The distinction between values and attitudes according to this interpretation is that values are more general-ised and less likely to change (less open to external influence) than attitudes i.e. values are higher order attitudes (Johnson H.M., 1961). It is this interpretation of values which is used in the research.

The second interpretation of values is less precise and is as a generic term which includes such concepts as attitudes and preferences. The following definition of values for example illustrate this generalised concept.

"Value may be defined as a conception or standard, cultural or merely personal, by which things are compared and approved or disapproved relative to one another" (Johnson H.M., 1961).

8.2.3 Attitudes

Attitude is generally defined as a 'learned pre-disposition to respond to an object in a consistently favourable or unfavourable way' (Allport F.H., 1955). An important implication of this definition is that attitudes are learnt. Bruvold has reviewed a number of studies on the determinants of environmental attitudes and illustrated the different factors involved: status, length of residence, beliefs, perception of problems and needs etc. (Bruvold W.H., 1973). He suggests that the variables to which attitudes are related can be summarised as information and experience. The learning

process can also be described as learning to approach (react favourably to) positive goals, and to avoid (react unfavourably to) negative (Cane S.T., 1974). Attitudes can be seen to be closely linked to the basic 'goals' of an individual.

However, although attitude has been defined above as pre-disposition to act, much research has noted that actual behaviour does not always relate well to the individuals' attitudes (Alwin D.F., 1973; Fishbein M., 1966). This discrepancy between attitudes and actual behaviour has led many researchers to postulate the existance of three components of attitudes: affective, cognitive and conative (behavioural).

Conflicting evidence as to the usefulness of these components has appeared in recent research (Fishbein M., 1966; Bruvold W.H., 1973; Ostrom T.M., 1969). The problem is not entirely a conceptual one, but also one of measurement (Fishbein M., 1966). It has also been pointed out that attitudes may have additional functions and not just be bases for behaviour, but have other functions (e.g. political bargaining, ego-defence etc.) (Katz D., 1967; Waterhouse A., 1971).

It is important to underline two points about the definitions of attitudes discusses above:

a) attitudes expressed by individuals are held to be dependant upon their perceptions of problems, environmental conditions, needs etc.

    and

b) attitudes are related to individual's basic goals and values, but may also have other functions for the individual.

8.2.4 Preferences

Preferences have been distinguished from attitudes because they imply one important property: order of attitudes. Couch defines a preference as a "type of attitude in which an object is given priority or viewed more

favourably in relation to another object or objects" (Couch I.R., 1973)
i.e. preferences involves comparison and the assigning of priorities.

The concept of preferences has, however, been used in a number of
different ways. The first and classic way is in economic theory in which
preferences are revealed in the quantity and quality of goods or services
chosen in order to achieve the goal of maximum utility, given the constraints
of income and prices (Johnson D., 1974). The same concept has been used
in the non-economic sense, in which case the preference for an object, or
more usually, an area, is the result of a kind of evaluation of the alter-
natives available. These alternatives are compared by the individual on
the basis of their relative expected achievements of his goals (Jackson
L.E. and Johnston R.J., 1972). The resulting 'preferred' alternative, or
order of preference, is based upon this comparison, whether it is conscious
or not.

The concept of preference has also been used to indicate the relative
desirability of the components of the objects or areas themselves. In
this sense preferences are closer to the actual goals and values of the
individual, and in fact can be regarded as the external (verbal) expression
of an individual's goals in an ordered (priority) form. Note that in dis-
cussing the differences between the concepts of preference that the method-
ology being used to determine the preference has a decisive influence on
the definition i.e. the concepts only have a meaning within a given oper-
ational context.

A major problem, common to the definition of attitudes in general is
the difference between what people say, and what they do. It will be noted
that the economist's definition of preference is based upon what people do,
that is their economic behaviour. Tversky has suggested that in non-

behavioural research preferences should be defined in a probabalistic

fashion, because of the occasional inconsistencies of behaviour (Tversky A.,

1969). However as will be clear in the review of research very little

attempt has been made to link environmental preferences to actual behaviour

to test this suggestion.

8.2.5 Satisfaction

Satisfaction, like preferences, is a concept which is in common use

without generally being defined. If man is regarded as a goal-directed

being, satisfaction can be thought of as the statement of an individual's

position with respect to his goals (Canter D., 1973). In other words it is

a measure of the extent to which an individual's goals have been achieved.

Some of the problems resulting from this definition are common to

those dealing with behaviour (see 8.2.6). These problems are:-

a) that an individual's goals are not static. Hence although theoretically

the achievement of maximum satisfaction would imply no intention to

change, or motivation for further behaviour, it is likely that the

goals will be adjusted upwards. Stagner points out that human mot-

ives are essentially non-satiating and refers to the concept of the

hierarchy of human 'needs' in which the achievement of the more basic

levels leads to the adoption of higher level 'needs' (Stagner R.,

1970).

b) the corollary of the above point is that if the goals are not achieved,

they may be adjusted downwards i.e. the individual adapts to his

situation (Simon H.A., 1967).

c) Harvey makes a distinction between the models of man as a maximising

being or a satisficing one (Harvey D., 1969). The concept of maxi-

mising behaviour is one which is borrowed from economics and it is one

which "takes on an imprecise meaning under conditions of uncertainty"

(Johnson D., 1974). Harvey suggests that 'satisficing' models can be regarded in three basic ways (Harvey D., 1969): Firstly as a kind of optimising behaviour in which the criteria are non-economic. Secondly as maximising behaviour with respect to a number of selected (or known) alternatives out of a much larger set of alternatives i.e. a 'bounded' optimum is sought. The third alternative, regarded by Harvey as 'conceptually barren' is that in which satisficing behaviour is non-optimising behaviour.

The implications of this discussion for the measurement of satisfactions need to be underlined, namely, is satisfaction gauged with respect to a reduced number of goals (i.e. bounded goals) or to lower levels of goals, i.e. sub-optimum goal levels, which can be termed 'expectations'.

Despite the problems of establishing the goal levels against which satisfaction is being measured the use of the concept of satisfaction has some advantages. Firstly it offers an indirect method of obtaining people's goals (although the measurement techniques involved are similar to those for attitudes). Secondly, behavioural constraints which would conceal desired behaviour from behavioural observations are avoided; and thirdly the concept of expectations, or adjusted goal levels, can be linked with that of reference groups (Darke J. and Darke R., 1970) or in the context of the environment - "socio-spatial reference systems" (Buttimer A., 1972). In other words an individual's expectations are not only dependant on his past achievement of his goals, but also on the "reference system" (both a social and a physical concept) he bases these goals upon. This point is important because concepts like satisfaction can only have meaning within some behavioural context. As seen later (8.4.2.1) most researchers ignore this.

8.2.6 Behaviour

Behaviour can be seen as a cyclic process in which an individual is motivated to 'behave', this behaviour being directed towards some goal. As suggested above if the goal is achieved behaviour may cease, or the goal itself may change and behaviour re-commence (Stagner R., 1970). Alternatively if the goals are not achieved they may be adapted to attainable levels, or irrational behaviour may result (Simon H.A., 1967).

Models of this simple process are, however, unsatisfactory for attempting to identify goals or values from behaviour, not only because of the difficulties mentioned above in the possible differences between satisficing and maximising behaviour, but also because of the other possible influences on behaviour. These influences include the constraints on behaviour, the information an individual has on choices, his perception of the situation and the perceived probability of goal achievement (Stagner R., 1970; Ackoff R.L. and Emery F.E., 1972). The perception process is thus central to an understanding of behaviour (see later 9.1) (Doherty J.M., 1969).

This short discussion of behaviour has illustrated some of the difficulties in attempting to determine goals and values from an individual's behaviour. In summary it can be said that if one is not assuming that an individual is behaving to maximising his goals in a situation of perfect information (i.e. in which the perceived world may be regarded as close to the real world) then it is necessary to

a)   identify the nature of the perceived world for that individual, and

b)   understand how the goals relate to this perception.

8.2.7 Summary

The above discussion has attempted to provide a conceptual background

to the discussion, which follows, of the research methodolgies frequently encountered. This has been a necessary, but difficult task because of the confusion which arises from the lack of adequate definition of concepts in some research and the differences between definitions in other research. The impact which the methodologies themselves have upon the definitions of the concepts will become clearer as the alternative methodologies are described.

8.3 RESEARCH METHODOLOGIES

There are a number of possible ways in which research methods in common use could have been categorised and in the sections which follow a simple division has been made on the basis of the way in which the dependant variables (e.g. attitudes or preferences) are obtained. The two basic categories are (Lemon N., 1973) a) Direct Methods, in which the investigator gives appropriate instructions or questions to the respondent and assumes that they will understand the aims of the investigator, and in most cases generate the required scale properties themselves. This method has the disadvantage of putting great reliance on the individual's ability to explain and measure his behaviour, attitudes, etc. However, because of their simplicity and relatively easy analysis, direct methods have been extremely popular in attempting to obtain environmental values. Most direct methods use questionnaire techniques.

b) Indirect Methods. In these methods the aspects to be measured (e.g. preferences) are interpreted from questions or data which do not directly refer to the aspects in question. The investigator's objective usually is to avoid any common understanding with the respondent on the aims of the questions. In some cases of course there is no contact with the "respondent" at all; observations of behaviour or the use of house prices for example involve no contact with the person

whose attitudes or preferences are under study.

The review of methodologies which follows is arranged under the two headings "Direct" and "Indirect" methods. It will be noted that some of the scaling techniques are common to both categories; the difference lies more in the way the resulting data are treated.

8.4   DIRECT METHODS

8.4.1 The main implication of the direct methods of determining an individual's environmental goals, values, etc., is that it involves contact with the individual and the recording of that individual's responses. In most cases this means the use of a questionnaire. The measurement problems involved in the use of direct methods generally are dealt with adequately elsewhere (Moser C.A. and Kalton G., 1971; Lemon N.,1973), enabling this review to deal with aspects which are apparent when direct methods are used in the context of environmental values.

8.4.2 The most straightforward direct method is the open-ended approach in which respondents are asked about their attitudes or preferences. No attempt is made to constrain respondents' answers (e.g. by any measurement scale). Their responses may not be used in their entirety ; e.g. key words or phrases may be selected, rather than obtaining a verbatim record of responses. Open-ended questions have usually formed part of larger questionnaires with later structured questions (e.g. Wilson R.L., 1962; Michelson W., 1966; Reynolds and Nicholson C., 1969; Duncan T.L.C. et al, 1971; MHLG, 1966a), but have also been the sole source of data (Wilkinson R.K. and Talbot M., 1971; Menchik M., 1972; DOE, 1971; MHLG 1970; MHLG, 1970b; Redditch Development Corporation, 1972; Jephcott P., 1971; Smith J.P., 1971; Wilkinson R.K. and Sigsworth, 1972; Heady B.W., 1972; Darke J. and Darke R., 1970).

The advantages of the open-ended approach are that it is simple, and does not force respondents into making or scaling attitudes they do not necessarily have.

The method does have a number of disadvantages, the main one being the difficulty of obtaining anything more than nominal scale data.

In most cases no attempt has been made to measure responses, the only measure being the number of times a feature was mentioned by a group of respondents. Menchik, for example, used a full content analysis of respondents' replies (written down verbatim) to questions on their criteria for judging house and area quality (Menchik M., 1972). Measurement based on the number of times the respondent mentions a feature or the number of respondents mentioning it rests on the assumptions that:

a) the relative importance of the features is related to the number of mentions

b) respondents have not omitted to mention any important aspects (Couch I.R., 1973).

The difficulties of measurement have meant that few successful attempts to relate the responses to environmental conditions have been made. Menchik established relationships between the number of mentions and measures of the environment (Menchik M., 1972). Couch adopted a slightly different approach and identified where there were statistical differences between the number of times a feature was mentioned in six different areas (Couch I.R., 1973). These differences were then related to the differences in environmental conditions between the areas.

Because of the scaling difficulties, and the assumptions on which the scaling rests, the usefulness of open-ended questions would appear to be limited to providing "useful insights" which may be missed in a structured

questionnaire (Duncan T.L.C. et al, 1971), and as a pilot technique for identifying issues for further research.

8.4.3 The second main type of direct method involves the use of structured questions. The two main variables which have been measured using direct structured questions are environmental attitudes and preferences. These will be discussed in turn.

8.4.3.1 Structured Attitude Measures

The basic advantage of structured questions in the measurement of attitudes is that everyone is asked the same standardised questions, and the possibilities of comparison and measurement are accordingly increased. It is this latter point of measurement, and the uses made of the measures, which will be discussed in this section.

Although the topic of measurement cannot be dealt with in full in this thesis, and is adequately covered elsewhere (e.g. Torgerson, 1958; Stevens S.S., 1972; Lemon N, 1973), it is necessary to refer to scaling in more depth. The scale properties of the measured variables (attitudes, satisfactions etc.) are important in determining the types of analysis which can be performed on the data. This can be critical if the variables are related together into a model of some form. In most of the attitude research reviewed the 'measurement by fiat' approach has been adopted, in which the environmental attitude and the measurement scale are related by arbitrary definition. In most cases too, ratio or interval data has been assumed even when the scale used in measuring the variables would appear only to produce ordinal data. For example using a rating scale with a number of categories is usually accepted as producing only ordinal data, unless some scaling procedure is applied (e.g. applying the law of categorical judgement) (Torgerson, 1958). It is argued by S.S. Stevens that direct

interval data may be obtained by using methods of magnitude estimation or comparison of stimuli (Stevens S.S., 1972). In its simplest form the magnitude estimation method requires respondents to estimate the strengths of their attitudes etc. using the length of a line-marking off the 'position' of their attitudes. However, as it is not possible to measure the 'real attitudes' directly it remains a matter of faith as to the degree to which ratio or interval data properties have been achieved. It remains the task of the researcher to justify his assumptions, but in the research reviewed there is little discussion of this issue. The assumption of ratio or interval properties puts a great reliance on the respondent's ability to scale his own attitudes, and had led one writer to warn of the seeming attractions of rating scales and to advise that "if there is a better way of measuring - use it" (Lemon N., 1973).

The following measurement methods have commonly been used:

a) Dichotomy measures

In this method respondents are asked whether they agree or disagree with attitude statements about the residential environment. Although it is possible to construct a scale (Guttman scale) from such data, it has not been used this way in the work reviewed. Only one study has used dichotomy measures entirely, and responses were not related to environmental conditions in any way (Maclean U., 1973).

b) Rating Scales.

These have been extensively used both for attitudes, and for the measurement of satisfaction (see below 8.5.2). Generally the studies have used questionnaires requiring respondents to rate their neighbourhoods, homes, or aspects of the environment on three to seven point scales (Lansing J.B. and Marans R.W., 1969; Buttimer A. and McDonald S.T., 1974; Troy P.N., 1971; Troy P.N., 1972; DOE, 1972; Kasl S. and Harburg E., 1972; Lansing J.B.,

Marans R.W. and Zehner R.B., 1970). In some cases each scale category was separately labelled and in others only the extremes were labelled (see later 9.6.3). As noted above, there is no guarantee that the scale produced is of interval or ratio status, unless some scaling method has been applied (Torgerson, 1958), which in the majority of the studies quoted it had not been.

c) Magnitude Estimation

This method has not been used much in environmental attitude research (Couch I.R., 1973; Hodgins H., 1976; Hills P , 1974). One interesting application of the method was for measuring a number of attitudes, in which parallel lines were used, one for each attitude. The ends of the scales were 'anchored' by respondents marking their most positive and their most negative attitudes first. Their remaining attitudes were then marked between these two extremes, resulting in comparative scale values (Hills P., 1974). There remain the problems of comparisons between individuals and particularly whether the end points of the scales should coincide (i.e. in effect stretching the scale for those with a small range) or not.

8.4.3.2 Structured Preference Measures

As preferences imply order of attitudes (8.2.4) some form of scaling is required. Two methods have been used commonly:

a) ranking by respondents of a list of (environmental) attributes according to their preferences, and

b) scaling the importance or priority of each environmental attribute.

The first method is probably more widespread and is often restricted to asking respondents to rank a small number (e.g. 3 to 5) of components from a larger list of components (Troy P.N., 1972; Michelson W., 1966). Because the responses are ranked there are problems of combining responses for a number of respondents, as the ranked values have of course no

absolute values, and cannot be added. The meaning of 'average ranks' as used in some surveys is thus not clear (Headey B.W., 1972).

More commonly the percentage of respondents selecting the various components as their top priority is calculated, producing an interval scale of the numbers of persons who say that a particular environmental attribute is most important. That is not to say that an interval scale of the relative importance of different environmental attributes is produced.

In the second method it is possible, if the scales are assumed to produce interval data, to obtain mean importance scores for each attribute, and to rank the attributes later if necessary (Hinshaw M. and Allott K., 1972).

One advantage of this latter approach is that a ll the components are scaled by each respondent, and not just the top few components selected.

The use of these two methods has one main disadvantage: respondents can only rate components which are included in the list of components or attitudes – the choice of what to include is thus critical. For example in an earlier review by the author the absence of safety and social components from most preference questions was noted, although other studies had found that these two aspects were very important contributors to overall satisfaction (Cane S.T., 1973). One method to avoid this has already been mentioned, and that is Menchik's method of content and analysis of open responses, the preferences being assumed to be related to the frequency of mentioning of aspects (Menchik M., 1972).

This latter approach has the main disadvantage of placing a greater dependance on the loquacity of the respondents than on the strength of their preferences. This disadvantage of limiting the respondent's choice is not restricted to preference measurement of course.

8.4.4 Apart from the problems of definition of the concepts (which in the direct approach, comes down to how questions are worded) the main difficulty which underlies all the methods discussed is that of measurement. This is a key point in designing a survey, as the limits of analysis are basically set by the quality of the data. It has been seen that there are numerous problems in obtaining data which is of interval or ratio status, and yet few of the studies reviewed either acknowledged the possibility that the data were of lower status or used scaling techniques to ensure higher status data. This topic will be returned to again below (9.6.3).

8.5 INDIRECT METHODS

8.5.1 Indirect methods, that is methods in which the variables to be measured (e.g. preferences) are interpreted from questions or data which do not directly refer to the variable in question, are more varied than the direct methods. In addition it is more difficult to separate the method used from the concept or variable being measured. In the discussion of methods which follows, the methods are arranged by the variable being measured as well as by the type of methodology. It will be noted that some of the measurement methods which were encountered in dealing with the Direct Methods are also used in Indirect Methods. The distinction lies more in the way the data is used than in the instrument adopted to measure the responses. This is particularly the case with the satisfaction approaches, discussed first.

8.5.2 Satisfaction Approaches

In order to obtain resident's goals or values from the measurement of satisfaction it is necessary to have some measures either of the environment or of residents' perceptions of that environment. From the measures it is possible to interpret the relative influence which different attri-

butes of the environment have upon satisfaction. Two main approaches have been used:

a) relating residents' overall satisfactions with the environment to their evaluations of the separate attributes of the environment, and

b) relating residents' overall satisfactions with the environment to "professional" evaluations of the attributes of the environment ("objective" measures).

Four studies have adopted the former approach (DOE, 1972; Lansing J.B., Marans R.W. and Zehner R.B., 1970; Troy P.N., 1971; Troy P.N., 1972). In each case interval data was assumed, and a regression analysis performed on the data with the measures of overall satisfactions as the dependant variable. The different contributions made by the evaluations of the attributes of the environment to overall satisfaction were assumed to reflect the respondents preferences (see below 8.6).

Four studies have related overall satisfaction to professional (planners) evaluations of the environment (Buttimer A. and McDonald S.T., 1974; Lansing J.B. and Marans R.W., 1969; Troy P.N., 1971; Troy P.N., 1972). The problem which these studies have revealed is that there is little correlation between the two sets of measures, largely because of the differences in perceptions between the residents and the "objective" observers (Troy P.N., 1971). Advances in the techniques of measuring the environment (e.g. Hawkes R.J., 1975) would, however, improve the usefulness of this approach, as it is one of the few methods which links the concept of goals through to the environment itself.

8.5.3 Preference Methods

In this approach respondents' values are interpreted from their choices between different areas or environments (as distinct from asking

respondents directly which components of the environment they preferred -
8.4.3.2). There are a number of different ways in which the choices are
presented to the respondents. The first method is to use recent migrants
and to get them to evaluate their past and present areas. In the second
method respondents base their choice on the names of areas, the assumption
being made that respondents are aware of the environment of the named areas.
The final method is one in which respondents base their choice upon photo or
sketch representations of areas.

8.5.3.1 Preferences of Recent Migrants

Several studies have used respondents who have recently moved, in order to
reduce the differences in perception due to varying knowledge of the areas
(Wilkinson R.K. and Talbot M., 1971; MHLG, 1970; Flowerdew A.D.J. and
Rodriguez F., 1975). Only one of the studies has related the scaled rel-
ative preferences for two areas to the physical characteristics of the two
areas (Flowerdew A.D.J. and Rodriguez F., 1975). In this study a five
point preference scale for the dwellings occupied before and after urban
renewal had taken place was used. In the regression equation, with the
relative preference as the dependant variable, only one variable was sig-
nificant - the difference in dwelling space occupied. However, no measures
of other characteristics of the areas other than dwelling aspects were
included. This approach is clearly capable of development to include
environmental characteristics.

Although it would appear to be attractive to extend this type of study
using recent movers there remains the problem that only a small percentage
of the population move each year (c.5%). In addition the households which
move are not representative of the general population (being generally
younger and smaller). (See below 8.5.4.3 for further discussion of the use

of migration.)

8.5.3.2 Preferences between named areas

An individual's preferences between areas is not only based upon his
or her environmental values but also upon the way in which they perceive
the nature of the areas (Jackson L.E. and Johnson R.J., 1972). In order
to identify these values therefore the nature of the images need to be
understood. The simplest approaches, in which respondents are just asked
to state where they would prefer to live, or to list their favourite cities
is therefore not sufficient (Hinshaw M. and Allott K., 1972; Lansing J.B.
and Hendricks G., 1967).

Johnston was more concerned about the influence of perceptions in his
study (Johnston R.J., 1972). He found a high correlation between perceived
status of an area and the desirability of those areas to the respondents.
In addition areas which were more familiar to the respondent were perceived
to have higher status. The physical 'determinants' of the perceptions were
not investigated however.

One study which has related areal preferences to the physical character-
istics of the areas is worthy of attention (Couch I.R., 1973). By regressing
the mean preference scores of the individuals in one area for the seventeen
other areas in the study Couch shows that

a)   the distance from the 'home' area is important, which reinforces the
     point about familiarity made above, and

b)   that absolute values of the environmental variables are not as important
     as the comparative values, e.g. the difference in tenure structure between
     the 'home' area and the other areas.

8.5.3.3 Preferences between photo-representations

The conceptual basis of studies using photo (or sketch) representations
of the areas or environments is the same as for the previous preference

studies mentioned, the difference being in the increased control which is
exercised (superficially at least) over the attributes of the areas rep-
resented. It can be argued that although at face value a photograph of
an area represents the same to everyone, it is still likely that individ-
uals will interpret the photographs differently, or perceive different as-
pects within the photograph. However the control exercised is greater than
in the methods mentioned above.

In all the research using this approach reviewed respondents were first
shown the photographs and asked to evaluate them either in an open-ended
form (Michelson W., 1966) or by using rating scales along a number of
dimensions in the other studies (Michelson W., 1966; Wilson R.L., 1962;
Peterson G.L., 1967; Peterson G.L. and Neuman, 1969). Following this the
respondents were asked to rank the photos in order of preference. The
methodology used by Peterson, and by Peterson and Neuman, is of most inter-
est. In both cases the model underlying the research is the same, and can
be expressed by the formula

$$P_j = a + \sum_{k=1}^{n} b_k X_{kj}$$

where j = a specific visual appearance (photo)

   P_j = the total quantity of preference generated by appearance
        j

   a = a constant

   k = a specific visual attribute in appearance j (e.g. beauty, age
       etc.)

   X_{kj} = the quantity of attribute k perceived in appearance j

   b_k = the quantity of preference generated by each unit of attribute
        k

The simple linear model assumes that the perception process reduces
the visual environment to a vector of independant linear attributes. The
'visual appearances' were simulated by the photographs of residential

neighbourhoods in one work, and of beaches in the other. The visual attributes were measured by the use of rating scales, having been defined on the basis of previous research and pilot testing. Factor analysis was used to construct orthogonal factors as the selected attributes, assumed to be independant, were found to be related. The factor solutions were then regressed on the preference scores.

The methodology is important because it shows one way in which overall preferences can be conceptualised, based on a person's perceptions (X) and their values (b). In neither case were any measures of the environments depicted by the photos related to the perceptions.

In other words it is not clear how the respondents' perceptions relate to the scenes shown in the photographs, which would appear to be the necessary next stage in the development of this type of research.

8.5.4 Behavioural Approaches

8.5.4.1 Three categories of behavioural research can usefully be identified:
a) research in which attempts have been made to relate behaviour to the characteristics of the environment. It is not intended to discuss this research here (see Michelson W., (1970) for a full review) as there has generally been no attempt to identify goals from the behaviour, although they are often implied. The most common example of research of this type has been into friendship formation in new estates (Carey L. and Mapes R, 1972; Athanasiou R. and Yoshioka G.A., 1973, etc.) Perraton summarises well the main methodological problems of using behaviour in order to identify goals and values (Perraton J., 1973). Among the points made are the dangers of inferring people's goals just by what they do and the inability to find out why choices are made (indeed

people may not always be aware of why choices are made (Proshansky H.M., 1972). This latter point also applies to the other behavioural approaches of course.

b) Research into economic behaviour, usually the interpretation of preferences from house prices.

c) Migration behaviour. The research which has used recent movers and asked for preferences between the 'before' and 'after' environmental conditions has already been discussed (8.5.3.1). In this section the reasons for the move and the <u>choice</u> of location are the main interests.

8.5.4.2 Economic Behaviour

The basis of using economic behaviour for the study of residents' goals is that, in theory and given certain conditions, the relative preferences for the various aspects of the 'housing bundle' of goods (i.e. the dwelling including its location and the surrounding environmental conditions) will be reflected in the prices people are prepared to pay for the dwelling. This review concentrates on this type of study, rather than those looking at the change in price after some environmental change (Davies G., 1973; Wilkinson R.K., 1973; Kain K.F. and Quigley J.M., 1970).

In most of the studies of this type house prices, obtained from building societies or estate agents records, have been regressed as dependant variable on a number of physical measures of the dwelling and its neighbourhood. The approach has a number of drawbacks, some of which are common to the research approaches already discussed:

a) the problem of measurement of the environmental attributes which are likely to have been taken into account in the price of the dwelling.

b) the multi-collinearity of the environmental data. This has commonly

been surmounted by the use of factor analysis, resulting in very generalised factors (Kain J.F. and Quigley J.M., 1970; Wilkinson R.K. and Archer C.A., 1973).

c) the major theoretical issue of the relative influence exerted on prices by locational factors (accessibility) as opposed to environmental factors (which are often also related to location).

d) Perfect information of opportunities, a necessary assumption for prices to reflect preferences accurately, does not exist. Residents action and information spaces are limited by distance and direction (Johnston R.J., 1972).

e) the existance of household surplus (i.e. the value over and above the market price of the dwelling that the occupant enjoys) which distorts the picture. A dwelling currently occupied has a greater value to the occupier than an exactly equivalent alternative - because of sentimental value, costs of moving etc.

f) the price paid is not only a reflection of the quality and location of the dwelling, but of purchasing power too. Unequal distribution of income is therefore a problem.

g) This approach only applies to the home-owning section of the population i.e. to just over half of the households in the UK. Kain and Quigley included renters in their study (Kain J.F. and Quigley J.M., 1970), developing a separate regression equation for the determinants of rents. The large council sector, and the existance of rent controls has made this approach difficult in the UK.

Despite the conceptual attractions of the economic approach there are these major drawbacks to the approach which have restricted its use to a limited number of studies (see 3.5.2 for results of these).

8.5.4.3 Migration Behaviour - Choice of Residence

The interest in migration behaviour is two-fold. Firstly in the reasons and likelihood of moving one is approaching more realistic (or action oriented) attitudes which can be tested against later behaviour. Secondly, the choice of residence should reflect the aspirations of the household - given the constraints of finance, information, distance, etc. (Yeates M., 1972).

Most research appears to have been carried out along the lines of the first approach, in which the 'stress' on the household (i.e. the mismatch between their existing situation and their goals) and the preferred area are investigated (Flowerdew R.T.N., 1973). The importance of the constraints has been demonstrated in a number of studies in which only a small proportion of desired moves were actually made (Dretthroom T. et al, 1971; Kasl S. and Harburg E., 1972), highlighting a problem of relying on behaviour alone.

One study which has investigated desires to move in a situation in which the constraints are altered has taken requests to move within the council sector (Bird H., 1972). The analysis of data from two housing authorities, Newcastle and London, concentrated on the stated reasons for requesting the move, and the choice of estate. Although the analysis was in an early stage at the time of writing physical factors such as size of estate, percentage of modern flats, amenities, overcrowding etc. had been found to be related to the number of requests to move (Bird H., 1974). This approach may suffer from the very low likelihood of moves actually taking place, despite the lack of the normal market constraints.

Deutschman approached the propensity to move from the opposite direction (Deutschmann H.D., 1972). He first classified households into 6

types on the basis of their size and income. Neighbourhoods were then described using 34 variables taken from census and land use data. The average environmental scores for each household type were treated as the norm, and individual household scores compared with the norm. The greater the difference, the greater the propensity to move according to Deutschmann, although this hypothesis was not tested against actual behaviour.

Like the other behavioural approaches the research has had to find ways of avoiding or compensating for the constraints on behaviour. This had led to a greater use of the preference approaches dealt with earlier. There is great scope for a combination of the two approaches, which may mean more use of environmental simulation to create realistic choices without the constraints which affect actual behaviour. The early steps in this technique form the subject of the next section.

8.5.5 Environmental Simulation

The feature which distinguishes studies reviewed in this section is not so much the conceptual framework behind the studies as the fact that the 'real world' is replaced by a simplified model representation which can of course be controlled and altered. The use of photographs to represent the residential environment has already been dealt with (8.5.3.3) and will not be repeated here. Most of the work using laboratory simulations has concentrated on interior housing design rather than the external environment, although noise nuisance and the psychological effects of stimuli in urban areas in general have been studied.

Associated with the attempts to simulate the environment have been attempts to improve measurement techniques (Hoinville G., 1971), and the use of gaming has been the main advance, as a method of simulating economic behaviour. Wilson developed the technique in the USA (Wilson R.L., 1962),

and considerable development work has been carried out in this country by Hoinville and SCPR (Hoinville G., 1971). The priority evaluator has now been used in a number of studies by SCPR and other researchers (Pendse D. and Wyckoff J., 1974; Hoinville G., 1971; Rowley G. and Wilson S., 1975), and it is possible to make some general points about the method and its advantages and disadvantages.

The general technique involves the presentation, usually on a board, of a number of elements or components of the environment for which respondents' valuations are required. Examples which have been employed are the various aspects of commuting (journey time, cost, number of interchanges etc.); amenity versus accessibility (traffic in home area and shopping centre versus amount of road travel); and environmental standards (car parking versus open space etc.). Each dimension forms a scale, commonly with 3 or 4 positions, each representing an 'amount' of the dimension in question. In an attempt to make the evaluations more realistic illustrations have commonly been used to represent each position. In addition, attached to each position is a value or price which the respondent has to 'pay' to achieve that standard.

The usual method of operating the game is to ask respondents firstly to indicate what their current position is on the scales. The respondents are then given 'money' or tokens with which to 'buy' changes in the environment. The amount of 'money' can be varied, and may even be less than the current 'value' enjoyed. The 'prices' can also be varied of course. The respondent is forced, as in real economic behaviour, to choose positions which will maximise satisfaction within the constraints of the 'money' available. A comparison between the 'bought' condition and the existing environment shows where improvements or sacrifices are desired, given the

prices of the various dimensions.

Pendse and Wyckoff define a satisfaction ratio (SR) which is given by the following equation:

SR = $\dfrac{\text{Proportion of budget allocated to a factor}}{\text{Proportion of existing value assigned to factor}}$

if SR $>$ 1, respondents are dissatisfied at present, and if SR = 1 they are indifferent (Pendse D. and Wyckoff J.B., 1974).

There are two main advantages of the gaming technique of measuring preferences:

a) the choices are easy to portray and can be more realistic to the respondent than questionnaire methods using ranking or rating scales. Respondents have been found to take the 'game' very seriously and to consider their choices carefully (Hoinville G., 1971).

b) The method simulates trade-offs which are made in real life without some of the constraints which usually operate (e.g. unequal income distribution).

There are also several disadvantages of the method which require further development work:

i)   There is a limit to the number of different dimensions which can be considered simultaneously. Rowley and Wilson quote Miller who suggests that the limit is seven (Miller G.A., 1956). Because of this limitation only simple aspects of the real world can be simulated.

ii) The price-tags assigned to the categories are critical. Pendse and Wyckoff point out that the trade-offs obtained only relate to the values on the board, hence it is important to know how realistic these values are (Pendse D. and Wyckoff J.B., 1974).

iii) The method can be very time consuming to operate (Perraton J., 1973), and may require relatively complex boards (in comparison at least to a questionnaire).

Gaming methods would appear to be applicable to certain research problems which are limited in scope and hence do not exceed the capabilities of the gaming approach. Development work on the effect of changes in prices on the board is also necessary. However this method is probably one of the most useful new approaches which have been reviewed.

8.6 SUMMARY AND CONCLUSIONS

8.6.1 This chapter has looked at the array of research which has dealt in some way with the residential environment, and has related the basic methodologies to the framework of man as a goal directed being. The aim was to look at methods of identifying residents' goals or values and to investigate their relationship with measurable features of the environment. A number of shortcomings of the current research can be identified, which provides this research in effect with a set of methodological objectives. These shortcomings are:

a) In many studies there is poor definition of the concepts used in the research, which reduces the generality of any results produced.

b) There is insufficient emphasis on the operational definition of the variables, even if the concepts from which they are derived have been defined. The importance of the operational context in the results obtained is illustrated by Troy's study in which he used two different methods to obtain respondents' preferences (Troy P.N., 1972).

He compared the percentage of respondents who had ranked a component as the most important one with the contributions that their evaluations of that component made to their overall satisfaction. The comparison

for the environmental components is shown in table 8.1.

Table 8.1

Component	% of respondents ranking component as most important	Contribution to Overall Evaluation (R^2)
Pedestrian Safety	22	.04
Clean Air	18	.09
Tidiness	15	.05
Traffic Noise level	13	.04
Appearance	12	.18
Traffic congestion	6	.02
Aircraft noise	6	-
Maintenance of Buildings	5	.09
Maintenance of lawns, trees	5	.04
		Total R^2 .55

It is clear from the table that the two methods give different answers, the reasons for which Troy discusses (Troy P.N., 1972). It is suff-icient to note here the implications which this has upon the need to take account of the operational context of the concepts i.e. the way they are to be measured.

c) There is often little or no attention paid to the scale properties der-ived from the instrument used. It is crucial that the scale properties implied by the analysis are inherent in the variable (e.g. attitude, preference) being measured itself and are capable of being obtained by the scaling method used.

d) There has been an almost total neglect of the social and environmental

conditions in which individuals are making their values known. Values have to be measured in relation to the individual's circumstances if any generality of results is to be obtained. The concept of reference groups has not received much attention, and there has been a lack of definition of the physical variables (Perraton J., 1973). Those studies which have linked the physical environment to the responses have faced problems of multi-collinearity among the physical variables, or of other constraints limiting the results (e.g. limitations of housing markets etc.).

e) All the methods fail to give an indication of the pattern of priorities over a full range of environmental possibilities, or of the trade offs involved (Perraton J., 1973). The gaming method, which approaches nearest to the ideal of obtaining trade-offs in a realistic manner is limited to a few dimensions of the environment at any one time.

8.6.2 The implications that these limitations on the existing research had upon the use of the results has already been discussed in the first volume (3.6). It remains to discuss the implications of the research review on the choice of methodology for this work. It was clear at the outset of this research that there would be two critical constraints on the choice of methodology. The first was the time (and financial) resources available; and the second was the fact that the chosen methodology had to be able to be repeated by the local authority themselves at a later date, if necessary.

The Indirect approaches, although in some case providing a strong conceptual basis, were rejected because of the limitations involved (e.g. in the behavioural approaches the problem of constraints, biassed sample etc.) and because of the time or difficulty involved (as in the case of gaming). Although the direct methods had many associated problems it was

decided that because of their simplicity of operation, they would be most appropriate in this research. However in choosing, in effect, a questionnaire technique, the following points had to be given emphasis:

a) the careful operational definition of the concepts

b) attention to the scaling methods

c) the possible use of "satisfaction" to give an alternative 'indirect' method of obtaining values.

The following chapter, which continues the discussion of the research design (Ch.4), will show how these points were included in the research.

RESEARCH STRATEGY

9.1 INTRODUCTION

9.1.1 The previous chapter emphasised the need to have a sound methodological basis to the research. In the context of environmental quality this particularly means linking people's goals and values not only with their responses, but to the environmental conditions themselves. In addition, the need for careful definition of concepts and attention to scaling was underlined. The possible achievement of these methodological objectives was limited by the need for simplicity in research design and procedure. This chapter demonstrates how the opposing requirements of the research design have been met.

9.1.2 The form of the research model was of course fundamentally influenced by the particular interests of the sponsoring authority with whom the research objectives were discussed. The objectives of the survey were contained in the research questions posed (4.1.2):

a) How does a resident's satisfaction with the residential environment relate to the physical (and measurable non-physical) attributes of that environment?

b) What relative priorities are placed by residents upon the different elements of their immediate environment, and how do these priorities vary?

c) Do common priorities exist among identifiable groups in the population, which can serve as a basis for deciding improvement priorities?

d) Can environmental standards be derived from the data?

e) Is the social survey useful as a tool for decision-making, given that the survey data may be of low scale status?

9.2 RESEARCH MODEL

9.2.1 Many of the basic concepts of the research have already been discussed in the previous chapter. To some extent, therefore, this chapter summarises that discussion. Later in the chapter the operational definition of the concepts will be dealt with. One important concept, that of perception, was only mentioned briefly in the last chapter and is thus dealt with in greater depth (9.2.2).

The concept of man as a goal-directed being is central to the research model (Ackoff R.L. and Emery F., 1972; Harvey D., 1969; Canter D., 1973; Simon H.A., 1967). An individual's goals are derived from, and adjust themselves to such factors as an individual's attitudes, performance, perceptions and character (Canter D., 1973). It is useful to distinguish the concept of expectations from that of goals. Goals can be regarded as the fundamental objectives towards which behaviour is directed, although they may be - and be known to be - unattainable. Goals are thus relatively stable. Expectations on the other hand are sub-optimal goal levels which are derived from a practical experience or knowledge of the likelihood of achieving the goal-levels (Harvey D., 1969). Thus, for example, a common goal might be "to have a nice house in the country", whereas the expectation for most people is likely to be more modest, depending on their income, age, location etc.

Satisfaction can be thought of as the statement of an individual's position with respect to his expectations (Canter D., 1973) as the goals can be considered to be unattainable. The derivation of satisfaction with the residential environment thus implies a comparison between the environment an individual expects, and the environment as perceived. It is therefore necessary to look in more detail at the perception process.

9.2.2 Perception

Definitions of perception range from Goodey's "passive" definition as: "an awareness of objects or other data through the medium of the senses" (Goodey B., 1971), to Warr and Knapper's more "active" conception of perception as: "involving interaction or transaction between an individual and his environment; he receives information from the external world which in some way modifies his experience and behaviour" (Warr P. and Knapper C., 1968). Beyond this broad definition, according to Warr and Knapper, there is little agreement, a point which Harvey also makes, adding that it is therefore possible to choose a definition of perception according to the objective of the research, within limits (Harvey D., 1969). The model used in this research is based upon the work by Warr and Knapper, as modified by Pocock (Pocock P.C.D., 1973).

Central to the work on environmental perception has been the investigation of the structure of the 'image' which man has of the environment, and the processes which determine the content and nature of this image. It is clear that an individual is capable of accepting only a proportion of the stimuli or potential 'pieces' of information from the environment, because of the limited capacity of the brain (Miller G.A., 1951). Thus one of the fundamentally important processes to understand is the way in which man selects, or filters, the input of information from the environment.

However the environmental input is not simply a number of physical stimuli. Warr and Knapper distinguish between overt and covert attributes of the stimuli (Warr P. and Knapper C., 1968). The overt variables are directly observable, whereas the covert variables are inferred from the overt ones i.e. they have meaning attached to them on the basis of the

individual's attitudes (Goodchild B., 1974). Pocock makes the same distinction rather differently by suggesting that there are three inputs for perception: the stimuli themselves, the context of the stimuli, and previous information on the stimuli (Pocock D.C.D., 1973). The significance of recognising this is that it is only possible to measure directly part of the input to perception, namely the stimuli themselves, and possibly the context as well.

The model of perception which is the basis of the research design has been based on that described by Pocock (Pocock D.C.D., 1973). This model is shown diagrammatically in Figure 9.1. This input, which is in three forms as described above, is 'selected' and 'processed' by the individual. This takes place as a result of the limited capacity of the brain to 'receive' all the stimuli presented, and also because of the organising tendencies of the brain as noted by the 'gestalt' psychologists (Koffka K., 1973; de Jonge D., 1962). Pocock suggests that four types of influence on both the selection and the processing of perception input can be identified (Pocock D.C.D., 1973):

a) The physiological character of the individual e.g. the capabilities of the sensory organs

b) The basic psychological character of the individual e.g. the varying tendencies towards simplicity, clarity and order (Winkel G.H., Malek R. and Thiel P., 1969).

c) The cultural characteristics of the individual e;g. past experience, preferences, beliefs etc., and

d) The current state of the individual e.g. the needs and moods of the moment.

The image of the environment which is retained is thus not only a simplified model of the real world, but it is also a 'processed' and poss-

FIGURE 9.1   THE   PERCEPTION   PROCESS

ENVIRONMENT

INPUT
SELECTION

(influenced
by)

IMAGE
PROCESSING

ENVIRONMENTAL
IMAGE

Present Environmental
Stimulus
Information

Contextual
Information

Stored
Stimulus
Information

Basic
Physiological
Make up

Basic
Psychological
Make up

Cultural
Characteristics
incl. Preferences

Current
State

Designative
Response
eg. Perception

Appraisive
Response
eg. Satisfaction

Prescriptive
Response
eg. Prediction

Feedback

after. POCOCK D.C.D (1973)

ibly a distorted model which has had meaning attached to it. However, the actual structure of the image is something about which there are different ideas (Harrison J. and Sarre R., 1971; Lynch K., 1960; Harvey D., 1969; Warr P. and Knapper C. 1968).

The model assumed here was chosen because it made the simple distinction between _what_ a person perceived, _how_ they responded to what they perceived and the inferences made about what was perceived[1] (Fig.9.1). Pocock terms these three components of the perception output as follows (Pocock D.C.D., 1973):

a) Designative component: that is the "whatness" and the "whereness" of what is perceived, to which one could add the "how-muchness".

b) Appraisive component: this is the evaluative component expressing likes and dislikes of the perceived environment.

c) Prescriptive component: this is a predictive and inferential component, and forms a major part of the feedback for future perceptions.

A number of studies have suggested that the designative component of perception (i.e. the "whatness" of the image) is organised into discrete dimensions (Peterson G.L., 1967, Troy P.N., 1972; Wilson R.L., 1962; Kelly G.A., 1970). According to Kelly, individuals arrange the attributes of the perceived environment into bipolar scales which express meaningful contrasts, and which are unique for each individual (Kelly G.A., 1970). Kelly's definition of a construct is the way in which two things are seen as alike, and different from a third. However, the method of identifying

---

(1) Planners in their work have some control over _what_ people perceive (i.e. by building, landscaping etc.) - but of course none over how people respond to what's there. This distinction was therefore felt to be useful.

the constructs, through the use of the repertory test is inappropriate to large samples surveyed by untrained planning staff. For this research therefore it was decided that the dimensions of the environment which make up a persons image were common to everyone (Peterson G.L., 1967; Troy P.N., 1972). The main argument in support of this decision is that in a society sharing a common culture and language the constructs used by individuals are likely to be similar, if not identical. Thus although people may perceive different <u>amounts</u> of a dimension, and have different feelings about them, nevertheless the dimension is assumed to have the same identity for everyone. The choice of the dimensions is thus critical, and is discussed later in this chapter (9.6.1).

9.2.3 Satisfaction

Although the concept of satisfaction has been discussed in general terms it remains to be related to the above model of perception. Satisfaction was defined above as the result of a comparison between the environment as it is perceived, and the individual's expectation of the environment. This process also occurs in the model of perception, the output being the "Appraisive" response. Thus for this research the appraisive output has been assumed to result in expressions of satisfaction or dissatisfaction. However the fact that the environmental image comprises a number of different dimensions presents several difficulties:

a) An individual's satisfaction with one dimension of the environment is unlikely to be independant of his satisfaction with other dimensions. For example high satisfaction with one dimension may reduce the expectation of another dimension.

b) The level of overall satisfaction (e.g. with life, or with living in an area) may affect the satisfaction expressed with the separate dimensions of the environment.

c) The commonly assumed linear additive models of satisfaction, whereby overall satisfaction with the environment, is the sum of the satisfactions with the component dimensions of the environment, do not accommodate the above likely processes (Troy P.N., 1972; Church M., 1973).

However in an attempt to simplify the research model this rather inadequate additive process was assumed as a starting point for the research (see later, chapter 12).

9.3 THE RESEARCH HYPOTHESES

The following hypotheses are based on the research models as developed in the previous section, and in relation to the research questions posed at the outset of the chapter (9.1.2).

a) Different individuals perceive different amounts of the common dimensions of the environment.

b) These perceptions are dependant upon the environmental conditions and on the characteristics of the individuals.

c) When environmental conditions are controlled, individuals may be grouped on the basis of their common perceptions

d) An individual's perception of an environmental dimension is different from his satisfaction with it.

e) An individual's overall satisfaction with the residential environment is a function of his satisfaction with each of the separate dimensions of the residential environment.

f) Individuals have different preferences between the environmental dimensions.

g) Individuals may be grouped on the basis of their preferences.

h) Individuals' stated preferences for different dimensions of the environment can be related to the contribution which their satisfactions with

the separate dimensions of the environment make to their overall satisfaction with the residential environment.

9.4 RESEARCH DESIGN

The research hypotheses dictate that the sample of individuals chosen for the survey should have a range of environmental conditions, and also a range of social characteristics. A case-study approach was decided upon, with the intention of selecting a number of homogenous (internally) areas and taking a sample of residents within each case-study area. The responses to the pilot survey (9.5) showed however that respondents were reacting in many cases to finer detail within the case study areas, which could not therefore be regarded as internally homogeneous. The case-study approach was therefore altered - the case-study areas simply being used as a convenient sampling frame for environmental conditions. The choice of the areas was discussed in 4.3.2.

Given the resources of time and finance a final total of interviews of around 300 appeared reasonable. It was felt that 30 interviews per case-study area would be an adequate sample, given that the responses were to be combined for all areas in the analysis. Eventually twelve case-study areas of varying size were selected, and the sample size within each area was adjusted roughly to the size of the areas.

The electoral register for each case-study area was used as the sample framework. The main reason for using the electoral register, rather than dwellings or households, was the wish to obtain a balance of social types - and particularly to avoid a predominance of housewives in the sample. The final size of the selected sample was 442, with the number in the separate areas varying from 25 to 40. Assuming a response of around 75%, this would result in just over 300 interviews.

9.5   THE PILOT SURVEYS

9.5.1   Before dealing with the critical issues of measurement and quest-
ionnaire design it is useful to outline how the questionnaires were piloted.
This enables the design of the questionnaires and their revision as a result
of the pilot study to be discussed together. The pilot testing was carried
out in two stages in a number of different areas within Wakefield City,
during the months of April and May 1974.

9.5.2   The First Pilot Stage

On the suggestion of the planning department a small mixed area of
private and council dwellings was chosen. A random sample of 20 persons
was selected from the electoral register. Unfortunately, as it turned out,
the sample contained an unusually large proportion of retired persons.
Thus after seven interviews, all with respondents over 55 years old, another
area was selected in which younger respondents might be found, in order to
test the questionnaire design on a range of persons. An area with less
favourable environmental conditions was sought, as the responses to the
environment had so far been extremely favourable (whether this was the
effect of the environment, or of the age of the respondents was not clear).
Three additional interviews were completed at this stage, making a total of
10 interviews. The first pilot questionnaire is included in Appendix D.

9.5.3   The Second Pilot Stage

The pilot survey was split into two stages so that improvements to
the questionnaire made after the first pilot stage could be tested before
the final questionnaire was printed. In addition the second stage gave
further opportunity for the interviewers to practise.

Three contrasting areas were selected to enable the response scales to
be tested against a range of conditions. These areas were

a) an area of detached and semi-detached post-war dwellings;

b) an area of nineteenth century terraces, close to the city centre, and

c) an area of nineteenth century terraces on the city outskirts.

Eight interviews were completed. Evening interviewing was also tried, in order to test respondents reactions to this. It was felt that evening interviewing might be required if a 'balanced' sample response was to be obtained (e.g. to avoid a bias towards housewives and the exclusion of working people).

The findings of the two pilot surveys have been incorporated into the discussion which follows on the choice of environmental dimensions, of physical measures, and of the measurement method.

9.6 MEASUREMENT ISSUES

There were three types of variables to be measured in the model:

a) the experimental variables i.e. the characteristics of the environment

b) the dependant variables i.e. perception and satisfaction, and

c) the uncontrolled variables e.g. the social characteristics of the respondent, preferences etc. (Fig.9.2).

These have already been discussed in some detail in Volume I (4.3.3), but four important issues were only briefly dealt with and require further discussion. These issues are the selection of the environmental dimensions to be included in the questionnaire; the choice of the "objective" measures of the residential environment; the form of the measuring instrument to be used to scale the perception and satisfaction responses; and the measurement of preferences. These issues will be dealt with in turn, before discussing the final layout of the questionnaire.

FIGURE 9.2   MEASUREMENT OF MODEL VARIABLES
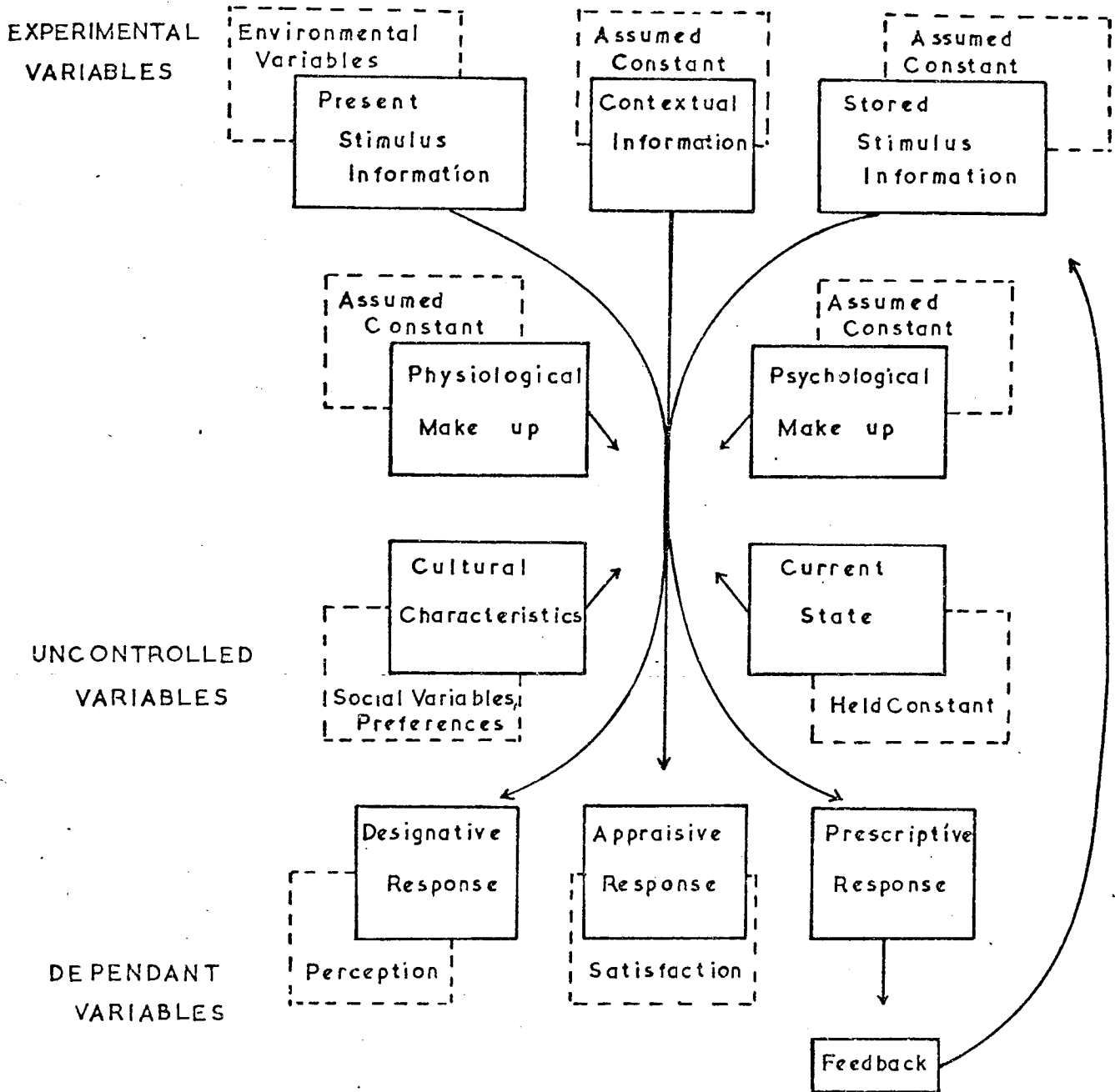
9.6.1 The Choice of Environmental Dimension

The initial choice of dimensions was based upon a review of some thirty studies carried out up to 1973 (Cane S.T., 1973). The object of the review was to ascertain what dimensions of the environment had been identified (i.e. what common constructs had been found in perceptions of the environment) and what descriptions of these dimensions had been used in the reviewed research. About fifty different 'dimensions' were abstracted from the research. No measures of comparative importance of the dimensions could be constructed (apart from the number of times that a particular dimension appeared) because of the different research frameworks used in the various studies. Many of the fifty 'dimensions' were clearly similar aspects of the environment to which different names or labels had been given. After combining such similar aspects a list of about twenty dimensions was obtained, plus a number of dimensions of convenience (Table 9.1). Sixteen of the most frequently occurring dimensions were included in the first pilot survey. At the same time the convenience aspects were made more specific, and three additional dimensions were thereby created.[1]

The first objective of the pilot survey with respect to these dimensions (see pilot questionnaire in Appendix D) was to check that respondents could understand the concepts and answer questions relating to them. No difficulties in the wording were found. Secondly, with the use of an open ended question the aim was to check if any important aspects had been omitted. Two additional aspects of the environment were mentioned by a number of respondents, and these were included in the second pilot

(1) A distinction was made between convenience to a primary (lower) and a secondary (upper) school; between pubs/clubs and other entertainment; and between convenience to a park and to the countryside.

Table 9.1 _Environmental Dimensions Used in Research_

	USUAL DIMENSION NAME	OTHER TERMS USED IN REVIEWED RESEARCH	SURVEYS IN WHICH TERMS HAVE BEEN USED. (key below)	Whether used in Pilot Survey	Main Survey	NOTES
1.	Basic Residential Quality	General Physical quality	2,3,5.	✓	–	Peterson found 'age' perceived as a measure of physical qual. – a dwelling measure; excluded.
2.	Dwelling Unit Quality	Quality of proximate properties	3,4,6	–	–	
3.	Clean Air		9,12,13	✓	✓	
4.	Appearance	Beauty	1,4,7,9,11,12,13,14	✓	✓	Broad concept; see up-keep, greeness.
5.	Reputation	Exclusiveness, Nice Neighbourhood	1,6,11,13	✓	✓	
6.	Quietness	–	1,5,10,12,13,14,15,16,17	✓	✓	Sometimes specified mo closely eg.from traffi noise from children et
7.	Safe place to live	Safety from traffic, no vandalism	4,7,8,9,10,12,14,15	✓	✓	
8.	Spaciousness	Lot size	1,6,10	–	–	possible use as physi-cal measure?
9.	Cleanliness	Tidiness, no dirtiness	1,8,9,10,14,15,16	✓	✓	
10.	Car Parking	–	9,15	–	✓	
11.	Privacy	"Neighbours keep to themselves"	1,15,16	✓	–	two aspects:physical social separation
12.	Friendliness	Homeness, "my kind of people"	1,5,6,7,10,12,13,14, 15,16,17	✓	✓	

Table 9.1 (Continued)

USUAL DIMENSION NAME	OTHER TERMS USED IN REVIEWED RESEARCH	SURVEYS IN WHICH TERMS HAVE BEEN USED. (Key Below)	Whether used in Pilot Survey	Main Survey	NOTES
13. Maintenance of buildings	Maintenance of lawns/trees	4,8,9,15,17	✓	✓	grouped together as 'upkeep'
14. Greeness	Closeness to nature/country-like	1,2,6,14,15	-	✓	access to country also included
15. Good for children	Childrens play	1,4,11,13,14, 15	✓	✓	provision & convenience aspects
16. Price	—	6	-	-	a dwelling measure: excluded
17. Nonoresidential use	—	3,13,15	-	-	include as a physical measure.
18. Crowdedness	"Near too many people"	1,5,6	-	✓	Converse of spaciousness?
19. View		4	-	✓	
20. Convenience to	city and shops	6,7,8,9,10,11,12,13, 14,15,16	✓	✓	
21. "	Schools	6,7,8,10,12,13,14,15, 16	✓	✓	sometimes different school levels distinguished
22. "	Work	6,7,8,10,14,17	✓	✓	
23. "	Transport	6,7,8,9,10,11,12,14, 15,16	✓	✓	
24. "	Parks	7,9,13,14,15	✓	✓	
25. "	Entertainment, pubs, social life	7,8,9,11,14,16	✓	✓	

Table 9.1 (Continued)

USUAL DIMENSION NAME	OTHER TERMS USED IN REVIEWED RESEARCH	SURVEYS IN WHICH TERMS HAVE BEEN USED.(Key Below)	Whether used in Pilot Survey	Main Survey	NOTES
26. Convenience to Post Office		10	-	-	

Key to References

1. Wilson R.L. (1962)
2. Peterson G.L. (1967)
3. Kain J.F. and Quigley J.M. (1970)
4. DOE (1972a)
5. Lansing J.B. and Marans R.W. (1969)

6. Menchik M. (1972)
7. Hinshaw M. and Allott K. (1972)
8. Troy P.N. (1971)
9. Troy P.N. (1972)
10. MHLG (1970)

11. Jephcott P. (1971)
12. Smith J.P. (1971)
13. Wilkinson R.K. and Sigsworth E.M. (1972)
14. MHLG (1966b)
15. Duncan T.L.C. et al (1971)
16. MHLG (1966a)
17. Lansing J.B., Marans R.W., and Zehner R.B. (1970).

questionnaire (View and Privacy).

Further, it was clear that respondents made a distinction between private and public areas of responsibility when evaluating upkeep. This distinction was made in the second pilot questionnaire too (i.e. Private Upkeep, Council Upkeep).

An attempt was made to find out, again by the use of open-ended questions, what detailed aspects of appearance respondents recognised. Although respondents had difficulty in answering this question a number of aspects did emerge, most of which were already covered in the pilot questionnaire, (e.g. upkeep, cleaness). A further dimension of appearance which was referred to and was thus included in the second pilot questionnaire was the presence of trees, grass, etc. (termed "Greeness" in the questionnaire).

The second pilot survey confirmed the addition of the dimensions (View, Privacy, Private and Council Upkeep, and Greeness), and prompted two further changes. Firstly, respondents were having difficulty answering the questions about the physical quality of the neighbourhood housing stock. It was clear that upkeep was a more meaningful concept to the respondents and that the two questions overlapped to a large extent. The question on the physical quality was therefore omitted. (It was retained as a physical measure to be made by the interviewer, see 9.6.2.) Secondly the safety question was being answered by respondents on different grounds, i.e. sometimes with respect to traffic, sometimes with crime in mind and so on. Thus in addition to the safety question the respondent, after he had answered, was asked to specify the aspects of safety which they had considered.

Finally, two further dimensions were added to the main questionnaire

at the request of the sponsors: Layout, and Car Parking. Table 9.2 lists
the dimensions which were included in the main questionnaire.

9.6.2 The Choice of the Environmental Measures

There were three criteria for the choice of measures:

a) the measures had to have some relationship with the selected dimensions
of the environment. The findings of previous surveys were used,
although few of these surveys had gone as far as relating the respondents
responses to physical measures of the environment (see 8.6).

b) the measures must be as objective as possible.

c) the measures should be both simple and quick to use (i.e. suitable for
general use by a local authority).

The measures chosen are shown in Table 9.3. They are divided into two
categories: those which have been derived directly from the review of
research, and those which have been chosen as likely to be related to
residents' responses (on the basis of the previous research). There were
three types of measurement (see pilot physical survey sheet, Appendix D):
those carried out in the field by the interviewers; those taken from a
map; and those taken from the latest census (1971).

The measures of house quality and upkeep need further explanation.
The requirement was for a simple 'objective' measure which could be
operated by someone with no specialised knowledge of housing. The Civic
Trust for the North West method (see explanations, Appendix D) was selected,
primarily because clear explanations and description were given for each
of the upkeep and house quality categories, thus making it relatively easy
to use (Civic Trust for the North West, 1971). The pilot survey, in which
a number of streets were assessed using the scoring sheet developed, rev-
ealed a number of practical difficulties in using the measures in their

Table 9.2 Environmental Dimensions included in Main Questionnaire

ENVIRONMENTAL DIMENSION	RESPONSE MEASURED	
	PERCEPTION	SATISFACTION
Convenience to: Shopping	✓	-
Work	✓	-
Buses	✓	-
Nursery/Play School	✓	-
Primary School	✓	-
Secondary School	✓	-
Park	✓	-
Countryside	✓	-
Pub or club	✓	-
Going out	✓	-
Overall Convenience	✓	✓
Greenness	✓	✓
Cleanness	✓	✓
Air Quality	✓	✓
Quietness	✓	✓
Safety	✓	✓
Private upkeep	✓	✓
Council upkeep	✓	✓
Suitability for Children	✓	✓
Friendliness	✓	✓
Privacy	✓	✓
Appearance	✓	✓
Car Parking	✓	-
Reputation	✓	-
View	✓	-
Layout	✓	-
Overall satisfaction	-	✓

Table 9.3 Choice of Environmental Measures

A. Physical measures mentioned in reviewed research as being related to respondents perceptions, satisfactions, attitudes etc.

Environmental Measure	STUDY (Key on table 9.1)
Age of dwelling	3
External condition of dwelling	3
Condition of surrounding structures	3
Quality of dwelling unit	3
Size of dwelling parcel	6
Litter	3
Broken pavements	16
State of street	12
Provision of trees	16
Damage by vandals	4,12
State of repair of dwellings (upkeep)	3,5
Distance to shops, buses, industry etc.	12,13,14,15
Tenure	3

Table 9.3 (Continued)

B. Other measures not mentioned specifically in research, but used in previous surveys (Duncan T.L.C., 1971) and possibly related to perceptions etc.

Environmental Measure	Possible Dimensions related to Measure
Type of noise source	Quietness
Building type	Appearance
Amount of car parking spaces	Car parking
Presence of street furniture	Appearance
Road width	Safety
Footpath width	Safety, Appearance
Proportion of fences in good repair	Appearance
Type of House boundary (hedge, fence etc.)	Appearance, Greenness
Presence of items of dereliction	Appearance, Safety
Whether in smoke control area	Air quality
Existence of back/front gardens	Greenness
Type of view	View
Density	Layout
Bus frequency	Convenience

Census Measures Dwelling Amenities
      Proportion of population
      over retiring age
      Car Ownership
      Population Density
	Upkeep
	
	Reputation, Friendliness
	Reputation, Convenience
	Layout

original form. In general the difficulties were those of definition, for example <u>what size</u> of area to take when estimating the number of trees; <u>what minimum size</u> should the trees be, and <u>how many</u> surrounding dwellings to consider when estimating the quality of neighbouring properties? All such distances were defined for the main survey in order to make measures taken by different observers comparable (in fact this problem did not arise as all the physical measures were made by the author).

The inclusion of street furniture was not felt to be justified by the experience of the pilot survey, mainly because of the general absence of any street furniture in the area. Some local authorities had installed litter bins on their estates (including one of the sample areas), so this feature was retained. The pilot results also suggested that it would be helpful to distinguish between different <u>types</u> of roads and parking facilities, as well as having measures of the size of the roads and the amount of parking. Because the nature of the view from dwellings varied considerably from one side of the dwellings to the other it was decided to make a distinction between the front and the back views. The predominant land uses in the foreground and the background were also added to the survey sheet.

The census data to be collected was amended slightly in view of the availability of the data at enumeration district level. Totals which could be extracted directly in percentage form were chosen, thus no breakdown of the sample-area population into age bands was included for example. No socio-economic data at this level was available at the time of the survey. The physical characteristics measured in the survey are discussed in chapter 10.

9.6.3 <u>The Measurement of Responses</u>

9.6.3.1 The research design called for the measurement of the amount of an

environmental dimension which an individual perceives in the area, and also the degree of satisfaction or dissatisfaction he/she feels with that dimension. The measurement problem was to trade-off the advantages of obtaining accurate and high order scale measures against the time involved in measurement.

Two different methods of measurement were used on the first pilot stage:
magnitude estimation (using a series of lines); and a seven-point scale similar in form to the semantic differential.

9.6.3.2 Magnitude Estimation

This method was used for half of the pilot sample to measure respondents perceptions for convenience to various facilities. A method similar to that used in the Leeds Pedestrian Survey was used (Hills P., 1974). In this method all the facilities, the convenience of which is to be measured, are considered together. The respondent is asked to state which feature is the most convenient, and to mark the appropriate line according to how convenient he feels it is. The respondent is then asked to repeat the procedure for the least convenient feature. The respondent thus has two fixed positions on the lines (Fig.9.3) between which he can then place the remaining amounts of convenience. In ideal circumstances the scale values are not only comparable (because they have been considered together and related to each other) but also have interval scale properties if one assumes that respondents have the ability to transfer their estimates of convenience onto a line (Stevens S.S., 1972).

However when this method was attempted a number of problems occurred:
a) respondents found it difficult to consider the nine convenience lines

   together,

FIGURE 9.3   EXAMPLE SCALES

A. COMBINED LINE SCALE   (FIRST PILOT)

Very
Inconvenient   Very
                                                  Convenient

Daily Shopping

Weekly Shopping

Buses

Workplace

Parks

   etc.

B. NUMBERED SCALE   (ENDS ONLY LABELLED)

7   Very Convenient

6

5

4

3

2

1   Very   Inconvenient

C. NUMBERED SCALE   (MAIN QUESTIONNAIRE)

7   Very Convenient

6   Convenient

5   Quite Convenient

4   Neither

3   Slightly Inconvenient

2   Inconvenient

1   Very Inconvenient

b) although respondents were asked to mark the best and worst first, there
was still a strong tendency for them to start at the top of the list and
to work downwards, without comparing the different facilities together.

c) the lines did not appear to be used as a scale, but almost as a dichot-
omy. The two ends of the scale were labelled and 66% of the responses
were at these two extremes in the first pilot stage.

In the second pilot stage two alterations were made to the scale: the
comparative aspects of the scales was abandoned, and the line was marked-off
into seven divisions. The subdivision of the scale did improve the spread
of respondents' scores somewhat.

9.6.3.3 Seven-Point Scale

The second method tested comprised a simple numbered scale (1-7),
labelled only at the extremes (Fig.9.3). This method was quicker, and
certainly easier than the line method for the respondents.

The proportion of the responses in the extreme categories was less
than in the line method, but was still considerable. It was decided to
label some of the intermediate positions for the second pilot stage. During
this second stage it became clear that the respondents were not regarding
the numbers as a _scale_, but were simply marking the 'labels' which fitted
their feelings best. The unlabelled categories thus remained virtually
unused.

9.6.3.4 The choice of measuring instrument was resolved after the decision
to accept that the data obtained from the scaled responses was only of _ranked_
status. The observation that respondents were influenced by the _labels_ on
the scales, rather than the numerical value of their responses, seems to
justify this decision. Once the low status of the data had been recognised

the extra time involved in using the line method made the choice of the other method obvious. The numbered scale also had the advantage that if the respondents were unable to complete the scales themselves it was easier for them to communicate their response to the interviewer than when using the line method. Recognising that respondents were using the 'labels' as much, if not more, than the number scale it was decided to label all the categories (Fig.9.3). The overall distribution of responses is discussed in Chapter 10.

9.6.4 Measurement of Preferences

The research design required that residents' preferences be measured (as part of the 'uncontrolled' variables). The practical choice lay between a type of priority evaluator device (8.5.5) and one of the direct methods (8.4.3.2), given the constraint of ease of use. However the large number of dimensions (16 in the final questionnaire) precluded the use of the priority evaluator (Miller G.A., 1956).

Two direct methods were piloted:

a) asking respondents to rank their top 3 (later 5) preferences from a list
    of dimensions

b) asking the respondent to give each dimension a preference score on a
    seven-point scale.

The first method was without doubt easier for the respondent to complete, and to some extent did force the respondent to make simplifed trade-offs (in that only five of the 16 dimensions could be selected).

The scaling method was unsatisfactory from two viewpoints;

a) most respondents gave each dimension the same score: "important, thus
    preventing any ordering of priorities of the dimensions.

b) the scoring of each dimension took longer to complete than the other
    method, and as this question came near the end of the questionnaire it

was not welcomed by the respondents.

The ranking method was therefore chosen.

9.7 FINAL QUESTIONNAIRE DESIGN

9.7.1 Questionnaire Structure

The order of the questions was changed in the main questionnaire as
well as some of the wording. The main questionnaire started with simple
questions about the length of residence and satisfaction with the dwelling
itself. The open-ended question about likes and dislikes of the area pro-
vided the introduction into the residential environment, without any prompt-
ing from the interviewer.

The questions on respondent's perception of convenience followed,
each convenience question being linked to questions on the respondent's use
of the facilities mentioned. Following the section on convenience the other
dimensions of the environment were introduced. In the pilot surveys the
series of questions on perception was separated from the question on satis-
faction. Many respondents failed to see any difference in the two questions
and replies such as "you've asked me that one already" were common. In
order to be able to point out the difference between the perception of
something, and the feeling of satisfaction derived from it, the two scales
were placed alongside each other (see 10.5.2 for a discussion of the results
of this).[1] The questions on perception and satisfaction were followed by
an assessment by the respondents of their overall satisfaction with the res-

---

(1) Because the list of dimensions in the final questionnaire was lengthy
it was decided not to measure the respondent's perception and satis-
faction for every dimension. Accordingly, perceptions were recorded
for every dimension, but satisfactions were not measured for any of the
convenience dimensions (except overall convenience) and for four of the
less important (on evidence reviewed) dimensions: Car Parking, Reputat-
ion, View and Layout. The full list of dimensions included in the main
questionnaire is given in Table 9.2.

idential environment, and then they were asked to rank their top 5 preferred dimensions. The questionnaire ended with a series of personal questions to establish the social characteristics of the respondents. A section of questions about the respondent's dwelling was added at the request of Wakefield M.D.C. (The analysis of these questions is not discussed in this thesis. See Cane S.T., 1975b).

9.7.2 Interview Procedure

The respondents were handed a separate set of scoring sheets at the start of the interview on which to record their responses, whilst the interviewer read the questions out. It was however possible for the interviewer to complete the main questionnaire directly if the respondent was unable or unwilling to do the scoring himself.

For several questions a flip-car (prompt-card) was used. These were mainly for the personal questions on age, income, rent, etc. However, a card was also used for the question on preferences, listing all sixteen dimensions. In order to reduce any bias from the ordering of the dimensions four different cards were used, with the dimensions listed in different orders. These cards were substituted periodically throughout the survey period. The final questionnaire, respondents' sheets and prompt cards are included in Appendix D.

9.8

This chapter has attempted to amplify some of the aspects of the research design which were only briefly discussed in the first volume (Chapter 4). The two chapters must, however, be used together in order to obtain a full description of the design of the research.

The chapter which follows looks at the data which was collected, and the implications which the characteristics of this data have had upon the research design.

Chapter 10

FURTHER CHARACTERISTICS OF THE SAMPLE AND DATA

10.1

Chapter 5 dealt with the general physical and social characteristics of Wakefield District, and compared these, where possible, to the data on the sample characteristics. Some important aspects were, however not dealt with at that stage. These aspects were the meaning, range and interrelationships of the physical data collected; the relationships between the physical and the social measures; and the nature of the responses to the scaled questions.

It is necessary to examine these because the research model includes both the physical environmental variables and the social variables describing the respondents separately. It is therefore important to understand any relationships between the two. In addition if the physical characteristics are closely inter-related this will cut down the range of independent relationships with perception or satisfaction likely to be found. The quality of the response data is critical to the extent to which any analysis can be carried out.

This chapter therefore examines the characteristics of the physical data; the relationships between the physical and social variables; and finally the characteristics of the scaled response data.

10.2 CHARACTERISTICS OF THE PHYSICAL DATA

The case-study areas themselves have already been described (5.2), leaving this section to deal with the three theoretical issues which have an important bearing on the interpretation of the analysis: the meaning of the data, as interpreted from the results (9.6.2 dealt with the <u>choice</u> of the measures); the range and distribution of physical conditions achieved in

the choice of case-study areas; and the interrelationships displayed among the physical variables.

10.2.1 The Meaning of the Physical Variables

Although this topic has already been discussed in connection with the survey design (4.3.3.2), it is necessary to repeat some of the main points before dealing with the relationships found in the data. The variables which were measured were indicators of some underlying characteristic of the environment which, it was hypothesised, should be related in some way to an individual's perception of the environment. For example, measures such as the number of trees and the presence of verges or hedges were felt to be the most useful indicators of the 'greenness' of an area, for which no simple direct measure as yet existed.

In some cases, of course, the selected indicator may be a poor measure of the characteristic which a person is responding to. This is demonstrated, for example, by the distances measured to various facilities in the survey. In this case there was a difference between the distance to the nearest facility (as measured) and the facility actually used by the respondent and to which his perception of convenience should really be related. Table 10.1 compares the mean distance to the nearest facility with the mean distance to the facility actually used, for a number of different facilities. In the cases where the respondents choice of facility was narrow (e.g. schools) the difference is not great; in the case of shops, parks and public houses however the difference between the minimum distance and the behavioural distance is greater.

In the analyses in which distances are involved the minimum distance will mostly be used (except where stated) as this information exists for all respondents, even when they did not use the facility.

Table 10.1 Comparison of Distances to Various Facilities

FACILITY	MEAN MINIMUM DISTANCE (km)	VARIANCE	MEAN BEHAVIOURAL DISTANCE (km)	VARIANCE
Primary School	0.57	0.11	0.59	0.13
Secondary School	1.70	1.34	2.03	1.40
Public House	0.34	0.03	1.30	3.59
Park	1.88	0.75	2.01	3.66
General Store	0.25	0.02	-	-
Chemist's Shop	1.44	0.58	-	-
Town Centre	1.65	0.72	-	-
Shopping Location - most frequent	-	-	2.26	9.23
- less frequent	-	-	3.12	21.74
Industry	0.65	0.40		
Work	-	-	5.08	34.73

The use of the census variables as indicators demonstrates a number of different problems in interpretation. These problems stem from three sources:

a) the time lapse between the census and the survey (3 years);

b) the differences in size and boundaries between the case-study areas and the census enumeration districts; and

c) the fact that census data is <u>aggregated</u> information relating to an area and not necessarily indicative of specific features within that area.

This latter point is the most critical one for the survey, for it is not always clear what physical attribute (which can be perceived by a resident) is represented by the data. For example the different proportions of tenure categories may be manifested in a number of different physical ways, not to mention any social meaning they may have. The census variables therefore have to be treated with care, and in the analysis which follows later the meaning of the variables will be discussed in some depth.

10.2.2 The Range and Distribution of the Physical Variables

Some of the physical variables measured displayed a very limited range of values. This limited range mainly reflects the conditions in the District as a whole, rather than the choice of case-study areas, although the emphasis on the 'lower' end of the housing range has undoubtedly had an influence.

The variables with the most limited ranges are:

a) Dwelling Characteristics - Only 2% of the respondents dwellings were judged to be in the two lower quality categories, and a further 21% were in the highest category. This left over 75% of the dwellings in the 2nd category. The distribution of the dwellings among the three upkeep categories was even more biassed, with 83% of the dwellings being judged to be in the middle category.

b) Location Variables - 50% of the respondents lived within 200 metres of a
general store, bus stop, open space and a public house or club (Fig.10.1
and 10.2)

c) Environmental Characteristics - Some of the indicators chosen showed very
little variation throughout the case-study areas. In some cases one or
two extreme values were recorded, but the other values were closely
grouped. For example, 75% of the respondents had fewer than 8 mature
trees within sight of their dwellings, although four respondents had over
50 within sight. Other examples of the lack of variation were that 75%
of the respondents' roads had no verges and 89% had no trees bordering
the roads.

The effects of the small range of some of the variables and the occas-
ional marked skewness of the values will be made clear when the analysis is
discussed. In general one would expect the strength of the relationships
between the physical measures and the residents' responses as revealed by
the analysis to be weakened.

10.2.3 The Interrelationships in the Physical Data

The physical data was examined using Pearson Correlations for those
variables of interval status and Cross-tabulations (Chi-square test) for the
remaining variables. The full correlation matrix is given in Appendix B.
The variables having strong relationships ($r \pm 0.6$) are shown in table 10.2.
There are two main reasons for the strongest correlations: the concentration
of dwellings in a small number of categories (upkeep or quality) and the
tendency in the District for the park, chemist shop and secondary schools to
be located in or near the town centres.

In order to investigate these relationships in a more meaningful manner
a factor analysis was carried out using the physical measures made at each

FIGURE 10.1   DISTRIBUTION OF PHYSICAL VARIABLES – DISTANCE TO FACILITIES

Cumulative Percentage of Respondents

100
80
60
40
20
0

Distance to Facilities (Kilometers)

0   0.5   1.0   1.5   2.0   2.5   3.0   3.5   4.0   4.5   5.0

BUS STOP ━×━×━ GENERAL STORE ━·━·━ PRIMARY SCHOOL
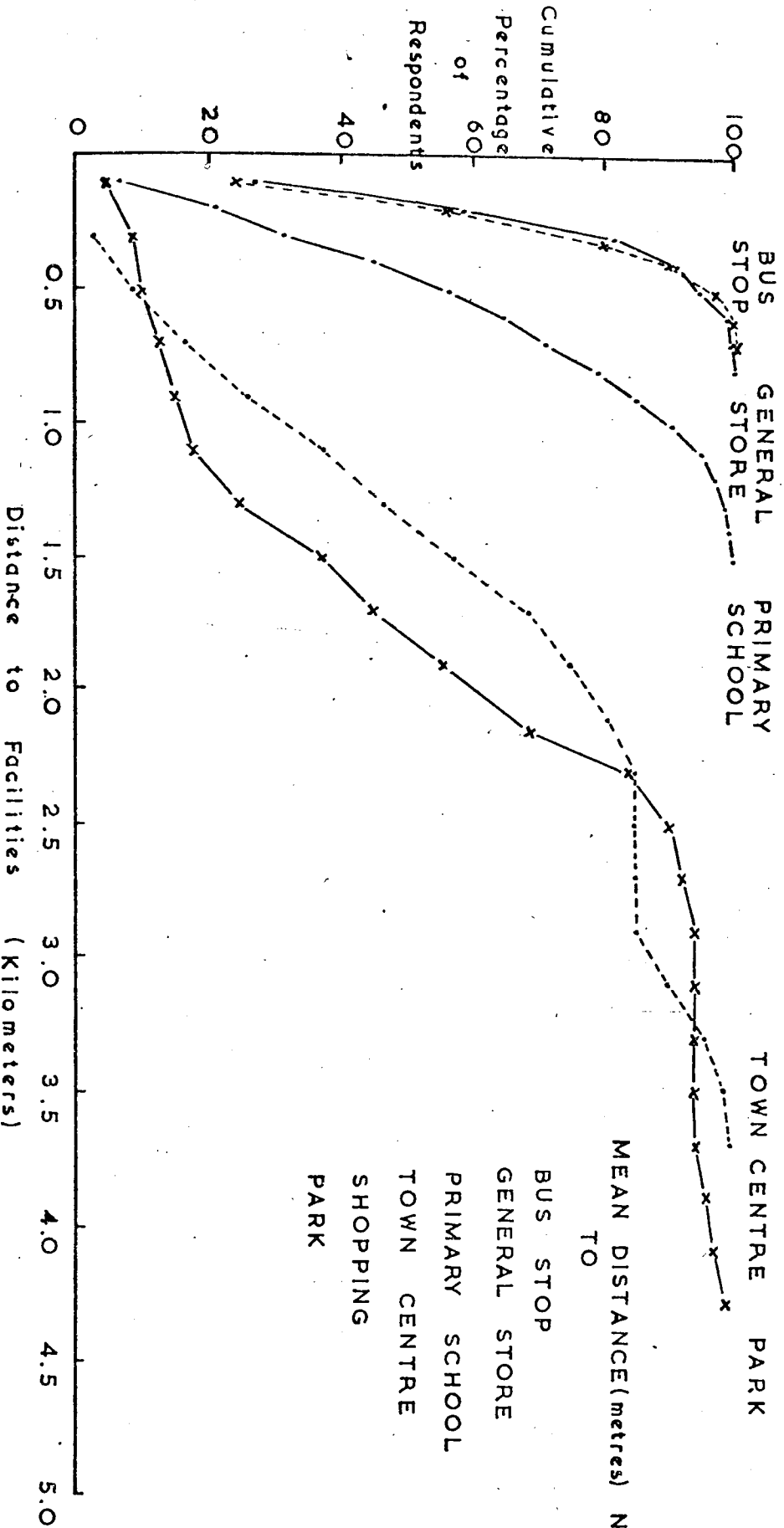
TOWN CENTRE   PARK

MEAN DISTANCE (metres) NEAREST TO		ACTUALLY USED
BUS STOP	250	–
GENERAL STORE	250	–
PRIMARY SCHOOL	570	590
TOWN CENTRE	1,650	–
SHOPPING	–	2,010
PARK	1,880	2,260

FIGURE 10.2   DISTRIBUTION OF PHYSICAL VARIABLES
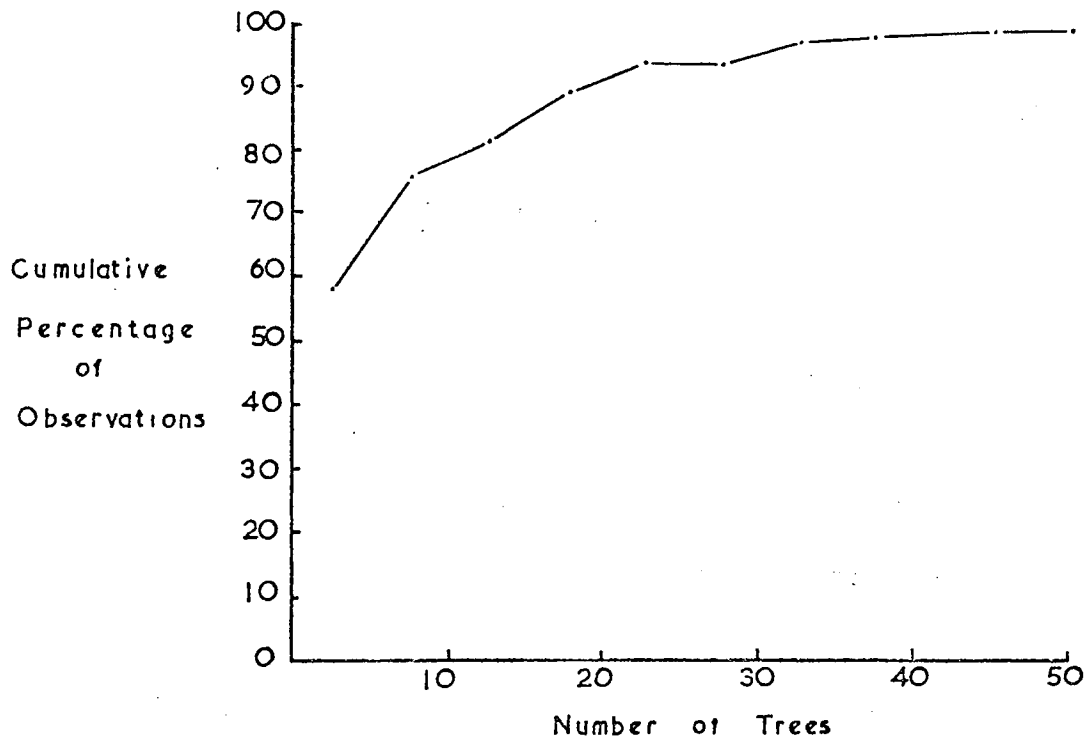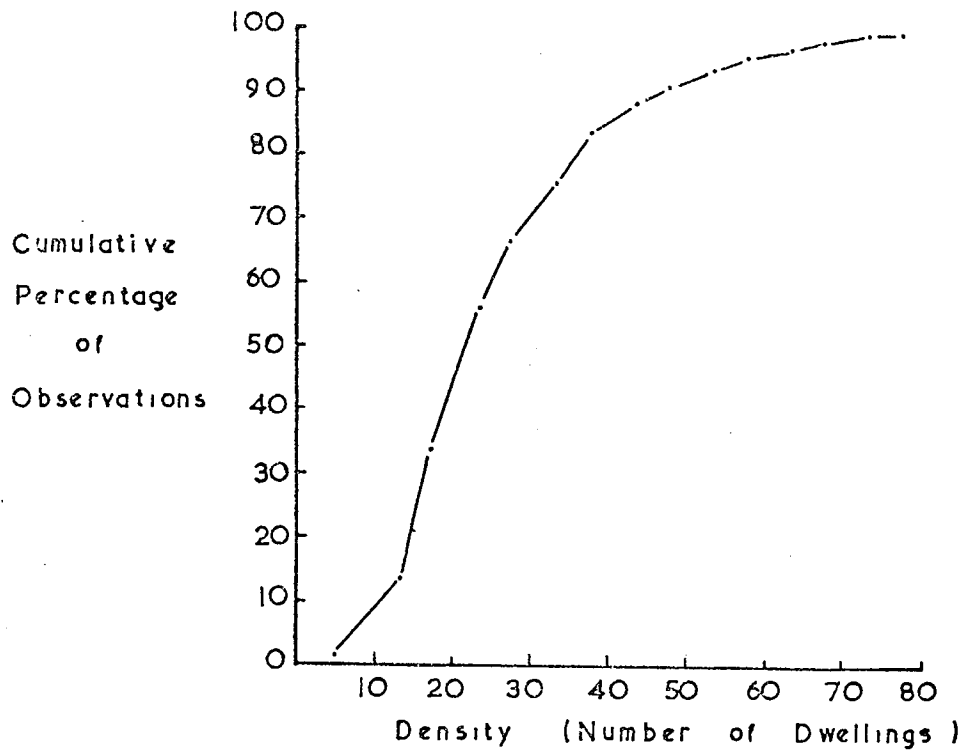
Table 10.2 <u>Interrelationships in the Physical Data</u>

PHYSICAL VARIABLE	CORRELATED VARIABLE	CORRELATION COEFFICIENT
% dwellings in best quality category (VARO17)	% dwellings in 2nd quality category (VARO18)	-.961
Distance to secondary school (VARO29)	Distance to town centre (VARO34)	.886
Distance to open space (VARO30)	Distance to childs play area (VARO32)	.785
Distance to open space (VARO30)	Bus frequency (BSFRE)	.735
Distance to park (VARO31)	Distance to town centre (VARO34)	.715
% dwellings in best quality category (VARO17)	Quality category of respondent's dwelling (BCTRES)	-.696
% dwellings in 2nd quality category (VARO18)	Quality Category of respondents' dwelling (BCTRES)	.649
% of dwellings in best upkeep category (VARO21)	% of dwellings in 2nd upkeep category (VARO22)	-.644
Distance to secondary school (VARO29)	Distance to park (VARO22)	.640
Distance to childs play area (VARO32)	Bus frequency (BSFRE)	.626
% dwellings in 2nd upkeep category (VARO22)	% dwellings in worst upkeep category (VARO23)	-.611

respondent's dwelling, the details of which are contained in Appendix B. As not all the physical variables could be included in the Factor Analysis those which were highly intercorrelated or which were found not to be correlated with perception were excluded (Appendix B, B2). Of the resulting nine factors (Table 10.3), the first five accounted for 80% of the total variance. These five factors were interpreted as:

Table 10.3 <u>Physical Factors</u>

Factor Type	Factor No.	Most strongly corr- elated variable	r	% of variance explained by factor
Town Centre Location	1	Distance to town centre (VAR034)	.969	26.0
Tenure	2	% households in council tenure - census (CCUNL)	.832	22.6
Social	3	% of households with-out cars - census (CAROWN)	.690	12.2
Density	4	No. of dwellings in 50m. square (NOHSES)	-.757	10.5
Dwelling Quality	5	% dwellings in best quality category (VAR017)	.695	8.6
Dwelling upkeep	6	% dwellings in middle upkeep category (VAR022)	-.907	6.1
Local Location	7	Distance to primary school (VAR028)	.718	5.7
Dwelling Amenities	8	% households with all amenities - census (ALLAMEN)	.748	5.0
Industry Location	9	Distance to industry (VAR024)	.639	3.4

(i)   Location with respect to town centre (26% variance)

(ii)   Tenure - proportion of dwellings in council ownership against private rent tenure (22.6%)

(iii)   "Social Factor" - (Disposable income) (12.2%)

(iv)   Density (10.5%)

(v)   Dwelling Quality percentage of dwellings in the best quality category (8.6%)

Taking the evidence from the cross-tabulation into account it is possible to identify several 'typical' associations of physical variables in the District. The importance of the existance of what could be termed environment types is that it markedly affects the possibilities of applying statistical controls in the analysis. For example the terraced building form is almost exclusively identified in the District with high densities, few trees and relatively good convenience to local facilities. It is therefore difficult to separate out the separate influences of each of these on satisfaction for example. This problem of control will be referred to where necessary in the sections on analysis.

The existance of 'typical' areas in the housing stock has been demonstrated at a national scale by Buchanan (Buchanan J., 1971) and this survey supports the evidence, although at a detailed level there are differences. These differences stem partly from the more detailed physical data collected in this research, and partly from the different nature of Wakefield District from the UK average (5.3).

The case-study areas have been plotted in Figure 10.3 on the basis of their scores on the first four factors. This enables a visual impression of the area types to be gained. The area types identified can be summarised according to the main dwelling types and ages in the areas into four general categories (Table 10.4):

a) terraced dwellings areas (Area Types 1-4) mainly dating from before 1919 (except those on the Warwick Estate), were associated with poorer dwelling quality, higher densities and locations nearer town centres or main roads. Most of these dwellings fronted straight onto the roads, and were backed by small gardens or yards (e.g. Hemsworth E; Featherstone; Bellevue W.).

FIGURE 10.3   CASE STUDY AREA CHARACTERISTICS

high car
ownership

low density ← → high density

low
car ownership
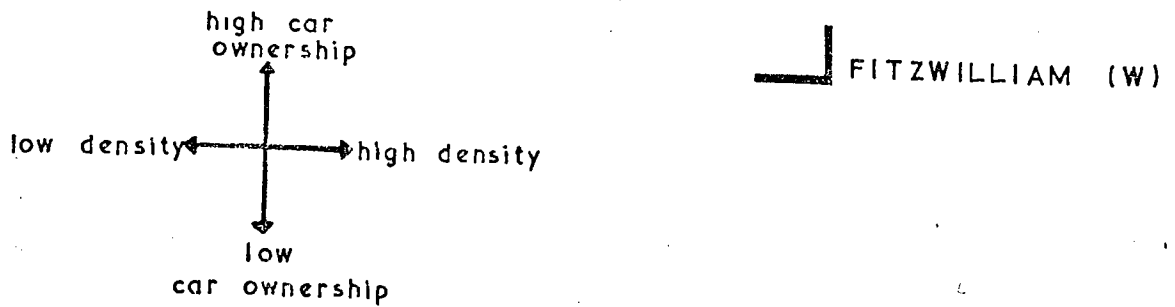
FITZWILLIAM (W)

STREETHOUSE

FITZWILLIAM (E)

INCREASED

DISTANCE

FROM

TOWN

CENTRE

BELLEVUE (COUNCIL)

NEVISON (E)

BELLEVUE (W)

ALTOFTS

GLASSHOUGHTON

THORNES

EASTMOOR

NEVISON (W)

WARWICK

FEATHERSTONE (E)

HEMSWORTH (W)

PONTEFRACT

FEATHERSTONE (W)

HEMSWORTH (E)

INCREASING   COUNCIL/PRIVATE RENT   PROPORTION

Table 10.4 Area Types

AREA TYPE	BUCHANAN STUDY EQUIVALENT(1)	CASE-STUDY AREA	DISTANCE FROM CENTRE	TENURE	CAR OWNERSHIP	DENSITY
Inner Terrace	Central Area Terraced	Hemsworth (East)	$\frac{1}{2}$ km	private rent/ owner/occ (2)	20-30%	high
Terrace	Inner Suburban terraced	Featherstone (East and West)	$\frac{1}{2}$-1$\frac{1}{2}$km	private rent/ owner/occ.	20-50%	medium - high
Inner Mixed	-	Pontefract Thornes	under 1$\frac{1}{2}$km	mixed	20-70%	medium
Outer Mixed	Outer Suburban Terraced	Bellevue (W. and Council)	1$\frac{1}{2}$-2km	mixed	20-40%	high
Council Semi-Detached	Public Semi-Detached	Warwick(3) Eastmoor Hemsworth (West)	$\frac{1}{2}$-1$\frac{1}{2}$km	Council (2)	20-40%	medium
Private	Private Semi-Detached	Altofts Nevison (East)	1$\frac{1}{2}$-2$\frac{1}{2}$km	Owner Occ.	50-70%	medium-low
Isolated Council	-	Streethouse Fitzwilliam (West)	3-4km	Council	10-40%	low
National Coal Board	-	Nevison (West) Glasshoughton Fitzwilliam (East)	1$\frac{1}{2}$-3$\frac{1}{2}$km	Private rent (ieNCB)	10-40%	medium-high

(1) Buchanan J. (1971)

(2) The tenure differences between Hemsworth East and West were not apparent on the figure because the census enumeration districts do not coincide with the case-study area boundaries.

(3) The Warwick Estate has been included here on the basis of tenure mainly; the main building form is post 1960 terraces.

b) semi-detached dwelling areas (Area Types 5-7) mainly council or owner

   occupied and inter-war in age, were associated with better dwelling

   quality and lower densities than the terraced dwellings. Although the

   estates containing semi-detached dwellings had narrower roads than aver-

   age, the pavements were wider and had a greater proportion of trees and

   verges. Parking provision within the curtilage was minimal on the

   council estates (e.g. Eastmoor, Fitzwilliam W., Hemsworth W., Altofts).

c) Coal Board Dwellings (Area Type 8). The dwelling types were either

   terraced (Glasshoughton, Fitzwilliam (East)) or semi-detached. The

   estates had relatively high densities, little parking and virtually no

   green features.

d) Post 1960 dwellings areas. These do not show in the table 10.4 as age

   was not taken into account and because most of the recent dwellings were

   on infill sites. The main characteristic is the high dwelling quality

   which is not always matched by the other measures (e.g. Featherstone

   (West) and Bellevue (Council)). The Warwick Estate, included in the

   Council semi-detached category was the only estate in which all the dev-

   elopment was recent, and in which open planning, pedestrian areas and

   terraced dwelling forms were associated together. The number of mature

   trees was smaller, and the evidence of vandalism common.

   The presence of these environmental types, or bundles, limits to an

extent the ability to separate the physical influences on perception. It is

even more important to see whether there is any relationship between the

physical and the social variables in the case-study areas, for it is critical

to the research model to be able to deal with these two aspects separately

as far as possible. This is discussed next.

10.3 THE RELATIONSHIP BETWEEN THE PHYSICAL AND SOCIAL VARIABLES

In order to investigate the relationships as simply as possible the physical factors resulting from the factor analysis were used as the physical variables against which the six main social variables were correlated (Table 10.5).

The table only shows those relationships which were significant at the 5% level or higher. Although there are a number of significant relationships, they are not as strong as the relationships with the physical data, and are not strong enough to cause concern.

Of the social variables the length of residence is the one related to most physical factors: to density, dwelling quality and local location at the 1% level. These relationships stem from close link between the age of the dwelling and the length of residence; the general picture is of the older terraced areas with higher densities and poorer dwellings (although well kept) having residents who have lived in the area for a greater length of time on average.

Another relationship of interest is that between household size (and persons per bedroom which is a similar variable) and the social and dwelling amenities factors. This appears to arise from the higher proportion of larger households living on post-war council and NCB estates who were interviewed (notably on the Eastmoor, Nevison and Warwick Estates). It is also of interest that tenure is not related to any of the social variables; on the other hand, the physical factor which is most significantly related to the social variables is in fact the one which has been interpreted as having a social meaning (Appendix B). Note however that the relationship between the "social" factor and age appears to be in the wrong direction, (i.e. the older the respondent the greater the disposable income). This points to the complex meaning of this factor, which is also dependant upon tenure and degree of overcrowding.

Table 10.5 <u>Relationships between the social and physical variables</u>

Physical Factor	Age	Length of resid -ence	Social Variable		Persons per bed- room	School leaving age
			House- hold size	Income		
1 Town Centre location	-	-	-	$-.109^{+}$	-	$-.128^{+}$
2 Tenure	-	-	-	-	-	-
3 'Social'	$-.210^{**}$	-	$.194^{**}$	-	$.181^{**}$	-
4 Density	-	$-.135^{*}$	-	$.116^{+}$	-	$.164^{*}$
5 Dwelling quality	-	$-.246^{**}$	-	$.137^{*}$	-	-
6 Dwelling upkeep	-	$-.115^{+}$	-	$.114^{+}$	-	$.116^{+}$
7 Local location	-	$-.168^{**}$	-	$.145^{*}$	-	-
8 Dwelling amenities	$-.117^{+}$	$-.100^{+}$	$.242^{**}$	-	$.152^{*}$	-
9 Industry location	-	$-.110^{+}$	-	-	-	-

Significance levels: ** .1%

                 * 1%

                 + 5%

10.4   THE SCALED RESPONSES

10.4.1 The purpose of examining the scaled responses in general before looking at the specific hypotheses is to provide the answers to two questions:

a) whether the scale form influenced the responses, and if so by how much;

b) to what extent therefore is the data capable of being used as intended.

It became apparent during the interviewing that certain scale categ-
ories were being avoided, that respondents were usually giving the same
score to both the perception and satisfaction questions, and that respond-
ents were also giving similar scores to all the different environmental
dimensions. These three possible sources of error are dealt with in turn.

10.4.2 Distribution of Perception Scores

Given that the environmental conditions in the areas only varied within
a restricted range, and assuming random errors in residents scaling of
perceptions, it would be expected that the distribution of perception
scores would approximate to the distribution of physical measures.

The distributions plotted for each environmental dimension show that
this is not the case, with the middle categories considerably under-used
(Fig.10.4), in a manner unrelated to the distribution of physical measures.
Only in the case of Reputation did the middle category reach its position on
a normal curve. Two other dimensions had more than 10% of the responses in
the mid-category, but in most cases it was under 5% (Table 10.6). Overall
6.1% of the responses were in the middle category (summing over all the
dimensions) which is significantly less than expected.

There are two possible explanations of this phenomenon. Firstly it could
be that a neutral response to the type of questions asked may be unlikely in
any case. The second reason could have been the labelling of the middle
category.[1] The middle category was simply labelled "neither" - chiefly

---

(1) It was clear during the interviewing that many respondents were taking
more notice of the labelling of the scales than the numbering (see also
9.6.3.3). The main evidence was the result of an error in the printing
of the second sheet of scales for the respondents. Category 3 (slightly
Unsatisfied) was labelled "Slightly Satisfied" by mistake. Several
respondents chose this third category initially, only to change to the
fifth category when the error had been pointed out to them.

PERCENTAGE

OF

RESPONDENTS

GIVING

SCORE
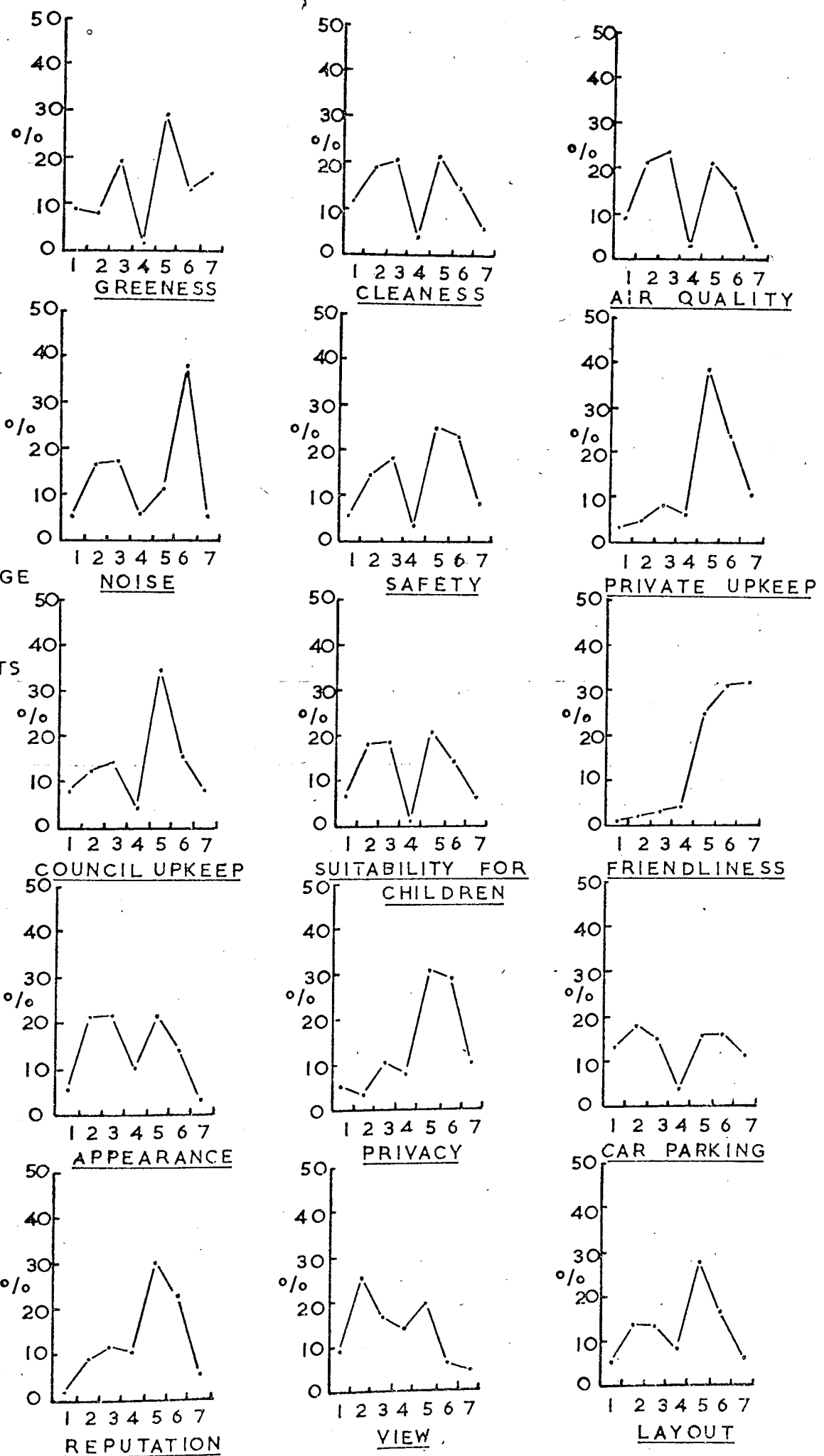
PERCEPTION SCORE GIVEN (1-7)

Table 10.6   Distribution of Respondents' Perception Scores (%)

Category Score	Green-ness	Clean-ness	Air Quality	Noise	Safety	Upkeep	Council	Suit Children-ly	Friend-ly	Looks	Priv-acy	Car Park	Reput-ation	View	Layout	Total (all Dimens-ions)
						Environmental Dimension										
1	9.4	12.2	9.4	5.3	5.9	3.4	8.4	7.2	0.6	6.2	5.3	13.1	2.2	9.7	5.3	6.9
2	7.5	19.4	21.2	16.6	14.1	5.0	12.5	18.1	2.2	21.6	3.7	17.8	9.1	25.3	13.7	13.9
3	19.7	20.3	23.7	16.9	18.4	8.4	14.7	18.7	2.8	21.9	10.3	15.0	11.9	17.2	13.7	15.6
4	2.2	4.1	2.8	6.6	3.4	6.2	4.4	1.9	4.1	10.0	8.4	4.1	10.6	14.1	8.7	6.1
5	29.7	22.2	21.6	11.6	25.0	38.4	34.4	20.9	25.0	21.9	30.3	15.3	30.0	19.4	27.5	24.8
6	13.1	15.0	15.9	37.2	23.4	24.4	15.6	14.7	30.6	14.4	29.7	16.6	23.1	6.2	16.6	19.8
7	17.2	5.9	2.8	5.3	8.1	10.9	8.1	6.9	31.9	2.8	10.3	11.9	5.6	6.2	16.6	9.3
Don't know	1.2	0.9	2.5	0.6	1.6	3.1	1.9	11.6	2.8	1.2	1.9	6.2	7.5	3.1	7.8	3.6
Total No Interviews	320	320	320	320	320	320	320	320	320	320	320	320	320	320	320	4800

because this label was felt to be sufficient given the restricted space on the questionnaire. However the meaning may not have been immediately clear to all respondents and in some cases it was used only as a 'don't know' option.

With the data being assumed to have only ordinal status it was not felt that the non-normal distribution of the scores was of importance, and the scores were used without any adjustment.

A further influence on the distribution of the responses was the interviewer him or herself. There is no significant difference between interviewers 1 and 2, but there is a significant difference between these two and the third (Table 10.7). The responses given to the third interviewer were more negative on average than the other responses; the "very satisfied" category being particularly under represented. However, as the third interviewer only accounted for 14% of the interviews, which were not concentrated in any one case-study area, it was decided to ignore this source of bias.

10.4.3 Perception and Satisfaction Scores

In the research model a distinction was made between the <u>perception</u> of an environmental dimension, and the <u>satisfaction</u> expressed with that perceived amount of the dimension (see 4.2 and 9.2.2). This was simply stated in hypothesis form as "An individual's perception of an environmental dimension is different from his satisfaction with it" (9.3).

As has already been mentioned it became clear during the survey that many respondents were giving exactly the same score for both the perception and satisfaction questions. The interviewers were briefed to explain to the respondents the practical differences between the two questions. Table 10.8, in which the rank correlation coefficients (Kendall's Tau) between the

Table 10.7 Influence of Interviewer on Perception Scores

CATEGORY	DISTRIBUTION OF SCORES BY INTERVIEWER (%)		
	Interviewer 1	Interviewer 2	Interviewer 3
1	2.5	2.3	2.3
2	6.0	6.9	16.3
3	11.6	12.6	5.8
4	7.4	3.8	3.5
5	26.3	25.3	25.6
6	31.9	32.2	45.4
7	14.4	16.9	1.2
TOTAL No. INTERVIEWS	144	132	44

Table 10.8 Correlation of Respondents' Perception Scores with their

Satisfaction Scores

Environmental Dimension	Kendall's Tau
Convenience	.493
Greenness	.597
Cleanness	.796
Air Quality	.774
Noise	.740
Safety	.849
Upkeep	.774
Council Upkeep	.837
Suitability for Children	.823
Friendliness	.825
Appearance	.728
Privacy	.788

(All correlations significant at .001 level)

perception and satisfaction scores are given, shows that one of the two dim-
ensions which had a Tau of <u>less</u> than 0.6 is the one for which the explanations
were given (Greenness - see Questionnaire in Appendix C). The other dimension,
Convenience, was the only one which had the perception and the satisfaction
scales separated on the sheets given to the respondents. The remaining co-
efficients are all around 0.8, showing the very strong correlation.[1]

Further evidence of the way in which these two scales received the same
scores is given in Table 10.9 which shows the two sets of scores cross-
tabulated. Overall 64.5% of the respondents gave the same score on both
scales. Only 7.1% gave 'opposite scores' i.e. said that they perceived
little of a dimension, but were satisfied; or that they perceived a lot of a
dimension and were dissatisfied.

The significance of this finding is that it is clearly not very meaning-
ful to retain the distinction between satisfaction and perception <u>as measured</u>
<u>in this survey</u>. The distinction only holds well for two dimensions namely
Greenness and Convenience, and the assumption of ordinal data reduces the
ability to distinguish the two measures.

There are a number of possible reasons for the lack of a clear difference
between the two measures:
a) the variations in peoples' responses have not been measured by the rel-
    atively crude scales i.e. insensitivity of the scales
b) the positioning and form of the scales may have introduced a bias. The
    juxtaposition of the two scales (the reasons for which are given in 9.7.1)

---

(1) Kendall's Tau usually gives a numerical value smaller than the other
     main rank correlation coefficient r_s (Spearmans) as extreme differences
     in rank are given less weight in Kendall's method. The coefficient
     <u>cannot</u> be interpreted in terms of % variance explained (Siegel S., 1956).

Table 10.9 The Correspondence of Perception and Satisfaction Scores

Environmental Dimension	Percentage of Respondents		
	Scoring same on Perception and Satisfaction scales	Scoring 3 or less on Perception scale and 5 or more on Satisfaction scale	Scoring 5 or more on Perception scale and 3 or less on Satisfaction scale
Greenness	48.2	11.9	2.8
Cleaness	60.2	3.5	3.8
Air Quality	61.6	6.2	1.6
Noise	61.6	10.4	1.0
Safety	68.5	1.3	3.3
Council Upkeep	69.4	0.3	3.0
Upkeep	69.8	2.0	2.0
Suitability for Children	72.7	1.8	4.1
Friendliness	80.9	0.3	1.0
Appearance	63.0	8.8	2.3
Privacy	68.7	3.3	2.0
Convenience	49.8	2.8	4.9
TOTAL %	64.5	4.5	2.6

possibly increased the likelihood of the same score being given on both scales.

c) the processes of perception and satisfaction may be more closely conn-
ected than had been hypothesised (Stevens S.S., 1970). In the case of
values which are generally shared and for dimensions in which more of
that dimension can be assumed always to lead to greater dissatisfaction
(e.g. as with noise or air pollution) one would expect the measures of

the two concepts to be close. They should not be close in the case of dimensions for which expectations are likely to vary greatly (e.g. appearance). However these distinctions cannot be seen in the data.

It is not possible to speculate or verify any further without new data, but these findings obviously have an important bearing on the analysis which will be discussed later (10.5.2).

10.4.4 The Perception Scores

The final point on the nature of the response data is the possibility of a 'halo' effect occurring between the scores on the different dimensions, in addition to the one already discussed between the perception and the satisfaction scores. If there was no 'halo' effect (i.e. tendency for the score given on one to scale to be influenced by the previous score given) and the environmental dimensions were unrelated to each other, one would not expect a respondent's score on one dimension to be related to the score on another dimension.

To test for any bias the respondents were categorised according to the score they had given on the first environmental dimension - Greeness. The subsequent score distributions were compared for each of the initial score categories. Three examples are given in Table 10.10, showing that the subsequent choice of scores is related to the initial score given. Not unexpectedly the effect was greatest for those giving "don't know" as their initial response, who subsequently selected this option about nine times as frequently as the overall average. The other distributions were also distorted, but to a lesser extent.

The exact source of the bias is not easy to identify, but there are three main possibilities:

Table 10.10 Correspondance of Scores Between Dimensions

Category Score	Overall distribution of scores for all respondents for 12 dimensions (%)	Distribution of scores of remaining 11 dimensions for those respondents who scored the following categories initially (i.e. for Greenness)		
		Don't Know	4	6
1	6.9	3.6	2.9	3.9
2	13.9	10.7	16.2	8.6
3	15.6	12.5	14.3	17.3
4	6.1	1.8	13.3	4.8
5	24.8	7.1	17.1	26.1
6	19.8	23.2	9.5	28.1
7	9.3	8.9	11.4	6.2
Don't Know	3.6	32.1	15.2	4.9
Total No. of scores	4800	56	105	630

a) 'psychological bias' - individuals tending to have a limited range of responses. This is the most likely explanation of the repeated 'don't know' responses by some individuals.

b) the dimensions are unlikely to be completely independant, particularly the dimensions related to appearance - layout, cleaness, upkeep etc.

c) measurement bias - the 'halo' effect referred to above. The effect of this bias, given that the environmental dimensions are likely to be related to each other, is not large.

The correlations between all the dimensions will be examined more critically later. At this stage it is sufficient to recognise that the measurement bias may exist.

10.5 SUMMARY AND CONCLUSIONS ON THE DATA

10.5.1 The Sample

The social and housing characteristics of the sample were shown to be fairly representative of Wakefield District in the first Volume (6.4). In this chapter some of the aspects of the physical characteristics have been discussed. The following conclusions were drawn:

Firstly, the range of values of some of the physical variables was small as a result of the choice of case-study areas (avoidance of recent higher quality developments), the crude measuring scales and the lack of variations in the district.

Secondly, the physical conditions in the district tended to vary together so that discrete environmental types could be identified e.g. 'terraced areas' or 'inter-war semi-detached dwelling areas'. One would therefore expect controlling for specific variables to be difficult in some cases because of the intercorrelations.

Finally, the social variables were only weakly related to the physical conditions in the case-study areas. This is partly due to the large proportion of council tenure in the District and the broader social spectrum to be found in this tenure category.

10.5.2 The Response Data

Two of the biases identified in the data could be ignored in the analysis. These were the under-use of the middle category, which was not important given the ordinal data assumptions; and the halo effect on the perception scores which, given that the environmental dimensions were unlikely to be completely independant, was relatively small (Table 10.10).

The other finding, that the perception and satisfaction scores were the

same in most cases had more serious implications, at least for the theoretical model. The model hypothesised a process which resulted in the 'selection' and 'processing' of the physical and social inputs from the external environment (see 4.2 and 9.2.2). The perception output was hypothesised to have a number of dimensions, including a quantitative dimension which it was intended to measure using the perception scale. Satisfaction with the environment (the appraisive dimension of the output) was hypothesised to be the result of the comparison between this quantitative response and the individuals expectations of the environmental conditions.

The implications of the quality of the response data is that it is not possible to distinguish the two separate outputs of the perception process, and hence it is not possible to test the hypothesis that perception is different from satisfaction (9.3).

The implications for the practical research task are less serious. The basic aims of the research were to investigate residents' environmental values, and to explore the link between the residential environment and the residents' expressions of overall satisfaction with the environment. It was still possible to do this as both the perception and satisfaction scores appeared to be similar measures of the appraisive output of perception. For convenience, mainly because they were available for all the dimensions, it was decided to use the scaled responses to the "perception" questions, and in order to indicate their appraisive nature, however, they will be referred to as measures of <u>Satisfaction</u> in the text.

The research hypotheses thus had to be modified slightly to take account of the quality of the data as discussed above, and are as follows (cf. original hypotheses 9.3).

a) Different individuals express different satisfactions with the common dimensions of the environment.

b) The satisfactions expressed are dependant upon the environmental conditions and on the characteristics of the individual.

c) When environmental conditions are controlled, individuals may be grouped on the basis of their common expressions of satisfaction.

d) An individual's overall satisfaction with the residential environment is a function of his satisfaction with each of the separate dimensions of the residential environment.

e) Individuals have different preferences between the environmental dimensions.

f) Individuals may be grouped on the basis of their preferences.

g) Individuals' stated preferences for different dimensions of the environment can be related to the contribution which their satisfactions with the separate dimensions make to their overall satisfaction with the residential environment.

In the chapters which follow the hypotheses, and the associated analysis, will be examined in turn.

Chapter 11

RESIDENTS' SATISFACTIONS WITH THE DIMENSIONS

OF THE RESIDENTIAL ENVIRONMENT

11.1 INTRODUCTION

The hypothesis which relates to this research question is a most important one for planners, who are essentially dealing with the physical fabric of residential areas and are concerned with the responses to the areas. The hypothesis states (10.5.2) that individuals express different satisfactions with the environment. An individual's satisfaction with the environment was hypothesised to be related to the objective measures of the environment and to the social characteristics of the individual.

The analysis proceeds in a number of stages, which will be reported in this chapter:

a) the full correlation matrix (using Kendall's non-parametric correlations) for satisfactions expressed with each of the separate environmental dimensions against the physical variables was obtained. Cross-tabulations were performed on the remaining physical variables which were only in categorised form and the chi-square test of significance applied.[1]

b) As the number of significant relationships was large the satisfactions were next correlated with the factors constructed on the basis of the factor analysis (10.2.3). This stage was essentially to help in the interpretation of the relationships, rather than seeking for stronger relationships.

c) The satisfactions were next correlated or cross-tabulated against the

---

[1] The scale status of each of the variables is given in Appendix A. See Siegel S. (1956) for details of the statistical tests.

social variables (i.e. the uncontrolled variables). No attempt was made at this stage to control for the physical environment.

d) The final stage was only carried out on a selected sample of the more preferred dimensions (see chapter 13 for discussion of preferences). At this stage attempts were made to improve the strength of the relationships, and to identify spurious relationships, by the use of partial correlations and selection of sub-samples of the sample population, i.e. by controlling for the uncontrolled variables.

11.2 SATISFACTION WITH ENVIRONMENT AND THE PHYSICAL VARIABLES

The relationships which were significant at the .001 level (except for the relationships with the physical factors, and the cross-tabulations for which the cut-off point was the .05 level) are shown in Tables 11.1 to 11.24 It will be noted that there are a large number of highly significant relationships, although the strength of the relationships is often weak. Before dealing with the general relationships in greater detail each environmental dimension will be discussed in turn.

11.2.1 Greeness (Table 11.1)

Satisfaction with the amount of Greeness in the area was related to no less than 20 of the physical variables at the .001 level. The most strongly related variables were the measures of density, the internal quality of the dwellings and the density of trees, all having a value of Tau greater than $\pm$ 0.2. Next in strength were a number of distance variables, which one would suspect were spuriously related to satisfaction with greeness. This is confirmed by the fact that none of the distance factors was significantly related to the satisfaction with greeness. The three significantly related factors were density, dwelling amenities, and tenure. The reason that the last two were significantly related is that they were in turn related to the types of dwelling and the treatment of spaces around the dwellings. For

Table 11.1A   Satisfaction with Greenness

Physical Variable (1)	Kendall's Tau	Significance level
Length of curtilage	.290	.001
% dwellings with all basic amenities*	.239	.001
Density	-.231	.001
Density of trees	.221	.001
Distance to Main Road	.200	.001
Distance to Corner Shop	.185	.001
Distance to a Public House or Club	.180	.001
Length of View (rear)	.174	.001
% dwellings in poor condition	-.166	.001
Width of Road	-.157	.001
No. of parking spaces	.147	.001
Distance to Industry	.140	.001
Width of Footpath	.134	.001
Frequency of Buses	-.134	.001
% of dwellings rented unfurnished privately*	-.129	.001
% dwellings in bad upkeep category	-.124	.001
Age of Dwelling	.123	.001
% of road in bad condition	-.122	.001
% of dwellings rented from Council*	.115	.001
% households 1½ pr. room*	-.113	.001
FACTORS (2): Density	.250	.001
Dwelling Amenities	.244	.001
Tenure	.120	.001

*   Census Variables

(1)   Definitions of the Physical Variables are given in Appendix A.

(2)   The factors are discussed in Appendix B and in Chapter 10.2.3.

example NCB properties generally had no gardens (if terraced dwellings), or no hedges; the NCB estates had fewer trees and no verges. Table 11.1B shows that the presence of gardens, hedges and trees at the roadside were all significantly related to satisfaction with greenness.

Table 11.1B Satisfaction with Greenness

Physical Variable	Significance level (Chi-square test)	Notes on relationship
Type of space behind dwelling	.001	High satisfaction - Garden Low satisfaction - yard
Type of Dwelling	.01	Detached, Semis and Bungalow - higher satisfaction
Type of space in front of dwelling	.01	Nothing or yard - low satisfaction. Garden - high satisfaction
Presence of roadside trees	.01	Higher satisfaction when present
Presence of Dereliction in area	.02	Lower satisfaction when present
Type of Curtilage boundary	.05	Slightly higher satisfaction with hedge present

11.2.2 Cleanness (Table 11.2)

The three variables most closely related with the respondents' satisfactions with the cleanness of their areas were all census variables: two were measures of tenure and the other was a measure of the internal dwelling amenities. It is noteworthy that the measures taken of the cleanness of the area e.g. amount of litter, and other measures which might give a visual impression of cleanness e.g. upkeep of dwellings, walls and roads were less strongly related to satisfaction with cleanness. This suggests that perceptions of cleanness were not just related to the immediately visible aspects - and of course these may vary widely from day to day in the case of

Table 11.2A Satisfaction with Cleanness

Physical Variable	Kendall's Tau	Significance level
% dwellings rented unfurnished privately[x]	-.224	.001
% dwellings rented from council[x]	.192	.001
% dwellings with all basic amenities[x]	.190	.001
Density of Trees	.171	.001
Distance to a Main Road	.162	.001
% dwellings in Poor Condition	-.161	.001
Length of Curtilage	.140	.001
% dwellings in Very Good condition	.139	.001
Distance to a Corner Shop	.138	.001
% dwellings in Bad Upkeep Category	-.136	.001
% of walls/fences in need of repair	-.123	.001
% road in bad condition	-.122	.001
Frequency of Buses	-.118	.001
Width of Footpath	.117	.001
Density	.117	.001
% of footpath affected by litter	-.114	.001
FACTORS		
Tenure	.209	.001
Dwelling Amenities	.161	.001
'Social'	-.124	.001
Dwelling Upkeep	-.100	.001
Density	.081	.016

[x] Census Variables

litter - but to less obvious factors. One such factor may be dust, and it is worth noting that the tenure and internal amenity variables also have some locational significance in that NCB properties were usually close to collieries (and in the case of Glasshoughton to a coking plant) and areas with dwellings without basic amenities were also associated with slum clearance operations - both sources of dust and dirt.

Five factors were significantly related at the .05 level to satisfaction with cleanness. Two of these, tenure and dwelling amenities, have already been discussed. Of the remaining factors dwelling upkeep is the simplest to understand i.e. the poorer the upkeep the lower the satisfaction with cleanness. The density and 'social'factors seem also to be indicating areas of older terraced dwellings and lower 'quality' areas which may be associated with poorer general upkeep which hence appear to be dirtier.

The categorised physical variables reflect the above relationships (Table 11.2B) in that satisfaction with cleaness was lower in the terraced

Table 11.2B Satisfaction with Cleanness

Physical Variable	Significance level (Chi-square test)	Notes on relationship
Presence of verges in road	.01	Satisfaction higher when present
Type of Space in front of dwelling	.01	Low satisfaction when fronting straight onto street
Noise Source	.02	Industrial source - low satisfaction

areas which have no verges and in which the dwellings front straight onto the road. The appearance of noise source as a significant variable was primarily the effect of the Glasshoughton Coke Works which is a major source of noise as well as pollution.

11.2.3 <u>Air Quality</u> (Table 11.3)

The respondents' satisfaction with the air quality were closely related to the same variables as were related to satisfaction with cleanness. One reason for this is possibly the lack of a distinction between the two dimensions in the minds of the respondents. A further reason is that one would expect the areas which were affected by air pollution (primarily in the vicinity of collieries, power stations and coke works) would also be generally dirty. The effects of domestic smoke are more difficult to identify, although the NCB areas (with mainly coal fires - using concessionary coal) and older dwellings which still have open fires mostly were probably the reasons for the first three physical variables being related to satisfaction with the air quality. Unfortunately it was not possible to compare a smokeless zone with a non smokeless zone as none of the case-study areas contained any smokeless areas. The appearance of the Frequency of Buses was probably the influence of two areas, Glasshoughton and Bellevue, both of which had above average bus services and both are located near smoke-producing sources.

This is reflected too in the cross-tabulations (table 11.3B). Those respondents who were judged to be near an industrial noise source, or an air polluting non-conforming use all had low satisfaction with the air quality. 90% of respondents living near an air polluting non-conforming use scored 3 (slightly unsatisfied) or less for their satisfaction with air quality.

11.2.4 <u>Noise</u> (Table 11.4)

No direct measures of noise levels were taken, the only indirect measures being of traffic noise - the distance from a main road and the width of the respondent's road. Both of these are among the significantly related variables, with values of Kendall's Tau of .152 and -.120 respectively.

Table 11.3A Satisfaction with Air Quality

Physical Variable	Kendall's Tau	Significance Level
% dwellings with all basic amenities[*]	.197	.001
% households renting unfurnished privately[*]	-.175	.001
% dwellings in Poor Condition	-.166	.001
Frequency of Buses	-.165	.001
Density of Trees	.159	.001
% dwellings in Very Good Condition	.149	.001
Distance to a Main Road	.135	.001
% households renting from council[*]	.131	.001
Length of Curtilage	.126	.001
% dwellings in Bad Upkeep category	-.125	.001
% dwellings in Mid Upkeep category	.122	.001
% households without cars[*]	-.122	.001
Factors		
Dwelling Amenities	.188	.001
Tenure	.162	.001
'Social'	-.126	.001
Dwelling Upkeep	-.124	.001
Density	.082	.001

[*] Census Variable

Table 11.3B Satisfaction with Air Quality

Physical Variable	Significance Level (Chi-square test)	Notes on Relationship
Noise Source	.001	Industrial source in area - low satisfaction
Non-conforming use in area	.01	Air pollution source - low satisfaction
Presence of Dereliction	.05	low satisfaction if present
Type of space in front of dwelling	.05	lower satisfaction - front straight onto street

Once again tenure, dwelling quality, density and the 'social' factors were all significantly related to satisfaction with noise. This would appear to be related to the presence of industry in some areas, and to the concentrations of children in others. This is reflected in the relationships with the categorised variables (Table 11.4B) in which respondents living near sources of noise from industry, children or main roads were less satisfied than average. Another variable which was significant was the type of dwelling; terraced dwellings (particularly those fronting straight onto the street) had low satisfaction scores - a reflection of the poorer insulation from traffic noise in such dwellings. In addition terraced dwellings in the case-study areas were more frequently located on ma in roads than were the other dwelling types.

11.2.5 Safety (Table 11.5)

The majority of the respondents were referring to safety from traffic when answering this question (see 11.4.6). However the variables relating to the type of road, and the distance to a main road were not significantly related to satisfaction with safety. The width of the respondent's road was

Table 11.4A   Satisfaction with Noise Level

Physical Variable	Kendall's Tau	Significance Level
% households renting unfurnished privately[x]	-.214	.001
% dwellings in Poor Condition	-.212	.001
Distance from Corner Shop	.181	.001
Distance from Main Road	.152	.001
% Household renting from Council[x]	.138	.001
Density of trees	.136	.001
Density	-.128	.001
Frequency of Buses	-.126	.001
Distance to Children's Playground	.124	.001
Length of View (rear)	.124	.001
% dwellings in Very Good Condition	.123	.001
Width of Road	-.120	.001
Distance to Open space	.118	.001
FACTORS		
Tenure	.156	.001
'Social'	-.122	.001
Dwelling Quality	.109	.002
Density	.089	.009

[x] Census Variable

Table 11.4B   Satisfaction with Noise Levels

Physical Variable	Significance Level (Chi-square test)	Notes on Relationships
Noise Source	.001	low satisfaction - industry, children, heavy traffic sources
Type of dwelling	.001	low satisfaction - terraces higher satisfaction - detached/bungalows
Type of space in front of dwelling	.001	lower satisfaction - fronting straight onto street
Type of space at rear of dwelling	.001	low satisfaction - yards
Type of Road	.001	lower satisfaction main road high satisfaction - crescents, and pedestrianised
Type of curtilage boundary	.01	low satisfaction - nothing above average - hedge
Non-conforming use in area	.02	low satisfaction - air pollution source, slightly low satisfaction - traffic source

related (Tau -.127), but less strongly than a number of other variables.

The most strongly related variables were the proportion of dwellings in poor condition and the distance to the corner shop, followed by the length of view to the rear of the house. The interpretation of these relationships is not simple (6 of the 9 physical factors were related to satisfaction with safety), but it would seem to be that the satisfactions with the safety of the denser terraced areas (table 11.5B) which have dwellings fronting onto roads (which are in general wider and more likely to be through roads than in other areas) was lower than, for example, satisfaction with the safety of the inter-war estates of semi-detached dwellings.

Table 11.5A   Satisfaction with Safety

Physical Variable	Kendall's Tau	Significance Level
% dwellings in Poor Condition	-.195	.001
Distance to Corner Shop	.173	.001
Length of view (rear)	.160	.001
% households renting unfurnished privately[*]	-.159	.001
% dwellings in bad upkeep category	-.152	.001
Distance to a Public House/Club	.140	.001
Density of Trees	.137	.001
Distance to Open Space	.136	.001
Length of Curtilage	.135	.001
Width of Road	-.127	.001
Distance to Childrens Playground	.125	.001
FACTORS		
Density	.121	.001
Tenure	.098	.005
'Social'	-.087	.011
Dwelling Upkeep	.087	.011
Town Centre location	.079	.019
Dwelling Quality	.074	.025

[*] Census Variables

Table 11.5B   Satisfaction with Safety

Physical Variable	Significance level (Chi-square test)	Notes on Relationship
Type of curtilage boundary	.001	low satisfaction - nothing higher satisfaction - hedge
Type of Dwelling	.05	higher satisfaction - flats, detached, and bungalow

11.2.6 Private Upkeep (Table 11.6)

Satisfactions of how well dwellings are maintained were correlated with two sets of variables, expressed as the two factors 'Dwelling quality' and 'Social'. The first set of variables are measures of dwelling condition and upkeep quality, and the state of repair of wall and fences.

The second set of variables, summarised in the social factor, are the two census variables indicating the proportion of overcrowding and car ownership. Superficially it appears reasonable that the aspects of upkeep which are not reflected by the dwelling measures might be related to private resources available, and be indicated by the two census measures. It should be noted in passing that in the council areas the concept of private upkeep did not of course relate to the dwelling itself, which was seen as a council responsibility, but virtually to the care of the garden alone.

None of the categorised variables was significantly related to the satisfaction with private upkeep.

11.2.7 Council Upkeep (Table 11.7)

It was realised that this dimension would mean something different to those respondents who were council tenants compared with the other respond-

Table 11.6   Satisfaction with Private Upkeep

Physical Variable	Kendall's Tau	Significance Level
% households living at over 1½ per room	-.208	.001
% dwellings in good upkeep category	.164	.001
% dwellings in bad upkeep category	-.161	.001
% dwellings in very good condition	.157	.001
% households without cars [*]	-.155	.001
% walls/fences in need of repair	-.140	.001
% dwellings in poor condition	-.134	.001
Condition of Respondent's dwelling	-.125	.001
FACTORS		
'Social'	-.198	.001
Dwelling Quality	.074	.026

[*] Census Variables

Table 11.7   Satisfaction with Council Upkeep

Physical Variable	Kendall's Tau	Significance Level
% dwellings in bad upkeep category	-.137	.001
Distance to a Chemists Shop	-.113	.001
FACTORS		
'Social'	-.113	.001
Dwelling Upkeep	-.094	.007
Tenure	.093	.007

ents. For the council tenants council upkeep referred to a whole range of services including those relating to the dwelling. To the other respondents council upkeep only related to the state of the roads and to the emptying of dustbins in effect. It was therefore expected that the correlations found would be weaker than those for other dimensions.

This was the case; only two physical variables were significant at the .001 level, and the second of these (distance to a chemist shop) is a spurious one which disappears when the first variable is controlled. Apart from dwelling upkeep the relationships with the factors show that tenure is significant (as one might expect), the remaining factor being the 'social' factor - which it will be noted was also the most strongly related factor to private upkeep. Once again this suggests a link between social and physical conditions, which may not be a result of neglect, but a function of the greater need for upkeep in some areas.

None of the categorised variables was significantly related to satisfaction with the council upkeep.

11.2.8 Suitability of the Area for Children (Table 11.8)

The three most highly related variables to the satisfactions with this dimension were the density of trees, the proportions of dwellings in poor condition and those in bad upkeep. These variables were followed in strength by the census variables of the degree of overcrowding and the car-ownership rate.

These relationships are summarised by the five factors which are significantly correlated to the satisfaction with the suitability of the area, and it is clear that it is not just individual aspects of the area which make it suitable for children, but a combination of variables. It is notable that access to schools, play areas or open space do not feature among the

Table 11.8   Satisfaction with Suitability of Area for Children

Physical Variable	Kendall's Tau	Significance Level
Density of Trees	.206	.001
% dwellings in poor condition	-.200	.001
% dwellings in bad upkeep category	-.182	.001
% households living at over 1½ per room ^{x}	-.170	.001
% households without cars ^{x}	-.160	.001
Length of Curtilage	.138	.001
Distance from Main Road	.133	.001
Distance from Public House/Club	.130	.001
FACTORS		
'Social'	-.131	.001
Dwelling Amenities	.129	.001
Density	.091	.011
Dwelling Upkeep	-.086	.015
Tenure	.083	.019

significant variables.

The implication of the relationships is that low density areas with better housing, more trees and higher car ownership are judged to be more suitable for children. None of the nominal variables is significantly rel- ated at the .05 level, which suggests that the presence of absence of a garden is not of paramount importance.

11.2.9 Friendliness (Table 11.9)

It was not expected that satisfaction with the friendliness of an area
would be highly related to the physical characteristics of the area, and
indeed there were no significant relationships at the .001 level. Two of
the factors were more weakly related (at the .05 level), suggesting that
the denser terraced areas with poorer housing were judged to be more friendly
than less dense areas. It should be noted however that no conclusion should
be drawn on the physical effects on friendliness before the social variables
have been examined (11.3).

Table 11.9   Satisfaction with Friendliness

Physical Variable	Kendall's Tau	Significance Level
None significant at .100 level		
FACTORS		
Density	-.072	.029
Dwelling Amenities	-.068	.037

11.2.10 Appearance (Table 11.10)

The satisfaction with appearance scores were correlated with no less
than 21 variables at the .001 level. This is partly the result of the
number of variables measured which were related in some way to the condition
and upkeep of the dwelling. Indeed the variables in these relationships
are summarised by the following five factors: 'Social', Tenure, Dwelling
amenities, Density and Dwelling Quality. These suggest that the dwellings
and the amount of space around them were of great importance.

Table 11.10A   Satisfaction with Appearance

Physical Variable	Kendall's Tau	Significance Level
Density of Trees	.250	.001
% households renting unfurnished privately[x]	-.234	.001
% households without cars[x]	-.227	.001
% dwellings in Poor Condition	-.226	.001
% dwellings in Very Good Condition	.220	.001
% dwellings in Bad Upkeep Condition	-.198	.001
No. of Parking Spaces	.188	.001
% Road Surface in Bad Condition	-.185	.001
% dwellings with all amenities[x]	.183	.001
Frequency of Buses	-.169	.001
Distance to Corner Shop	.166	.001
% households at $1\frac{1}{2}$ pp room[x]	-.164	.001
Distance to Main Road	.155	.001
Density	-.153	.001
Condition of Respondent's Dwelling	-.148	.001
Distance to a Bus Stop	-.146	.001
Length of Curtilage	.137	.001
Distance to Public House/Club	.125	.001
Width of Footpath	.122	.001
% Household renting from Council[x]	.121	.001
% Dwellings in Good Condition	-.116	.001
FACTORS		
'Social'	-.210	.001
Tenure	.188	.001
Dwelling Amenities	.176	.001
Density	.126	.001
Dwelling Quality	.105	.003

[x] Census Variable

Table 11.10B   Satisfaction with Appearance

Physical Variable	Significance Level (Chi-square test)	Notes on Relationship
Presence of a verge	.01	present - higher satisfaction
Presence of dereliction in area	.01	present - lower satisfaction
Presence of trees in roadside	.02	present - higher satisfaction

The most highly related individual variable was the density of trees, (Tau of .250), and this vegetation aspect of appearance was also reflected in the categorised variables which were significant (Table 11.10B). Both the presence of verges and trees at the side of the road were significant at the .01 level. The converse also holds - the presence of dereliction, and a greater proportion of the road in poor condition were both associated with lower satisfaction with appearance.

11.2.11 Privacy (Table 11.11)

It was recognised from the outset that privacy could have two meanings: a physical meaning which implies separation from other dwellings or public areas; and a 'social' meaning, which implies that people "mind their own business". This dual interpretation has had the effect of weakening the relationships, although elements of both meanings were reflected in the relationships, For example the type of dwelling, and type of space at the rear of the dwelling - both relating to the separation between dwellings - were significantly related to satisfaction with the privacy (table 11.11B).

The social meaning is more difficult to identify, but was reflected in the variable indicating the proportion of households living at over $1\frac{1}{2}$

Table 11.11A   Satisfaction with Privacy

Physical Variable	Kendall's Tau	Significance Level
Density of Trees	.165	.001
% households living at over 1½ p p room[*]	-.138	.001
% dwellings in poor condition	-.131	.001
Distance to open space	.127	.001
% dwellings in Bad Upkeep Category	.113	.001
Age of Respondent's dwelling	-.112	.001
FACTORS		
'Social'	-.150	.001
Industry location	-.096	.006
Density	.079	.018

[*] Census Variable

Table 11.11B   Satisfaction with Privacy

Physical Variable	Significance Level (Chi-square test)	Notes on Relationship
Type of dwelling	.001	higher satisfaction - detached/semi-detached
Type of space at rear of dwelling	.01	garden - slightly higher yard/public grass - lower satisfaction

persons per room, although this could also be interpreted as lack of privacy within the households (however one should be cautious about interpreting census variables in such a direct manner (10.2.1)).

11.2.12 Car Parking (Table 11.12)

This relatively straightforward dimension was most strongly correlated to the amount of parking spaces per dwelling, and to the type of parking facilities (table 11.12B). Respondents who could only park on verges or in the road were in general less satisfied with the parking. The provision of parking facilities was related to the type and quality of dwellings, and also to car ownership, so it is not surprising that satisfaction with parking is also related to these variables.

Table 11.12A   Satisfaction with Car Parking

Physical Variable	Kendall's Tau	Significance Level
No. of Parking Spaces	.239	.001
% dwellings in Good Upkeep Category	.169	.001
% households without Cars[x]	-.163	.001
% dwellings in Very Good Condition	.161	.001
Length of Curtilage	.135	.001
% dwellings in Poor Condition	-.133	.001
Density of Trees	.132	.001

Table 11.12B   Satisfaction with Car Parking

Physical Variable	Significance Level (Chi-square test)	Notes on Relationship
Type of Parking	.001	high satisfaction - garage low satisfaction - on road/verge
Type of dwelling	.01	low satisfaction - terrace high satisfaction - detached

11.2.13 Reputation (Table 11.13)

Like the responses to Friendliness it was not expected that the responses to questions about Reputation would be very strongly related to the physical variables. The reasons for this expectation were partly the social nature of reputation, and partly the fear that respondents would tend to give 'acceptable' answers to an outsider i.e. that their areas were respectable.

However significant relationships were found, the strongest being that with the proportion of households living at over $1\frac{1}{2}$ persons per room, followed by the density of trees. The distance variables which were next in strength would appear to be spuriously related.

The only categorised variable which was found to be significantly related to the satisfaction with the Reputation was the type of dwelling (table 11.13B). Respondents living in flats and detached dwellings reported higher satisfactions.

11.2.14 View (Table 11.14)

Respondents' satisfactions with the view were highly correlated with their satisfactions with the appearance (Tau 0.487), and hence were also correlated with most of the same physical variables (density of trees,

Table 11.13A   Satisfaction with Reputation of the Area

Physical Variable	Kendall's Tau	Significance Level
% households living at over 1½ p p room*	-.276	.001
Density of Trees	.250	.001
Distance to childrens playground	.223	.001
Distance to Chemists Shop	-.178	.001
% households renting unfurnished privately*	-.177	.001
% households without cars*	-.170	.001
% dwellings in Bad Upkeep Category	-.169	.001
% footpath affected by litter	-.158	.001
Distance to Bus Stop	-.147	.001
Distance to Town Centre	-.133	.001
Age of Dwellings	-.127	.001

* Census Variable

Table 11.13B   Satisfaction with Reputation of the Area

Physical Variable	Significance level (Chi-square test)	Notes on Relationship
Type of Dwelling	.001	higher satisfaction - flats and detached dwellings

Table 11.14A Satisfaction with the View

Physical Variable	Kendall's Tau	Significance Level
Density of Trees	.247	.001
Length of Curtilage	.239	.001
% dwellings in Bad Upkeep Category	-.216	.001
% households without cars*	-.210	.001
Density	-.194	.001
No. of Parking Spaces	.175	.001
% dwellings in Poor Condition	-.170	.001
Length of View (rear)	.159	.001
Distance to Industry	.151	.001
% households renting unfurnished privately*	.150	.001
% households having all basic Amenities*	.148	.001
% road in Poor Condition	-.145	.001
Condition of Respondent's Dwelling	-.145	.001
Distance to Corner Shop	.141	.001
% dwellings in Very Good Condition	.136	.001
% households living at over $1\frac{1}{2}$ p p room*	-.136	.001
% dwellings in Good Upkeep Category	.131	.001

* Census Variable

Table 11.14B   Satisfaction with the View

Physical Variable	Significance Level (Chi-square test)	Notes on Relationship
Presence of trees at roadside	.01	Not present - lower satisfaction
Presence of dereliction in areas	.01	Present - lower satisfaction
Foreground view at rear of dwelling	.01	lower satisfaction - industry/dereliction
Foreground view at front of dwelling	.05	residential or no view - average satisfaction
Background view at front of dwelling	.05	
Type of dwelling	.05	terrace - lower satisfaction
Type of space at rear of dwelling	.05	garden - higher satisfaction

upkeep and condition of dwellings, car ownership etc.). The length of curtilage was, however, more closely related to satisfaction with the view than with appearance. The length of the view from the rear of the respondents dwelling was also significantly related.

The relationships with the categorised variables indicating the type of foreground and background views were restricted by the very limited range of types of view in the district, but were nevertheless significant at the .05 level (Table 11.14B). Respondents overlooking housing, or having a restricted view (less than 100m) gave average scores, whereas those looking out over industry or dereliction registered lower satisfaction.

11.2.15 Layout (Table 11.15)

Few respondents, except those living on recent estates or other distinctly 'planned' areas, appeared to attach the conventional meaning to

Table 11.15A   Satisfaction with the Layout of the area

Physical Variable	Kendall's Tau	Significance Level
Density of trees	.225	.001
Length of Curtilage	.222	.001
% dwellings in Poor Condition	-.217	.001
% households living at over $1\frac{1}{2}$ pp room*	-.172	.001
Density	-.167	.001
% dwellings in Bad Upkeep Category	-.163	.001
% households rented unfurnished privately*	-.160	.001
% households without cars*	-.149	.001
Distance to corner shop	.132	.001
% dwellings in Very Good Condition	.125	.001
FACTORS		
Density	.182	.001
'Social'	-.122	.001
Tenure	.097	.007
Dwelling Amenities	.084	.016

* Census Variable

this variable. For most respondents the question appeared to be treated as yet another question about appearance. Consequently the responses were also highly correlated with the responses to the appearance question (Tau of 0.475).

The number of trees was consequently the most strongly related variable followed by the measures of density and dwelling quality. The relationships

Table 11.15B   Satisfaction with the Layout of the area

Physical Variable	Significance Level (Chi-square test)	Notes on Relationship
Type of non-conforming uses in area	.01	low satisfaction - traffic generating
Type of dwelling	.05	low satisfaction - terrace high satisfaction - flats/ detached
Type of curtilage boundary	.05	higher satisfaction - hedge, low - nothing
Presence of trees at roadside	.05	Present - higher satisfaction

with the categorised variables (Table 11.15B) shows that the presence of non-conforming uses in the area (particularly traffic generating uses) was associated with low satisfaction.

The type of road (e.g. through road, cul-de-sac, pedestrianised etc.) which is perhaps most commonly associated with the concept of layout, was not significantly related to satisfaction. Density, and also dwelling type, remain the only variables which are some function of layout and were also significantly related to the respondents' satisfaction with the layout.

11.2.16 Convenience for Shopping (Table 11.16)

The perceived convenience for shopping was most highly related to the distance to the nearest chemists shop (Tau -.205). Two other distances from shopping facilities were among the significantly related variables: distance to town centre (highly related to the distance to a chemists shop in any case), and the distance to the nearest general (corner) shop. The other variables would appear to be spuriously related to the satisfaction with the convenience for shopping, through their relationships with the

distance variables (see below 11.4.3).

Table 11.16   Convenience for Shopping

Physical Variable	Kendall's Tau	Significance Level
Distance to a Chemists Shop	-.205	.001
Distance to a Park	-.190	.001
Age of Dwelling	-.169	.001
Distance to Town Centre	-.157	.001
Density of Trees	.135	.001
% households living at over 1½ p p room*	-.128	.001
Width of Road	.122	.001
Distance to a Corner Shop	-.118	.001
Distance to a Primary School	-.113	.001

11.2.17   Convenience for Buses (Table 11.17)

Two variables were related to the satisfaction with the convenience of buses at the .001 level; namely the distance to a bus stop, and the distance to a main road.   These two variables were strongly inter-related in any case.   The frequency of buses, which was among the physical variables, was only weakly related to the convenience, significant at the .06 level.

Table 11.17   Convenience for Buses

Physical Variable	Kendall's Tau	Significance Level
Distance to a Bus Stop	-.151	.001
Distance to a Main Road	-.125	.001

11.2.18 Convenience to a nursery school (Table 11.18)

This question was added at the last minute in response to a local issue over the provision of nursery schools. No measures were made of the distance to any nursery or play-group facilities in the areas as few existed. It is therefore not surprising that the distance to the nearest primary school was the most highly related variable, particularly as the majority of the sample had no children of nursery age and consequently had no firm knowledge of the facilities available, or their location.

Table 11.18 Convenience to a Nursery School

Physical Variable	Kendall's Tau	Significance Level
Distance to a Primary School	-.294	.001
℀ dwellings in Mid Upkeep Category	.196	.001

✖ Census Variable

The proportion of dwellings in the middle upkeep category was positively related to this satisfaction, although for no apparent reason.

11.2.19 Convenience to a Primary School (Table 11.19)

The satisfaction with the convenience to a primary school was most strongly correlated with the distance to the nearest primary school. The value of Kendall's Tau, -0.337, was one of the highest first order correlations found in the survey, and it is significant that it relates to a facility for which there was a limited choice (unlike shopping and public houses for example) and which is local (and hence probably known by most people even if they had no children).

The other significant relationships were primarily the result of inter-

relationships in the physical data i.e. spurious relationships.

Table 11.19   Convenience to a Primary School

Physical Variable	Kendall's Tau	Significance Level
Distance to a Primary School	-.337	.001
Frequency of Buses	-.239	.001
Distance to Childrens Playground	-.148	.001
Density of Trees	.134	.001

11.2.20   Convenience to a Seconday School (Table 11.20)

The satisfaction with the convenience of a secondary school was related to the distance to the nearest secondary school (Tau -0.252), and also, because of their usual proximity in the District, to the distances to a chemists shop and to the town centre. Although the distance to a bus stop was significantly related to this satisfaction (and it appears to be a logical relationship given that the bus is an important mode of transport to school), the strength of the relationship was reduced when the distance to a secondary school was controlled for. This also applies to the relationships with the other variables.

11.2.21   Convenience to a Park (Table 11.21)

The satisfaction with the convenience to a park was related most strongly to the distance to the nearest formal park (as opposed to open space or playing fields). The distance to open space of any description was only weakly related, indicating that the term 'park' is only understood in relation to the larger formal parks. The relationships with a number of other variables were spurious, particularly the distance variables.

Table 11.20   Convenience to a Secondary School

Physical Variable	Kendall's Tau	Significance Level
Distance to a Secondary School	-.252	.001
Distance to a Chemists Shop	-.223	.001
Distance to Town Centre	-.208	.001
Distance to Bus Stop	-.168	.001
% dwellings in Bad Upkeep Category	-.150	.001
% footpath affected by litter	-.144	.001
% households living at over $1\frac{1}{2}$ pp room[*]	-.135	.001

Table 11.21   Convenience to a Park

Physical Variable	Kendall's Tau	Significance Level
Distance to Park	-.270	.001
Distance to Chemists Shop	-.234	.001
% households living at over $1\frac{1}{2}$ pp room[*]	-.215	.001
Age of Dwelling	-.210	.001
Distance to Town Centre	-.165	.001
Density of Trees	.155	.001
% households without cars[*]	-.144	.001
Distance to Secondary School	-.140	.001
Distance to Corner Shop	-.128	.001
Distance to Main Road	-.119	.001

[*] Census Variable

11.2.22 Convenience to a Public House or Working Mans Club (Table 11.22)

The satisfaction with convenience to a public house or club was not as strongly related to distance to the nearest facility as some of the other dimensions have been. This was partly the result of the very limited range of distances in the District (10.2.2), but was also a function of the large choice open to residents. Nevertheless the distance to a pub or club was significantly correlated (Tau -.146), second in strength to a density measure. This latter variable may be significant because of greater concentration of facilities in denser terraced areas.

Table 11.22   Convenience to a Public House or Club

Physical Variable	Kendall's Tau	Significance Level
Length of Curtilage	-.158	.001
Distance to a Public house/Club	-.146	.001

11.2.23 Convenience to the Countryside (Table 11.23)

This question was asked mainly to see if the respondents considered the open country in the immediate vicinity of the case-study areas as 'countryside', i.e. for recreation purposes. It was clear during the survey that this was not the case, and the lack of a significant relationship with the distance to the nearest open space (usually open countryside in the District) confirms this.

Both variables which were significantly related can be interpreted more as indicators of mobility perhaps, i.e. the convenience to countryside being seen as related to the access to transport, rather than to distance from the countryside.

Table 11.23   Convenience to the Countryside

Physical Variable	Kendall's Tau	Significance Level
% dwellings in Bad Upkeep Category	-.148	.001
% households without cars[*]	-.125	.001

11.2.24   Convenience to Work

None of the physical variables was related to satisfaction with
convenience to work at the .001 level. It had been expected that the dis-
tances to the town centre, or to the nearest industry might be correlated,
but the wide distribution of work-places reduced any possible relationships.

11.2.25   Convenience for Going Out (Table 11.24)

The perception of convenience for going out was related to three var-
iables at the .001 level, yet none of them was a distance variable. Dis-
tance to the town centre, which could have been expected to be related, was
not even significant at the .05 level. One of the reasons for this was the
wide variety of activities undertaken by the respondents, making a single
location, such as a town centre, unlikely to be of paramount importance.
In addition, as in the case of convenience to countryside, mobility was
probably more important than distance.

Table 11.24   Convenience for Going Out

Physical Variable	Kendall's Tau	Significance Level
% households living at over $1\frac{1}{2}$ pp room[*]	-.142	.001
% dwellings in Poor Condition	-.138	.001
Density of Trees	.135	.001

[*] Census Variable

11.2.26 Satisfaction with the Environmental Dimensions - Summary

At this stage, before having attempted to control the correlations for any social variables which may be significant, it is worth making a few points about the relationships which have been discussed.

Although numerous highly significant relationships have been identified, discounting those which appear to have been spurious, they are all relatively weak relationships. The highest first order correlation coefficient value was -0.337 for the satisfaction with the convenience of a primary school and the distance to the nearest school. However when one compares this strength of relationship with the few other surveys which have related individual (rather than grouped) responses to physical measures (mainly for responses to noise) then the relationships found in the current survey appear more favourable. For example McKennel obtained a value of r of 0.46 for the relationship between average peak loudness and annoyance (McKennel A.C., 1963); Griffiths and Langdon obtained an r of 0.29 for the relationship between TNI (Traffic Noise Index) and noise dissatisfaction (Griffiths I.D. and Langdon F.J., 1968). In a work on the visual evaluation of the environment Hopkinson et al achieved an r of 0.56 between individuals visual satisfaction and the satisfaction predicted on the basis of objective measures (Hawkes R.J., 1975).

The values of the correlation coefficients found in this study compare favourably firstly because they are rank correlations, which as explained earlier generally have a lower value than r; and secondly because they are not dealing with such simple concepts as noise and visual impact of motorways as in the above quoted studies. It is notable that the best relationships in this research have been achieved with the relatively straightforward concepts of convenience.

One fundamental influence on the satisfactions expressed by respondents which has not been dealt with yet is the social characteristics of the individuals. This is the subject of the next section.

11.3 Satisfaction with the Environment and the social variables

It was hypothesised on the basis of the model that the satisfaction expressed by individuals would be related to social variables describing the respondents as well as to the physical variables. Thus in a similar manner to the physical variables rank correlations were performed where possible, and the chi-square test applied to cross-tabulations of the other variables. No attempt was made to control for the physical variables, partly because the relationships were relatively weak (10.3), and partly because partial correlation was carried out at a later stage (11.4).

The relationships which were significant at the .05 level or above are given in Tables 11.25 (Correlations) and 11.26 (Cross-tabulations). Unlike the relationships between the satisfactions and the physical variables the relationships with the social variables are consistent enough for a number of general statements to be made, dealing with each social variable in turn.

11.3.1 Age of the Respondent

The age of the respondent was significantly correlated with the satisfaction with most of the environmental dimensions, and in all cases it was positively correlated; that is the older the respondent, the more satisfied he or she was likely to be. The strength of the relationships was of the same order as those with the physical variables. The highest values of Tau were for the satisfaction with the Reputation (0.249) and with the Privacy (0.219).

11.3.2 Household Size

The size of the household of which the respondent was a member was also significantly related to most of the satisfactions. The value of Tau, which was always negative, was at a maximum for the satisfaction with privacy, having a value of -0.220. In other words the larger the household, the lower the average satisfaction. Part of this relationship must be ascribed to the strong link between the size of the household and the age of the respondent (Tau -0.412).

11.3.3 School Leaving Age

The respondent's school leaving age was negatively related to a number of satisfactions, the strongest relationship being again with satisfaction with the Privacy and with the Reputation. However when the respondents age is controlled for the relationships were no longer significant (The correlation of age with school leaving age had a Tau of -0.534).

11.3.4 Income

Income, which was also correlated with age (Tau -0.359), was generally negatively correlated, if somewhat weakly, with the satisfactions expressed. One exception to this rule was in the case of satisfaction with car parking which was positively correlated with income. This is most likely to be explained by the relationship between income and car ownership and the provision of parking, rather than a difference in expectation with income (which if it did exist would probably be in the opposite direction i.e. lower incomes being more satisfied with less parking).

11.3.5 Length of Residence

Length of Residence was the weakest related social variable of this group of five; it was only related to four satisfactions at the .05 level. This is perhaps surprising as it is often suggested that the longer a per-

Table 11.25   Relationship between Satisfactions with Environmental

Dimensions and Social Variables

Environmental Dimension	Social Variable	Correlation with Satisfaction for that Dimension (Kendall's Tau	Significance level
Cleaness	Income Age School leaving Age	-.129 .121 -.083	.001 .001 .014
Air Quality	Income Age School leaving age Length of Residence	-.169 .096 -.080 -.076	.001 .006 .017 .023
Noise	Household Size Age	-.087 .067	.011 .037
Safety	School leaving age Household Size Age	-.148 -.132 .131	.001 .001 .001
Private Upkeep	Age School leaving age Household Size Income	.128 -.070 -.068 -.067	.001 .034 .038 .048
Council Upkeep	Income Age	-.155 .087	.001 .010
Suitability for Children	Age Household Size Length of Residence	.149 -.118 .096	.001 .002 .008
Friendliness	Household Size School leaving age Age	-.132 -.095 .091	.001 .007 .008
Appearance	Age	.079	.018

ps

Table 11.25 Continued

Environmental Dimension	Social Variable	Correlation with Satisfaction for that Dimension (Kendall's Tau)	Significance level
Privacy	Household Size Age School leaving age Income Length of Residence	-.220 .219 -.177 -.158 .088	.001 .001 .001 .001 .010
Car Parking	Household Size Income	-.097 .098	.006 .008
Reputation	Age School leaving age Household Size Income	.249 -.162 -.143 -.106	.001 .001 .001 .005
View	Household Size	-.078	.021
Layout	Age Household Size Income School leaving age	.159 -.134 -.081 -.080	.001 .001 .024 .021
Overall Convenience	Household Size Age Income Length of Residence	-.166 .147 -.090 .070	.001 .001 .012 .033

son has lived in an area the more adapted they are to it, and hence are likely to be more satisfied. In addition they supposedly have more developed social networks which again are assumed to increase satisfaction, or at least render it less susceptible to influence by the physical conditions . Neither of these assumptions is however supported by the findings.

11.3.6 Class

Although the cross-tabulations with three of the satisfactions had

significant chi-squares (Table 11.26) the relationship between class and
satisfaction was not clear, or straightforward. Although the small prof-
essional group had slightly higher scores, and unskilled workers were less
satisfied in the three cases in the table, no trend was apparent for the
other occupational classes between unskilled and professional. A larger
sample in some of the smaller classes would be required before being able
to draw any further conclusions.

Table 11.26 Relationship between Satisfactions with Environmental

Dimensions and Categorised Social Variables

Categorised Social Variables	Environmental Dimension	Significance Level (chi-square test)	Notes on Relationship
CLASS	Suitability for Children Appearance	.041 .048	higher satisfaction - professional extreme negative - unskilled
	Car Parking	.005	unskilled - lower satisfaction
MARITAL STATUS	Appearance	.013	widowed - more sat- isfied
	Privacy	.009	widowed/divorced - high satisfaction
HOUSEHOLD STATUS	Safety	.003	families - low sat- isfaction small/old households - high satisfaction
	Overall Convenience	.006	large & small famil- ies - low satisfact- ion small h/holds - high satisfaction
	View	.009	large families - low satisfaction. old & small h/holds - high satisfaction
	Car Parking	.010	low satisfaction - large families

Table 11.26 (cont.)

Categorised Social Variables	Environmental Dimension	Significance Level (chi-square test)	Notes on Relationship
	Car Parking	.010	high satisfaction - small households
	Reputation	.047	low satisfaction - large families high satisfaction - old households

11.3.7 Marital Status

Marital status was significantly related to only two of the satisfaction dimensions: Appearance and privacy. In both cases widowed and divorced respondents were more satisfied, although of course these respondents would also tend to be older (and hence be expected to be more satisfied - 11.3.1). The majority of the respondents (c.75%) were married, and the distribution of their scores closely reflected the overall distribution. For satisfaction with privacy single persons were either 'very satisfied' or 'very unsatisfied'; again however the size of this sub-sample was too small to draw any valid conclusions.

11.3.8 Household Status

It was expected that this variable would be more generally related to the satisfactions with the environmental dimensions, as to some extent it is a summarising variable of age, marital status and household size, all of which have been found to be significantly related in many cases so far. In fact household status was significantly related to only five satisfaction dimensions: Safety, Convenience, View, Car Parking and Reputation.

Two general trends are identifiable in the relationships: i) the older, smaller household members express higher satisfaction than those in

the larger households. ii) for safety and convenience, households which contained children expressed lower than average satisfactions.

11.3.9 Relationships with the social variables - Summary

The most consistant relationship which has been revealed in the data is that between the age of the respondent and his/her satisfaction with the environmental dimensions. Most of the other relationships with the social variables can be traced in part at least to this basic relationship with age. The link between the physical environment and the social variables has not been controlled for, but it is not likely to alter the strength of the relationships greatly (see 12.3).

The remaining uncontrolled variables, whose relationship with satisfactions has not been mentioned yet, are the respondents preferences (9.6). These will be discussed in a later chapter as they require rather different treatment from the other social variables (Chapter 13).

11.4 SATISFACTION WITH THE ENVIRONMENTAL DIMENSIONS - Controlled Relationships

The discussion so far has highlighted a number of problems in explaining the relationships: the possibility that the relationships with the social variables were affecting the relationships with the physical variables; the large number of physical variables which were involved in the relationships with satisfaction with some of the dimensions; and finally the wide variety of environmental dimensions included in the discussion so far which has lead to rather superficial consideration of the relationships.

It was decided to concentrate on a smaller selection of environmental dimensions, and to investigate the relationships more thoroughly. The dimensions chosen for this were those which appeared to be the most important ones from the respondents point of view (see later 13.6). The follow-

ing dimensions were chosen: Friendliness, Appearance, Convenience, Cleaness, Suitability for Children, Safety, Air Quality, Privacy and Private Upkeep.

Three techniq-ues of further investigation were considered. The first has already been referred to in the previous discussion, and that is the use of factor analysis to overcome the inter-relationships in the physical data. The reason that not much emphasis has been placed upon the factor analysis, and why it is not referred to in this section, is that it was not possible using the computer facilities available to include all the original physical variables in the factor analysis (see Appendix B). Thus a certain amount of subjective pre-selection of variables was necessary before applying the factor analysis. To avoid any mistaken interpretation therefore the original variables have been used in the analysis which forms the basis of this section.

The second technique available was that of partial correlation. Kendall has shown (see Siegel S., 1956) that the formula for non-parametric partial correlation is identical to the parametric formula, i.e.

$$r_{ij.k} = \frac{r_{ij} - (r_{ik})(r_{jk})}{\sqrt{1 - r_{ik}^2} \cdot \sqrt{1 - r_{jk}^2}}$$

with Kendall's Tau substituted for r.

By using partial correlation it is possible to identify those relationships which are spurious by observing the change in significance of the relationship when the main related variable is controlled for. In the following sections it has been necessary, due to the data handling limitations of the computer when dealing with non-parametric statistics, to rely on using parametric statistics in some cases. When this has been done the values of the first order correlations are given by both methods for comparison.

arison. Important findings were repeated using the non-parametric statistic, and have been included in the tables in that form.

The third technique, which has been used for the satisfactions with convenience in particular, was to select sub-samples of the sample population on the basis of social or behavioural characteristics. It is difficult to compare the magnitude of the correlations obtained from samples of different sizes, but the change in significance of the relationships between the sub-samples is of importance.

The nine dimensions which were investigated more closely are discussed in turn.

11.4.1 Friendliness (Table 11.27)

Satisfaction with friendliness was related to only four of the physical variables at the .05 level (11.2.9), but of these only the distance to a bus stop remains significant after the three social variables household size, school leaving age and age of the respondent have been controlled for. The weakness of the remaining relationship suggests as expected that the physical environmental conditions are not important with respect to this particular dimension.

11.4.2 Appearance (Table 11.28)

The controlling of the variables related to appearance was carried out in two stages. The first table shows the effect on the most highly correlated physical variables of controlling for two social variables - Age (using partial correlation), and Class (by dividing the sample into two groups: professional, managerial and non-manual in one group, and manual workers in the other group). Controlling for age made very little difference to the strengths of the relationships with the physical variables. Dividing

Table 11.27   Friendliness

Physical Variable	Kendall's Tau				
	First Order Correlation	controlling for			
		Household size	School leaving Age	Age	All 3 Social Variables
Density	.109*	.095+	.100+	.103+	-
Distance to Bus Stop	.106*	.114+	.105+	.116+	.113+
Length of View (rear)	-.094*	-.097+	-	-	-
% dwellings with all amenities	-.093*	-	-	-	-

Table 11.28   Appearance

Physical Variable	Kendall's Tau		Class	
	First Order Correlation	Controlling for Age	Non-manual etc. N=80	Manual N=236
Density of Trees	.250**	.249**	.440**	.198**
% dwellings in poor condition	-.226**	-.223**	-.332**	-.192**
% dwellings in very good condition	.220**	.220**	.116+	.249**
% dwellings in bad upkeep category	-.198**	N.A.	-.243**	-.189**
% households rented unfurnished privately	-.234**	-.229**	N.A.	N.A.
% households without cars	-.227**	-.223**	N.A.	N.A.

Significance Levels   **   .001

                 *   .01

                 +   .05

Table 11.28 Appearance (Continued)

Physical Variable	First Order Correlation	Pearson's r controlling for			
		Density of Trees	% dwellings in poor condition	% dwellings in bad up-keep cat.	Condition of respondent dwelling
Density of Trees	.299**	-	.289**	.270**	.305**
% dwellings in poor condition	-.227**	-.214**	-	-.185**	-.193**
% dwellings in bad upkeep category	-.209**	-.163*	-.162*	-	.189**
Distance to Main Road	.194**	.235**	.150**	.192**	.158*
% households renting unfurnished privately	-.292**	-.257**	-.266**	-.242**	-.252**
Condition of respondents dwelling	-.173**	-.184**	-.124*	-.147*	-
% households without cars	-.317**	-.231**	▼.308**	-.278**	-.295**
Frequency of Buses	-.200**	-.168**	-.170**	-.180**	-.215**
% households living at over 1½ pp room	-.177**	.082+	-.175**	-.141*	-.185**
% households having all amenities	.261**	.242**	.228*	.258**	.251**
% households renting from council	.179**	.227**	.142*	.165*	.154*

the sample into two groups does have a marked effect, for example the relationship between satisfaction and the density of trees and the percentage of dwellings in poor condition was improved for the non-manual group. This should not however be interpreted as meaning that this class group hold these features as more important, for the main reason for the improved relationship was the better range of values of the physical variables within this group. The findings, however, underline the importance of the amount of trees and the upkeep of the dwellings in the appearance of an area.

The second table shows the attempt to remove the spurious relationships by controlling for the four most closely related physical variables to satisfaction with appearance. Note that for the data handling reasons mentioned earlier Pearson's r has been used for this table. It will be noted from the table that the strengths of correlations with only a few variables is markedly reduced by controlling for any of the four physical variables shown: the percentage of dwellings in the bad upkeep category and the percentage of households living at over $1\frac{1}{2}$ persons per room are both reduced when the density of trees is controlled; the condition of the respondents dwelling is reduced in significance when the percentage of dwellings in poor condition is controlled for example.

The conclusion to be drawn is that the satisfaction with the appearance although primarily related to the amount of trees and to the condition of the dwellings was also related, not unexpectedly, to many other variables (and presumably to other variables which were not measured in this study). Further improvements in the measurement of the environment would appear to be necessary to identify more precisely the important aspects of an area's appearance.

11.4.3 Convenience

The convenience to six types of facility was investigated further at this stage (excluding convenience to work, the countryside, going out, and to nursery schools as being the least related to the satisfactions measured in the survey). In the discussion of convenience only the distance variables have been used (except frequency of buses), and controlling has been done on the basis of the data obtained on the respondents usual shopping, travel, etc. behaviour.

a) Convenience for Shopping (Table 11.29)

The distance to the respondent's usual shopping location, as well as to any secondary location used was recorded, along with the frequency with which the respondent shopped at each location. It is interesting to note that the distance to the most frequently used shops was slightly less strongly correlated with the satisfaction with shopping than was the distance to the nearest chemist (Tau values of -.181 and -.205 respectively). The distance to the less frequently used shops was not significantly related at the .05 level.

These findings suggest that irrespective of where respondents actually shop they have some idea of the convenience of their area for shopping. This conclusion is underlined when the respondents who rarely or never did any shopping are excluded from the sample - resulting in no improvement in the strength of the relationships as might have been expected.

Some more interesting differences are evident when the sample is divided into those who shopped every day, and those who shopped over once per week, but not every day. For those who shopped every day (23.4% of the sample), the distance to the nearest 'corner' shop was the most highly related variable (Tau -.293). For those who shopped less often the distance

Table 11.29   Convenience for Shopping

Physical Variable	Kendall's Tau			
	All Sample N=320	Shoppers only N=262	Everyday Shoppers N=73	Over once per week Shoppers N=177
Distance to a Chemist Shop	-.205[xx]	-.194[xx]	-.222[xx]	-.243[xx]
Distance to a general store	-.118[xx]	-.106[x]	-.293[xx]	-.027
Distance to Town Centre	-.157[xx]	-.152[xx]	-.218[x]	-.151[xx]
Distance to most used shopping location	-.181[xx]	-.183[xx]	-.152[+]	-.140[x]
Distance to secondary shopping location	-.025	N.A.	-.049	-.050

Significance levels   xx   .001

                       x   .01

                       +   .05

to a chemist was the most significant variable (Tau -.243), the correlation with the distance to a 'corner' shop being no longer significant.

Controlling for the ownership of cars, or for the social variables (not shown in table) made no significant changes to the relationships.

The importance of the distance to a chemist shop needs to be explained, and particularly why this particular variable is more highly related to satisfaction than the distance to the town centre. It is probably not the chemist shop itself which is of importance, but the fact that it is indicative of the size and range of shops available. In most cases in fact in Wakefield District the chemist shop was located in the town centre, but in a small number of case-study areas (e.g. Fitzwilliam) the chemist shop was

located in a secondary centre, containing a range of basic shops (green-grocers, supermarkets etc.). A further study would be required to invest-igate this point in more detail e.g. to identify whether any better indic-ator of shopping could be found e.g. banks or post offices.

b) Convenience for Buses (Table 11.30)

As with the satisfaction with shopping convenience partial correlation, controlling for the variations in the social variables, produced no signig-icant changes in the strength of the relationships examined. At the next stage the two case-study areas of Hemsworth and Fitzwilliam were excluded from the analysis. This was done because the bus service in these two isolated settlements were felt to perform a different function (namely inter-town services) from those in the other areas. The result of exclud-ing these two areas was to improve the strength of the relationship with the distance to the bus stop somewhat, whilst the frequency of the buses was no longer significant.

Table 11.30 Convenience for Buses

| Physical Variable | Kendall's Tau | | | | |
	All Sample N=310	All areas exc.Hemsw and Fitz-will. N=256	Bus users only N=197	Bus users over 1per week N=164	Bus users less than 1 per wk. N=142
Distance to Bus Stop	-.151[xx]	-.198[xx]	-.233[xx]	-.169[xx]	-.137[x]
Distance to Main Road	-.125[xx]	-.101[x]	-.074	-.025	-.259[xx]
Bus Frequency	.096[x]	.066	.058	.098[+]	.124[+]

The sample was also divided according to whether, and how often, the respondent used the bus. Taking all the bus users for all areas together the correlation of satisfaction with the convenience of buses with the distance to a bus stop was further strengthened, whilst the relationships

with the bus frequency and the distance to a main road were no longer sig-
nificant. When only those respondents who use the bus less than once a
week, or not at all, were taken the distance to a main road became the most
significant variable. This suggests that the non-bus users are likely to
equate bus routes with the main roads, even if this is not the case. Their
perceptions of the convenience of the buses is slightly more related to the
frequency of buses because they are less likely to be familiar with the
actual times of the buses and their waiting times would then be dependant
on the frequency of buses.

c) Primary School (Table 11.31)

Controlling for the social characteristics of the respondent resulted
in no significant change in the strength of the correlation with the dist-
ance to the nearest primary school. When the school users only were con-
sidered there was no improvement in the relationship, nor was the distance
to the school actually used related any more closely. This rather cur-
ious finding was mainly the result of the small range of distances involved
as well as the small size of the school users group (only 69 respondents).
As with shopping facilities it is clear that there is a general awareness
of the convenience of the school even if the respondents are not directly
involved in using the school.

Table 11.31 Convenience to Primary School

Physical Variable	Kendall's Tau					
	All Sample N=310	School Users only N=69	Controlling for			
			H'hold size	Age	Income	Length of res.
Distance to nearest Primary School	-.337**	-.323**	-.339**	-.337**	-.335**	-.338**
Distance to School actually used		-.269**				

d) Secondary School (Table 11.32)

The results of controlling for the social variable had a similar negligable effect as in the above case. Likewise when the small users group was selected the correlation of satisfaction with the distance to the nearest secondary school was reduced in strength. However when the distance to the school actually used was taken the correlation coefficient was increased to -0.328 in comparison to -0.160 for the distance to the nearest school. This finding of course reflects the greater 'choice' involved in secondary education compared with primary education, and perhaps also the lower general awareness of the location of secondary schools.

Table 11.32   Convenience to Secondary School

Physical Variable	Kendall's Tau					
	All Sample	School users only N=53	Controlling for			
			H'hold size	Age	Income	Length of residence
Distance to Secondary School (nearest)	-.252**	-.160^{+}	-.249**	-.256**	-.260**	-.251**
Distance to School actually used		-.328**				

Significance Levels   **   .001

                     *   .01

                     +   .1

e) Park (Table 11.33)

The satisfaction with the convenience to a park was significantly related to a number of variables at the .001 level, all of which were considerably reduced in significance when the distance to a park was controlled for (NB parametric statistics were used in this test). The distance to a chemists shop remained the only variable, apart from the distance to a park, which was significantly related to the satisfaction at the .001

level albeit with the strength of the relationship having been halved.

By selecting only those respondents who actually used a park the value of Tau was raised from -0.270 to -0.397. If the distance to the park actually used by the respondent was taken the value of Tau was further increased to -0.503. This illustrates the necessity of understanding residents behaviour when trying to identify the sources of satisfaction or dissatisfaction with an area.

f) Public House/Club (Table 11.34)

The measures of distance to a public house or club were not strongly related to satisfaction, and only a small improvement was achieved by selecting only those respondents who used them or by taking the distance to the pub or club they actually used. There are two main reasons for these findings: firstly that most of the case-study areas had a number of pubs or clubs within a very small radius (less than $\frac{1}{2}$ km) and secondly that many respondents visited a variety of pubs or clubs ranging in distance from 100 metres to 20 kilometres i.e. distance was not an important variable for many respondents in the sample.

11.4.4 Cleaness (Table 11.35)

Satisfaction with cleaness was investigated in two stages; firstly by selecting sub-samples from the sample population, and secondly by partial correlation.

The first sub sample comprised all the respondents except NCB tenants, because it was felt that NCB estates were a special category with respect to cleaness (see 5.2). As a result the correlations with the percentages of households with all basic amenities, and with the percentage of dwellings in poor condition were both improved. Secondly the sample was divided

Table 11.33   Convenience to a Park

| Physical Variable | Pearson's r | |
	First Order	controlling for Distance to a Park
Distance to a Park	$-.424^{**}$	–
Distance to a Chemist Shop	$-.358^{**}$	$-.181^{**}$
Distance to Town Centre	$-.210^{**}$	$-.139^{*}$
Density of Trees	$.225^{**}$	$.075$
% Households living at over 1½ pp room	$-.252^{**}$	$-.155^{*}$
Age of dwelling	$-.241^{**}$	$-.119^{+}$

| | Kendall's Tau | |
	All Sample	Park users only N=104
Distance to a Park	$-.270^{**}$	$-.397^{**}$
Distance to Park actually used	$-.380^{**}$	$-.503^{**}$

Table 11.34   Convenience to a Public House or Club

| Physical Variable | Kendall's Tau | |
	All Sample	Pub/Club users only N=205
Distance to nearest pub/club	$-.146^{**}$	$-.176^{**}$
Distance to pub/club actually used	–	$-.177^{**}$

Significance Level   **   .001

                      *   .01

                      +   .1

Table 11.35 Cleanness

Physical Variable	Kendall's Tau				Controlling for		
	All Sample N=317	Excluding NCB tenants N=277	Respondents with dwellings in very good condition N=66	Respondents with dwells. not in very good condition N=251	Income	Age	School leaving Age
% Household renting unfurnished privately	-.224**	—	-.243*	-.201**	-.226**	-.216**	-.222**
% Households renting from Council	.192**	—	.240*	.172**	.194**	.196**	.187**
% Households with all amenities	.190**	.247**	.193+	.180**	.193**	.196**	.194**
Density of trees	.171**	.167**	.014	.215**	.174**	.170**	.181
% dwellings in poor condition	-.161**	-.205**	-.083	-.176**			
Length of curtilage	.140**	.190**	-.007	.177**			
Distance to Main Road	.162**	.227**	.171+	.132**			

Table 11.35 Continued

Physical Variable	First Order Correlation	Pearson's r — Controlling for					
		% h/holds renting unf.priv.	% h/holds with all amenities	Density of Trees	% dwellings in poor condition	Length of Curt- ilage	Condition of resp's dwellings
% households renting unfurnished privately	-.247**	-	-.256**	-.222**	-.232**	-.258**	-.216**
% households with all amenities	.259**	.261**	-	.243**	.231**	.211**	.242**
Density of trees	.174***	.135+	.148*	-	.174**	.142*	.188***
% dwellings in poor condition	-.159*	-.128+	-.116+	-.147*	-	-.130*	-.144*
Length of curtilage	-.189***	.203***	.111+	.147*	.164*	-	.203**

Significance Levels   **   .001   *   .01   +   .1

into two groups on the basis of the condition of the respondents dwelling. Taking only those respondents with dwellings in the best condition the tenure variables alone remained significant at the .01 level, possibly because of the small variation in the other variables within this small group. Taking the other (larger) group, with 80% of the sample population, the main relationships which were improved were those with the density and the density of trees, although the change was not great.

Partial correlation was carried out in two phases. The social variables were first controlled using non-parametric partial correlation. No significant changes in the original relationships were evident for the four variables to which the controls were applied. In the second phase parametric partial correlation was used in an attempt to identify any spurious relationships. In fact when the two census variables indicating the tenure and the internal dwelling quality were controlled the next three variables in strength of relationship were much reduced in significance. When the two census variables were tested by controlling for the other variables their relationships with satisfaction were shown to be robust i.e. they remained significantly related at the .001 level.

Tenure was shown to be a key variable, along with dwelling amenities, but it is not clear what tangible aspects of tenure or dwelling quality are actually related to the satisfaction. The interpretation is made difficult because these particular variables are census variables and therefore refer to areas rather than to specific aspects of the environment which residents would see. Further work is therefore necessary to identify the tangible correlates of tenure and dwelling amenities.

11.4.5. Suitability for Children (Table 11.36)

Controlling for the social variables again had little effect on the strength of the correlations with satisfaction, the density of trees remaining as the strongest variable.

The use of partial correlation showed that the density of trees and the percentage of dwellings in poor condition were fairly robustly related to the satisfaction, whereas the strengths of the relationships with the other four variables were reduced when controlling for the tree density or the dwelling condition. The implication of the results is that lower density areas with more trees and better quality housing are regarded as more suitable for children. The location of such a dwelling would appear to be a secondary consideration.

11.4.6 Safety (Table 11.37)

The respondents who had said that in answering the question on safety they had been concerned with safety other than from traffic (only 22 persons) were first excluded from the sample. The strengths of the relationships for the remainder of the sample were not markedly different from those of the total sample. The most highly related variable remains the percentage of dwellings in poor condition in the vicinity.

When those respondents who lived in a household which included children were taken as a group the strength of this latter relationship was reduced, and the distance to a 'corner' shop became the strongest. The reason for this, as suggested earlier, may be that terraced areas, in which corner shops are usually close at hand, are seen as being slightly more dangerous because of their road layouts. The weakness of the relationships may have resulted from a uniform concern with safety which was, to some extent, independant of the actual conditions.

Table 11.36 Suitability for Children

Physical Variable	Kendall's Tau			
	First Order Correlation	controlling for		
		Age	Household Size	Length of Residence
Density of Trees	.206**	.205**	.207**	.204**
% dwellings in Poor Condition	-.200**	-.194**	-.204**	-.204**
% dwellings in bad upkeep category	-.182**	-.167**	-.174**	-.176**

	Pearson's r			
	First Order Correlation	controlling for		
		Density of of trees	% dwellings in poor condition	% dwellings in bad upkeep category
Density of trees	.22**	-	.214**	.194**
% dwellings in poor condition	-.224**	-.209**	-	-.182**
% dwellings in bad upkeep cat.	-.212**	-.174*	-.166*	-
% h/holds living at over 1½ pproom	-.217**	-.152*	-.220**	-.180*
% h/holds without cars	-.198**	-.121+	-.183**	- .146*
length of curtilage	.198**	.150*	.161*	.181*

Significance levels   **   .001

                 *   .01

                 +   .1

Table 11.37 **Safety**

Physical Variable	All Sample	Safety from traffic only N=298	Households with children only N=96	Small h/holds only N=117	Controlling for School leaving Age	Controlling for Household Size	Controlling for Age
				Kendall's Tau			
% dwellings in poor condition	-.195**	-.199**	-.184**	-.217**	-.186**	-.185**	-.190**
Length of view (rear)	.160***	.165***	.137+	.183*	.169***	.159*	.165*
Distance to general shop	.173**	.171***	.191*	.166***	.184***	.182***	.180***
% households renting unfurn. privately	-.159**	-.158**	-.183*	-.096	-.155*	-.157*	-.150*
% dwellings in bad upkeep category	-.152**	-.157**	-.143+	-.097			
Distance to pub/club	.140**	.134**	.104	.167*			
Width of road	-.128**	-.137***	-.138+	-.112+			

Table 11.37 Continued

Physical Variable	Pearson's r		
	First Order Correlation	controlling for % dwellings in poor condition	Distance to Corner shop
% dwellings in poor condition	-.187[xx]	-	-.150[x]
Length of view (rear)	.100[+]	.080	.071
Distance to Corner shop	.192[xx]	.161[x]	-
% households renting unfurnished privately	-.182[xx]	-.157[x]	-.140[x]
% dwellings in bad upkeep category	-.173[xx]	-.131[+]	-.141[x]
Width of Road	-.143[+]	-.136[x]	-.080

Significance levels   xx   .001

                    x   .01

                    +   .1

When the percentage of dwellings in poor condition and the distance to a corner shop were used as controls in partial correlation the significance of the other relationships was markedly reduced, the length of the view and the width of the road being no longer significantly related at the .05 level. Without measures of actual traffic flows it is not possible to show that concern for safety was relatively independant of the actual conditions, but the analysis points to this conclusion.

11.4.7 Air Quality (Table 11.38)

The further analysis of the satisfactions for this dimension parallels that of the cleaness dimension very closely. Excluding NCB tenants from the sample improved the relationships with a number of variables, notably the proportion of dwellings in poor condition, and the percentage of households

Table 11.38   Air Quality

Physical Variable	Excluding NCB tenants N=277	Respondents dwelling in very good condition N=65	Respondents dwelling not in very good cond. N=247	Kendall's Tau Controlling for			
				Income	Age	School leaving age	length of residence
% h/holds having all amenities	.247***	.265***	.180**	.201***	.202***	.201***	.194***
% h/holds renting unf. privately	—	-.227*	-.171***	-.178***	-.168*	-.172***	-.172***
% dwellings in poor conditions	-.204***	-.172+	-.158***	-.177***	-.162*	-.164*	-.164*
Frequency of buses	-.196***	-.194+	-.173***				
Density of trees	-.161***	-.043	-.203***	.159*	.162	.152*	.157*
Distance to Main Road	.186***	.159+	.119*				
Length of curtilage	.164***	-.009	.151**				

Table 11.38 Continued

Physical Variable	Kendall's Tau	First Order Correlation	Pearson's r controlling for		
			% h/holds having all amenities	% h/holds renting unfurnished privately	% dwellings in poor condition
% households having all amenities	.197**	.267***	-	.272***	.240***
% households renting unfurnished privately	-.175***	-.195***	-.197***	-	-.179***
% dwellings in poor condition	-.166***	-.164**	-.119+	-.139*	-
Bus frequency	-.165***	-.234***	-.088	-.241***	-.204***
Density of trees	-.159***	.151*	.122+	.119+	.138*
Length of curtilage	.131***	.163*	.080	.173*	.146*
Distance to Main Road	.135***				

Significance levels   *** .001   ** .01   + .1

with all amenities. Taking just the respondents who had dwellings in very good condition, the latter variable was the only one which remained significant at the .001 level. When the remaining respondents were considered the density of trees became the strongest related variable (as with Cleanness).

The partial correlations, using the social variables as controls, produced no change in the relationships. Using the physical variables as controls however showed again that the two census variables indicating tenure and dwelling amenities were robustly related to the satisfaction with Air Quality, whereas much of the strength of the other variables relationships was spurious and due to the interrelationships with the two census variables.

11.4.8 Privacy (Table 11.39)

The three most significant relationships with the satisfaction with privacy were investigated at this stage, partial correlation being carried out with the social variables as control variables. When the age of the respondent was controlled the three relationships were reduced in significance if not in strength. The weak link between the physical environment and satisfaction with privacy was not altogether surprising, as discussed earlier (11.2.11).

When the correlations between the satisfaction and three of the physical variables was controlled by the density of trees the correlations were markedly reduced in strength. When the census variable percentage of households living at over $1\frac{1}{2}$ persons per room was controlled a similar result was obtained. According to this (parametric) test the census variable appeared to be more robustly related to satisfaction, if only marginally.

Table 11.39 Privacy

Physical Variable	First Order Correlation	Kendall's Tau controlling for				
		H/hold Size	Age	School leaving Age	Income	Length of residence
Density of trees	.165**	.168*	.165*	.186**	.169**	.163*
% h/holds living at over 1½ pp room	-.138**	-.120#	-.116+	-.139*	-.134*	-.128+
% dwellings in poor condition	-.131**	-.138*	-.122+	-.120+	-.141*	-.135*

Physical Variable	First Order Correlation	Pearson's r Controlling for	
		Density of trees	% h/holds living at over 1½ pproom
Density of trees	.182**	–	.128+
% households living at over 1½ pproom	-.186**	-.133*	–
% dwellings in poor condition	-.119+	-.107+	-.117+
Age of dwelling	-.145*	– .103+	-.080

11.4.9 Private Upkeep (Table 11.40)

The analysis of satisfaction with upkeep was carried out in two stages; in the first stage two different sub-samples were selected on the basis of dwelling condition and tenure, and in the second stage partial correlation was carried out.

When the respondents whose dwellings were not in the best condition were taken as a group the strengths of most of the correlations were improved, notably the census variable of occupation density, dwelling upkeep and car ownership. When council tenants were excluded from the sample (on the grounds

Table 11.40 <u>Private Upkeep</u>

Physical Variable	Kendall's Tau						
	All Sample	Responds dwells. not in best con N=244	Non-Council tenants N=16?	Controlling for			
				Age	School leaving Age	H/hold size	Income
% h/holds over 1½ p p room	-.208**	-.226**	-.293**	-.196**	-.208**	-.203**	-.206**
% dwells. in best up-keep cat.	.164**	.156**	.219**	.163*	.172**	.159*	.170**
% dwells. in v.good cond.	.157**	.163**	.155**	.157*	.162*	.158*	.162*
% dwells. in bad upkeep category	-.161**	-.181**	-.185**	-.148*	-.159*	-.156*	-.159*
% h/holds without cars	-.155**	-.182**	-.241**	-.148*	-.164*	-.152*	-.159*

Significance levels   **   .001
                 *   .01
                 +   .05

Table 11.4C Continued

Physical Variable	First Order Correlation	Pearson's r		
		Controlling for		
		% h/holds at over 1½ pp room	% dwellings in good upkeep	% dwellings in very good condition
Households living at over 1½ p p room	-.267**	-	-.232**	-.294**
% dwellings in good upkeep category	.192**	.139*	-	.161*
% dwellings in best condition	.144*	.191**	.098+	-
% dwellings in poor upkeep category	-.230**	-.190**	-.198**	-.206**
% Households without cars	-.203**	-.114+	-.141+	-.185**

Significance levels ** .001

** .01

+ .05

that private upkeep had a slightly different meaning for council tenants) the two census variables of occupation density and car ownership were considerably strengthened compared with the other variables

Partial correlation, controlling for the social variables, particularly age, reduced the significance of the relationships except with the occupation density which appeared to be more robust. When the physical variables were used to control the relationships it was notable that the occupation density remained significantly related at the .001 level, as did the proportion of dwellings in the bad upkeep category. The other relationships were weakened when the controls were applied showing them to be spurious, in part at least.

The reason why the census variable of occupation density should be related to upkeep is puzzling, as it is not clear what the visible attributes of the census variable are. Two areas which had higher than average occupation densities (Kevison (W) and Warwick) both had problems of both private and public upkeep, and were both areas which were reception points for immigrant mining families from Scotland and Durham. This latter point appeared to contribute to residents negative attitudes to aspects of the area. It is possible that the responses from these two areas have affected the relationships to some extent. The field measure of upkeep condition was also related to the satisfactions with upkeep, even after controlling.

11.5 SATISFACTION WITH THE ENVIRONMENTAL DIMENSIONS - SUMMARY AND CONCLUSIONS

11.5.1 The respondents' satisfactions with the separate environmental dimensions were found to be related to the measures of the environment, although the relationships were not straightforward or clear. In general the relationships (while highly significant) were not very strong, although they are comparable in strength with the findings of other research in this field, (see 6.5.2 for a summary of the relationships, and comparisons with other research).

11.5.2 The respondents' satisfactions were also related to their social characteristics, and particularly their age. These relationships were independant of the environmental variables. No account has been taken yet of the respondents' preferences, which will be discussed more fully later (Ch.13).

11.5.3 The assessment of convenience depends very much upon the behaviour pattern of the respondent, and must therefore be related to that. This is especially the case for shopping and the use of parks (11.4.3).

11.5.4 The satisfactions with Friendliness and Privacy were more related to the social variables than to the physical variables. When the social variables were controlled the strengths of the few relationships with the physical variables were markedly reduced (11.4.1; 11.4.8).

However, controlling for the social variables, had little effect on the correlations between the physical variables and the satisfactions with the remaining Dimensions.

11.5.5 It is interesting to note that the census variables were often as highly related to satisfactions as the variables measured in the field. The problems of interpreting the census variables have been mentioned. However the strength of the relationships with the census variables suggests that they were as useful as on-site measurements for crude predictions of satisfaction - bearing in mind that both types of variables were weakly related to satisfaction.

11.5.6 The tentative use which was made of the (partial) factor analysis showed the potential of using this technique for interpreting the relationships, in comparison with partial correlation. Unfortunately with the facilities available it was not possible to exploit factor analysis with the number of variables and respondents involved.

11.5.7 Finally in this section reference must be made to the third hypothesis, which stated that respondents could be grouped on the basis of their common satisfactions (10.5.2). However this was not practicable for two main reasons:

a) The scatter of satisfaction responses, even after controlling for the physical variables, was large and did not fall into discrete groups.

b) The relationships between the satisfactions and the social variables was

weak and did not assist in the selection of groups. Even where it might have been expected to help (e.g. households with children, tenure groups etc.) the differences in satisfaction responses between the groups were insufficient to be able to identify groups - especially as more than one dimension needs to be considered.

The only groups which were selected, and which demonstrated significant differences in satisfaction were based on shopping and park visiting behaviour. However these groups only hold for those convenience dimensions in question, and hence are of limited general use.

The grouping of respondents on the basis of their preferences remains a possibility, and will be discussed later (Chapter 13).

Chapter 12

OVERALL SATISFACTION

12.1 INTRODUCTION

This chapter is devoted to the analysis of the hypotheses that an individual's overall satisfaction with the environment is a function of his satisfactions with each of the separate environmental dimensions (10.5.2).

The satisfactions expressed with the dimensions of the environment are indeed highly correlated with overall satisfaction, so that the nul hypothesis that there is no relationship can be rejected (Table 12.1).

However when one wants to measure the relative strengths of the relationships with overall satisfaction a number of problems are apparent. The first of these is that the research model assumed that the environmental dimensions were independant, and yet the satisfactions measured for the separate dimensions were clearly not independant (Table 12.2). Most satisfactions were inter-correlated with values of Tau between 0.2 and 0.4, including those dimensions which one would not expect to be related e.g. Noise and Privacy or View etc.

These inter-relationships among the satisfactions would seem to stem from four sources which were not included in the original model (or hypotheses):

a) The fact that satisfactions with the different dimensions of the environment shared common 'determinants' among the physical variables. The prime example was the two dimensions Cleaness and Air Quality (see 11.2.2; 11.2.3).

b) The possibility that an individual's overall satisfaction influenced the satisfactions expressed with the component dimensions of the environment, i.e. that there is 'feedback' from Overall Satisfaction.

c) The probability of an element of 'instrument error' deriving from the
juxtaposition of the measurement scales in the questionnaire (see 10.4).

d) The satisfactions with the different dimensions, and with the environment as a whole, may have had common social determinants.

In order to be able to determine the relative contributions which the separate satisfaction may make to Overall Satisfaction these additional influences have to be included in the assumed additive model of satisfaction. The revised model of the possible processes is shown in Figure 12.1 below.
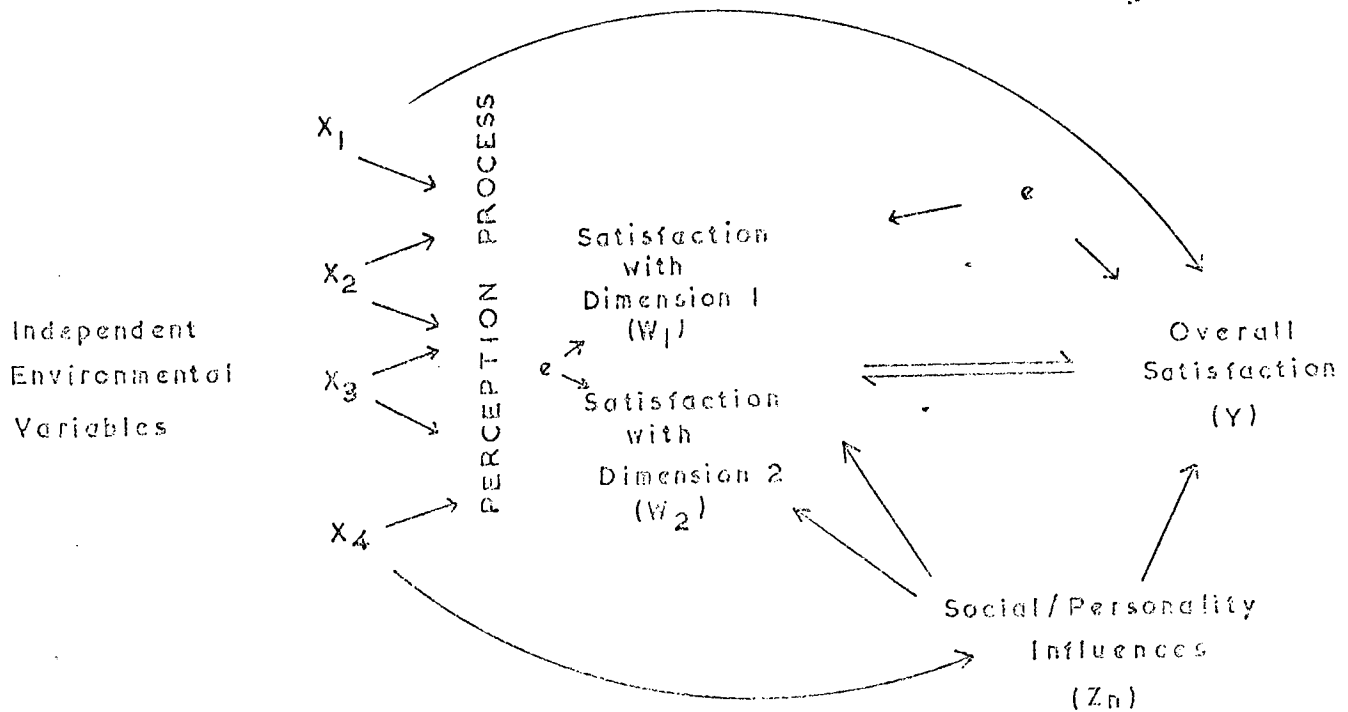
Figure 12.1 The build up of Overall Satisfaction with the Environment

Table 12.1   Correlations between Overall Satisfaction and Satisfactions
with the separate Environmental Dimensions

Environmental Dimension	Correlation Coefficient (Kendall's Tau)
Appearance	.463
Layout	.459
Reputation	.439
Cleaness	.428
View	.391
Upkeep	.374
Air Quality	.356
Council Upkeep	.323
Overall Convenience	.320
Suitability for Children	.320
Privacy	.319
Greeness	.295
Safety	.277
Noise	.256
Friendliness	.241
Car Parking	.200

N.B. All correlations significant at .001 level

	Cleaness	Air Quality	Noise	Safety	Private Upkeep	Council Upkeep	Suitability for children	Friendliness	Appearance	Privacy	Car Parking	Reputation	View	Layout
Greeness	.336 **	.287 **	.207 **	.220 *	.108 **	.166 **	.367 **	.112 *	.376 **	.149 **	.137 *	.228 **	.352 **	.308 **
Cleaness		.493 **	.307 **	.265 **	.293 **	.405 **	.306 **	.083 +	.449 **	.198 **	.117 **	.399 **	.313 **	.343 **
Air Quality			.265 **	.213 **	.230 **	.232 **	.217 **	.056	.401 **	.136 **	.021	.236 **	.307 **	.306 **
Noise				.365 **	.219 **	.159 **	.234 **	.069 +	.252 **	.331 **	.212 **	.196 **	.265 **	.270 **
Safety					.148 **	.174 **	.299 **	.146 **	.221 **	.323 **	.189 **	.249 **	.277 **	.338 **
Private Upkeep						.290 **	.136 **	.212 **	.332 **	.263 **	.235 **	.369 **	.261 **	.252 **
Council Upkeep							.216 **	.125 **	.285 **	.185 **	.164 **	.339 **	.210 **	.249 **
Suitability for Children								.195 **	.359 **	.204 **	.215 **	.293 **	.351 **	.364 **
Friendliness									.110 *	.188 **	.192 **	.190 **	.107 *	.142 **
Appearance										.239 **	.231 **	.375 **	.467 **	.475 **
Privacy											.236 **	.312 **	.221 **	.281 **
Car Parking												.294 **	.195 **	.280 **
Reputation													.235 **	.374 **
View														.443 **

Significance levels **   .001
               *   .01
               +   .05

The model includes the possibility that the satisfactions expressed with the separate dimensions (W_1, W_2 etc.) 'share' the independant physical variables (X_1, X_2 etc.); that the measured satisfactions, including Overall Satisfaction, are affected by instrument error (e); and that the satisfactions may share common social or personality influences (Z_n). The directions of 'causation' are not definitively stated in the model, leaving the possibility that the separate satisfactions are 'caused' by the Overall Satisfaction, or vice versa.

This model has been investigated using the method of causal inferences using partial correlation in the manner outlined by Blalock (Blalock H.J., 1964). The essence of the technique is that by controlling for common independant variables certain links in the model can be eliminated as the relationships are shown to be spurious. The relationships which should disappear can be predicted from the postulated model, and hence the hypothesised model can be verified, altered or rejected.

Before turning to the core of the model, i.e. the relationship through the separate satisfactions between the physical variables and overall satisfaction, the other possible determinants of overall satisfaction will be dealt with.

12.2 SOCIAL/PERSONALITY INFLUENCES ON OVERALL SATISFACTION

In fact no personality measures were made during the survey, so this discussion is restricted to the social variables measured. The respondent's satisfaction with his or her home has been included among the social variables as a control variable. It was assumed that a person's satisfaction with their areas would be influenced also by their satisfaction with their homes, in additional to the physical variables relating to the surrounding environment.

The first possibilities to be tested were a) that overall satisfaction was independant of the Social/Personality variables i.e. $rZnY = 0$ and, if not, b) that the relationships were spurious and dependant only upon the common environmental determinants (Fig. 12.2) i.e. $rZnY.Xn = 0$.
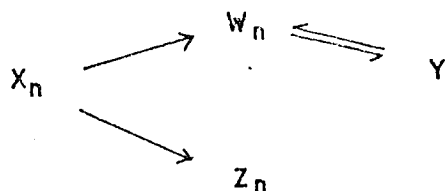
Figure 12.2   Model A: Overall satisfaction independant of Social/ Personality Variables

In order to test these two propositions the first order correlations between the social variables and overall satisfaction were obtained (Table 12.3), and then the partial correlations controlling for the environmental variables were calculated. The environmental variables which were most strongly correlated with overall satisfaction were chosen, nine in all.[1]

Table 12.3 Correlation between Overall Satisfaction and the Social Variables

Social Variable	First Order Correlation		Correlation controlling for physical variables	
	Kendall's Tau	Significance Level	Kendall's Tau	Significance Level
Satisfaction with the Home	.375	.001	.339	.001
Age	.207	.001	.186	.001
Household Size	-.135	.001	-.138	.01
Income	-.134	.001	-.147	.001
Length of Residence	.084	.05	.100	.05

(1)   The following nine variables were controlled for: Age of dwelling; % of dwellings in very good condition; % of dwellings in poor condit- ion; % of dwellings in bad upkeep category; Density of trees; Density; % of households with all basic amenities; % of households renting unfurnished privately; % of households without cars.

It can be seen from Table 12.3 firstly, that overall satisfaction is significantly correlated with several social variables (i.e. $r\bar{z}nY \neq 0$); and secondly that all the relationships remain significant after controlling for the environmental variables (i.e. $r\bar{z}nY.Xn \neq 0$).

Hence it can be concluded that the five social variables are significantly related to the overall satisfaction independantly of the physical conditions.

12.3 SOCIAL INFLUENCES ON THE SATISFACTIONS WITH THE SEPARATE DIMENSIONS OF THE ENVIRONMENT

It was firmly established in the last chapter (11.3) that the satisfactions with the separate dimensions were influenced by the social characteristics of the individuals. At that time no attempt was made to control for the possibility that the social variables were correlated with the environmental variables, and that their relationship with the satisfactions may have stemmed from this. To test for this possibility nine environmental dimensions were selected (see 11.4), and the partial correlations of the satisfactions with the separate dimensions with the social variables, controlling for the environmental variables was obtained (i.e. $r\bar{W}nZn.Xn$). Parametric correlations were used because of the data handling limitations of the computing facilities. The environmental variables controlled were the same as in the previous section (see note to 12.2).

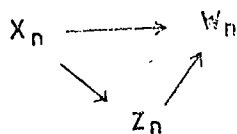Figure 12.3 illustrates the relationships in question.

Figure 12.3   Model F Satisfactions with Environmental Dimensions spuriously related to Social Variables

As table 12.4 shows although a number of significant first order correlations were no longer significant after controlling, the majority of the correlations remain significant. It is interesting to note the social variable which loses the largest number of significant relationships is age (which was seen as the most important social variable in the previous chapter), suggesting that there is a stronger correlation between age and the physical environment, than, say, for household size. The conclusion to be drawn is that in most cases the social variables influence the satisfaction with the separate dimensions independantly of the environmental conditions i.e. $r_{W_n Z_n . X_n} \neq 0$.

Having established that the social variables have some independant influence on both Overall Satisfaction and the separate satisfactions the main body of the model can be examined i.e. the relationship between overall satisfaction (Y) and the separate satisfactions (W_n). A number of different models will be put forward and tested in turn.

12.4 Model C: Overall Satisfaction is Independant of the Satisfactions with the Separate Dimensions of the Environment

If overall satisfaction were independant of the separate satisfactions then one would expect the correlation between the two to equal zero if the common background social variables are controlled for, i.e.

$$r_{W_n Y . Z_n} = 0 \qquad \text{(Fig 12.4)}$$
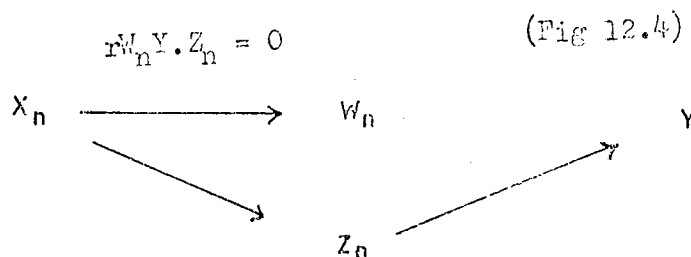
$$X_n \longrightarrow W_n \qquad\qquad Y$$

$$Z_n$$

Figure 12.4 Model C: Overall Satisfaction independant of separate satisfactions

The partial correlation coefficients are given in table 12.5. The controlled variables were satisfaction with the home, age, household size,

Table 12.4 Correlation between the social variables (including the satisfaction with the home) and satisfaction with the Dimensions of environment. Controlling for the environmental variables.

Environmental Dimension	Social Variable					
	Length of Residence	Age	Household Size	Income	School leaving Age	Satisfaction with home
Cleaness	.032	.095	-.023	$-.119^+$	-.072	$.233^{**}$
Air Quality	-.025	.033	.014	$-.183^*$	$-.157^*$	$.215^{**}$
Safety	.083	.094	$-.146^+$	-.005	$-.147^+$	$.167^*$
Private Upkeep	.038	.038	-.042	-.111	-.061	$.131^*$
Suitability for children	$.175^*$	$.189^*$	$-.181^*$	-.061	$-.132^*$	$.129^+$
Friendliness	.064	$.134^+$	$-.220^{**}$	-.064	$-.192^{**}$	$.127^+$
Privacy	.080	$.128^+$	$-.200^{**}$	-.079	-.084	$.164^*$
Appearance	-.031	.040	-.010	-.037	-.070	$.306^{**}$
Convenience	-.089	$.129^+$	-.208	$-.152^+$	-.105	$.258^{**}$

Significance levels ** .001

                    * .01

                    + .05

N.B. Parametric Partial Correlation Used. See 12.2 for controlling variables. Relationships which were significant before controlling, and which are no longer significant at the .05 level after controlling, have been underlined.

Table 12.5 Correlation Between Overall Satisfaction and the Separate

        Satisfactions

Satisfaction Dimension	Correlation(1) with Overall Satisfaction (Kendall's Tau) controlling for:	
	Social Variables	Social and Environmental variables
Cleaness	.375	.340
Air Quality	.304	.251
Friendliness	.192	.192
Private Upkeep	.306	.275
Privacy	.236	.204
Convenience	.224	.218
Suitability for children	.255	.256
Safety	.212	.180
Appearance	.391	.353

(1) All correlations significant at the .001 level.

income, and length of residence. All the relationships of overall satisfaction with the separate satisfactions remained significant at the .001 level.

Thus $r_{WnY.Zn} \neq 0$, and as it stands overall satisfaction is not independant from the separate satisfactions. There is , however, another possible source of a correlation, and that is any _direct_ relationship between the environmental variables and overall satisfaction. Thus in order to show whether overall satisfaction is independant of the separate satisfactions the environmental variables should also be controlled (i.e. show whether $r_{WnY.ZnXn} = 0$).

However after controlling for both the social and the environmental variables, the relationships between overall satisfaction and the satisfactions with the separate dimensions remain significant i.e. $rWnY.ZnXn \neq 0$ (Table 12.5).

Thus there is an independant relationship between the separate satisfaction and the overall satisfaction; and Model C can be rejected.

12.5 Model D: Overall Satisfaction 'causes' the Satisfactions with the Separate Environmental Dimensions

If this second model is to be valid not only must overall satisfaction be related to the satisfactions with the dimensions independantly of the social influences (verified above), but it must also be independant of the physical variables when social variables are controlled (i.e. $rXnY.Zn \neq 0$) (Fig 12.5)
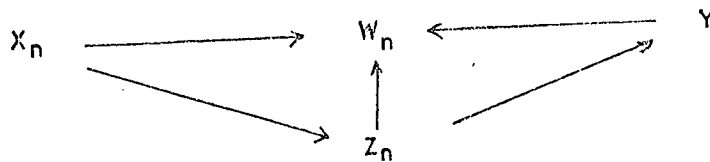
Figure 12.5 Model D: Overall Satisfaction 'causes' Separate Satisfactions

However the overall satisfaction is significantly related to a number of physical variables at the .01 level and above (Table 12.6), although the relationships are weakened after controlling for the social variables.

Thus the overall satisfaction is not entirely independant of the physical variables, i.e. $rX_nY.Z_n \neq 0$, and this suggests that this model in which overall satisfaction 'causes' the other satisfactions is not verified either.

Table 12.6 Correlation between Overall Satisfaction and the Physical

            Variables

Physical Variables	First Order Correlation		Controlling for Social Variables	
	Kendall's Tau	Significance level	Kendall's Tau	Significance
% dwellings in poor condition	-.239	.001	-.219	.001
% dwellings in bad upkeep category	-.197	.001	-.118	.020
% households living at abover 1½ pp room	-.167	.001	-.098	.043
% dwellings in very good Condition	.157	.001	.141	.007
% households renting unfurnished privately	-.149	.001	-.126	.014
% households without cars	-.118	.001	-.065	.128
Density	-.109	.01	-.117	.020
% Households with all basic amenities	.103	.01	-.125	.014
Density of Trees	.100	.01	.070	.110
Length of Curtilage	.098	.01	.080	.083
Distance to a General Store	.094	.01	.072	.105

12.6 Model E: Satisfactions with the separate environmental dimensions

            'cause' overall satisfaction

    If the model in which the separate satisfactions 'cause' the overall

satisfaction is to be verified then three conditions should be satisfied.

The first two, already verified, are that overall satisfaction must not be

independant of the separate satisfactions, or of the physical variables.

    The third condition is that, assuming that each of the environmental

dimensions is independant, the correlations between the separate satisfact-

ions, controlling for the social background variables should be zero; i.e.
$rW_1W_2 \cdot Z_n = 0$ (Fig 12.6).
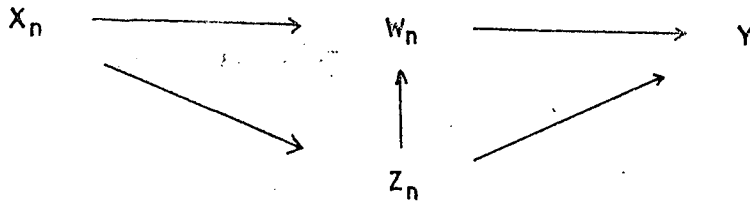
Figure 12.6 Model E: Separate Satisfactions 'cause' Overal Satisfaction

Table 12.7 shows the results of the analysis. Only seven of the thirty six interrelationships in the correlation matrix were no longer significant at the .05 level, although many of the relationships had been weakened (compare with table 12.2).

Table 12.7 Nonparametric partial correlation matrix - Controlling for Social Variables (see text)

Satisfaction with	Air Quality	Friendliness	Private Upkeep	Privacy	Convenience	Suitability for children	Safety	Appearance
Cleaness	.453 xx	.051	.243 xx	.146 x	.134 +	.277 xx	.232 xx	.405 xx
Air Quality		.031 x	.179 xx	.088	.020	.195 xx	.188 xx	.354 xx
Friendliness			.180 xx	.142 x	.277 xx	.159 x	.108 +	.067
Private Upkeep				.213 xx	.076	.089	.100 +	.271 xx
Privacy					.126 +	.145 x	.276 xx	.189 xx
Convenience						.216 xx	.122 +	.151 x
Suitability for Children							.259 xx	.325 xx
Safety								.185 xx

Significance levels xx   .001

x   .01

+   .05

Thus the third condition is shown not to hold i.e. $rW_1W_2 \cdot Zn \neq 0$, and on this first analysis the hypothesised model in which the separate satisfactions 'cause' the overall satisfaction cannot be accepted. However it was assumed for the test that the dimensions were independant, and it was shown in the last chapter that this was not the case, as several of the dimensions were related to common physical variables. If these physical variables are controlled for in addition to the background social variables the inter-correlations should be reduced to zero i.e. $rW_1W_2 \cdot X_n Z_n = 0$.

The results of this partial correlation are given in table 12.8. Although the strength of the relationships is further reduced still only seven correlations are no longer significant at the .05 level i.e. $rW_1W_2 \cdot X_n Z_n \neq 0$. If all the physical independant variables have been successfully controlled for[1] then there are two possible explanations of the remaining correlations:

a) that the generation of satisfaction is a two-way process, with the
    overall satisfaction being 'caused by' and 'causing' the separate sat-
    isfaction;, or

b) instrument error i.e. the halo effect from the juxtaposed scales in
    the questionnaire.

The problems of investigating reciprocal causation are great as Blalock has pointed out (Blalock H.J., 1964). Ideally some kind of time series data is required to enable one variable to be 'lagged' in time, and hence to be regarded as the "cause" at time $(t-1)$, resulting in a dependant variable which then becomes the "cause" at time (t). However no such time

(1) The weak correlation between the physical variables and the satis-
     factions suggests that possibly not all the significant physical
     variables have been measured.

Table 12.8 _Nonparametric partial correlation matrix, controlling for the Physical and social variables_

Satisfaction With	Air Quality	Friendliness	Private Upkeep	Privacy	Convenience	Suitability for children	Safety	Appearance
Cleaness	.381 xx	.077	.236 xx	.110 +	.132 +	.231 xx	.152 x	.321 xx
Air Quality		.059	.170 x	.053	.016 +	.128 +	.123 +	.267 xx
Friendliness			.150 x	.160 x	.256 xx	.191 xx	.147 x	.114 +
Private Upkeep				.191 xx	.015	.059	.100 +	.253 xx
Privacy					.109	.165 x	.016	.154 x
Convenience						.220 xx	.160 x	.144 x
Suitability for Children							.244 xx	.258 xx
Safety								.104 +

Significance levels xx .001
x .01
+ .05

Physical Variables controlled for (see Appendix A for key):

AGEBLDG, WALLREPI, VAR017, VAR019, VAR022, VAR023, PTHLIT, RDWTH, TREES,

VAR026, VAR033, VAR034, VAR035, NOHSES, LCURT, BSFRE, ALLAMEN, COUNL, PUNF,

PPROOM, CAROWN

Social Variables controlled for: AGE, INCOM, HSHSIZE, SATHOM, LRES

series data was available.

One final analysis was carried out to investigate whether the instrument error could be shown to be affecting the correlations. The correlations matrix for the satisfactions with the separate dimensions of the environment, controlling for the social and physical variables and for the overall satisfaction, was calculated[1] (Table 12.9). Twenty of the original correlations were no long significant, and it is instructive to examine the remaining significant relationships. If the instrument error was the main cause of the remaining relationships then it would be expected that the variables which were juxtaposed on the questionnaire would be the remaining variables. However this is not the case.

Intuitively the reason for the remaining relationships would seem to be common physical determinants which were not measured in the survey, and hence have remained uncontrolled throughout the analysis. It is obviously not possible to verify this with the survey data available, but the fact that the remaining relationships are between satisfactions with aspects of appearance (upkeep, cleaness, air quality, suitability for children), concern for children (safety, suitability for children), and social aspects (privacy, friendliness) suggests that the reason given is sound.

12.7 Conclusion

This chapter has been concerned with the way in which overall satisfaction is derived. The issue was complicated by the high degree of correlation among the separate satisfactions. The three simple forms of the model of satisfaction had to be rejected: that in which overall satisfaction

---

(1) Strictly this violates the rule of not controlling for the dependant variable. However in this exploratory exercise it was felt to be justified.

Table 12.9 <u>Nonparametric partial correlation matrix, controlling for</u>

<u>physical and social variables, and overall satisfaction</u>

Satisfaction With	Air Quality	Friendliness	Private Upkeep	Privacy	Convenience	Suitability for children	Safety	Appearance
Cleaness	.328 **	–	.160 *	–	–	.155 *	–	.233 **
Air Quality		–	–	–	–	–	–	.203 **
Friendliness			.104 +	.125 +	.225 **	.148 *	–	–
Private Upkeep				.141 *	–	–	–	.177 **
Privacy					–	.120 +	.223 **	–
Convenience						.173 *	–	–
Suitability for Children							.209 **	.181 **
Safety								–

Significance levels ** .001
                 * .01
                 + .05

relationships less significant not shown

Physical and social variables controlled - as in Table 12.6; Overall

Satisfaction also controlled.

is independant of the separate satisfactions, that in which overall satis-

faction causes the separate satisfactions, and the third model in which

overall satisfaction is derived from the satisfactions with the separate

environmental dimensions.

The most likely explanation, which could not be verified with the data from this survey, is that there is a reciprocal process in which the overall satisfaction is derived from, and in turn influences, the satisfactions with the environmental dimensions.

The influence of the measuring instrument did not appear to play a significant role in the relationships. Far more important were the common physical determinants of some of the satisfactions, particularly those related to appearance, for which no measures were made in the survey.

The effect of the correlations between the separate satisfactions, particularly when trying to establish the relative importance of the dimensions in the reciprocal build up of satisfaction, will be dealt with in the next chapter.

RESIDENTS' PRIORITIES

13.1 INTRODUCTION

Two related research questions are examined in this chapter. The first is the question as to what residents' preferences with respect to the elements of the residential environment are, and to how these preferences vary (9.1.2)? The second question is to whether groupings of the population are possible on the basis of preferences, having shown earlier the difficulty of identifying groups on the basis of satisfaction alone (11.5.7).

It is easier to deal with the issue of grouping first, as the analysis relating to the first question is simplified if the sample population can be assigned to a small number of groups.

13.2 INDIVIDUAL PREFERENCES

The relevant hypothesis stated simply that individuals have different preferences between the environmental dimensions (10.5.2). The basic data upon which the analysis is based are the responses to the question in which respondents were asked to select five environmental dimensions from a list of fifteen, and to rank these five in the order of preference to the respondent (9.6.4). In order to reduce the bias introduced by the measuring instrument four different prompt cards were used for this question, with the dimensions listed in a different order on each card.

The responses to this question are summarised in table 13.1. The dimensions have been ranked according to the number of mentions each dimension received as the respondent's first preference. If the respondents other four preferences are included in the total number of mentions there are some small changes in the ordering of the dimensions, e.g. "Clean

Table 13.1 Respondent's Preferences

Environmental Dimension	Number of Respondents choosing Dimension as					Overall Distribution % by number of mentions
	First Preference	Second Preference	Third Preference	Fourth Preference	Fifth Preference	
Friendliness	50	42	21	33	25	10.7
Convenience	48	31	25	26	17	9.2
Suitability for Children	42	24	26	26	16	8.4
Safety	34	27	22	18	22	7.7
Privacy	27	19	23	21	13	6.4
Clean Area	24	26	34	35	8	7.9
Clean Air	19	23	15	24	20	6.3
Appearance	14	22	19	11	12	4.9
Quiet	13	25	22	13	11	5.3
Reputation	9	5	10	6	12	2.6
Greenery	8	11	17	9	19	4.0
GoodLayout	8	5	9	8	11	2.6
Private Upkeep	5	8	9	8	1	2.6
Good View	5	7	13	3	11	1.6
Council Upkeep	4	18	16	6	8	3.4
No Response	10	27	39	73	114	16.4

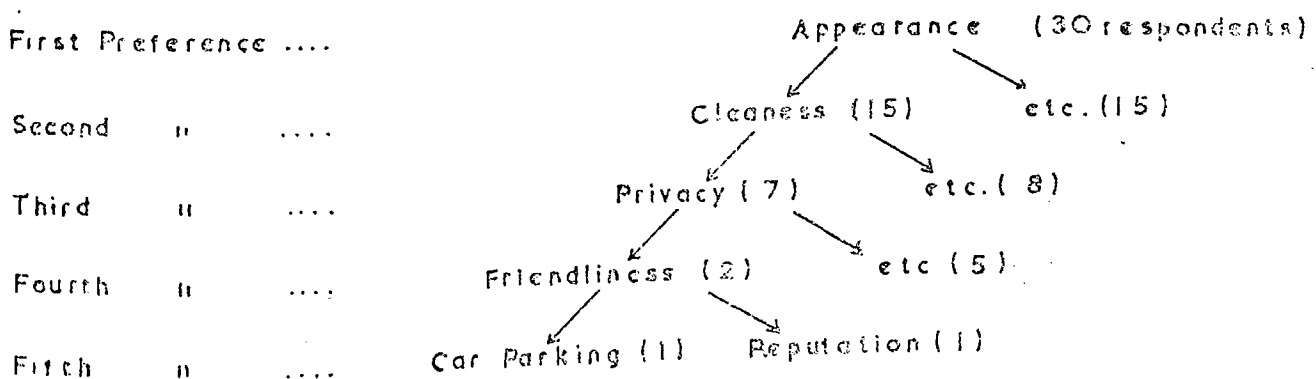Area" was more frequently mentioned, taking all the responses into account, than 'Privacy' or 'Safety'.

Overall, excluding the non-responses, half of the total responses were accounted for by the top four dimensions: Friendliness; Convenience; Suitability for Children; and Clean Area. The first eight dimensions in the overall preference list included 80% of the total number of responses. The indication therefore is that although different respondents chose different dimensions as their preferences, there was a concentration of choice around the top half of the list. This suggests that there are sufficient grounds to justify the suggestion that some respondents, or groups of respondents, share common priorities.

13.2 GROUPING OF PREFERENCES

The pattern of preference choice was first examined to see if this could provide a basis for grouping respondents.[1] If any pattern of choice existed the respondents first preference would be usually associated with particular second, third etc. choices; e.g. people choosing 'appearance' might also tend to choose 'upkeep'. However no clear patterns existed.

---

(1) This was done using the "BREAKDOWN" procedure available in the SPSS package. In this analysis it is possible to examine the respondents 5 preferences graphically as shown below:

First Preference ....   Appearance   (30 respondents)

Second   "   ....   Cleaness (15)   etc. (15)

Third   "   ....   Privacy (7)   etc. (8)

Fourth   "   ....   Friendliness (2)   etc (5)

Fifth   "   ....   Car Parking (1)   Reputation (1)

It was therefore decided to group the respondents on the basis of the dimension chosen as the first preference, resulting in fifteen groups initially. To retain fifteen groups was not felt to be helpful, as the sample size within some of the groups was too small for meaningful further analysis. Four different numbers of groups were chosen, from six groups to nine groups. In each case the desired number of groups was determined and those respondents who did not fall within one of the groups (i.e. they did not select one of the top dimensions as their first preference) were assigned to a group on the basis of their second preference, followed by their third etc.preference if necessary. This process continued until all respondents were members of one of the groups, or until all five preferences had been used.

After a comparison of the relationships between the social and physical variables and the different preference groupings six groups was found to give the best all round relationships. These six groups were based on the following preferences: Friendliness; Convenience; Suitability for Children; Safety, Privacy; and Cleaness (including both Clean Air and Clean Area dimensions).

In the sections which follow these six groups of respondents will be used to examine the social and physical relationships with preferences. At the same time of course the strength and nature of the discovered relationships will give some indication of the usefulness (or otherwise) or the preference groupings identified.

13.3 THE SOCIAL CHARACTERISTICS OF THE PREFERENCE GROUPS

The cross-tabulations of the preference groups against the social variables revealed that four social variables were significantly related at the .05 significance level or above (chi-square test). These variables

were the tenure; income; age; and household status of the respondents.
These will be dealt with in turn.

13.3.1 Tenure

The cross-tabulation of the six preference groups against tenure was
significant at the .02 level. A higher than average proportion of the
respondents in the "Friendliness" group were council tenants (57% compared
with 42% in the sample as a whole); whereas 54% of those in the "Convenience"
group, and 48% of those in the "Privacy" group were owner-occupiers (38% of
the sample were owner-occupiers). NCB tenants were over-represented in the
"suitability for Children" and the "safety" groups, forming 23% and 21%
of the groups respectively, compared with their share of the sample of 13%.

13.3.2 Age

There were a number of clear differences among the age groups in their
choice of preference group (chi-square test significant at .001 level).
52% of those who were in the "Suitability for Children" group were between
20 and 29 (i.e. the age group with greatest likelihood of having children),
although they only formed 20% of the sample.

The 35-44 age group were over-represented in the "Safety" preference
group (28% of group compared with 15% in sample population), whereas the
45-60 age group predominated the "Cleaness" preference group (63% of group
compared with 40% of sample population). The older age categories were
more evident in the "Privacy" and "Friendliness" preference groups. 29%
of the respondents in the Privacy group were over 65 (13% of sample popu-
lation); 31% in the Friendliness group were over 60 (24% in the sample
population).

13.3.3 Income (Table 13.2)

The cross tabulation of income against preference group gave a value of chi-square which was significant at the .001 level. The main difference between the groups was that the higher income group (over £40 per week) were over-represented in the "Convenience" and "Privacy" preference groups, whilst the low income groups (less than £30 per week) were more evident in the "Friendliness" group. In the £30-40 per week income group the "Good for Children" preference was chosen more often, along with "Convenience".

13.3.4 Household Status (Table 13.3)

The household categories have been condensed for the table; single persons have been grouped with small adult households; and small and large families have been put together. Almost half the families with children came within either the "Good for Children" or the "Safety" preference groups (32% and 16% of the families respectively). Small households were more likely to be in the "Convenience" or "Friendliness" groups (31% and 23% of small households respectively). 27% of the respondents in large adult households came within the "Cleaness" group, whereas old small household members were most likely to be in the "Friendliness" or "Cleaness" groups, these two preferences accounting for 52% of the respondents in old small households.

13.3.5 Summary of the Social Characteristics

The tables have shown a clear link between the social characteristics of the respondent and their preferences. The easiest relationship to explain is that between the household situation of the respondent and the preferences. Respondents with children naturally are more concerned about the safety and suitability of their neighbourhoods for children. The smaller (and usually older) households are more interested in the friendliness

Table 13.2

Preference Group	Income (per week)				Total %
	under £20 %	£20-30 %	£30-40 %	over £40 %	
Friendliness	28.3	28.3	15.2	12.2	19.6
Convenience	11.9	15.0	27.3	28.6	21.1
Good for Children	7.5	6.7	27.3	20.4	16.7
Safety	13.4	18.3	12.2	8.2	13.1
Privacy	17.9	11.7	4.0	18.4	11.6
Cleaness	20.9	25.0	14.2	12.2	17.8
TOTAL	67	60	99	49	100.0

Table 13.3

Preference Group	% of household type choosing each preference group				
	Single Persons and small adult households	Small and large families	Large Adult Households	Old small Households	TOTAL %
Friendliness	22.9	11.8	21.6	26.6	19.9
Convenience	31.3	21.5	16.5	15.6	20.2
Good for Children	8.3	32.3	13.4	1.6	15.9
Safety	8.3	16.1	11.3	14.1	12.9
Privacy	16.7	6.5	10.3	17.2	11.6
Cleaness	12.5	11.8	26.8	25.0	19.5
TOTAL	48	93	97	64	100.0

ness of the area, and also in the cleaness of it, a concern which is shared most by the middle-aged respondents. The higher income and owner-occupied respondents are more likely than the other respondents to choose Privacy and Convenience as their main priorities.

13.4 THE RELATIONSHIP BETWEEN PHYSICAL CONDITIONS AND PREFERENCE GROUP

The first stage in examining whether the physical conditions had any influence on the choice of preferences was to compare the distribution of preferences in the different case-study areas (Table 13.4). The table is arranged, once again, by preference groups.

Some significant differences are clear in the table. For example 33% and 25% of the respondents in the Thornes and Bellevue areas of Wakefield city were in the "Convenience" preference group. In contrast to these two centrally located areas was the case study area of Streethouse, an isolated settlement in which an equally high proportion of the respondents selected Convenience as their main preference (28%). 35% of the respondents living in the Glasshoughton area came within the "Cleaness" preference group, a proportion which is only approached in Bellevue and Hemsworth. All three case study areas, and Glasshoughton in particular, had below average satisfactions reported with the cleaness and the air quality.

The three large estates of Eastmoor, Nevison and Warwick all had above average numbers of respondents in the "Good for Children" preference group. This may be related to the physical conditions partly, but is probably more a reflection of the preponderance of households with children on these estates.

This preliminary investigation suggests that the respondents' choice of preferences, as shown by their preference group, is related to the physical

Table 13.4 <u>Preference Groups by Sample Area</u>

Preference Group	All Areas No.	All Areas %	Thor nes %	East Moor %	Belle vue %	Hemsw orth %	Fitz will. %	Feath erst. %	Alt ofts %	Nevi son %	Ponte fract %	Glass ho. %	Street House %	Warwick Estate %
Friendliness	61	19.1	5.6	16.1	14.3	20.8	25.0	25.8	27.6	6.2	16.1	13.0	27.8	29.6
Convenience	61	19.1	33.3	12.9	25.0	20.8	10.7	29.0	17.2	18.7	16.1	13.0	27.8	11.1
Good for Children	48	15.0	11.1	25.8	3.6	16.7	17.9	9.7	20.7	28.1	-	13.0	5.6	22.2
Safety	39	12.2	16.7	6.5	-	12.5	10.7	9.7	10.3	21.9	9.7	17.4	22.2	14.8
Privacy	35	10.8	11.1	12.9	14.3	-	10.7	16.1	6.9	9.4	38.7	-	-	-
Cleaness	59	18.4	22.2	9.7	28.6	29.2	21.4	9.7	6.9	15.6	12.9	34.8	16.7	22.2
Other	17	5.3	-	16.1	14.3	-	3.6	-	10.3	-	6.5	8.7	-	-

ical conditions of the residential environment. In the case of priorities such as Cleaness or Convenience, which are not as strongly related to the household stage of the respondent as priorities like Good for Children or Safety, it is likely that respondents choose either the dimensions with which they are most satisfied, or those with which they are clearly most dissatisfied. For example the respondents in the Thornes area were more satisfied on average with the convenience of their area than those in other areas (the median satisfaction score for convenience was 6.4 in Thornes compared with 5.6 overall), and Convenience was the predominant priority among these respondents. A further example is that a higher than average proportion of respondents in Altofts, possibly one of the more desirable areas to live in the district, originally chose Appearance as their main priority (they were of course regrouped according to their other priorities into one of the six preference groups later).

An example of respondents choosing a dimension with which they were unsatisfied as a preference was in Glasshoughton. The median satisfaction score for cleaness in Glasshoughton was 2.2 compared with the overall median of 3.4, and just over a third of the respondents selected cleaness as their main priority. Similarly the above average number of respondents in the Convenience group in Streethouse can be related to their median satisfaction with convenience score of 4.5 compared with the overall median 5.6.

As a further test on the relationship between the physical conditions of the environment and the choice of preferences the physical variables were re-coded into categorised form and cross tabulated against the preference groups. However none of the cross tabulations produced a chi-square which was significant at the .001 level, and only five variables were

significant at the .05 level. Three of these were distance variables (to a Park, Secondary School and to Childrens Play facilities) which were not related in any interpretable way to the preference groups. The other two variables were the proportion of households having all basic amenities, and the upkeep category of the respondents home (Table 13.5).

The first variable of the two reflects the previous table of the case-study areas: 33% of those living in the areas which had fewer than 70% of the households with all basic amenities (mainly in the Glasshoughton and Bellevue areas) were in the "Cleaness" group. The category including over 90% of households with all amenities was over represented in the "Good for Children" group, which reflects again the greater proportion of households with children on the council and post-war estates.

The upkeep category of the respondents home can be linked to both physical and social variables. The respondents with dwellings in good upkeep were over represented in the "Friendliness" and "Privacy" groups - many of these were owner-occupiers and a quarter of them lived in Altofts. 40% of the respondents with dwellings in poor upkeep were on the Nevison Estate where the presence of households with children accounts for the pre-dominance of the Safety and Good for Children preference groups.

13.5 THE INFLUENCE ON PREFERENCE CHOICE - A SUMMARY

Two types of influences have been examined, social and physical. The evidence relating social characteristics to preference choice is the stronger. The main determinants were the type of household, particularly whether there were children present or not, and the age of the respondent. Smaller households were more concerned about friendliness or privacy; households with children were concerned more about safety and the suitability

Table 13.5 A Percentage of respondents in preference groups in household amenity categories

Preference Group	% households having all amenities				Total %
	under 70	70-80	80-90	90-100	
Friendliness	15.4	20.0	30.9	17.3	20.1
Convenience	18.0	22.9	25.5	17.3	20.1
Good for Children	7.7	15.7	5.5	22.3	15.8
Safety	15.4	8.6	10.9	15.1	12.9
Privacy	10.3	10.0	21.8	8.6	11.6
Cleaness	33.2	22.9	5.5	19.4	19.5
TOTAL	39	70	55	139	303

Table 13.5 B Percentage of respondents in preference groups in dwelling upkeep categories

Preference Group	Upkeep Category of Respondents Dwelling			Total %
	Good	middle	Poor	
Friendliness	28.2	19.3	13.3	20.1
Convenience	23.1	20.5	6.7	20.1
Good for Children	15.4	15.3	26.7	15.8
Safety	10.3	11.6	40.0	12.9
Privacy	15.4	11.2	6.7	11.6
Cleaness	7.7	22.1	6.7	19.5
TOTAL	39	249	15	303

of the area for children. Large adult households, mainly middle aged respondents (and middle incomes), were more concerned about cleaness, with an increasing proportion mentioning friendliness as the respondent's age became greater and the household smaller.

The influence of the physical conditions is less easy to demonstrate although it is an attractive hypothesis that a respondent chooses the dimensions that he is either most satisfied with, or most disatisfied with, it has not been possible to verify this conclusively. The distribution of choices by area support the hypothesis, but there is a lack of sufficient relationships directly with the physical variables, and independant of the social variations.

13.6 RESIDENTS PREFERENCES AND THE BUILD UP OF OVERALL SATISFACTION

It was hypothesised that an individual's stated preferences can be related to the contributions which his satisfaction with the different environmental dimensions make to his overall satisfaction (10.5.2). The determination of the contributions using ranked data presents a basic problem: the fact that it is not possible to use regression analysis. The information on which the following discussion is based is the comparative strengths of the relationships between the overall satisfaction and the satisfactions with the separate dimensions. In order to account for the intercorrelations between the separate satisfactions partial correlation was used, controlling first for the variable with the strongest first order correlation with overall satisfaction (i.e. satisfaction with Appearance). This procedure was then repeated by taking the variable which was most closely correlated with Overall Satisfaction after the Satisfactions with Appearance had been controlled (i.e. Satisfaction with Reputation) and then controlling for this variable too. The effect of the controlling was to reduce the

strength of the relationships with those satisfactions which were highly related to other satisfactions. For example, when the satisfaction with appearance was controlled the correlation with satisfaction with greeness was significantly reduced in strength.

Table 13.6 shows the changes in the relationships when the number of variables being controlled is increased progressively up to four (Satisfactions with Appearance, Reputation, Satisfaction with the Home and with Convenience). When all four satisfactions are controlled four satisfaction dimensions are no longer significantly related to Overall Satisfaction: Safety; Suitability for Children; Friendliness; and Car Parking). The order of strengths of the controlled relationships was as follows: Appearance, Reputation, Satisfaction with the Home, Convenience, Layout and View.

It is clear that the ordering of the dimensions according to the strengths of their 'independant' (or indeed their first order) correlations with overall satisfaction is very different from the ordering obtained when direct questions on preferences were asked (Table 13.1). Only one of the top six variables with respect to their correlations with overall satisfaction was also one of the top stated preferences - Convenience. In fact three of the top preferences were no longer significant after the first four satisfaction dimensions had been controlled: Friendliness; Suitability for Children; and Safety. The nul-hypothesis that there is a difference between the two cannot be rejected therefore.

The question is, why are they different? Superficially one would have expected that the dimensions which the respondents stated were important to them would also be made strongly correlated with overall satisfaction. However this does not appear to be the case, for which a number of reasons

Table 13.6 Correlation of overall satisfaction with the separate satisfactions

Satisfaction Dimensions	First Order Correlation	Controlling for satisfactions with:			
		Appearance	Appearance Reputation	Appearance Reputation Satisf^n w. home	Appearance Reputation Satisf^n w. Home Convenience
Appearance	.463**	-	-	-	-
Layout	.459**	.307**	.249**	.280**	.286**
Reputation	.439**	.323**	-	-	-
Cleaness	.428**	.278**	.207**	.191**	.178**
View	.391**	.214**	.165*	.193**	.198**
Satisfaction with home	.375**	.267**	.291**	-	-
Upkeep	.374**	.264**	.191**	.154*	.149*
Air Quality	.356**	.210**	.188**	.173**	.184**
Council Upkeep	.323**	.225**	.154*	.156*	.153*
Overall Convenience	.320**	.250**	.258**	-	-
Suitability for Children	.320**	.186**	.136*	.115+	.077
Privacy	.319**	.242**	.177**	.142*	.118+
Greeness	.295**	.147*	.122+	.134*	.133*
Safety	.277**	.197**	.149*	.119+	.098
Noise	.256**	.162*	.134*	.133+	.128+
Friendliness	.241**	.216**	.175**	.147*	.093
Car Parking	.200**	.108+	.035	.028	.020

Significance levels ** .001
                      *   .01
                      +   .05

189

can be postulated:

a) The range of responses along some dimensions was limited. This was especially the case with the satisfaction with friendliness, for which one suspects socially acceptable answers were given (62% of the respondents said they were satisfied or very satisfied with the friendliness of their area). The effect of this small range was to reduce the strength of the correlation of the satisfaction with friendliness with the other variables, including overall satisfaction.

b) The form of questions was different; the question on preferences being more hypothetical in nature than the question about satisfaction. Thus although the environmental conditions which the respondent was experiencing at the present could be measured and controlled to some extent no such information exists with respect to the preference question. For example it is not clear what assumptions the respondents made about the hypothetical situation they were asked about - some respondents may have assumed that they would have a good dwelling with garden etc. and thus be less concerned about those aspects usually associated with good housing (e.g. car parking, good appearance etc.) and more concerned about other aspects. This emphasises the problem of trying to compare answers obtained in different behavioural contexts (8.6.1).

c) Adaption to the environmental conditions i.e. the lowering or suppression of certain expectations which would not necessarily remain suppressed if the respondent moved. For example the respondents living adjacent to the coke-works in Glasshoughton appeared to have adapted to, and accepted, the heavy air pollution because of the other benefits of the area (cheap rents, nearness to work etc.). Thus although the heavy air pollution may not have been reflected in their overall satisfaction with the area it is likely that the respondents would wish to change the conditions if the opportunity

arose, as implied by the hypothetical preference question. This suggests a disadvantage in using the contributions which the separate satisfactions make to overall satisfaction in order to gauge the relative importance of the dimensions (see 7.2).

d) Three of the dimensions which were in the top six in terms of their relationships with overall satisfaction were physically close to the overall satisfaction scale on the questionnaire. Thus the possibility of some influence on responses by the scale positions cannot be ruled out. However one would expect that if this 'halo' effect was of importance that the relationships with Layout and View would disappear when the satisfaction with Reputation is controlled. The relationships are indeed weakened, but do not disappear which suggests that the 'halo' effect is not of overriding importance.

The important implication of the finding that the two methods of attempting to obtain people's preferences are not entirely comparable is which, if either, should be taken as their preferences for the purposes of decision making? The discussion of this point is to be found in Chapter 7.2.

13.7

Further evidence on the usefulness of the identified preference groups is obtained when the correlations between the overall satisfaction with the residential environment and the satisfactions with the separate environmental dimensions within each group are examined (Table 13.7). The table only gives the relationships which were significant at the .001 level; the relationships being ranked on the basis of their correlation coefficients (Kendall's Tau). The different values held by the group members are illustrated in the table (although some caution should be exercised as the subsamples are small and the range of physical variables within each group are not equal). For example in the "Friendliness" group the overall satisfaction was more closely related to satisfactions with Reputation

Table 13.7 Order of Strength of Correlations between Overall Satisfaction as the Separate Satisfactions, by Preference Groups

	All Sample (1)	Friendliness	Convenience	Good for Children	Safety	Privacy	Cleaness
1	Appearance	Reputation	Satisfaction with home	Safety	Appearance	Reputation	Cleaness
2	Layout	Friendliness	Convenience	Air Quality	Private Upkeep	Appearance	View
3	Reputation	Cleaness	Appearance	Suitability for children	Noise	Privacy	Appearance
4	Cleaness	Convenience	Cleaness	Cleaness	Suitability for children	Satisfaction with Home	Satisfaction with Home
5	View	Appearance	Council Upkeep	Greeness	Privacy	Noise	Reputation
6	Satisfaction with home	Air Quality	Private Upkeep		View	View	Air Quality
7	Private Upkeep		Reputation		Safety	Cleaness	Suitability for children
8	Air Quality		View		Reputation	Greeness	Greeness
9	Council Upkeep		Suitability for children		Satisfaction with Home	Upkeep	Convenience
10	Convenience				Council Upkeep		
11	Suitability for children				Convenience		
12	Privacy						
	320 Respondents	60 Respondents	61 Respondents	48 Respondents	38 Respondents	35 Respondents	59 Respondents

(1) First Order Correlations, top 12 dimensions only given (Table 13.6)
(2) All relationships given were significant at the .001 level.

and friendliness; in the "cleaness" group the satisfactions with cleaness and the view were most closely correlated with overall satisfaction.

13.8 USE OF PREFERENCE GROUPS AS CONTROL GROUPS

It was suggested in the research model (9.2.2) that the individual's preferences could be regarded as part of their cultural characteristics, and could hence influence perception. However two problems arose when attempting to use preferences as a control variable whilst investigating the relationships between satisfaction and the environmental variables:

a)   the preferences were related to the environment (13.4)

b)   the numbers in each group were rather small (35-61).

A number of dimensions were selected, satisfactions with which, it was hypothesised, were likely to be influenced by the preferences. Three dimensions were chosen: Safety, Privacy and Air Quality. For each dimension the non-parametric correlation coefficient with selected physical variables was calculated for each preference group (Table 13.8).

Some differences in the strengths of relationships between the groups was apparent. For example the satisfactions with air quality for the members of the "Cleaness" group were more related to all the physical variables than for the other groups. The satisfactions of these latter groups were not significantly related to any of the physical variables except the proportion of dwellings with all amenities. The satisfactions with privacy for the members of the "Privacy" group were more related to the number of trees than for the members of other groups whose satisfactions were more related to the social variable, household size, in general. For the members of the "Safety" group satisfactions with Safety were generally less related to the physical variables than for other respondents. This

finding compares with the conclusion earlier that households with children were concerned about safety irrespective, to some extent, of the actual conditions. Note here however that the "Good for Children" group's satisfactions with safety were more strongly related to the width of the road, proportion of unfurnished tenancies and proportion of dwellings in poor building condition than for most of the groups.

Thus there is some tentative evidence that groups selected on the basis of expressed preferences are of use in explaining the relationship between satisfactions and the environmental conditions. To be able to draw any further conclusions a large sample size within each group would be required, with each sample exhibiting a range of environmental conditions.

13.9 RESIDENTS' PRIORITIES - SUMMARY

The original questions with which the chapter started were what are the residents environmental priorities, and how do they vary; and is it possible to identify groups on the basis of these priorities? Common preferences were evident among some residents from the responses to the direct questions on preferences enabling six groups to be selected. The groups were well related to the social characteristics of the respondents, particularly their age and household status. The preferences were also related to the physical conditions of the respondents areas, although this relationship, which was identifiable in the variation in preferences between the areas, could not be conclusively established.

It was also found that, for the reasons discussed above, the priorities which were interpreted from the correlations between the separate satisfactions and the overall satisfaction were different from the preferences obtained from direct questioning. However the priorities interpreted from

the same correlations, taking each preference group separately, appeared
to be consistent with the likely values of the members of the preference
groups.

Table 13.8 Correlations between satisfactions with certain environmental
dimensions and selected physical variables for each preference
group

A. Air Quality

Preference Group	Kendall's Tau between Satisfaction with Air Quality and				
	% h/holds with all amenities	% dwellings in poor Condition	Density of trees	Length of Curtilage	% dwellings in poor upkeep
Friendliness	.228	-.041	.107	.126	-.013
Convenience	.226	-.064	.013	.030	-.077
Good for Children	.110	.026	.072	.125	-.014
Safety	.233	-.054	-.016	-.031	.017
Privacy	.195	-.085	.145	.145	-.140
Cleaness	.314	-.171	.209	.206	-.185

B. <u>Safety</u>

Preference Group	Kendall's Tau between Satisfaction with Safety and			
	% dwellings in poor condition	Distance to Main Road	% households rent. unfurn privately	Width of Road
Friendliness	-.097	.210	-.159	-.211
Convenience	-.057	.262	-.156	-.301
Good for Children	-.161	.112	-.200	-.207
Safety	-.102	.036	-.156	-.065
Privacy	-.118	.144	-.133	-.047
Cleaness	-.039	-.012	.028	-.077

C. <u>Privacy</u>

Preference Group	Kendall's Tau between Satisfaction with Privacy and		
	Density of Trees	Age of Dwelling	Size of Household
Friendliness	.047	-.145	-.106
Convenience	.104	-.181	-.216
Good for Children	.047	-.044	-.149
Safety	-.059	-.035	-.282
Privacy	.339	-.133	-.121
Cleaness	.065	-.074	-.143

Chapter 14

CONCLUSIONS

14.1

The major conclusions of the research which derive from the discussion in both volume I and volume II, have already been given in chapters 6 and 7. These two chapters contain the main positive findings of the study. The purpose of this short chapter is to examine a number of points about the research method somewhat more critically. This research, as it spans the gap between theory and practice, has had to operate a delicate trade-off between the validity and the simplicity of the method used, and also between the breadth and depth of the research. Three specific examples illustrate this trade-off and the degree of success which has been achieved. These examples are the quality of the data; the pre-selection of the environmental dimensions; and the measurement of the physical environment.

14.2 Quality of the Data

The assumption of ordinal data status for the responses to the scaled questions on satisfaction and perception was made for two main reasons:

a) given the resources available for the survey it was not felt possible to develop and use a more sophisticated scaling method which would give higher status data. In particular the extra time which would be involved in interviewing was a disadvantage.

b) the scaling methods used were typical of those currently being used by many local authorities in their social monitoring and participation exercises, although no account was usually taken of the low status of the data.

The respondents' difficulties in using even the simple scales in the questionnaires confirmed the decision to assume only ordinal data.

Despite the assumption of ordinal data the non parametric statistics used have probably been as effective as parametric methods in identifying the _existence_ of significant relationships in the data.[1] However, the fundamental limitation of non parametric correlation (Kendall's Tau in the case of this research), is that it was not possible to interprete the correlation coefficient in terms of the contribution which the correlated variable makes to the dependant variable (as in the R^2 of parametric analysis).

Neither is regression analysis possible, at least with the statistics currently available in computor analysis packages. These fundamental disadvantages have partly been resolved by the use of partial correlation, which has been used, for example, to account for the inter-correlations between the responses to the separate dimensions of the environment i.e. to obtain independant correlations.

The use of ordinal data with careful analysis allows much to be brought out of the data without false conclusions being drawn based on interval data assumptions. It has been a distressingly common feature of research in this field that statistical analyses have been used which require interval data (and assumptions of normal distributions etc.) without any discussion of the scaling methods or the reasons which lead the researchers to assume that they have obtained interval data. Although 'statistics' are obviously obtained whatever the status of the data, there must always remain a question mark over the interpretation of the results if the data quality does not match that of the statistical procedure used (Simpson B., 1975). By using non-

---

(1) "When used on data to which the Pearson's r is properly applicable Kendall's Tau has an efficiency of 91%. That is, Tau is approximately as sensitive a test of the existance of association between two variables in a bivariate normal population with a sample of 100 cases as is the Pearson r with 91 cases" (Siegel S., 1956; p.223)

198

parametric statistics one is sacrificing a degree of explanatory power in the interests of confidence in the results. This sacrifice must therefore be set against the additional resources required at the survey or piloting stage in order to obtain interval data. In this study this could only have been done by restricting the range of environmental aspects considered in the research, a point which is raised again below.

A further advantage of the use of ordinal data is that not only does it enable a great deal to be learnt about the results in a qualitative manner, but it prevents any superficial analysis which can result from the use of summarising statistics. This is particularly important in applying the results to the work of a local authority (e.g. see Appendix D on the use of the survey data to select areas for environmental improvement).

14.3 THE PRE-SELECTION OF THE ENVIRONMENTAL DIMENSIONS

The pre-selection of the nature, identity and description of the dimensions of the residential environment was made on the basis of previous research (9.6), and was made in order to reduce the amount of pilot work necessary. That the selected dimensions successfully covered the scope of the environment is shown by the fact that no new environmental elements were referred to in the open-ended questions (although more specific aspects of the included dimensions did, of course, arise). However it is clear from the analysis that the dimensions chosen were not independant from each other, and in some cases there was ambiguity about the meaning of the dimensions to the respondents (e.g. Council Upkeep). The main alternative to the pre-selection of the dimensions would have been to extend the pilot stages and through the use of open-ended questions (possibly also the use of repertory grid techniques (Kelly G.A., 1970)) to identify the dimensions from first principles. The assumption, made in this study, that people share common

dimensions with which they perceive the environment, would also have to be examined.

In other words a trade off exists between the specification of the dimensions and the time and resources which must be spent at the pilot stage of the research. Once again a compromise solution could possibly be found by restricting the scope of the environment under investigation, at the loss of generality of the results.

It has been possible to overcome the problem of the environmental dimensions not being independant by the use of partial correlation, thus justifying the pre-selection of the dimensions in the light of the resources available.

14.4 THE PHYSICAL MEASURES OF THE ENVIRONMENT

The complexity of the relationships found in this research, and the overall weakness of these relationships points to the need for further research into the measurement of the environment. In this respect the survey was hampered by the relative lack of variation in the environmental conditions in Wakefield District, and also by the inability to carry out a full factor analysis on the physical data because of the data handling restrictions in the SPSS package at Aston.

Nevertheless significant and useful relationships have been identified both between the environmental measures and the satisfactions, and between the different physical measures. The relationships are made more useful because of the wide range of environmental aspects which were included. However it is clear that in order to make further advances in explaining the relationships between residents' satisfactions with specific attributes of the environment and the measures of these attributes, work which concentrates

on a narrower field of interest is required (as has already taken place for noise and visual intrusion for example). Such research probably has to be of a longer term nature, and is thus of less _immediate_ interest to a local authority (in contrast to this study which was designed to be of immediate practical use).

There remains the fundamental conflict between the complexity of the environment itself (and the relationships with the environment) and the requirement which local authorities have for simple measures or indicators of the environment. It is thus perhaps inevitable that relatively poor measures of the environment are made, as the expense or time involved in taking better measurements may not be justified by the improved accuracy of the measures. However these practical constraints should not prevent the search for better measurement methods.

APPENDIX A

Definitions and Scale Status

Of The Survey Variables

Variable Code	Variable Description & Categories	Scale Status
AGE	Age of respondent: 1) 15-19; 2) 20-24; 3) 25-29 4) 30-34; 5) 35-39; 6) 40-44; 7) 45-49; 8) 50-54; 9) 55-59; 10) 60-64; 11) over 65	r
AGEBLDG	Age of respondent's dwelling 1) pre-1875; 2) 1876-1918; 3) 1919-1944; 4) 1945-1960; 5) post 1961	r
AIRP	Whether respondent's dwelling was in smoke control zone or not	D
ALL AMEN	Proportion of households in enumeration district having all basic amenities ✗	R
BCTRES	Building condition category of respondent's dwelling (See Appendix C)	r
BKSPCE	Type of space at rear of respondent's dwelling 1) private garden; 2) private yard; 3) public grass; 4) public - hard; 5) nothing; 6) other	C
BSFRE	Average bus frequency per hour during period 06.00 - 24.00 on nearest bus route	R
BUPRES	Upkeep category of respondent's dwelling (Appendix C)	r
CAR	Whether respondent owns a car or not	D
CAROWN	Proportion of households in enumeration district without a car.✗	R
CARPK	Respondent's parking facility 1) on road; 2) on verge; 3) within curtila ge; 4) garage with curtilage; 5) garage elsewhere; 6) other; 7) hardstanding	C
CLASS	Respondent's class 1) Professional; 2) Intermediate; 3) Skilled non-manual; 4) skilled manual; 5) partly skilled; 6) unskilled; 7) No information	C
CONBS	Respondent's satisfaction with convenience for buses (7 pt. scale)	r
CONCT	Respondent's satisfaction with convenience to countryside (7 pt. scale)	r
CONGO	Respondent's satisfaction with convenience for going out (7pt. scale)	r
CONNS	Respondent's satisfaction with convenience to nursery school (7 pt. scale)	r
CONOV	Respondent's satisfaction with overall convenience (7 pt. scale)	r

CONPB	Respondent's satisfaction with convenience to pub/ club (7 pt. scale)	r
CONPK	Respondent's satisfaction with convenience to park (7 pt. scale)	r
CONPS	Respondent's satisfaction with convenience to Primary School (7 pt. scale)	r
CONSH	Respondent's satisfaction with convenience for shopping (7 pt. scale)	r
CONSS	Respondent's satisfaction with conveience to secondary school (7 pt. scale)	r
CONWK	Respondent's satisfaction with convenience to work (7 pt. scale)	r
COUNL	Proportion of households in enumeration district renting from council[*]	R
DEREL	Presence of items of dereliction within 200m of respondent's dwelling	D
DIS1	Respondent's dislike with area (coded after interviews)	C
DIS2	Respondent's dislike with area (coded after interviews)	C
DIS3	Respondent's dislike with area (coded after interviews)	C
DIST1	Distance from respondent's dwelling to most frequently used shops	R
DIST2	Distance from respondents dwelling to second most frequently used shops	R
DIST 3	Distance from respondent's dwelling to workplace	R
DIST4	Distance from respondent's dwelling to park visited	R
DIST5	Distance from respondent's dwelling to pub/club normally used	R
DIST6	Distance from respondent's dwelling to school used by under 10s in household	R
DIST7	Distance from respondent's dwelling to school used by over 10s in household	R
DIST8	Extent of view from respondent's dwelling (front) - 100 ms	R
DIST9	Extent of view from respondent's dwelling (rear) - 100 ms	R

EDUC	Respondent's post-school education 1) none; 2) university; 3) Certificate of education; 4) HND; 5) GCE A-level; 6) GCE O-level; 7) Other	C
EMPLOY	Respondent's employment status 1) Working head of household; 2) housewife; 3) working relation of head; 4) retired; 5) unemployed; 6) part-time	C
FAMSTAT	Household type: 1) Individuals under 60; 2) small adult household; 3) small family; 4) large family; 5) large adult household; 6) Old small household	C
FHSETYP	Dwelling preference of likely movers 1) terrace; 2) semi-detached; 3) high-rise flat; 4) detached; 5) converted flat; 6) low-rise flat; 7) mobile home	C
FLOC	Area preference of likely movers (Categorised after interviews)	C
FREBS	Frequency with which respondent used bus: 1) daily; 2) over 1 per week; 3) less than 1 per week; 4) hardly ever	r
FRECT	Frequency of respondent's use of local countryside 1) over 1 per month; 2) less than 1 per month; 3) hardly ever	r
FREGO	Frequency of respondent going out for evening: 1) over 1 per week; 2) less than 1 per week; 3) hardly ever	r
FREPB	Frequency with which respondent went out to a pub/club (coded as for FREBS)	r
FREPK	Frequency with which respondent visited park (coded as for FREBS)	r
FRESH1	Frequency of shopping at usual shops (coded as for FREBS)	r
FRESH2	Frequency of shopping at secondary shopping location (coded as for FREBS)	r
FRSPCE	Area between respondent's dwelling and road: 1) private garden; 2) private yard; 3) public grass; 4) public hard; 5) nothing; 6) other	C
FTENUR	Tenure preference of likely movers 1) Own home; 2) rental purchase; 3) council; 4) unfurnished; 5) furnished; 6) NCB; 7) other	C
HOWAIR	Respondent's perception of air quality (7 pt. scale)	r
HOWCAR	Respondent's perception of car parking (7 pt. scale)	r
HOWCLE	Respondent's perception of cleaness (7 pt. scale)	r
HOWCUP	Respondent's perception of council upkeep (7 pt. scale)	r

HOWGRE	Respondent's perception of greeness (7pt scale)	r
HOW KID	Respondent's perception of suitability for children (7 pt. scale)	r
HOWLAY	Respondent's perception of layout (7pt scale)	r
HOWLOOK	Respondent's perception of appearance (7pt scale)	r
HOWNOI	Respondent's perception of noise (7pt scale)	r
HOWPAL	Respondent's perception of friendliness (7pt scale)	r
HOWPRIV	Respondent's perception of privacy (7pt scale)	r
HOW REP	Respondent's perception of area reputation (7pt.sacle)	r
HOWSAF	Respondent's perception of safety (7 pt scale)	r
HOWUPK	Respondent's perception of private upkeep	r
HOWVIEW	Respondent's perception of view (7pt scale)	r
HSETYP	Respondent's dwelling type: 1) terrace; 2) detached; 3) semi-detached; 4) low flat; 5) high flat; 6) bungalow; 7) semi-terrace; 8) other	C
HSCGOST	Rent or mortgage repayments (see prompt card nine for categories - Appendix C)	r
HSHSIZE	Number of persons in household	R
INCOM	Head of household's or respondent's income (see prompt card 6 for categories - Appendix C)	r
INTID	Interviewer's identity	C
INTNO	Interviewer number	C
LCURT	Length of respondent's dwelling curtilage (metres)	R
LIKE1	Respondent's likes of area (categorised after survey)	C
LIKE2	Respondents likes of area (categorised after survey)	C
LIKE3	Respondent's likes of area (categorised after survey)	C
LITTR	Presence of litter bins in area	D
LRES	Length of residence in present dwelling	R
MAININC	Income of head of household (categories as INCOM)	r
MARIST	Marital Status of respondent 1) Single; 2) Married; 3) Widowed; 4) Separated/Divorced	C

MODSH	Mode of travel for shopping 1) car; 2) Motor cycle; 3) Bicycle; 4) Walk; 5) Bus; 6) Rail; 7) company transport; 8) other	C
MODWK	Mode of travel to work (categories as for MODSH)	C
MORINC	Presence of additional earners in household	D
MOVEQ	Whether respondent was considering moving in next 5 years	D
NCARPK	Average number of off-street parking places per dwelling in respondent's immediate area	R
NMOV	Number of moves made by respondent in previous 5 years	R
NOBED	Number of bedrooms in respondent's dwelling	R
NOHSES	Number of dwellings in a 50m sided square centred on respondents dwelling	R
NOIS	Predominant noise source: 1) heavy traffic; 2) medium traffic; 3) light traffic; 4) children; 5) industry 6) other	C
NONCON	Type of non-conforming use in area 1) none; 2) traffic generating; 3) noise generating; 4) air polluting; 5) other	C
OCCUP	Occupation of respondent - classified into socio-economic groups	C
PERSBED	Number of persons per bedroom in respondent's dwelling	R
PFACT1-PFACT9	Physical factors created by factor analysis (Appendix B)	R
PLAY	Usual place respondent's children play 1) street; 2) garden; 3) in area; 4) fields; 5) local park; 6) house	C
PLOC	Respondent's previous residence location (categorised after interviews)	C
PPROOM	Proportion of households in enumberation district living at over 1½ persons per room[*]	R
PTBBROK	Percentage of footpath covered with broken paving; or unmade	R
PTHLIT	Percentage of footpath affected by weeds or litter	R
PTHWTH	Width of footpath	R
PUNF	Proportion of households in enumberation district in private unfurnished tenancy[*]	R

RDBROK	Percentage of road surface broken or unmade	R
RDTYP	Type of road outside respondent's dwelling; 1) main road; 2) through road; 3) cul-de-sac; 4) crescent; 5) pedestrian only; 6) other	C
RDWTH	Width of road	R
SATAIR	Respondent's satisfaction with air quality (7pt scale)	r
SATCLE	Respondent's satisfaction with cleaness (7 pt scale)	r
SATCON	Respondent's satisfaction with convenience (7 pt scale)	r
SATCUP	Respondent's satisfaction with council upkeep (7pt scale)	r
SATGRE	Respondent's satisfaction with greeness (7pt scale)	r
SATHOM	Respondent's satisfaction with home (7pt scale)	r
SATKID	Respondent's satisfaction with suitability for children (7pt scale)	r
SATLOOK	Respondent's satisfaction with friendliness (7pt scale)	r
SATNOI	Respondent's overall satisfaction (7pt scale)	r
SATPAL	Respondent's satisfaction with friendliness (7pt scale)	r
SATPRIV	Respondent's satisfaction with privacy (7pt scale)	r
SATSAF	Respondent's satisfaction with safety (7pt scale)	r
SATUPK	Respondent's satisfaction with private upkeep (7pt scale)	r
SCHAGE	Age at which respondent left school	R
SEX	Sex of respondent	D
SIZEOK	Whether respondent's dwelling was 1) right size; 2) too large; 3) too small for present needs	C
TENUR	Tenure of respondent's dwelling: 1) Own home (outright); 2) Own home (mortgage); 3) rental purchase; 4) council; 5) private unfurnished; 6) private furnished; 7) NCB	C
TREERD	Whether road lined with trees	D
TREES	Number of mature trees (over 5m) within sight, 106m back and front of dwelling	R
VANDAL	Whether there was evidence of vandalism in area	D
VAR001	Respondent's choice of first preference (see prompt card 2, Appendix C)	C

VAR002	Respondent's choice of second preference	C
VAR003	Respondent's choice of third preference	C
VAR004	Respondent's choice of fourth preference	C
VAR005	Respondent's choice of fifth preference	C
VAR006	Number of people in respondent's household in 0-4 age group	R
VAR007	Number of people in respondent's household in 5-9 age group	R
VAR008	Number of people in respondent's household in 10-14 age group	R
VAR009	Number of people in respondent's household in 15-19 age group	R
VAR010	Number of people in respondent's household in 20-44 age group	R
VAR011	Number of people in respondent's household in 45-59 age group	R
VAR012	Number of people in respondent's household in over 60 age group	R
VAR013-VAR016	Absence of any of the following facilities: 1) fixed bath/shower; 2) hot and cold water at fixed bath/shower; 3) wash hand basin; 4) hot and cold water at wash hand basin; 5) sink; 6) hot and cold water at sink; 7) a WC within dwelling	C
VAR017	% dwellings in building condition 1 (very good condition) within vicinity of respondent's dwelling (Appendix C)	R
VAR018	% dwellings in building condition 2) (Good condition) within vicinity of respondent's dwelling (Appendix C)	R
VAR019	% dwellings in building condition 3) (Poor Condition) within vicinity of respondent's dwelling (Appendix C)	R
VAR020	% dwellings in building condition 4) (Bad Condition) within vicinity of respondent's dwelling (Appendix C)	R
VAR021	% dwellings in upkeep category A (Good upkeep)	R
VAR022	% dwellings in upkeep category B (Average Upkeep)	R
VAR023	% dwellings in upkeep category C (Bad upkeep)	R
VAR024	Distance from respondent's dwelling to nearest industry	R

VARO25	Distance from respondent's dwelling to major through road	R
VARO26	Distance from respondent's dwelling to general store	R
VARO26	Distance from respondent's dwelling to chemists shop	R
VARO28	Distance from respondent's dwelling to primary school	R
VARO29	Distance from respondent's dwelling to secondary school	R
VARO30	Distance from respondent's dwelling to open space	R
VARO31	Distance from respondent's dwelling to a park	R
VARO32	Distance from respondent's dwelling to childrens play	R
VARO33	Distance from respondent's dwelling to pub/club	R
VARO34	Distance from respondent's dwelling to town centre	R
VARO35	Distance from respondent's dwelling to bus stop	R
VERG	Presence of a verge on respondent's road	D
VEWBB	Type of view in background at rear of dwelling: 1) residential; 2) industrial; 3) dereliction; 4) woods; 5) park; 6) country; 7) Mixed; 8) other	C
VEWBF	Type of view in foreground at rear of dwelling (categories as VEWBB)	C
VEWFB	Type of view in background at front of dwelling (categories as VEWBB)	C
VEWFF	Type of view in foreground at front of dwelling (categories as VEWBB)	C
WALL	Type of boundary to respondent's home: 1) wall; 2) fence; 3) hedge: 4) nothing; 5) other	C
WALLREP1	% of boundaries in vicinity of respondent's dwelling in need of repair/cutting	R
WALLREP2	whether respondent's boundary in need of repair/cutting	D
WOTCT	What countryside respondent usually visited (categorised after interview)	C
WOTGO	What activities respondent did: going out in evening (categorised after interviews)	C
WOTSAF	What safety respondent was considering: 1) traffic; 2) crime; 3) vandalism	C

215

YMOV1 Why respondent moved to present dwelling   C
       (categorised after interview)

YMOV2 Why respondent would like to move from existing dwelling C
       (categorised after interviews)

Scale Status Codes

D - Dichotomy

C - Category

r - ranked

R - Ratio

Variables marked ✶ were taken from the 1971 Census.

APPENDIX B

<u>The Physical Variables:</u>

<u>Correlations and Factor Analysis</u>

B1.   The correlation matrix for the physical variables is given in table B1. Correlations which were not significant at the 5% level have been excluded from the table for clarity. The computer designation of the variable has been used for labelling the variables; Appendix A defines the meaning of the variable codes.

The significance levels corresponding to the correlations are as follows:

.001	r greater than 0.180
.01	r between 0.130 and 0.180
.05	r between 0.180 and 0.090

B2.   Factor Analysis

The following options available in the SPSS package (Nie N., et al; 1970) were selected: principal factor with iteration; the number of iterations was limited to 25. The initial factor matrix was rotated using the Varimax method to produce orthogonal factors. All the data for the case-study areas was combined for the analysis.

The output obtained included the original correlation matrix; the communalities, eigen values and proportion of variance explained; the initial factor matrix, and the rotated factor matrix. In addition the best estimate of coefficients for the construction of the factors from the original variables was obtained (factor score matrix).

Because of the limitations of capacity in the SPSS package at both Aston and Birmingham Universities, where the programmes were run, it was necessary to limit the number of variables input into the factor analysis run. Three criteria were used in reducing the number of variables:

a) Variables which were very highly correlated with another could be

excluded. Hence the following variables were left out: percentage of dwellings in the best condition; percentage of dwellings in good upkeep; and building condition of respondent's dwelling (VAR017, VAR021, BCTRES: r greater than .64 in each case - an arbitrary cut off point)

b) Variables which had a very limited range of values in the sample were excluded ((percentage of footpath broken; Extent of rear view, extent of front view) PTHBROK, DIST8, DIST9). VAR019 was aggregated with VAR020 to form a new variable - BADCAT (i.e. the % of dwellings in the two worst condition categories, 3 & 4).

c) Variables which had no relationship with the measures of perception. The following variables were thus excluded: percentage of boundaries in need of repair; upkeep category of respondent's dwelling; percentage of road surface broken or unmade; distance to chemists shop, open space and childrens play, pub/club (WALLREPI, BUPRES, RDBROK, VAR027, VAR030, VAR032, VAR033). The remaining 26 variables were included in the initial correlation matrix for the factor analysis.

B3. Factor Analysis Results

Nine factors were constructed from the 26 variables. The eigen values and the percentage of total variance in the data explained by each of the rotated factors are given in Table B2. Table B3 gives the correlations of the nine factors with the 26 physical varia-bles, from which the following interpretations of the meaning of the factors is derived.

Factor 1 is a locational measure with respect to the town centre (r of 0.969 with distance to town centre). The high correlations between this factor and the distances to parks and secondary schools arise from their usual location in or near the town centres (or equidistant from the centres and the case-study areas).

<u>Factor 2</u> is a tenure factor. It correlates highly with the proportion of
households renting from the council, and negatively with the proportion
renting privately. The factor also has some physical aspects, with building
quality (high council proportion - better quality), width of paths and distance
to a bus stop also being correlated with this factor.

<u>Factor 3</u> Three census variables load highly on this factor, which has been
termed the 'social' factor: the proportion of households without cars, the
proportion living at over $1\frac{1}{2}$ persons per room, and the proportion renting
private unfurnished dwellings. The interpretation is not easy as the mean-
ing of the census variables in physical terms is not clear.

At first sight this factor would appear to be an indicator of wealth, or
of household conditions. However the factor is unrelated to income (see
table 10.3), but is related to household size and occupation density.
Perhaps the factor is an indicator of household means i.e. disposable
income which falls with the increased size of household.

The age of the dwelling is also related to this factor - the newer the
dwelling, the lower the car ownership. This appears to be the influence of
the two large post war estates, Nevison and Warwick, both of which had low
car ownership in 1971.

The other variables which correlate with this factor, the density of
trees and the proportion of poorly kept dwellings also accord with the
location of the 'poorer' respondents in estates like the above which also
had poor tree and upkeep conditions (especially Nevison).

<u>Factor 4</u> is primarily a measure of density with the number of houses, and
the length of curtilage highly related to the factor. The other variables
e.g. the density of trees, parking spaces and the distance to a general
store are all closely linked to density.

Factor 5 is a measure of dwelling quality. It correlates most highly with the age of the respondent's dwelling, the proportion of dwellings in very good condition, and the amount of parking per dwelling. The distance from a main road, and to a general store, are also correlated with this factor. This is consistent with conditions in the case study areas in which the older terraced housing is often located on or near main roads, is poorer in quality and has fewer off-street parking places than other areas. The opposite is the more recent, expansive private and council estates, remotely located but with better dwelling quality.

Factor 6 This factor is a measure of dwelling upkeep. It is highly correlated with the proportion of dwellings in the middle upkeep category, and is also correlated with the dwellings in the worst building condition.

Factor 7 This factor is a composite measure of location with respect to local facilities. It is correlated with the distance to the nearest primary school, bus stop and general store.

Factor 8 Once again this factor is not easy to interprete, mainly because it is most closely correlated to two variables which at first sight have little in common: the proportion of households with all the basic amenities; and the frequency of buses. It is likely that this factor is a measure of the internal quality of the dwellings in an area, the relationship with the frequency of buses arising from the fact that the four case study areas with the highest bus frequencies (and all located near centres and main roads) - Bellevue, Thornes, Glasshoughton and Hemsworth - were all areas which had a high proportion of dwellings without all basic amenities.

Factor 9 The main variable with which this factor is correlated, but which only accounts for 41% of the variance, is the distance to the nearest

industry. This variable was relatively unrelated to any other physical

variable, except the density of trees, as there is no consistent pattern of

industrial location with respect to town centres in the District.

Physical Variables	AGEBLDG	WALLREPI	NCARPK	VAR017	VAR018	VAR019	VAR020	BCTRES	VAR021	VAR022	VAR023	BUPRES	PTHMTH
AGEBLDG	1.00												
WALLREPI	-.14	1.00											
NCARPK	.35		1.00										
VAR017	.58	-.22	.42	1.00									
VARC18	-.50	.22	-.36	-.96	1.00								
VAR019	-.32			.20	-.20	1.00							
VAR020							1.00						
BCTRES	-.41	.16	-.27	-.70	.65	.25		1.00					
VAR021		-.18	.47	.28	-.25			-.26	1.00				
VAR022			.21		.10	-.12	-.20	.11	-.64	1.00			
VAR023		.10	-.22	-.22	.14	.25	.25	.14	-.21	-.61	1.00		
BUPRES			-.14	-.16	.16			-.29	-.34	.10	.22	1.00	
PTHWTE	.26			.27	.28				.11	.12		.13	1.00
PTHBRCK			.15										
PTHLIT	.13	.12	-.12						-.20		.21	.10	.10
RHWTE	.39		-.14	-.20	.19			.10	.10	-.14			-.15
RDBRCK				-.16	.15			.11					-.17
TREES	-.26	.20	.20		.10				.12		-.19	-.10	
DIST8	.12			.12	-.11			-.12		.12			.18
DIST9						-.10							
VAR024													
VAR025	.39	.17	.21	.29	-.23	-.23		-.27	.23	.18	-.16		.15
VARC26	.37		.37	.26	-.21	-.21		-.15		.18			.11
VAR027	.43			.16	-.12	-.21		-.19	-.11		.21		
VAR028		.26	-.11	-.15	.16		.15		-.18		.20		-.15
VAR029	.12		-.11						-.10		.19		
VAR030				.10	-.12		.19	-.19		-.14	.12	-.10	-.15
VAR031	.32								-.14				
VAR032		.14	-.11					.20					-.15
VAR033	.13	.13	.15			-.26	-.28						
VAR034	.17		-.13					.11	-.16		.14		
VAR035										-.15	.22		-.15
NOESES	-.49	-.16	-.36	-.21	.10	.41		.12					-.18
LCURT	.16	.12	.28			-.19			.14		-.11		-.12
BSFRE	-.18		-.22			.16	.20				.12		-.17
ALLAMEN	.41		.11	.24	-.19	-.19	-.11					.10	.31
COUNL	.36			.31	-.28	-.20	.10	-.16	-.24	.26			.36
PUMF			-.16	-.36	.33	.16		.33	-.14	.14	.33	.23	-.15
PPRCCM	.39			.13	-.13		-.10		-.24		.20	.16	.11
CAROWN	.10		-.41	-.17	.13		.10	.19	-.40	.12	.26	.23	

Table B1 Continued

Physical Variables	PTHROK	PTELIT	RDWTH	RDEROK	TREES	DIST8	DIST9	VAR024	VAR025	VAR026	VAR027	VAR028	VAR029	VAR030
PTHROK	1.00													
PTELIT		1.00												
RDWTH			1.00											
RDEROK	.36			1.00										
TREES		-.11	.12		1.00									
DIST8			.13			1.00								
DIST9							1.00							
VAR024					.16			1.00						
VAR025		.11	-.23	-.10	.10	.13	.14	.21	1.00					
VAR026			-.36			.29	.15	.12	.28	1.00				
VAR027		.33	.19		-.29			-.18	.30	.19	1.00			
VAR028					-.13	-.13			-.23	.10	.50	1.00		
VAR029		.17	-.25		-.21						.45	.39	1.00	
VAR030		-.13		.10	-.11			-.22	-.10		.17	.21		1.00
VAR031		.11	-.22		-.37				.15		.54	.25	.64	.14
VAR032		-.23		.11				-.14	-.20			.39		.79
VAR033					.25	.14	.10	-.12		.37				-.20
VAR034		.16	-.24		-.19			-.24			.44	.31	.89	
VAR035		.16		.17	-.27				.10		.26	.21	.33	
NOESES	-.16		.27		-.23	-.15	-.19		-.31	-.42	-.25		-.13	
LCURT			-.20	.14	.26				.22	.26			.11	
ESFRE			.10		.14	-.16		-.16	-.36	-.24		.40	.11	.74
ALLAMEN		.10	-.25	.19	.10	.10	.10		.44	.35	.19		.14	-.30
COUNL			-.30	-.13	-.11	.20		.21	.13	.36	.12	.10	.16	-.12
PUNF		.18	.10		-.17	-.13				-.25			.14	-.15
PPROGM	.20	.23	-.21	.11	-.34						.19		.27	.11
CAROWN		.12			-.37				-.22	-.22		.10	.28	

219

Table B1 Continued

Physical Variable	VAR031	VAR032	VAR033	VAR034	VAR035	NOESES	LCURT	ESFRE	ALLAMEN	CCUNL	PULF	PPROCI	CAROME
VAR031	1.00												
VAR032	.27	1.00											
VAR033	-.15	.10	1.00										
VAR034	.72			1.00									
VAR035	.15	-.20	.23	.29	1.00								
NOESES	-.21	-.13	-.34	-.22		1.00							
LCURT			.26	.16		.53	1.00						
ESFRE		.63	-.32		.11	.21	-.19	1.00					
ALLAMEN	.13	-.17	.36	.26	-.15	-.41	.33	-.53	1.00				
CCUNL	.34	.10		.19	-.17	-.27		.16	.33	1.00			
FUNF		-.36		.22	.36	.10		.11		-.58	1.00		
PPROCH	.29		-.14	.27		-.13			.21		.38	1.00	
CAROWN	.36		-.21	.26	.19		-.12	.10	-.14	.29	.33	.39	1.00

1) Significance levels: r greater than 0.180 - .001 level
   r between 0.130 and 0.180 - .01 level
   r between 0.180 and .090 - .05 level

2) Key to variable codes in Appendix A

Table B2   ROTATED FACTORS: EIGENVALUES

Factor	Eigenvalue	% Variance Explained
1	4.14	26.0
2	3.59	22.6
3	1.94	12.2
4	1.66	10.5
5	1.36	8.6
6	0.98	6.1
7	0.90	5.7
8	0;79	5.0
9	0.54	3.4

Table B3 Factor Analysis - Rotated Factor Matrix

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor9
AGEBLDG	.117	.221	.451	.229	.662	-.030	.058	.203	.024
NCARPK	-.114	-.115	-.162	-.363	.584	.040	-.057	.038	-.016
VARC17	-.085	.307	.000	-.057	.695	-.005	-.131	.106	-.117
BADCAT	.011	-.007	.026	-.281	-.279	.253	-.019	-.130	-.060
VARC22	-.044	.180	.088	-.020	-.183	-.907	.062	.049	-.045
VARC23	.072	-.019	.310	-.081	-.228	.757	.222	.029	.039
PTHWTH	-.037	.527	.209	-.111	.226	-.046	-.029	.287	-.256
PTHLIT	.081	-.037	.265	-.069	.032	.113	.127	.139	-.128
RDWTH	-.178	-.197	-.184	-.181	-.183	.069	.025	-.163	-.001
TREES	-.308	.007	-.426	-.402	-.168	-.043	-.071	.144	-.326
VARO24	-.093	.068	.012	.006	-.030	.032	.028	.092	.639
VARO25	.194	.025	-.036	.126	.417	.125	.170	.433	.236
VARC26	.042	.152	-.060	.341	.341	-.187	.275	.226	.125
VARO28	.222	.035	-.037	.077	-.155	.073	.718	-.177	.035
VARC29	.823	-.022	.116	.039	-.075	.103	.182	.062	-.040
VARC31	.726	.213	.198	.057	.078	-.004	.046	-.059	.106
VARO34	.969	-.032	.136	.120	-.105	.012	.094	.142	-.252
VARO35	.305	-.325	.231	-.098	.137	.053	.347	-.102	.032
NCESES	-.117	-.197	-.094	-.757	-.299	.006	-.095	-.143	-.121
LCURT	.099	-.068	-.075	.675	.029	-.006	-.030	.151	.082
BSFRE	.102	.030	-.075	-.209	-.130	.098	.281	-.595	-.160
ALLAREN	.132	.218	.095	.286	.133	-.019	.019	.748	-.047
COUNL	.215	.832	.052	.120	.086	-.141	.052	.068	.238
PUNF	.051	-.687	.636	.006	-.235	.110	-.024	.157	-.120
PPROCM	.133	-.010	.641	.019	.087	.038	-.042	.113	.001
CARCAP	.231	.219	.690	-.073	-.305	-.023	-.049	-.249	.156

APPENDIX C   THE QUESTIONNAIRES AND SURVEY SHEETS

RESIDENTIAL ENVIRONMENT SURVEY : 1974

Introduction.

I am carrying out a survey into what people think about the places they live in. The research is being done for Aston University in Birmingham. Your name has been chosen from a list of all people living in this area.

Interview number

Address of Interview (write in)

Area code

Date of Interview:

1. How long have you lived at this address?

1.1. (if less than 5 years) How many times have you moved in the last 5 years?
Where did you live last?

1.2. How satisfied are you with your home? Card 1.

2.1. Thinking about your home area, that is the area you can see from your doorstep, what are the things that you most like about it? (write in)

2.2. And what are the things that you most dislike about it? (write in)

224

3. I would like you now to say how convenient your home is to the things mentioned on the first sheet. Will you put a cross on each line in the place which you think shows the right level of convenience for that thing? First of all, which is the worst one? Put a cross where you think it should be. Now think of the one which is most convenient and cross that. Now do the rest. If you don't know, put a cross in the box on the right.

1. Daily shopping (e.g. fresh foods, papers etc)
2. Weekly shopping (or less frequent)
3. Buses
4. Workplace
5. Parks, countryside etc.
6. Pubs, clubs
7. Primary school
8. Secondary school
9. Other entertainment (films, shows, dances, etc)

4. If you were able to have two of these improved which ones would you choose?

5. How would you rate the overall convenience of your home to all the things on the sheet? Use the line at the bottom of the sheet.

6. Let us now turn to some other aspects of your home area (you will recall that this is roughly the area you can see from your doorstep). Look at the second sheet; either ring the appropriate number, or put a cross on the line in the right place.

6.1. How clean or dirty is your home area?

6.2. How noisy or quiet is your home area?

6.3. How clean or dirty is the air here?

6.4. How would you rate the condition of the buildings in your home area?

6.5. How safe for you would you say it is here? (traffic, crime etc)

6.6. How well do you think this area is kept up?
(grass, fences, roads, pavements etc)

6.7. What is your home area like for children?

6.8. How friendly are people in this area?

6.9. How would you rate the looks of your home area?

6.10. What impression do you think other people have of
your home area?

7. What is it about the looks of your home area that you
like/dislike? (Do not prompt at first) (write in)
If no response try country-like

greeness

views

colour

housing variety

interesting

landscaping.

8. EITHER

8.1. I would now like you to show me on sheet 3A how satisfactory
you think the various features of your home area are. As
before, mark the most satisfactory thing on first and then
the least satisfactory before doing the others.
1. Condition of buildings
2. Air quality
3. Safety
4. Quietness
5. Convenience
6. Cleanliness
7. Upkeep
8. Friendliness
9. Appearance
10. Good for children
11. Reputation
OR

8.2. Say whether they are satisfactory or not (sheet 3B).

9. If it were possible to improve two of these things, which
two would you choose? 226

10. How would you rate your overall satisfaction with your home area as a place to live, bearing in mind all the things we have mentioned? Use the line at the bottom of sheet 3.

11. EITHER

11.1. Looking at the list on the card (card 2) can you tell me which three things are most important to you when judging an area as a place to live?

1.

2.

3.

OR

11.2. How important do you feel each of the following things are when living in an area? Give each thing a score of 1-7 according to how important each thing is. (card 3).

1. Safety of area
2. Reputation of area
3. Friendliness of people in area
4. Upkeep of area
5. Quietness of area
6. Clean air
7. Appearance of area
8. Convenience
9. Condition of buildings good
10. Area good for children
11. Clean area

12. And now, just to complete the questionnaire, I would like to ask you some questions about yourself to help me to sort out the results. (Confidentiality if asked)

12.1. Sex (do not ask)   M 1   F 2

12.2. Age (Card 4)   Less than 20   1

21-25	2
26-30	3
31-35	4
36-40	5
41-45	6
46-50	7
51-55	8
56-60	9

12.3. Are you   Married   1
                 Single   2
                 Separated   3
         ° Divorced   4
       or Widowed?   5

12.4. How many children of these age groups are there
in this household?

                 0-5

                 5-10

                 10-15

                 15-20

12.5. At what age did you leave school?

12.6. Have you done any studies since leaving school?
To what level?

                 Degree   1
                 Cert. Ed   2
                 HND   3
                 GCE A level   4
                 GCE O level   5
                 Other   6
                 None   7

12.7. Do you own your home, or do you rent it? (If
rented, furnished or unfurnished, council,
private or NCB?)

                 Owner Occ.   1
                 Rent unf. Priv   2
                      fur. Priv   3
                      unf. Coun   4
                      unf. NCB   5

12.8. What is your occupation? (write in):
If you are a housewife do you have a part-time
job? If so, what?

12.9. Where is your workplace? (Place):   (dist)

12.10. What job do you actually do there? (write in):

228

12.11. How do you get there usually?

Car	1
Bus	2
Bike	3
M/cle	4
Walk	5
Train	6
Other	7

12.12. In which group does your wage or income fall?
(Card 5)

	per week	per annum	
less than	£15	£780	1
	15-20	780-1,040	2
	20-25	1,041-1,300	3
	25-30	1,301-1,560	4
	30-35	1,561-1,820	5
	35-40	1,821-2,080	6
	40-50	2,081-2,600	7
	50-60	2,601-3,120	8
over	60	£3,121	9

12.13. Are there any other wage earners in the household?
Yes 1   No 2

12.14. Do you do any every-day shopping?   Where? (write in):(dist)
Yes 1   No 2

12.15. Do you do any weekly shopping? Where? (write in): (dist)
Yes 1   No 2

12.16. How often do you go out in the evenings?

more than 3 times a week 1
1-2 times a week   2
less than once a week   3
more than 3 times a week - where to?:
less than 3 times a week - where to?:

12.17. Do you use the local park or countryside?
Yes 1   No 2
Which place (write in): (dist)

12.18. Where do your children play? (write in) (dist)

12.19. Where do your children go to school? (dist)

        1

        2

        3

12.20. Do you have a car?

    Yes 1   No 2

12.21. If so, where do you park it? (dist)

Thank you for your help. (Have you any comments
about the questions I have asked? Could you
understand all of the questions? etc.)

	Very Inconvenient		Very Convenient	
1. Daily Shopping (eg. fresh foods, papers etc.)	├──	──	──┤	☐ Dont know
2. Weekly (or less often) Shopping	├──	──	──┤	☐ Dont know
3. Buses	├──	──	──┤	☐ Dont know
4. Workplace	├──	──	──┤	☐ Dont know
5. Parks, countryside etc.	├──	──	──┤	☐ Dont know
6. Pubs, clubs	├──	──	──┤	☐ Dont know
7. Primary School	├──	──	──┤	☐ Dont know
8. Secondary School	├──	──	──┤	☐ Dont know
9. Other entertainment (films, shows, dances etc)	├──	──	──┤	☐ Dont know
	Very Inconvenient		Very Convenient	

OVERALL CONVENIENCE

```
├──────────────┼──────────────┤
Very           O.K.          Very
Poor                        .Good
```
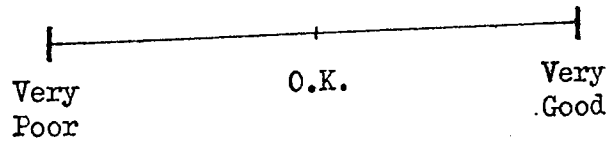
1. Cleanliness of area

       7 Very clean
       6
       5
       4
       3
       2
       1 Very dirty

2. Quietness of area

       7 Very quiet
       6
       5
       4
       3
       2
       1 Very noisy

3. Quality of the air

       7 Very clean
       6
       5
       4
       3
       2
       1 Very dirty

4. Condition of buildings

       7 Very good
       6
       5
       4
       3
       2
       1 Very poor

5. Safety of area

       7 Very safe
       6
       5
       4
       3
       2
       1 Very unsafe

6. Upkeep of area

       7 Very well kept
       6
       5
       4
       3
       2
       1 Very poorly kept

7. Suitability for children

       7 Very suitable
       6
       5
       4
       3
       2
       1 Very unsuitable

8. Friendliness of people

       7 Very friendly
       6
       5
       4
       3
       2
       1 Very unfriendly

9. Looks of area

       7 Very attractive
       6
       5
       4 O.K.
       3
       2
       1 Very unattractive

10. Reputation of area

       7 Very good
       6
       5
       4
       3
       2
       1 Very bad

1. Cleanliness of area

   Very   Very
   dirty   clean

2. Quietness of area

   Very   Very
   noisy   quiet

3. Quality of the air

   Very   Very
   dirty   clean

4. Condition of buildings

   Very   Very
   poor   good

5. Safety of area

   Very   Very
   unsafe   safe

6. Upkeep of area

   Very   Very
   poorly kept   well kept

7. Suitability for children

   Very   Very
   unsuitable   suitable

8. Friendliness of people

   Very   Very
   unfriendly   friendly

9. Looks of area

   Very   Very
   unattractive   attractive

10. Reputation of area

   Very   Very
   bad   good

233

		Very Unsatisfactory	Very Satisfactory	
1.	Condition of buildings			Dont know ☐
2.	Quality of the air			Dont know ☐
3.	Quietness of the area			Dont know ☐
4.	Safety of area			Dont know ☐
5.	Cleanliness of area			Dont know ☐
6.	Upkeep of area			Dont know ☐
7.	Friendliness of people			Dont know ☐
8.	Appearance of area			Dont know ☐
9.	Reputation of area			Dont know ☐
10.	Good for children			Dont know ☐
11.	Convenience			Dont know ☐

Very   Very
Unsatisfactory   Satisfactory

OVERALL SATISFACTION

Very   Very
Unsatisfied   Satisfied

234

1. Condition of buildings   Satisfactory ☐   Unsatisfactory ☐   Dont know ☐

2. Quality of the air   Satisfactory ☐   Unsatisfactory ☐   Dont know ☐

3. Quietness of the area   Satisfactory ☐   Unsatisfactory ☐   Dont know ☐

4. Safety of area   Satisfactory ☐   Unsatisfactory ☐   Dont know ☐

5. Cleanliness of area   Satisfactory ☐   Unsatisfactory ☐   Dont know ☐

6. Upkeep of area   Satisfactory ☐   Unsatisfactory ☐   Dont know ☐

7. Friendliness of people   Satisfactory ☐   Unsatisfactory ☐   Dont know ☐

8. Appearance of area   Satisfactory ☐   Unsatisfactory ☐   Dont know ☐

9. Reputation of area   Satisfactory ☐   Unsatisfactory ☐   Dont know ☐

10. Good for children   Satisfactory ☐   Unsatisfactory ☐   Dont know ☐

11. Convenience   Satisfactory ☐   Unsatisfactory ☐   Dont know ☐

OVERALL SATISFACTION

                    Very   Very
                 Unsatisfied   Satisfied

                 L_____·_____J

235

SURVEY SHEET

Interview numbers
in street

of buildings   pre 1875 (1) 1876-1918 (2) 1919-1944 (3) 1945-1960 (4)

1961+ (5)

6

▢

ding type   Terrace (1) Detached (2) Semi-det. (3) Flat up to (4)
3 storeys

Flat - high (5) Pre-fab (6) Converted to flats (7)

Other (8)

7

▢

a between dwelling and road

Maintained grass (1) Private gardens (2) Private yard (3)

Hard surface (4) Nothing (5) Other (6) -specify

8

▢

et furniture   Seats yes 1 no 2   litter bins yes 1
no 2

bus shelter yes 1 no 2   lighting yes 1 no 2

9 _____ 12

▢▢▢▢

% in working order

13 ___ 15

▢▢▢

ding Condition   Number of houses in Cat. 1   %

"   "   "   "   " 2   %

"   "   "   "   " 3   %

"   "   "   "   " 4   Do not code

16 17

▢▢

18 19

▢▢

20 21

▢▢

rivate upkeep   "   "   "   "   " A   %

"   "   "   "   " B   %

"   "   "   "   " C   Do not code

22 23

▢▢

24 25

▢▢

r Parking   Av. no. of spaces (off street) per dwelling   (one decimal pl.)

26 27

▢▢

rivate space (rear)   Garden 1 Paved Yard 2 Communal - grass 3

Communal - hard 4   Other (specify) 5

28

▢

avement   % of area covered with broken paving

% of area affected by litter & weeds

width (metres, to one decimal place)

29 30

▢▢

31 32

▢▢

33 34

▢▢

oad   width   (metres)

% of area unmade or with broken surface

35 36

▢▢

37 38

▢▢

lls etc.   Wall   1 Fence   2   Hedge   3

% in need of repair / cutting

39 40 41

▢ ▢▢

42 44

▢▢▢

rees   No. of mature trees in sight within 100m of centre of road (5m+ high)

iews : Residential 1   Industry 2   Derelict Land 3 Woodland 4

Parkland   5 Countryside 6 Restricted (250mtrs -) 7

Other (specify) 8

45

▢

Items of Dereliction (write in)   1   Yes/No 2

Non - conforming use within street(specify)   1   Yes/No 2

Noise   Traffic   1   Children 2   Industry 3   Other (specify) 4

Air Pollution   in smoke control area 1 not in smoke control area 2

Distance   nearest industry (specify) (100ms)

                            major through road (A,B,M/way) (10ms)

                            walking dist to general store (100ms.)

                            walking dist to primary school (100ms)

                            dist to secondary school   (100ms)

                            nearest public play space, open area (100ms)

                            nearest park / recreation ground   (100ms)

                            nearest formal childrens playspace (100ms)

                            pub / WMC (100ms)

                            Town centre (100ms)

                            Bus stop   (100ms)

Bus frequency to town centre (average freq. per hour 6am. - 12 pm)

No. of dwellings per 100m of street

Census data

          % pop over retiring age

          % pop less than 5

          pop density ppha.

          % car ownership

          % h/holds with no inside WC

          % h/holds lacking or sharing baths

          % h/holds lacking or sharing hot water

SPARE

New Card

Categories of Dwelling Condition: observers notes

Categories

1. Well maintained

    Good roof, good walls (no loose slates, no settlement, good pointings)

    Good chimneys

    Windows and door openings true

    Paint condition good

    Rainwater goods, etc. in good order

2. Fair Condition

    Some roof repairs needed

    Painting needed

    Some painting needed

    Structurally sound

3. Poor Condition

    Some structural repairs necessary

    major roof repairs necessary

    Total repointing needed or rerendering

4. Semi-derelict

    Buildings ready for demolition and clearance

    Very poor structural order

Categories of Upkeep - observers notes

Category A

Very spruce - immaculate all windows

Street paintwork, sills, gardens and rear very clean

Category B

Fair condition - some painting necessary with cleaning down of dirty paint-

work etc.

<u>Category C</u>

Very poor, dirty windows, curtains, broken panes/cardboard

Litter, unkempt garden

RESIDENTIAL ENVIRONMENT SURVEY : 1974

Introduction

I am carrying out a survey for the Universtity of Aston in Birmingham and Wakefield District Council into what people think about the places they live in. Your name has been chosen from a list of all people living in this area. Would you mind answering some questions about your home and its neighbourhood ?

Interview number

Address of Interview :

Date of Interview :

Area code

1. How long have you lived at this address ?   (yrs, mnths)

2. (Only ask if less than 5 yrs)

Where did you live before? -   (district if local, town, county if not)

How often have you moved in the last 5 years ?

3. How ~~many rooms do you occupy ? (exc. bathroom, kitchen, toilet~~)

4. Is your home - too large 1
                    , right size 2   for your present needs ?
                    too small 3

5. Do you lack any of the following facilities ?   (CARD 1)

6. Do you own your home, or is it rented ? (and if rented, furnished or unfurnished, council or private)

Own home   1
Rent - council   2
     - priv. unf   3
     - priv. furn   4

7. How satisfied are you with your home (CARD 2)

8.1 Thinking about your neighbourhood, that is roughly the area ~~you can see from your doorstep~~, what are the things that you most like about it ? (write in)

8.2 And what are the things that you most dislike about it ?
(write in)

9.1 How convenient is your home for shopping ?
       Either A. – The top line on the first sheet represents a scale of convenience to shopping. It runs from very convenient on the right hand side through convenient and not so convenient to very inconvenient on the left-hand side. Please put a cross somewhere along the line in the position which you think shows the right level of convenience.
       Or   B. – The set of numbers in the top left corner of the first sheet is a scale of convenience to shopping. It runs from 7 for very convenient, through convenient and not so convenient to 1 for very inconvenient. Please ring the number which you think shows the right level of convenience.

9.2 How often do you go shopping?
    1 Daily
    2 Over 1 p.week
    3 Less than 1 p.w.
    4 ~~Never~~

9.3 Where do you do your shopping? (write in)
          code dist. 100 m's

10.1 How convenient is your home for buses ? use the line / numbers on the first sheet again. (Re- explain if necessary)

10.2 How often do you travel by bus?
    1 Daily
    2 1 p.week +
    3 1 p.week -
    4 never

11.1 How convenient is your home for parks or ~~recreation grounds~~?
11.2 How often do you use them ?
    1 Daily
    2 1 p.week +
    3 1 p.week -
    4 never

11.3 where is the one that you use most? (write in)
          code dist 100 m's

12.1 How convenient is your home to the countryside
12.2 How often do you go out into the countryside?
12.3 Where do you go to? (write in)
    1 1 p.week +
    2 1 p.mnth +
    3 1 p.mnth -
    4 never   code dist Km

13.1 How convenient is your home for going out in the evening?
13.2 How often do you go out of an evening?
    1 Daily
    2 1 p.week +
    3 1p.week -
    4 never

13.3 Where do you go to? (write in)
          code dist 100 m's

14.1 How convenient is your home to work?

14.2 Where is your work? (place - write in)

14.3 How do you get there?
                                                 Car 1
                                                 Bus 2
                                                Bike 3
                                                M/cl 4
                                                Walk 5
                                                Rail 6
                                                Other 7

15.1 How convenient is your home to :   Primary School

                                           Secondary School

16 How would you rate the overall convenience of your home to all the things mentioned? Use the scale at the bottom of the page.

17. I would now like to turn to some other aspects of the neighbourhood - that is roughly the area you can see from your doorstep. There are two parts to each question; firstly I want to know how much of something there is here and secondly how satisfied you are with what there is. For example, I could ask " How big are the houses here?" and then " How satisfied are you with the size of the houses?" (Show respondant on the spare scales at the top of sheet 2)

17.1 How clean or dirty is your neighbourhood ?

    How satisfied are you with the cleanliness?

17.2 How noisy or quiet is your area ?

    How satisfied are you with the level of noise ?

17.3 How clean or dirty is the air here ?

    How satisfied are you with the air quality ?

17.4 How would you rate the external condition of the buildings in the area ?

    How satisfied are you with the building condition?

17.5 How safe for you would you say it is here ? (traffic, crime etc.)

    How satisfied are you with the level of safety?

17.6 How well do the council keep the area up ?

    How satisfied are you with the councils upkeep?

17.7 How well do the people look after their homes and gardens in this area ?

    How satisfied are you with their upkeep?

17.8 What is the area like for children?

    How satisfied are you with the suitability of the area for children ?

17.9 How friendly are people in this area ?

    How satisfied are you with the friendliness of the area?

17.10 How would you rate the looks of your neighbourhood?

    How satisfied are you with the looks of the area ?

247

17.12 How much greeness (trees, grass etc) is there in the area?

How satisfied are you with the amount of greeness?

18: ~~Is there anything about the looks of your area that you~~ ~~particularly like / dislike (Do not prompt)~~ ~~write in~~

19. How would you rate your overall satisfaction with your neighbourhood area as a place to live, bearing in mind all the things which have been mentioned ? Use the scale at the bottom of the page.

20. When judging an area as a place to live, eg when moving to a different area , what are the most important things to consider? Choose the 5 most important ones from the list (CARD 3) or give each factor a score of 1-5 according to how important each thing is (card 4)

  1. Safety of area
  2. Reputation of area
  3. Friendliness of people in area
  4. Upkeep of area
  5. Quietness of area
  6. Clean air
  7. Appearance of area
  8. Convenience
  9. Condition of buildings good
  10. Area good for children
  11. Clean area
  12. Greeness of area

And now, just to complete the questionnaire, I would like to ask you some questions about yourself to help me to sort out the results. (Confidentiality if asked)

21.   Sex (do not ask)   M 1   F 2

22.   Age (Card 5)   Less than 20   1
                             21-25   2
                             26-30   3
                             31-35   4
                             36-40   5
                             41-45   6
                             46-50   7
                             51-55   8
                             56-60   9
                             61-65   10

23.   Are you   Married   1

Single   2

Separated   3

Divorced   4

or   Widowed?   5

24. How many people are there in this household?

25.   How many children of these age groups are there in this household?

0-5

5-10

10-15

15-20

Where do they normally play ?   (write in)   (code dist 100 m's)

Where do they go to school? (write in)
          Primary :
          Secondary :   (code dist 100 m's)

km

26.   At what age did you leave school?

27.   Have you done any studies since leaving school?
       To what level?

Degree   1
Cert. Ed   2
HND   3
GCE A level   4
GCE O level   5
Other   6
None   7

28. What is your occupation?

29. In which group does your income fall? (CARD 6)

30. Are there other wage earners in your household?

31. Do you have a car?

     If so, where do you park it ? (write in)

Thank you for your help.

THE UNIVERSITY
OF ASTON
IN BIRMINGHAM

Dear

A general survey of the quality of the environment is being carried

out in this area. As part of this survey an interviewer will be

calling to see you in the next few days. I hope that you will be

willing to help us by answering a number of questions then. If

there is a particular time when you will (or will not) be

available could you please leave a message where the interviewer

can see it.

Thank you for your co-operation.

S. Cane

Research Organiser

Name   :

Address   :

Date - 1st try :

     2nd try :

     3rd try :

     4th try :

RESIDENTIAL ENVIRONMENT SURVEY : 1974

INTRODUCTION

    I am carrying out a survey for the University of Aston in Birmingham and the
City of Wakefield District Council into what people think about the places they
live in. Your name has been chosen from a list of all people living in this
area. Would you mind answering some questions about your home and its neighbourhood?

Interview number

Area code

1. How long have you lived at this address?   (code years, months)

   Only if less than 5 years : Where did you live before? (write in - district if
                           local, town and county if not)

   Only if less than 5 years : Why did you move? (write in)

   Only if less than 5 years : How many times have you moved in the last 5 years?

2. How satisfied are you with your present home?   (CARD ONE)

3. What are the things that you most like about your neighbourhood here? (write in)

4. And what things do you most dislike about it? (write in)

5. (Hand respondant board) The set of numbers in the top left-hand corner of the
   first sheet is a scale of convenience. 7 is very convenient, 6 is convenient and
   so on down the scale to 1 for very inconvenient. If you think that something is
   just about convenient then ring 5 here (show respondant on example scale); if
   it is inconvenient, but not extremely inconvenient, then ring 2.

   5.1 How convenient is your home for shopping?

   5.2 Where do you usually do your shopping (write in)

       1.   2. (if more than one place)

Dist 1
100ms

Dist 2

5.3 How often do you go shopping there?   Freq. 1

      1.   1 Daily   2. 1 Daily
            2 More than 1per wk.   2 More than 1per wk   Freq. 2
            3 Less than 1per wk.   3 Less than 1per wk
            4 Hardly ever   4 Hardly ever

5.4 How do you normally get there?

      1 Car/van   4 Walk   7 Company transport
      2 M/cle   5 Bus   8 Other (specify)
      3 Bicycle   6 Rail

5.5 How convenient is your home to work?

5.6 Where is your work? (place, not company - write in)   Dist
                                                100ms

5.7 How do you usually get there?   (code as for Q5.4 above)

5.8 How convenient is your home for buses? (or rail if this has been mentioned in
                             Q5.4 or Q5.7)   Bus

                                          Rail

5.9 How often do you travel by bus (rail)?   1 Daily
                                   2 More than 1 per wk.
                                   3 Less than 1 per wk.
                                   4 Hardly ever

5.10 How convenient is your home to play schools or nurseries?

5.11 How convenient is your home to primary or junior schools?

5.12 How convenient is your home to secondary or grammar schools?

5.13 How convenient is your home for parks or other open space?

5.14 How often do you normally go to a park etc.?   1 Daily
                                      2 More than 1 per wk.
                                      3 Less than 1 per wk.
                                      4 Hardly ever
5.15 Where do you usually go to? (write in)   Dist
                                                100ms

5.16 How convenient is your home to the surrounding countryside?

5.17 How often do you use the local countryside?   1 More than 1 per month
                                        2 Less than 1 per month
                                        3 Hardly ever

5.18 What do you do usually? Where? (write in)

5.19 How convenient is your home to pubs or clubs?

5.20 How often do you usually go to a pub or club?   1 Daily
                                      2 More than 1 per wk
                                      3 Less than 1 per wk
                                      4 Hardly ever
5.21 Where is the pub/club you go to most often?   Dist
                                                100ms

5.22 How convenient is your home for going out to other things in the evening?
                        (eg. eating out, bingo,films etc.)

5.23 What things do you do? (write in)

5.24 How often usually?   1 More than 1 per wk
                                      2 Less than 1 per wk
                                      3 Hardly ever

6. How would you rate the overall convenience of your home (to all the things

Column reference boxes (right margin): 37, 38, 39, 40, 41 43, 44, 45, 46, 47, 48, 51, 52, 53 55, 56, 57, 58 59, 60, 61, 62 64, 65, 66 67, 68, 69

7. How satisfied are you with this level of convenience? (CARD ONE)

Interview number

8. I would now like to turn to some other aspects of the area around your home.
There are two parts to each question; firstly I want you to say how much of
each thing there is in the area, and secondly how satisfied you feel with it.
For example, on the top left-hand scale I want to know how much greenery
there is in the area (trees, grass etc.). The top, number 7 means that it is
very green around here, and so on down the scale to the bottom, number 1 ,
which means very little greenery. Now how much would you say there is here?
And now on the top right-hand scale I want you to say how satisfied you are
with what greenery there is here. This time the scale goes from 7, very
satisfied, to 1, very unsatisfied. If you have no feelings either way then
ring number 4.

8.2 How clean or dirty is your neighbourhood? (repeat any explanation as necessary)
How satisfied are you with the cleanliness?

8.3 How clean or dirty is the air here?
How satisfied are you with the air quality?

8.4 How noisy or quiet is your area?
How satisfied are you with this?

8.5 How safe for you would you say it is here? (Find out 'safe from what' - code
1 traffic 2 crime 3 vandalism 4 etc)
How satisfied are you with the level of safety?

8.6 How well do people look after their homes (and gardens) in this area?
How satisfied are you with their upkeep?

8.7 How well do the council look after the area?
How satisfied are you with the council upkeep?

8.8 How suitable is the area for children?
How satisfied are you with this?

8.9 How friendly are people in this area?
How satisfied are you with the friendliness of the area?

8.10 How would you rate the looks of the area?
How satisfied are you with the looks of the area?

8.11 How much privacy do you have here?
How satisfied are you with the amount of privacy?

8.12 What is the area like for car-parking?

8.13 What is the reputation of the area?

8.14 How would you rate the view from here?

8.15 How good is the layout of the area?

9. Bearing in mind all the things that have been mentioned how would you rate your
overall satisfaction with your area as a place to live? Use the final scale
on the sheet.

10. When you are judging an area as a place to live, for example before moving
to a new area, what are the most important things to consider? Looking at
the list (CARD TWO) can you tell me which one is most important to you; and
then the next four in approximate order of importance.

1   2   3   4   5

nd now, just to complete the questionnaire, I would like to ask you some questions
bout yourself to help us sort out the results. (Assure respondant about the
onfidentiality of their answers if they ask.)

Sex M 1   F 2

1. In which of these age groups are you? (CARD THREE)

2. Which of these are you (CARD FOUR) ?

3. At what age did you leave school?

4. Have you done any studies since leaving school? If so, to what level?
   None 1 , Degree 2 , Cert. Ed 3 , HND 4 ,   GCE A Level 5
   GCE O Level 6 ,   Other (specify) 7

5. How many people are there in the following age groups in this
   household, including yourself? (CARD FIVE)

   0 - 4
   5 - 9
   10-14
   15-19
   20-44
   45-59
   60+

6. Where do the younger children usually play? (write in)

7. Which school do the under 10 year-olds go to (write in) ?   Dist 100ms

8. Which school do the over 10's go to? (write in)   Dist 100ms

9. What is your occupation? (write in, describe if obscure)
   If a housewife – what is your husbands occupation?
   If retired – what was your occupation?   code hswf.
                                              1 , rtrd 2

9. In which group does the main source of income for the household fall?
                                              (CARD SIX)

0. Are there any other wage earners in the household?   yes 1 / no 2

1. Do you have a car?   yes 1 / no 2

ousing Section

Interview number

2. How many bedrooms does your household have? (Does not include
   rooms in separate dwellings in same building)

3. Is your home too large (1), the right size (2), or too small (3) for your
                                              present needs ?

4. Do you not have any of the following facilities? (CARD SEVEN)

5. In which of these groups is your home? (CARD EIGHT)

6. (for renters) – How much rent do you pay approximately? (CARD NINE)
   (for owners with mortgages) – Can you tell me roughly what your mortgage
                                              repayments are? (CARD NINE)

7. Are you thinking of moving in the next five years?   yes 1 / no 2
   If Yes – Where to? (write in)
          – In which group is it preferable for your new home to be ?
                                              (CARD EIGHT)
          – Why are you thinking of moving? (write in)
          – What type of house would you prefer to move in to? (CARD TEN)

SHEET ONE

1. EXAMPLE

7 Very Convenient
6 Convenient
5 Quite Convenient
4 Neither
3 Slightly Inconvenient
2 Inconvenient
1 Very Inconvenient

☐0 Dont know

2. SHOPPING

7 Very Convenient
6 Convenient
5 Quite Convenient
4 Neither
3 Slightly Inconvenient
2 Inconvenient
1 Very Inconvenient

☐0 Dont know

3. WORK

7 Very Convenient
6 Convenient
5 Quite Convenient
4 Neither
3 Slightly Inconvenient
2 Inconvenient
1 Very Inconvenient

☐0 Dont know

4. BUS

7 Very Convenient
6 Convenient
5 Quite Convenient
4 Neither
3 Slightly Inconvenient
2 Inconvenient
1 Very Inconvenient

☐0 Dont know

5. NURSERIES, PLAY SCHOOLS

7 Very Convenient
6 Convenient
5 Quite Convenient
4 Neither
3 Slightly Inconvenient
2 Inconvenient
1 Very Inconvenient

☐0 Dont know

6. PRIMARY, JUNIOR SCHOOLS

7 Very Convenient
6 Convenient
5 Quite Convenient
4 Neither
3 Slightly Inconvenient
2 Inconvenient
1 Very Inconvenient

☐0 Dont know

7. SECONDARY, GRAMMAR SCHOOLS

7 Very Convenient
6 Convenient
5 Quite Convenient
4 Neither
3 Slightly Inconvenient
2 Inconvenient
1 Very Inconvenient

☐0 Dont know

8. PARKS, OPEN SPACE

7 Very Convenient
6 Convenient
5 Quite Convenient
4 Neither
3 Slightly Inconvenient
2 Inconvenient
1 Very Inconvenient

☐0 Dont know

9. LOCAL COUNTRYSIDE

7 Very Convenient
6 Convenient
5 Quite Convenient
4 Neither
3 Slightly Inconvenient
2 Inconvenient
1 Very Inconvenient

☐0 Dont know

10. PUBS, CLUBS

7 Very Convenient
6 Convenient
5 Quite Convenient
4 Neither
3 Slightly Inconvenient
2 Inconvenient
1 Very Inconvenient

☐0 Dont know

11. OTHER ENTERTAINMENT

7 Very Convenient
6 Convenient
5 Quite Convenient
4 Neither
3 Slightly Inconvenient
2 Inconvenient
1 Very Inconvenient

☐0 Dont know

12. OVERALL CONVENIENCE

7 Very Convenient
6 Convenient
5 Quite Convenient
4 Neither
3 Slightly Inconvenient
2 Inconvenient
1 Very Inconvenient

SHEET TWO

Greenness		
7 Very green	7 Very satisfied	
6 Green	6 Satisfied	
5 Quite green	5 Quite satisfied	
4 Neither	4 Neither	Dont know [0]
3 Not much greenery	3 Slightly satisfied	
2 Little greenery	2 Unsatisfied	
1 Very little greenery	1 Very unsatisfied	

Cleanliness of area		
7 Very clean	7 Very satisfied	
6 Clean	6 Satisfied	
5 Quite clean	5 Quite satisfied	
4 Neither	4 Neither	Dont know [0]
3 Slightly dirty	3 Slightly satisfied	
2 Dirty	2 Unsatisfied	
1 Very dirty	1 Very unsatisfied	

Air quality		
7 Very clean	7 Very satisfied	
6 Clean	6 Satisfied	
5 Quite clean	5 Quite satisfied	
4 Neither	4 Neither	Dont know [0]
3 Slightly dirty	3 Slightly satisfied	
2 Dirty	2 Unsatisfied	
1 Very dirty	1 Very unsatisfied	

Quietness of area		
7 Very quiet	7 Very satisfied	
6 Quiet	6 Satisfied	
5 Slightly quiet	5 Quite satisfied	
4 Neither	4 Neither	Dont know [0]
3 Slightly noisy	3 Slightly satisfied	
2 Noisy	2 Unsatisfied	
1 Very noisy	1 Very unsatisfied	

Safety		
7 Very safe	7 Very satisfied	
6 Safe	6 Satisfied	
5 Quite safe	5 Quite satisfied	
4 Neither	4 Neither	Dont know [0]
3 Slightly unsafe	3 Slightly satisfied	
2 Unsafe	2 Unsatisfied	
1 Very unsafe	1 Very unsatisfied	

Private Upkeep		
7 Very well kept	7 Very satisfied	
6 Well kept	6 Satisfied	
5 Quite well kept	5 Quite satisfied	
4 Neither	4 Neither	Dont know [0]
3 Slightly poorly kept	3 Slightly satisfied	
2 Poorly kept	2 Unsatisfied	
1 Very poorly kept	1 Very unsatisfied	

Council Upkeep		
7 Very well kept	7 Very satisfied	
6 Well kept	6 Satisfied	
5 Quite well kept	5 Quite satisfied	
4 Neither	4 Neither	Dont know [0]
3 Slightly poorly kept	3 Slightly satisfied	
2 Poorly kept	2 Unsatisfied	
1 Very poorly kept	1 Very unsatisfied	

8. **Suitability for children**

7	Very suitable	7	Very satisfied	
6	Suitable	6	Satisfied	
5	Quite suitable	5	Quite satisfied	
4	Neither	4	Neither	0 Dont know
3	Slightly unsuitable	3	Slightly unsatisfied	
2	Unsuitable	2	Unsatisfied	
1	Very unsuitable	1	Very unsatisfied	

9. **Friendliness**

7	Very friendly	7	Very satisfied	
6	Friendly	6	Satisfied	
5	Quite friendly	5	Quite satisfied	
4	Neither	4	Neither	0 Dont know
3	Slightly unfriendly	3	Slightly unsatisfied	
2	Unfriendly	2	Unsatisfied	
1	Very unfriendly	1	Very unsatisfied	

10. **Looks of area**

7	Very attractive	7	Very satisfied	
6	Attractive	6	Satisfied	
5	Quite attractive	5	Quite satisfied	
4	Neither	4	Neither	0 Dont know
3	Slightly unattractive	3	Slightly unsatisfied	
2	Unattractive	2	Unsatisfied	
1	Very unattractive	1	Very unsatisfied	

11. **Privacy**

7	Very private	7	Very satisfied	
6	Private	6	Satisfied	
5	Quite private	5	Quite satisfied	
4	Neither	4	Neither	0 Dont know
3	Quite public	3	Slightly unsatisfied	
2	Public	2	Unsatisfied	
1	Very public	1	Very unsatisfied	

12. **Car Parking**

7	Very good
6	Good
5	Quite good
4	Neither
3	Slightly poor
2	Poor
1	Very poor

13. **Reputation**

7	Very good
6	Good
5	Quite good
4	Neither
3	Slightly bad
2	Bad
1	Very bad

14. **View**

7	Very attractive
6	Attractive
5	Quite attractive
4	Neither
3	Slightly unattractive
2	Unattractive
1	Very unattractive

15. **Layout**

7	Very good
6	Good
5	Quite good
4	Neither
3	Slightly poor
2	Poor
1	Very poor

16. **Overall Satisfaction**

7	Very satisfied
6	Satisfied
5	Quite satisfied
4	Neither
3	Slightly unsatisfied
2	Unsatisfied
1	Very unsatisfied

CARD ONE

7   VERY SATISFIED

6   SATISFIED

5   QUITE SATISFIED

4   NEITHER SATISFIED NOR UNSATISFIED

3   SLIGHTLY UNSATISFIED

2   UNSATISFIED

1   VERY UNSATISFIED

CARD TWO A

SAFETY	REPUTATION
FRIENDLINESS	COUNCIL UPKEEP
QUIETNESS	CLEAN AIR
PRIVATE UPKEEP	CONVENIENCE
APPEARANCE	GOOD FOR CHILDREN
CLEAN AREA	PRIVACY
GREENERY	GOOD LAYOUT

GOOD VIEW

CARD THREE

Age Group		Age Group	
1	15-19	2	20-24
3	25-29	4	30-34
5	35-39	6	40-44
7	45-49	8	50-54
9	55-59	10	60-64
11	65+		

CARD FOUR

MARITAL STATUS

1. SINGLE

2. MARRIED

3. WIDOWED

4. SEPARATED/DIVORCED

CARD FIVE

	AGE GROUP
0- 4	1
5--9	2
10-14	3
15-19	4
20-44	5
45-59	6
60+	7

CARD SIX   INCOME

£ per Week	£ per Annum	Income Group
0-15	0 - 780	1
16-20	781 - 1040	2
21-25	1041 - 1300	3
26-30	1301 - 1560	4
31-35	1561 - 1820	5
36-40	1821 - 2080	6
41-50	2081 - 2600	7
51-60	2601 - 3120	8
61 +	3121 +	9

CARD SEVEN

1. A FIXED BATH OR SHOWER

2. HOT & COLD WATER SUPPLY AT A FIXED BATH OR SHOWER

3. A WASH-HAND BASIN

4. HOT & COLD WATER SUPPLY AT A WASH-HAND BASIN

5. A SINK

6. HOT & COLD WATER SUPPLY AT A SINK

7. A W.C. WITHIN THE DWELLING

CARD EIGHT	TENURE CATEGORIES
OWN HOME (OUTRIGHT)	1
OWN HOME (MORTGAGE etc.)	2
RENTAL PURCHASE	3
RENTED FROM COUNCIL	4
RENTED PRIVATELY (UNFURNISHED)	5
RENTED PRIVATELY (FURNISHED)	6
N.C.B. HOUSE	7
OTHER (PLEASE SPECIFY)	8

CARD NINE

£ per Week	£ per Month	PAYMENT GROUP
under 2	under 8.70	1
2 - 4.00	8.71 - 17.30	2
4.01 - 6.00	17.31 - 26.00	3
6.01 - 8.00	26.00 - 34.70	4
8.01 - 10.00	34.71 - 43.30	5
10.01 - 15.00	43.30 - 65.00	6
over 15	over 65	7

CARD TEN

DWELLING TYPES

1. TERRACE

2. SEMI-DETACHED

3. HIGH-RISE FLAT

4. DETACHED

5. HOUSE CONVERTED TO FLATS

6. LOW-RISE FLAT (LESS THAN 3 STOREYS)

7. MOBILE HOME

DWELLING TYPES

256

PHYSICAL SURVEY SHEET - MAIN SURVEY

1. Age of Buildings 1 pre-1875 2 1876-1918 3 1919-1944 4 1945-1960 5 1961+
2. Building Type 1 Tce 2 Det 2 Semi-det 4 low-flat 5 High-flat 6 bungalow 7 Semi-tce 8 other
3. Area betw. dwell & rd. 1 Priv. garden 2 Priv. yard 2 Public-grass 4 Public-hard 5 nothing 6 other
4. Rear space - as above
5. Walls etc. Wall 1 Fence 2 Hedge 3 Nothing 4 Other 5
6. " in need of repair/cutting (within area A) Is resp.'s in need? 1 Yes 2 No
7. Car Parking 1 on rd. 2 on verge 3 within curt 4 garage within curt 5 garage elsewhere 6 other
8. Ave. no. of off-street parking-places per dwelling (within area A)
9. Building condition no. of houses in Cat 1 (within area A)
10. no. of houses in Cat 2
11. no. of houses in Cat 3
12. no. of houses in Cat 4 (no code) Cat. of resp's home
13. Upkeep no. of houses in Cat A (within area A)
14. no. of houses in Cat B
15. no. of houses in Cat C (no code) Cat. of resp's home
16. Sidewalk Is there a verge? 1 yes 2 no
17. Are there litter bins 1 yes 2 no
18. Total width in metres to one decimal place
19. % covered with broken pavings/unmade (within area A) "
20. % affected with weeds/litter
21. Road Width in metres to one decimal place
22. % of area unmade or with broken surface
23. 1 Main rd. 2 Through rd. 3 cul-de-sac 4 crescent 5 pedest.only 6 other
24. Trees Are there trees in road? 1 yes 2 no
25. no. of mature trees (5m+) in sight within 100ms front & back
26. View Approx. extent of view - Front 100ms
27. Back 100ms
28. type: resid 1 indust 2 derelict 3 wood 4 park 5 country 6 mixed 7 other 8 - front-fore
29. " front-back
30. " back -fore
31. back -back
32. Dereliction any items within 200 metres? 1 yes 2 no
33. Vandalism Any evidence 1 yes 2 no
34. Non-Conf. use within 200 metres? 1 None 2 traffic gen. 3 noise gen. 4 air polln. 5 other

257

35. Noise   Heavy traffic <u>1</u>   Medium traffic <u>2</u>   Light traf. <u>2</u>   Children <u>4</u>   Industry <u>5</u>   Other <u>6</u>

36. Air Polln.   In smoke control area <u>1</u>   not in <u>2</u>

37. Distance   to nearest industry (specify) (100ms)

38.   to major through rd. (A, B, M/way) (100m)

39.   nearest gen.store (100ms)

40.   nearest chemist

41.   nearest primary school

42.   nearest secondary school

43.   nearest public play space/open area

44.   nearest park

45.   nearest childrens play area

46.   nearest pub/WC

47.   town centre

48.   bus stop

49. No. of dwellings within Area B

50. Av. length of private curtilage (m)

51. Bus. freq. to main shopping centre (av. freq/hr. 6 am - 12 pm)

NOTES ON PHYSICAL SURVEY SHEET

1. Area A - this was defined as the 3 dwellings either side of the respond-
    ent's home and the 6 dwellings opposite, unless the dwellings were very
    separated in which case only the immediately visible dwellings were
    taken i.e. those within about 40 m of the respondents home.

2. Building condition and upkeep categories refer to scales used by the
    Civic Trust for the N.W. (see notes on pilot survey)

3. View The overall extent of the front and back view was estimated and the
    main foreground and background characteristics of both views categorised.

4. Non-conforming uses - the definition again followed that of the Civic
    Trust for the N.W. Instead of a point score the type of nuisance was
    coded. (see list below)

5. Area B - this was taken as a square with sides 50 m in length centred on
    the respondents dwelling.

6. In addition the following census measures were included for each respond-
    ent. The source was the 1971 census (E.D. figures).
          a) % of households having all 3 amenities
          b) % of households renting from council
          c) % of households renting private unfurnished property
          d) % of households living at densities of over 1½ persons
             per room
          e) % of households without cars

7. List of non-conforming uses. The main type of nuisance was estimated by
    the observer during the survey.
    - Heavy and light industrial uses where smoke, fumes, vibration or
      visual appearance detract from environmental quality

- Collieries and associated uses e.g. spoil heaps

- Sewage works

- Warehousing

- Junk yards, car cemetries, tips etc.

- Derelict land, waste land

- Railway land/yards

- Major power lines and associated plant

- Commercial streets frontages

- Proximity of an airport

APPENDIX D   Wakefield District's Approach to Area Priorities

D1.   The aim of the surveys of housing and environment which were carried

out by Wakefield district in the summer of 1974 was to obtain a priority rat-

ing of the areas of pre-1919 housing for housing action, in order to guide

the choice between Clearance, General Improvement Area or Housing Action

Area treatment. The housing survey was carried out by the Environmental

Health Department who included a section on "Environmental Quality" at the

suggestion of the Planning Department. Ten house condition measures were

made of each property in the areas of pre 1919 housing, and eight measures

of the environment of each street within the areas (Table D1). However not

all the gathered information was used in the assessment of the improvement

priorities.

The priorities for each area were worked out as follows (Table D2):

The Existing Housing Condition was calculated by multiplying the prop-

ortion of dwellings in the area in each amenity category (i.e. below 5

point; 5-12 point; over 12 point) by a weight and then summing the three

totals to obtain Total A. The inspector's estimate of the feasible improved

condition of the dwellings was calculated in a similar manner (Feasible

House Condition = Total B). The House Improvability (HI) was then defined

as the difference between the two (Total A - Total B).

The Existing Environmental Condition was calculated by summing the

score for each environmental element multiplied by its 'weight' (Total C).

Once again an estimate was made of the feasible (improved) environmental

condition, which was weighted and summed as for the existing condition

(Feasible Environment Condition = Total D). The Environmental Improvability

(EI) was defined as the difference between the existing and the feasible

totals (Total C - Total D).

The priority assessment was finally made by adding the <u>Existing House</u> <u>Condition</u> score (multiplied by 25 to give it the same weight as the environment - i.e. Total A X 25) and the <u>Existing Environmental Condition</u> (Total C) to the Total <u>Improvability of the area</u> (i.e. (HI X 25) + EI) giving a <u>Priority Factor</u> (Table D2) which was used to order the areas. The resultant ordered list of areas formed the basis for deciding the programming of clearances or improvement action in the areas i.e. the areas with a high "Priority Factor" were to be tackled first.

D2.   The method which Wakefield District used to determine their priorities can be discussed under three headings:

a) the relationship of the method to the stated aims of the policy;

b) the choice of the environmental measures; and

c) the weightings given to these measures.

The first point is a general one, but the latter two can be discussed more specifically in the light of the research results.

D2.1   <u>The relationship of the method to the stated aims of the policy</u>.

There are two general shortcomings of the method with respect to the aims of the housing policy. Firstly, because of the way in which the priorities are calculated it is not possible to relate the priority position of an area to the action required. For example a good environmental score can 'mask' a poor housing score in the aggregated Priority Factor. An area may in fact contain many irrepairable dwellings, and yet still appear as a priority for improvement because the environment is poor, but improvable. The use of the concept of 'fundamental deficiencies' as used in the American APHA method (see Duncan T.L.C., 1971) would be of value here i.e. deficiencies to the dwellings which render it unfit irrespective of the quality or the improvab-

ility of the surrounding environment. The first point, then, is that the aggregated score gives a poor guide for action.

Secondly, the method supposedly gives an indication of unsatisfactory environments, which begs the question 'unsatisfactory for whom, and by what standards?'. The District Housing Policy statement makes it clear that it is the residents well-being which is in question (2.6). The extent to which the survey measures reflected the values of the residents is the subject of the next two sections.

D2.2   The choice of environmental measures

It is assumed that the environmental measures included in the Wakefield method were intended to provide an indication of the residents' well-being in the area (in accordance with the policy aim). It is therefore instructive, to compare the choice of measures with those physical variables measured in the study which were found to be related to the residents' overall satisfactions with their areas.

Of the eight environmental measures in the District's Survey Schedule six measures had close equivalents in this study (Table D3). The condition of the back street had no equivalent, and was assumed to be in the same condition category as the front street for the purpose of comparison. Neither was a measure of the lighting made in the research; however, lighting was not among the features which were mentioned in response to the open questions on likes and dislikes of the area (except as objects which had been vandalised). Thus although lighting cannot be compared as a measure, the responses (and indeed the low weight given to it in Wakefield's priority calculations) suggest that lighting is of minor importance.

Three aspects of the choice of measures must be discussed:

a) whether the chosen measures are indeed indicators of well-being

b) whether the measures are comprehensive

c) whether the selected measures are independant.

Only one of the six comparable measures in the research was found to be significantly related to overall satisfaction (table 12.6), and that was the density of trees. The proportion of road surface in poor condition, and the number of parking spaces, were almost significant at the 5% level. All six variables were, however, significantly related to respondents satisfactions with several of the separate dimensions of the environment (Table D4). Note that some of the relationships were found to be spurious, particularly those involving the distance to childrens play facilities (11.4). The conclusion which can be drawn is that apart from the density of trees the measures are weak indicators of overall satisfaction, although they are better predictors of satisfactions with different aspects of the environment.

The second point was whether the measures were comprehensive, i.e. whether there are other physical variables which could be used. Variables which were significantly related to overall satisfaction at the 5% level, and which were not included in the Wakefield measurement schedule of the environment are:

- Dwelling Condition e.g. % dwellings in poor condition (N.B. this variable was included in the <u>dwelling</u> assessment)

- Dwelling Upkeep e.g. % dwellings in poor upkeep category

- Density e.g. number of dwellings in given area, length of curtilage

- Census variables - density of occupation, household amenities, car owner-
ship rate.

(Table 12.6)

Thus the Wakefield measures cannot be considered to be comprehensive.

The question of inter-relationships arises from the inclusion of the conditions of the front _and_ back streets in the schedule, whilst one would suspect that the two are highly correlated. It is not possible to verify this particular suspicion as the two were not measured separately in the research, but it is possible to examine the other variables. Of the other possible inter-relationships between the physical variables only three were significant at the 5% level. These were the density of trees with the number of parking spaces ($r = 0.20$); the road condition with the distance to play facilities ($r = 0.11$); and the number of parking places with the distance to play facilities ($r = -0.11$). It would thus appear that Wakefield District have been relatively successful in selecting independant measures of the residential environment.

D2.3 Weighting of the Environmental Measures

Two important issues with respect to weighting are not discussed further here. The first is whether weighting is permissible in any case (Simpson B., 1975) given the type of data Wakefield were using (i.e. ordinal data). The second is whether the dwelling should have been given equal weight to the environment, as one would have expected the dwelling condition itself to be of greater importance in deciding housing policy (Duncan T.L.C., 1971).

This section examines the relative weighting of the environmental elements of the survey schedule only. It will be recalled that each of the physical measures had three quality categories (Table D1), and that the area score for each variable was multiplied by a weight. These weights were obtained by a ranking of the physical variables in the order of difficulty (and therefore cost) of improving them. This apparent misuse of ordinal data as cardinal data may possibly be justified if the weights in fact correspond to the relative costs, or to the relative importance of the

elements to the residents. Using the research survey data it is only possible to examine the weights with respect to residents' values.

A marked difference between the values assumed by Wakefield and those implied by the survey results is obvious; according to the research results the density of trees is more closely related to overall satisfaction than the state of the road, or the number of parking spaces (2-3 times as significant approximately). In the Wakefield schedule both the latter variables were given more weight than the density of trees. This suggests that costs were uppermost in the reasons for weighting than residents values, which is at variance with the policy statements.

D2.4   A critical feature which has to be considered is the sensitivity of the priority rankings to the weightings. In order to test the sensitivity of the weighting the environmental scores for the 17 sub case-study areas (i.e. the sub divisions of the original case-study areas - see Table 5.5) were calculated from the survey data, both with and without using the weights. The scores were calculated as described above (D1), although no account could be taken of the feasible improved condition (Table D2). The exclusion of the improved condition, although this would alter the priorities, does not affect the exercise of testing the weightings. Table D5 shows the ranking of areas obtained by the two methods.

The most noticeable feature about the two rankings is their similarity: most of the changes in rank are marginal - only two areas altered position more markedly: Glasshoughton moved from 11th with the weighting to 6th without it (the area received bad scores on street condition and non-conforming uses both of which were highly weighted); and Fitzwilliam (East) moved down from 5th to 10th (for the opposite reason). This finding suggests that the

weighting has relatively little effect on the ordering of the areas; in fact, the weightings just reinforce the orderings already obtained. A more critical feature is the original choice of elements, rather than their weights, and particularly the choice of independant elements.

D2.5 Summary of critique of Wakefield District Method of Priority Assessment

The following criticisms have been made:

a) the aggregation of scores makes it impossible to relate any action to the priority ranking of an area, and also makes it possible for the good aspects of an area to mask bad aspects.

b) the relative importance given to the environment appears to be excessive in comparison with the importance of the dwelling

c) the selection of environmental measures was not comprehensive, and included some variables which were only weakly related to residents' well being.

d) the weighting of the elements was suspect, and certainly did not reflect residents' values.

e) in the weighting operation ordinal category scores, and ordinal weightings, were treated as interval data; which gives a false impression of numerical status to the resulting Priority Factors.

D3 The Use of the Measures of Satisfaction

It is not sufficient to criticise the method used in the Wakefield District without giving some indication of how the method could be improved. In the concluding chapter of Volume 1 the physical measures which could be used as criteria for priorities were discussed (7.3.5), and it was suggested that the survey response data could be used directly. This section outlines this suggestion in more detail.

It must be reiterated that the object is to indicate the residents satisfaction with an area (or their well-being), which must be used in conjunction with other data (e.g. dwelling condition, costs of improvement etc.) for a decision on policy to be made.

D3.1   The Use of Overall Satisfaction

The most obvious survey measure which could be used is the residents' own expressions of overall satisfaction with their areas. The average overall satisfaction (medians were used as the data was ordinal) was calculated for each of the 17 sub areas (Table D6). The table ranks the areas according to the median overall satisfaction, and also presents the same data graphically. Although the table shows the ranking of the areas (in the same way that the Wakefield method does) it gives no indication of what the reason for the degree of dissatisfaction might be, and hence gives no hint of the policy choices.

In passing it is interesting to note that it is not just the pre 1919 areas which have the lowest average satisfaction, or the most recent areas which have high satisfaction as indicated by the Wakefield rankings (Table D5). For example Featherstone (West), a recent private development in poor environmental surroundings which was 6th from the top in the Wakefield rankings, is 4th from bottom according to the median overall satisfaction. Glasshoughton, the area with, subjectively, one of the worst environmental conditions is 11th in the Wakefield rankings, and 7th according to overall satisfaction. This reinforces the point that areas with poor environments do not always contain dissatisfied residents.

D3.2   It is possible to increase the amount of information by using the responses to the question on satisfaction with each of the dimensions of the environment. The examples given here are the ten most important di-

mensions to the respondent (Table 6.13) on the basis of contributions to overall satisfaction, and including satisfaction with the dwelling. For each dimension the median satisfaction for all the case-study areas was calculated, and table D7 shows for three areas the deviations of the area median from the all area medians for each dimension. The examples indicate particular problems in the areas. Eastmoor, the area with the highest median overall satisfaction is shown to have below average satisfactions with convenience and with the dwellings themselves. Glasshoughton, which had an average overall satisfaction, had extremely low satisfactions with air quality, layout, reputation, appearance and cleaness which were balanced by above average satisfaction with convenience and upkeep. Featherstone West, which had the highest median satisfaction with the dwellings (which were all less than 8 years old), had very low median satisfactions with all the other dimensions (council upkeep in particular) except private upkeep.

D3.3   There are thus 2 steps in identifying priorities: the use of median overall satisfaction; and the use of the median specific satisfactions.

Taking the two steps together, four basic categories of area which require some sort of improvement can be identified. The approach in each category, however, is likely to be different.

a)   Areas in which overall satisfaction is low, and satisfaction with the priority dimensions is also low.

An area in this category obviously has a high priority for some kind of action to improve the environment, but the solution is not a simple one as the dissatisfaction is likely to be due to a whole range of environmental aspects, and the improvement of just one aspect may not make much difference to the general levels of satisfaction. Comprehensive action is therefore required.

Table D8 gives an example of an area in this category. The area, Featherstone (East), had the lowest median satisfaction of the areas, and satisfactions with all the environmental dimensions were also below average. Council Upkeep received the lowest rating and this is related to an adjacent clearance areas which had only been partly cleared. It is interesting to note that the area did not come out the worst on the basis of the physical measures of the dwellings and that satisfaction with the dwellings was average, suggesting that the area does have some positive potential on which to improve.

b) Areas with low satisfaction levels for specific dimensions, but high overall satisfaction.

The areas in this category are of a lower priority, as they are judged to be satisfactory by the residents, and presumably these residents are prepared to remain in the area despite the sometimes serious drawbacks. In the example, Table D7 the area is Glasshoughton, which was seventh in the rankings according to overall satisfaction, and yet on the basis of physical measures would have come at the bottom of the ranking. The poor conditions in the area, which is sited alongside a colliery and coking plant, are reflected in the low average satisfactions with cleaness, air quality, appearance, reputation, safety and layout.

The potential for improvement in this category of area is great, and the improvements are likely to be easier to effect than in the first category of area, as there is basic satisfaction with the area upon which to build.

c) Areas with low overall satisfaction levels, despite high satisfaction levels, with individual dimensions or good physical conditions.

The areas in this category are most difficult to deal with unless it
is apparent from the survey information why the satisfaction levels are low.
The most frequent type of area in this category in the survey comprised new
or post-war dwellings (with which respondents were very satisfied) located
in poor environmental conditions. In these cases unless some action is
taken to improve the environment rapid deterioration of the dwellings could
occur (e.g. Featherston West). However General Improvement Area policies
would not be appropriate.

The example given however is slightly different (Table D9). The area
comprised pockets of council dwellings - some inter-war semi-detached
dwellings and some post-war maisonettes and flats - set in a run down area
of nineteenth century terraces in Wakefield City. The area was fifth from
bottom in terms of overall satisfaction, and yet all the satisfactions with
the environmental dimensions, except Appearance, layout, view and Council
upkeep were above average. It is difficult to specify the 'cause' of the
low overall satisfaction precisely, although the whole of the Bellevue area
has suffered from heavy traffic and dereliction. The problem in dealing
with this type of area is the danger that, even after improvements, satis-
faction may remain low, particularly if the precise problem has not been
identified.

d) <u>Areas with high overall satisfaction, and high satisfactions with the
environmental dimensions</u>.

These areas have a low priority for action as current satisfactions
are high. Only if such areas contained physically poor housing stock for
example would it appear worthwhile to consider the areas for any further
action.

D4   Hence with a small number of areas it is possible to obtain a visual impression of the factors affecting satisfactions. With ordinal data for the responses it is not possible to summarise the data further into any index form. However the original ranking of areas serves as the initial priority selector (i.e. choosing those areas with the lowest satisfaction for urgent action), followed by the use of the other data as the method of defining suitable action to be evaluated la-ter according to costs etc.

In the context of providing additional insights into the causes of dissatisfaction in the areas, which might warrant action, there is an additional source of information in the survey which can be used to back up the data on satisfactions with the separate dimensions - the responses to the open ended questions on likes and dislikes.

Table 10 lists the features which were mentioned by 10% or more of the respondents in a case study area. Looking at the three areas given in the last example, the generally positive nature of the responses in Eastmoor can be seen with quietness and nearness to town (an anomaly as satisfaction with convenience was below average in this area) as the main likes; whereas the negative influence of the colliery tips and coke works can be seen in the Glasshoughton and Featherstone responses.

D5   The use of the survey response data has only been briefly touched upon, and no attempt has been made to evaluate the priorities of all the case study areas (see Cane S.T., 1975c) in this appendix. The strength of this type of survey data, which is straightforward to obtain, and of modest scale status, is not in providing information in summary index form as many planners would like it, but in providing extensive depth of information. The weakness of such data is that with a large number of areas or variables it soon becomes impossible to handle - although two methods of initial screen-ing

have been proposed in the text - the use of census variables as indicators, and the use of the measures of overall satisfaction.

Table D1 Wakefield Metropolitan District Council - Housing Survey 1974

A Individual House Condition Report

Measure	Condition Categories
Age	1. pre 1919 2. 1919-1939 3. 1944-1961 4. post 1961
Type	1. Back to back 2. Terrace 3. Semi-detached 4. Detached 5. Others
Size	Number of Bedrooms
Occupation	1. Occupied 2. Vacant 3. Derelict
Ownership	1. Council 2. Private
Amenities	1. 12pt or above 2. 5-12pt 3. below 5pt
Repair	1. Good 2. Fair 3. Bad
Outbuildings	1. Good 2. Fair 3. Bad
Garden - front	0 - no 1 - yes
Garden - rear	0 - no 1 - yes

B Environmental Report

Measure	Condition Categories		
Front Street Condition	0 - good	1 - fair	2 - bad
Back Street Condition	0 - good	1 - fair	2 - bad
Traffic	0 - none	1 - fair	2 - bad
Parking facilities	0 - good	1 - fair	2 - bad
Greenery/foliage	0 - good	1 - fair	2 - bad
Non-conforming uses	0 - none	1 - little	2 - dominant
Childrens play facilities	0 - good	1 - fair	2 - Bad
Lighting	0 - good	1 - fair	2 - bad

Table D2 Assessment of Improvement Priority

A. Housing Elements

Existing Condition	% of houses in area	Feasible Condition	% of houses in area
Below 5 pt	...... X3)	Below 5 pt	...... X3)
5-12 pt	...... X2) = Total A	5-12 pt	...... X2) = Total B
over 12 pt	...... X1)	over 12 pt	...... X1)

HOUSE IMPROVEMENT (HI) = Total A - Total B

B. Environmental Elements

Measure (Table D1)	Existing Area Score	X weight	Feasible Area Score	X weight
Traffic	.... X8)		.... X8)	
Non Conforming Uses	.... X7)		.... X7)	
Front Street Condition	.... X6)		.... X6)	
Back Street Condition	.... X5)		.... X5)	
Childrens play Facilities	.... X4) = Total C		.... X4) = Total D	
Parking	.... X3)		.... X3)	
Trees/foliage	.... X2)		.... X2)	
Lighting	.... X1)		.... X1)	

ENVIRONMENTAL IMPROVABILITY (EI) = Total C - Total D

C. Assessment

Total Area Condition = (Total A X 25) + Total C

Total Improvability = (HI X 25) + EI

PRIORITY FACTOR = Total Area Condition + Total Improvability

Table D3   WMDC Survey 1974 - Equivalent Measures

Wakefield Environmental Measure	Equivalent Variable in survey	Condition Categories Assumed
1. Front Street Condition	% of road surface broken	0 good condition 1 1-20% damaged 2 over 20% damaged
2. Back Street Condition	above variable and categories used	
3. Through/industrial traffic	Type of road	0 cul-de-sac, crescent, pedestrian only 1 Through road 2 Main road
4. Parking facilities	Number of parking spaces per dwelling	0 over 1 per dwelling 1 0.6 - 1 per dwelling 2 less than 0.5 per dwelling
5. Trees/foliage	Number of trees	0 over 20 1 - 20 2 under 5
6. Non-conforming uses	Presence of non-conforming uses	0 none 2 present
7. Childrens play facilities	Distance to play facilities	0 nearer than 0.2 km 1 0.3 - 0.8 km 2 Over 0.8 km
8. Lighting provision	No comparable measure	-

Table D4 Relationships between Environmental Measures and Satisfactions
         with Specific Dimensions

WMDC Environment Measure	Survey Variables	Significantly related to satisfactions with the following dimensions at 5% significance level
Front (& back) street condition	% of road surface broken	Greeness, Cleaness, Air Quality, Suitability for Children, Appearance, Car Parking, Reputation, View, Layout
Through/industrial traffic	Type of road	Greeness, Quietness
Parking Facilities	No. of parking spaces	Greeness, Quietness, Upkeep, Suitability for Children, Appearance, Privacy, Car Parking, View, Layout
Trees/foliage	No. of trees	Greeness, Cleaness, Air Quality, Quietness, Safety, Upkeep, Council Upkeep, Appearance, Privacy, Car Parking, Reputation, View, Layout
Non-Conforming Uses	Presence of non-conforming uses	Air Quality, Quietness, Layout
Childrens play Facilities	Distance to play facilities	Cleaness, Air Quality, Quietness, Safety, Upkeep, Privacy, Reputation

277

Table D5 Area Priorities using WMDC Environmental Scoring System

AREA	WEIGHTED ENVIRONMENT SCORE*	RANK	UNWEIGHTED ENVIRONMENT SCORE*	RANK
NEVISON (EAST)	11.81	1	2.42	1
WARWICK	19.55	2	4.71	3
ALTOFTS	19.87	3	4.48	2
FITZWILLIAM (WEST)	24.08	4	4.94	5
FITZWILLIAM (EAST)	24.17	5	5.83	10
FEATHERSTONE (WEST)	25.16	6	4.88	4
NEVISON (WEST)	25.24	7	5.48	9
THORNES	26.72	8	5.28	8
PONTEFRACT	27.78	9	5.26	7
EASTMOOR	28.45	10	6.09	11
GLASSHOUGHTON	28.74	11	5.21	6
STREETHOUSE	29.49	12	6.54	12
HEMSWORTH (WEST)	30.23	13	6.75	13
BELLEVUE (COUNCIL)	31.24	14	7.54	15
HEMSWORTH (EAST)	34.00	15	7.00	14
BELLEVUE (WEST)	37.47	16	7.88	16
FEATHERSTONE (EAST)	38.00	17	8.26	17

* Back Street Condition assumed to be the same as the front street condition.

  Lighting conditions not included

283

TABLE D6 MEDIAN OVERALL SATISFACTIONS BY CASE·STUDY AREA

All Area Median

-2   -1   Median   +1

EASTMOOR

HEMSWORTH (WEST)

PONTEFRACT

ALTOFTS

WARWICK

THORNES

GLASSHOUGHTON

NEVISON (EAST)

FITZWILLIAM (EAST)

NEVISON (WEST)

STREETHOUSE

HEMSWORTH (EAST)

BELLEVUE (COUNCIL)

FEATHERSTONE (WEST)

BELLEVUE (WEST)

FITZWILLIAM (EAST)
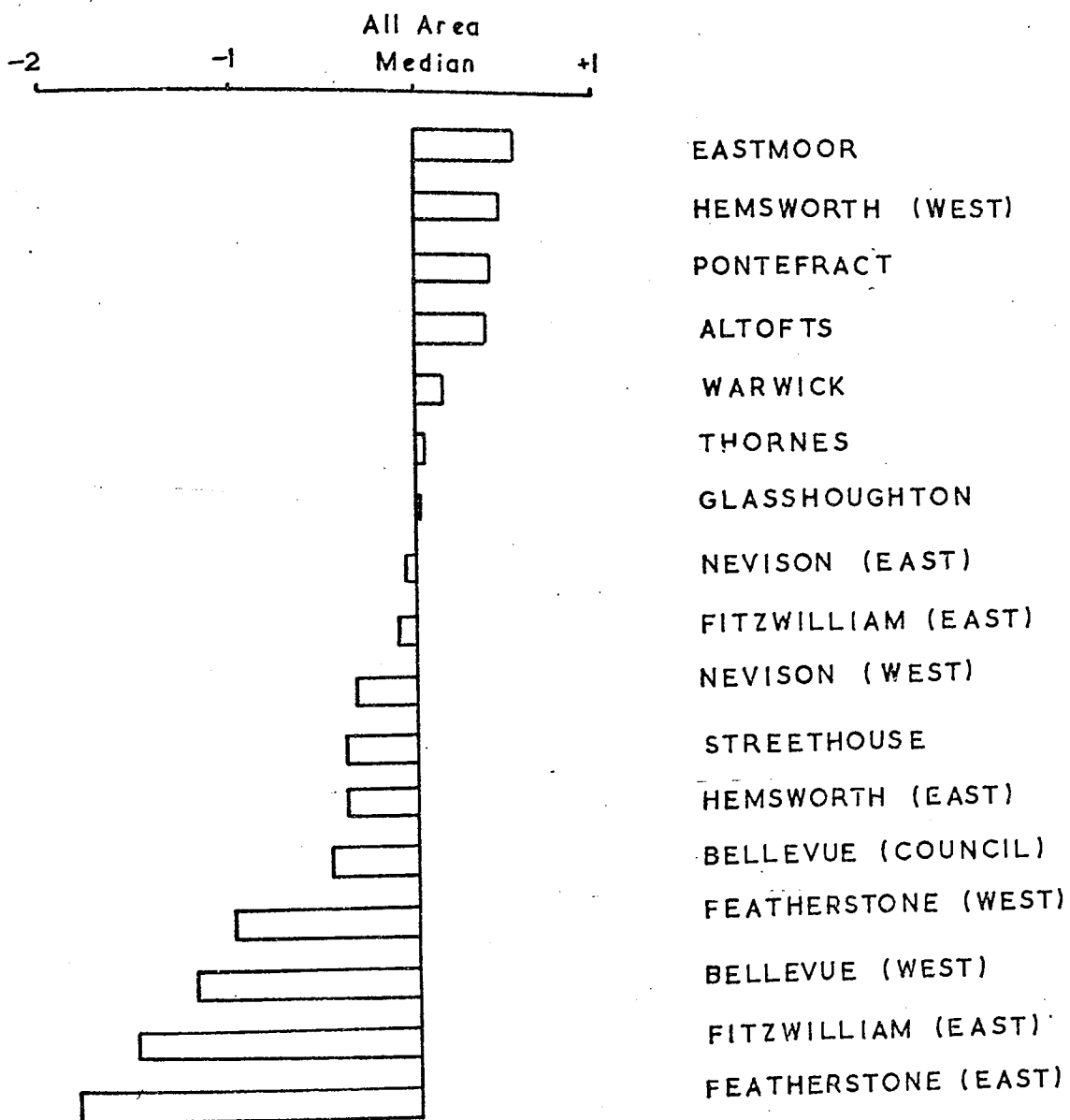
FEATHERSTONE (EAST)

TABLE D.7   SEPARATE SATISFACTIONS BY CASE-STUDY AREA

FEATHERSTONE (WEST)

All Area Median

2   1   1   2

- Appearance
- Reputation
- Convenience
- Layout
- Cleaness
- View
- Private Upkeep
- Air Quality
- Council Upkeep
- Dwelling

EASTMOOR

- Appearance
- Reputation
- Convenience
- Layout
- Cleaness
- View
- Private Upkeep
- Air Quality
- Council Upkeep
- Dwelling

GLASSHOUGHTON

- Appearance
- Reputation
- Convenience
- Layout
- Cleaness
- View
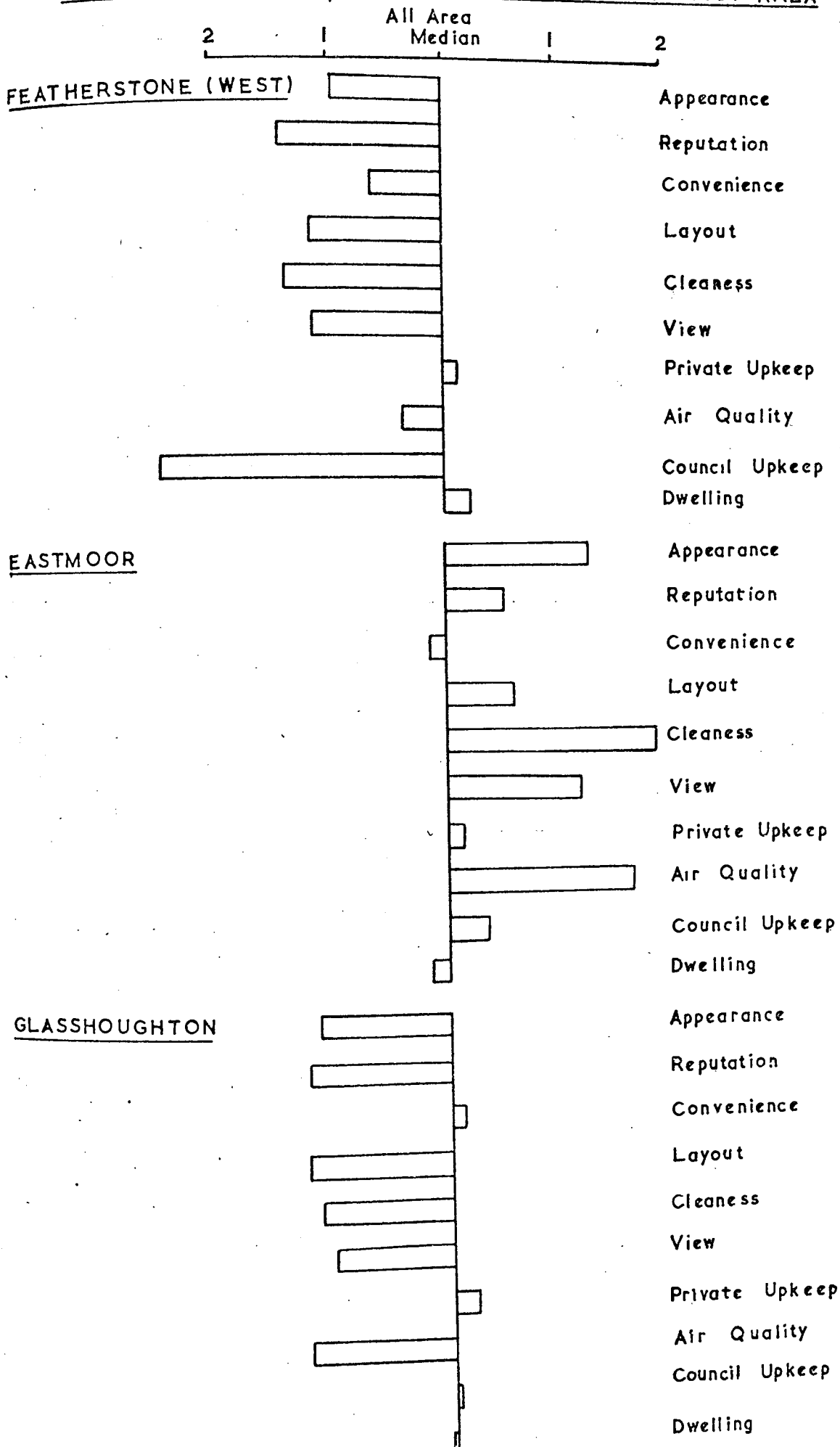- Private Upkeep
- Air Quality
- Council Upkeep
- Dwelling

TABLE D8   SEPARATE SATISFACTIONS : FEATHERSTONE (EAST)
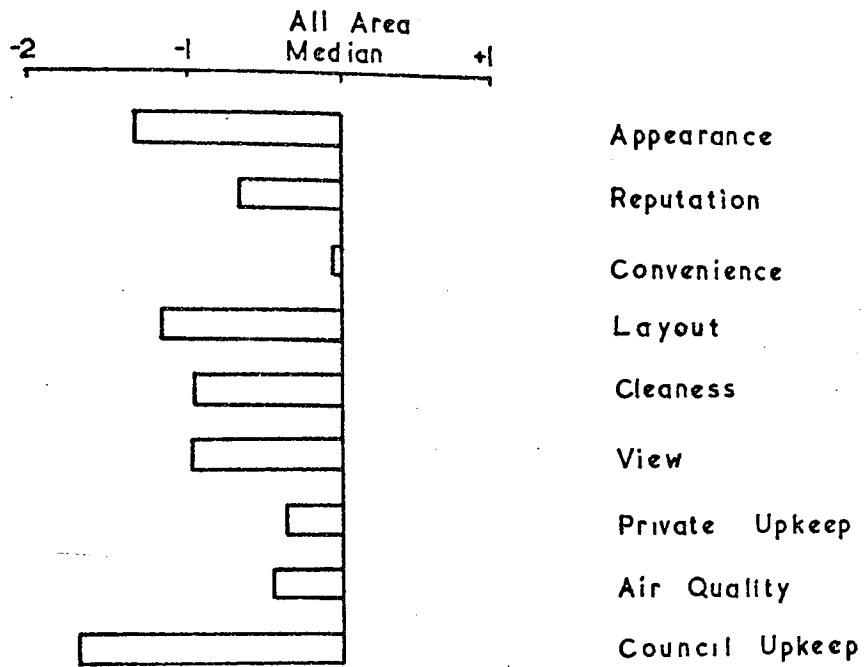
TABLE D9   SEPARATE SATISFACTIONS : BELLEVUE (COUNCIL)

Case Study Area	% Likes/Dislikes	Likes (% of area responses)										Dislikes (% of area responses)																
		FRIENDLY	QUIET	NEAR TOWN	KNOWN AREA ALL LIFE	NICE AREA	CONVENIENT	NEAR PARK	NEAR COUNTRY	NEAR WORK	PRIVATE	NOTHING FOR CHILDREN	VANDALISM	DIRTY	PIT STACK	TRAFFIC	AREA DETERIORATED	DERELICTION	AIR POLLUTION	UNFRIENDLY	LACK OF SOCIAL AMEN.	POOR BUSES	INDUSTRY TOO CLOSE	NO DOCTOR	NO SHOPS	NO CHEMIST	TOO MANY CHILDREN	STRAY DOGS
THORNES	2.7	20		31		23								15								15						10
CROFTS	1.9	18	24			13	13					14 10	10			15	10 10	10									13	
EASTMOOR	1.3	19	24	17							10					12	12		18	17								
PONTEFRACT	1.3	23	12	10				21							18		10				15							
EVISON	1.2	21							18						12													
HEMSWORTH	1.1	14	23	14										18														
BELLEVUE	1.1	25						14						15														
FITZWILLIAM	1.0	26			14			15						15 12														
FEATHERSTONE	0.9	27	14	10	10							13 10											15					
GLASSHOUGHTON	0.9	24	10		10	10				10		12												13	13	12		
WARWICK	0.7	38			23	10																						
STREETHOUSE	0.5																											

BIBLIOGRAPHY

ACKOFF R. and F. EMERY (1972) "On Purposeful Systems"

ALLPORT F.H. (1955) "Theories of Perception and the Concept of Structure"
    J. Wiley and Sons Inc. New York

ALWIN D.F. (1973) "Making Inferences from Attitude-Behaviour Correlations"
    SOCIOMETRY Vol 36/2 pp 253-278

APPLEYARD D. and M. LINTELL (1972) "The Environmental Quality of city
    streets: Residents viewpoint "JOURNAL OF THE AMERICAN INSTITUTE OF
    PLANNERS, March pp 84-101

ARCHITECTS JOURNAL (1970) "Housing Improvement Areas of Great Britain"
    July 1 pp 15-35

ARCHITECTURAL RESEARCH UNIT (1967) "Courtyard Houses - Report of a follow
    up" ARCHITECTS JOURNAL Vol 21/45

ARROW K. (1963) "Social Choice and Industrial Values" Wiley, New York

ATHANASIOU R. and G.A. YOSHIOKA (1973) "The Spatial Character of Friend-
    ship Formation" ENVIRONMENT AND BEHAVIOUR Vol 5/1 pp43-66

BAGLEY C. (1973) "The Built Environment as an Influence on Personality
    and Social Behaviour: A Spatial Study" Paper read at Psychology and
    the Built Environment Conference, University of Surrey

BARKER R.G. (1963) "On the Nature of the Environment" JOURNAL OF SOCIAL
    ISSUES Vol 19/4 pp17-38

BIRD H. (1972) "The Analysis of Residential Preferences in the Public
    Sector" Centre for Environmental Studies, Working Note 345, LONDON

BIRD H. (1974) "The Analysis of Local Authority Tenants' Requests to Move:
    Preference Patterns in the Public Sector" Centre for Environmental
    Studies, Working Note 402, London

BLALOCK H.J. (1964) "Causal Inferences in Non-experimental research"
    Chapel Hill

BLUMENFELD H. (1971) "Criteria for judging the Quality of the Urban
    Environment" in LOWENSTEIN L.K. "Urban Studies - an Introductory
    Reader" pp 502-507, Free Press, New York

BORDESSA R. (1969) "An Appraisal and contribution to Urban Perception"
    Seminar Paper 8, Department of Geography, University of Newcastle
    upon Tyne.

BROADY M. (1968) "Planning for People" National Council of Social Service
    Bedford Square Press, London

BROOKES J. and K. HUGHES (1975) "Housing Redevelopment and Rehabilitation"
    TOWN PLANNING REVIEW Vol 46/2 pp 215-225

BOWER S.H. and P. WILLIAMSON (1974) "Outdoor Recreation as a function of
    the Urban Housing Environment" ENVIRONMENT AND BEHAVIOUR, Sept.
    pp 295-345

BROWN P. and WHITTAKER C. (1974) "Handbook of Environmental Powers" ARCHITECTS JOURNAL Vol 160 Aug 14 - Sept 4

BRUVOLD W.H. (1973) "Belief and Behaviour as Determinants of Environmental Attitudes" ENVIRONMENT AND BEHAVIOUR Vol 5/2 pp 202-218

BUCHANAN J. (1971) "Evaluation of Housing Stock and its Environment" JOURNAL OF THE ROYAL TOWN PLANNING INSTITUTE Vol 57/8 pp 373-374

BURTON I. (1968) "The Quality of Environment: A Review" GEOGRAPHICAL REVIEW Vol 50/3 pp 472 - 481

BUTTIMER A. (1972) "Social Space and the Planning of Residential Areas" ENVIRONMENT AND BEHAVIOUR Vol 4/3 pp 279-318

BUTTIMER A. and S.T. McDONALD (1974) "Residential Areas: Planning, Perceptions and Preferences" in J. FORBES (Ed) "Studies in Social Science and Planning" Scottish Academic Press, Edinburgh

CANE S.T. (1973) "Surveys of Residents' Evaluations of Environmental Quality: A Review" Joint Unit for Research on the Urban Environment, Working Paper 1, University of Aston.

CANE S.T. (1974a) "Project Report - 1973" Internal Discussion Paper, Joint Unit for Research on the Urban Environment, University of Aston

CANE S.T. (1974b) "The Subjective Response to Amenity Factors" JURUE Seminar Paper, University of Aston

CANE S.T. (1975a) "Working Paper 1 - Basic Sample Characteristics" JURUE, University of Aston

CANE S.T. (1975b) "Working Paper 2 - Housing" JURUE, University of Aston

CANE S.T. (1975c) "Memo to Wakefield Metropolitan District - Draft Results" JURUE, University of Aston

CANTER D. (1973) "Evaluating Buildings: Emerging Scales and the Salience of Building Elements over Constructs" in "Architectural Psychology" KULLER R. (Ed) pp 214-238

CANTER D. (1974) "Empirical Research in Environmental Psychology: A Brief Review" PSYCHOLOGICAL BULLETIN 27 No.94 pp 31-38

CAREY L. and R. MAPES (1972) "The Sociology of Planning" Batsford, London

CARROLL J. et al (1973) "Castleford: A Case Study of Planning and Pollution" Planning Diploma Thesis, Leeds Polytechnic

CENTRAL HOUSING ADVISORY COMMITTEE (1966) "Our Older Homes: A call for Action" (Denington Report) HMSO, London

CHERRY G.E. (1973) "Town Planning in its Social Context" Leonard Hill Books, Aylesbury

CHERRY G.E. (1974) "The Evolution of British Town Planning: A History of town planning in the United Kingdom during the twentieth century and of the RTPI 1914-1974" L. Hill, Leighton Buzzard.

CHURCH M. (1973) "The Analysis of Residents Satisfaction as an Indicator of Environmental Quality" M.Sc Thesis, University of Aston

CITY OF WAKEFIELD METROPOLITAN DISTRICT COUNCIL (1974a) "Housing Strategy - Project Report

CITY OF WAKEFIELD METROPOLITAN DISTRICT COUNCIL (1974b) "Housing Strategy: Aims, Objectives and Problems - A discussion Paper"

CITY OF WAKEFIELD METROPOLITAN DISTRICT COUNCIL (1974c) "Planning Position Statement No.7 Employment"

CITY OF WAKEFIELD METROPOLITAN DISTRICT COUNCIL (1974d) "Planning Position Statement No.8 Housing"

CITY OF WAKEFIELD METROPOLITAN DISTRICT COUNCIL (1974e) "Planning Position Statement No.10 Population"

CIVIC TRUST FOR THE NORTH WEST (1971) "Environmental Quality - a measuring system" The Trust, Manchester

CLARK W.A.V. and M. CADWALLADER (1973) "Residential Preferences: an alternative view of intra-urban space" ENVIRONMENT AND BEHAVIOUR Vol 5/6 pp 693-703

COMMITTEE ON PUBLIC PARTICIPATION IN PLANNING (1969) "Planning and People" Skeffington Report) HMSO, London

COMMONER B. (1972) "The Closing Circle: confronting the environmental crisis" Cape, London

COUCH I.R. (1973) "Perception and Residential Preference in S. Manchester" Manchester University: Centre for Urban and Regional Research, Occasional Paper 19.

CRAIK, K.H. (1973) "Environmental Psychology" in MUSSEN P.H. and M.R. ROSENZWEIG (Eds) "Annual Review of Psychology" Vol 24 pp 403-422

CULLINGWORTH J.B. (1973) "The Shifting Sands of British Housing Policy" RIBA JOURNAL October pp 488-491

CULLINGWORTH J.B. (1973) "Problems of an Urban Society; Volume 2: The Social Context of Planning"

DARKE J. and R. DARKE (1969) "Physical and Social Factors in Neighbourhood relations" Centre for Environmental Studies, Working Paper 41, London

DARKE J. and R. DARKE (1970) "Health and the Environment: High Flats" Centre for Environmental Studies, University Working Paper 10, London

DAVIES G. (1973) "Environmental Evaluation - The Use of House Prices" Joint Unit for Research on the Urban Environment, Seminar, University of Aston

DAVIES J.G. (1972) "The Evangelistic Bureaucrat" Tavistock Publications

605

DEPARTMENT OF THE ENVIRONMENT (1971a) "New Life in Old Towns" HMSO, London

DEPARTMENT OF THE ENVIRONMENT (1971b) "West Yorkshire Conurbation Housing Survey, 1969" Housing Survey Report No.7, HMSO London

DEPARTMENT OF THE ENVIRONMENT (1972a) "The Estate outside the Dwelling" Design Bulletin No.25, HMSO, London

DEPARTMENT OF THE ENVIRONMENT (1972b) "West Yorkshire Movers Survey, 1969" Housing Survey Report No.8, HMSO, London

DEPARTMENT OF THE ENVIRONMENT (1973a) "Making Towns Better - The Sunderland Study" (2 vols) HMSO, London

DEPARTMENT OF THE ENVIRONMENT (1973b) "Making Towns Better - The Rotherham Study" HMSO, London

DEPARTMENT OF THE ENVIRONMENT (1973c) "Making Towns Better - The Oldham Study" HMSO, London

DEPARTMENT OF THE ENVIRONMENT (1973d) "Public Participation in General Improvement Areas" Area Improvement Note No.8, HMSO, London

DEUTSCHMAN H.D. (1972) "The Residential Location Decision, A Study of Residential Mobility" SOCIO-ECONOMIC PLANNING SCIENCES vol 6, August pp349 - 364

DOHERTY J.M. (1968) "Residential Preferences for Urban Environments in the US" Graduate School of Geography Discussion Paper No.29, London School of Economics, London

DOHERTY J.M. (1969) "Developments in Behavioural Geography" Graduate School of Geography Discussion Paper No.35, London School of Economics, London

DRETTBOCK T. et al (1971) "Urban Violence and Residential Mobility" JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS Vol 37/5 pp 319-325

DUNCAN W.L.C. (1971) "Measuring Housing Quality - A Study of Methods" Centre for Urban and Regional Studies Occasional Paper No.20, University of Birmingham.

DUNCAN T.L.C. et al (1971) "The Kings Heath Study" Centre for Urban and Regional Studies, Research Memo No.6, University of Birmingham.

The ECOLOGIST (1972) "A Blueprint for Survival" Penguin Books, HARMONDSWORTH

EVERSLEY D. (1973) "The Planner in Society: The Changing Role of a Profession" Faber and Faber Ltd. London

FISHBEIN M. (1966) "The Relationships between Beliefs, Attitudes and Behaviour" in S. FELDMAN (ed) "Cognitive Consistency, Motivational Antecedents and Behavioural Consequents" Academic Press pp 199-223, New York

FLOWERDEW A.T.J. (1973) "Preference Rankings on several attributes:
    Applications in Residential Site Selection" ENVIRONMENT AND PLANNING
    Vol 5/5 pp 601-609

FLOWERDEW A.D.J. and F. RODRIGUEZ (1975) "A Retrospective Economic
    Evaluation of Physical Planning" Centre for Environmental Studies,
    Urban Economics Conference, Keele, 8-11 July

FORBES J. (Ed) (1974) "Studies in Social Science and Planning" Scottish
    Academic Press Ltd., Edinburgh

FRIED M. and P. GLEICHER (1961) "Some sources of residential satisfaction
    in an urban slum" JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS
    Vol 27 pp 305-315

GOODCHILD B. (1974) "Class Differences in Environmental Perception"
    URBAN STUDIES June pp 157-169

GOODEY B. (1971) "Perception of the Environment" Centre for Urban and
    Regional Studies, Occasional Paper 17, University of Birmingham.

GOODEY B. (1972) "A checklist of sources on Environmental Perception"
    Centre for Urban and Regional Studies, Research Memo No.11,
    University of Birmingham

GREATER LONDON COUNCIL (1972) "Perception of the Environment with special
    reference to the Urban Environment: A selected Bibliography" Depart-
    ment of Planning and Transportation, Bibliography No.36.

GRIFFITHS I.D. and F.J. LANGDON (1968) "Subjective Responses to Road
    Traffic Noise" JOURNAL OF SOUND AND VIBRATION Vol 8 pp 1-16

HAMNETT C. (1973) "Improvement Grants as an Indicator of Gentrification
    in Inner London" AREA Vol 5/4 pp 252-261

HARRISON E. (1974) "Wakefield Housing limited by Sewage Disposal"
    BUILDING TRADES JOURNAL vol 168 pp 16-17

HARRISON J. and R. SARRE (1971) "Personal Construct Theory in the Measure-
    ment of Environmental Images: Problems and Methods" ENVIRONMENT AND
    BEHAVIOUR Vol 3/4

HARVEY D. (1969) "Conceptual and Measurement Problems in the Cognitive -
    Behavioural Approach to Location Theory" in COX K. and GOLLEDGE (Eds)
    "Behavioural Problems in Geography: A symposium" Northwestern Studies
    in Geography No.17, Evanston, Illinois

HAWKES R.J. (1975) "Visual Intrusion in the Urban Environment" Paper to
    PTRC Symposium on Environmental Evaluation, Canterbury, September 25

HEADEY B.W. (1972) "Indicators of Housing Satisfaction" Survey Research
    Centre, University of Strathclyde Occasional Paper No.10.

HILLS P. (1974) "The Environmental Effects of Traffic" Seminar given at the
    Joint Unit for Research on the Urban Environment, University of Aston
    27 February

HINSHAW M. and K. ALLOTT (1972) "Environmental Preferences of Future
    Housing Consumers" JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS
    Vol 38/2, pp 102-107

HMSO (1967) "Scotlands Older Homes" Scottish Housing Advisory Committee
    HMSO, London

HMSO (1968) "Old Houses into New Homes" Cmnd 3602 HMSO, London

HMSO (1968) The Older Houses of Scotland: A plan for action Cmnd 3598,
    HMSO, London

HMSO (1972) "Towards Better Homes: Proposals for Dealing with Scotlands
    Older Housing" Cmnd 5338 HMSO, London

HMSO (1973) "Better Homes: the next Priorities" Cmnd 5339 HMSO, London

HMSO (1973) "General Household Survey 1971 - Introductory Report" HMSO,
    London

HMSO (1973) "Tenth Report from the Expenditure Committee" HMSO, London

HODGES H. (1976) "The Evaluation of the Quality of the Environment: A
    Method of Predicting the Environmental Effects of Urban Traffic"
    PhD Thesis, University of Aston

HOINVILLE G. (1971) "Evaluating Community Preferences" ENVIRONMENT AND
    PLANNING Vol 3

HOPKINSON R.G. (1971) "The Quantitative Assessment of Visual Intrusion"
    JOURNAL OF THE ROYAL TOWN PLANNING INSTITUTE Vol 57, December
    pp 445-449

HOWE F. and F.D. PATTERSON (1969) "An Environmental Gaming Simulation
    Laboratory" JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS Vol 35/6
    pp 383-388

JACKSON L.E. and R.J. JOHNSON (1972) "Structuring the image: an invest-
    igation of the elements of mental maps" ENVIRONMENT AND BEHAVIOUR
    Vol 14/4 pp 415-428

JACKSON L.E. and R.J. JOHNSON (1974) "Underlying regularities to mental
    maps; an investigation of relationships among age, experience and
    spatial preferences" GEOGRAPHICAL ANALYSIS Vol 6 January pp 69-84

JEPHCOTT P. (1971) "Homes in High Flats" University of Glasgow Social and
    Economic Studies, Occasional Paper 13.

JOHNSON D. (1974) "Some Relevant Economic Terminology Regarding Subjective
    Response" Joint Unit for Research on the Urban Environment, Seminar
    Paper, University of Aston.

JOHNSON H.M. (1961) "Sociology: A Systematic Introduction" Routledge and
    Keegan Paul, London

JOHNSON S.P. (1973) "The Politics of Environment; The British Experience"
    Tom Stacey Ltd.

JOHNSTON R.J. (1972) "Activity Spaces and Residential Preferences; some
    tests of the hypothesis of sectoral mental maps" ECONOMIC GEOGRAPHY
    vol 48 pp 197-213

JOHNSTON R.J. (1973) "Spatial Patterns in Suburban Evaluations"
    ENVIRONMENT AND PLANNING Vol 5/3 pp 385-395

de JONGE D. (1962) "Image of Urban Areas: their structure and Psycholog-
    ical Foundations" JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS Vol 28
    November, pp 266-276

KAIN J.F. and J.M. QUIGLEY (1970) "Evaluating the Quality of the Resident-
    ial Environment" ENVIRONMENT AND PLANNING Vol 2 pp 23-32

KAIN J.F. and J.M. QUIGLEY (1970) "Measuring the Value of Housing Quality"
    JOURNAL OF AMERICAN STATISTICAL ASSOCIATION Vol 65/330 pp 532-548

KASL S. and E. HARBURG (1972) "Perceptions of the Neighbourhood and the
Desire to Move Out" JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS Vol 38/5
    pp 218-324

KASMAR J.V. (1970) "The Development of a Usable Lexicon of Environmental
    Descriptors" ENVIRONMENT AND BEHAVIOUR vol 2 pp 153-169

KATES et al (1966) "Mans response to the physical environment - Introduction"
    JOURNAL OF SOCIAL ISSUES (Special Issue) vol 22/4

KATZ D. (1967 "The Functional Approach to the Study of Attitudes" in
    HOLLANDER E.P. and R.G. HUNT (Eds)" Current Perspectives in Social
    Psychology" Oxford University Press.

KELLY G.A. (1970) "A Brief Introduction to Personal Construct Theory"
    in BANISTER D. (Ed) "Perspectives in Personal Construct Theory"
    Academic Press

KOFFKA K. (1935) "Principles of Gestalt Psychology" Kegan Paul, New York.

LANGDON F.J. and I.D. GRIFFITHS (1968) "Subjective Response to Road
    Traffic Noise" JOURNAL OF SOUND AND VIBRATION Vol 8/1 pp 16-32

LANSING J.B. and G. HENDRICKS (1967) "Living Patterns and Attitudes in
    the Detroit Region" A Report by the Detroit Regional Land Use Study.

LANSING J.B. and R.W. MARANS (1969) "Evaluation of Neighbourhood Quality"
    JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS vol 35/3 pp 196-199

LANSING J.B., R.W. MARANS and R.B. ZEHNER (1970) "Planned Residential
    Environments" Institute for Social Research, University of Michigan,
    Ann Arbor

LEE T. (1970) "Perceived Distance as a function of Direction in the City"
    ENVIRONMENT AND BEHAVIOUR Vol 2/1 pp 40-51.

LEE T. (1971) "The Effect of the Built Environment on Human Behaviour"
INTERNATIONAL JOURNAL OF ENVIRONMENTAL STUDIES Vol. pp 307-314

LEMON N. (1973) "Attitudes and their Measurement" Batsford

LOWE P. (1975) "Participation in Planning" BUILT ENVIRONMENT, December,
    pp 235-238

LOWENTHAL D. (1972a) "Methodolgical Problems in Environmental Perception
    and Behaviour Research" in "Environmental Design: Research and Pract-
    ice" EDRA 3/AR8, Los Angeles

LOWENTHAL D. (1972b) "Research in Environmental Perception and Behaviour:
    Perspectives on Current Problems" ENVIRONMENT AND BEHAVIOUR Vol 4/3
    pp 251-254

LOWENTHAL D. and M. RIEL (1972) "The Nature of Perceived and Imagined
    Environments" ENVIRONMENT AND BEHAVIOUR Vol 4/2 pp 189-208

LYNCH K. (1960) "The Image of the City" Cambridge, Mass: Harvard Univ.Press

MACLEAN U. (1973) "Environmental Perceptions in a Deprived Area" in
    RAVEN P. (Ed) "Architecture and Social Sciences" School of the Built
    Environment, University of Edinburgh pp 47-70

MADGE R. (1975) "Planning by Ideals: The Utopian Trap" BUILT ENVIRONMENT
    Vol 4/2 pp 66-75

MARTIN A.E. (1967) "Environment , Housing and Health" URBAN STUDIES Vol 4/1
    pp 1-21

McKENNEL A.C. (1963) "Aircraft Noise Annoyance around London (Heathrow)
    Airport" The Government Social Survey, Central Office of Information
    Report SS 337.

MEADOWS D.H. et al (1972) "The Limits to Growth" Pan Books Ltd. London

MENCHIK M. (1972) "Residential Environmental Preferences and Choice:
    Empirically Validating Preference Measures" ENVIRONMENT AND PLANNING
    Vol 4/4 pp 445-458

MICHELSON W.H. (1966) "An Empirical Analysis of Urban Environmental
    Preferences" JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS, November,
    pp 355-360.

MICHELSON W.H. (1970) "Man and his Urban Environment: A Sociological
    Approach" Addison-Wesley, READING (Mass.)

MILLER G.A. (1951) quoted in POCOCK D.C.D. (1973) "A Model of Environmental
    Perception" ARCHITECTURAL PSYCHOLOGY NEWSLETTER Vol 3/4

MILLER G.A. (1956) quoted in ROBEY G. and S. WILSON (1975) "The Analysis
    of Housing and Travel Preferences - A Gaming Approach" ENVIRONMENT
    AND PLANNING Vol 7 pp 171-177.

MINISTRY OF HOUSING AND LOCAL GOVERNMENT (1966a) "Deeplish Study -
    Improvement Possibilities in a District of Rochdale" HMSO, London

MINISTRY OF HOUSING AND LOCAL GOVERNMENT (1966b) "Home and Environment -
    A Pilot Study in Reading" HMSO, London

MINISTRY OF HOUSING AND LOCAL GOVERNMENT (1970a) "Living in a Slum - A
    Study of St. Mary's, Oldham" Design Bulletin 19, HMSO, London

MINISTRY OF HOUSING AND LOCAL GOVERNMENT (1970b) "Moving out of a Slum"
    Design Bulletin 20, HMSO, London

MISCHEL W. (1971) "Introduction to Personality" Holt, Rinehart and
    Winston, New York

MORRIS R.N. and J. MOGEY (1965) "The Sociology of Housing: Studies at
    Berinsfield" Routledge and Keegan Paul, London

MOSER C.A. and G. KALTON (1971) "Survey Methods in Social Investigation"
    2nd Edition, London

MURIE A. (1974) "Household Movement and Housing Choice" Centre for Urban
    and Regional Studies, Occasional Papers No.28, University of
    Birmingham

NATIONAL ECONOMIC DEVELOPMENT OFFICE (1971) "New Homes in the Cities"
    HMSO, London

NIE N. et al (1970) "SPSS Statistical Package for the Social Sciences"
    McGraw Hill

NOTTINGHAMSHIRE COUNTY PLANNING DEPARTMENT (1969) "A Method of Assessing
    the Physical Environment of Urban Residential Areas" Notts County
    Council, NOTTINGHAM

NUNNALY J.C. (1967) "Psychometric Theory" McGraw Hill

ONIBOKUN A.G. (1972) "A System for Evaluating the Relative Habitability of
    Housing" EKISTICS Vol 36/216 pp 313-317

ONIBOKUN A.G. (1974) "Evaluating Consumers Satisfaction with Housing:
    An Application of a Systems Approach" JOURNAL OF THE AMERICAN INSTITUTE
    OF PLANNERS Vol 40 May pp 189-200

OPPENHEIM A.N. (1966) "Questionnaire Design and Attitude Scaling"
    Heinemann, London

O'RIORDAN T. (1973) "Some Reflections on Environmental Attitudes and
    Environmental Behaviour" AREA Vol 5/1 pp 17-21

OSTROM T.M. (1969) "The Relation between the Affective, Behavioural and
    Cognitive Components of Attitudes" JOURNAL OF EXPERIMENTAL SOCIAL
    PSYCHOLOGY Vol 5 pp 12-30

PENDSE D. and J.E. WYCKOFF (1974) "Environmental Goods: Determination of Preferences and Trade-Off values" JOURNAL OF LEISURE RESEARCH Vol 6/1 pp 64-76.

PEPPER S. (1971) "Housing Improvement: goals and strategy" Lund Humphries, London

PERRATON J. (1973) "Plan Evaluation: A Review of Research Relevant to the Choice of Objectives and Criteria for Plan Evaluation" Centre for Land Use and Built Form Studies, Working Paper 67, University of Cambridge.

PETERSON G.L. (1967) "A Model of Preference: Quantitative Analysis of the Perception of the Visual Appearance of Residential Neighbourhoods" JOURNAL OF REGIONAL SCIENCE Vol 7/1 pp 19-31

PETERSON G.L. and E. NEUMAN (1969) "Modelling and Predicting Human Response to the Visual Recreation Environment" JOURNAL OF LEISURE RESEARCH Vol 1 pp 219-237

POCOCK D.C.D. (1973) "A Model of Environmental Perception" ARCHITECTURAL PSYCHOLOGY NEWSLETTER Vol 3/4

PROSHANSKY H.M. (1972) "Methodology in Environmental Psychology: Problems and Issues" HUMAN FACTORS VOL 14/5 pp 451-460

RAVETZ A. (1972) "The Uses and Abuses of the Planned Environment" RIBA JOURNAL Vol 79/4 pp 144-151

RAVETZ A. (1974) "Model Estate: Planned Housing at Quarry Hill, Leeds" Croom Helm, London

READE E. (1968) "Some notes towards a Sociology of Planning – the case for Self Awareness" JOURNAL OF THE ROYAL TOWN PLANNING INSTITUTE Vol 54/5

REDDITCH DEVELOPMENT CORPORATION (1972) "Household Survey 1971" The Corporation

REYNOLDS I. and C. NICHOLSON (1969) "Luring off the Ground" ARCHITECTS JOURNAL 20.8.69.

REYNOLDS I., R. INCE and P. DAVIES (1974) "The Quality of Local Authority Housing Schemes" ARCHITECTS JOURNAL 27.2.74 pp 451-460

ROBERTS K. (1974) "An exploratory study of Residential Choice based on Photographs" SYNTHESIS 5 pp 4-6

ROSOW I. (1961) "The Social Effects of the Physical Environment" JOURNAL OF THE AMERICAN INSTITUTE OF PLANNERS 27 pp 127-134

ROWLEY G. and S. WILSON (1975) "The Analysis of Housing and Travel Preferences – A Gaming Approach" ENVIRONMENT AND PLANNING Vol 7 pp 171-177

SAARINEN T.F. (1969) "Perception of Environment" Association of American
Geographers Resource Paper No.5

SANOFF H. and M. SAWHNEY (1972) "Residential Livability: A Study of users
attitudes towards their residential environment" in MITCHELL W.J. (Ed)
"Environmental Design: Research and Practice" EDRA Conference,
University of California pp 13.8.1 to 13.8.10

SIEGEL S. (1956) "Nonparametric Statistics for the Behavioural Sciences"
McGraw Hill

SIMMIE J.M. (1972) "The Sociology of Internal Migration" Centre for Envir-
onmental Studies, University Working Paper No.15, London

SIMMIE J.M. (1974) "Citizens in Conflict: The Sociology of Town Planning"
Hutchinson Educational, London

SIMON H.A. (1967) "Theories of Decision-making in Economics and Behaviour-
al Science" in "Surveys of Economic Theory - Resource Allocation"
Vol III for the American Economics Association and the Royal
Economics Society, McMillan

SIMPSON B. (1975) "The Penalty Point Muddle" TOWN AND COUNTRY PLANNING Vol43/6
pp 305-308

SMITH J.P. (1971) "Low Hill - Study of a Wolverhampton Housing Estate"

SNIDER J.G. and C.E. OSGOOD (Eds) (1969) "Semantic Differential Techniques:
A Sourcebook"

STAGNER R. (1970) "Perceptions, Aspirations, Frustrations and Satisfactions:
An approach to Urban Indicators" ANNALS OF THE AMERICAN ACADEMY OF
POLITICAL AND SOCIAL SCIENCE Vol 388 pp 59-68

STEVENS S.S. (1970) "On the Quantitative Evaluation of Noise" in CHALUPNIK
(Ed) "Transportation Noise" pp 114-128

TITTLE C.R. and R.J. HILL (1967) "Attitude Measurement and Prediction of
Behaviour: An Evaluation of Conditions and Measurement Technique"
SOCIOMETRY Vol 30 pp 199-213

TOGNACCI L.N. et al (1972) "Environmental Quality - How Universal is
Public Concern" ENVIRONMENT AND BEHAVIOUR Vol 4/1 pp 73-86

TORGERSON W.S. (1958) "Theory and Methods of Scaling" J. Wiley and Sons Inc.
New York

TROY P.N. (1971) "Environmental Quality in Four Sydney Suburban Areas"
Urban Research Unit, Australian National University, CANBERRA

TROY P.N. (1972) "Environmental Quality in Four Melbourne Suburbs" Urban
Research Unit, Australian National University, Canberra

TVERSKY A. (1969) "Intransitivity of Preferences" PSYCHOLOGICAL REVIEW Vol76
pp 31-48

VIVIRAKIS J. etal (1972) "Residents Satisfaction with their Community"
    EKISTICS Vol 33/199

WALL G. (1973) "Public Response to Air Pollution in South Yorkshire"
    ENVIRONMENT AND BEHAVIOUR Vol 5/2 pp 219-248

WARD B. and R. DUBOS (1972) "Only One Earth" Pelican Books, HARMONDSWORTH

WARR P. and C. KNAPPER (1968) "The Perception of People and Events"
    Wiley, London

WATERHOUSE A. (1971) "Dominant Values and Urban Planning Policy" JOURNAL OF
    THE ROYAL TOWN PLANNING INSTITUTE Vol 57/1 pp 9-14

WELLS B. (1970) "Individual Differences in Environmental Response" in
    PROSHANSKY H.M. et al (eds) "Environmental Psychology: Man and His
    Physical Setting" Holt, Rinehart and Winston Inc. New York, pp 483-492

WEST RIDING COUNTY PLANNING DEPARTMENT (1972a) "Urban Renovation Programme -
    Preliminary Report" West Riding C.C. WAKEFIELD

WEST RIDING COUNTY PLANNING DEPARTMENT (1972b) "An Initial Environmental
    Survey of South and West Yorkshire" Preliminary Report, West Riding C.C.,
    Wakefield

WHITBREAD M. (1972) "Measurement in Evaluation" Planning Methodology Research
    Unit, Working Paper No.6, University College, London.

WICKER A. (1972) "Processes which mediate Behaviour-Environment Congruence"
    BEHAVIOURAL SCIENCE Vol 17 pp 265-278

WILKINSON R.K. and M. TALBOT (1971) "An Investigation of the Attitudes of
Families rehoused from Slum Twilight Areas in Batley, Leeds and York"
    JOURNAL OF SOCIAL AND ECONOMIC ADMINISTRATION pp 236-262

WILKINSON R.K. and E.M. SIGSWORTH (1972) "Attitudes to the Housing
    Environment: An Analysis of Private and Local Authority Households in
    Batley, Leeds and York" URBAN STUDIES Vol 9/2

WILKINSON R.K. (1973) "House Prices and the Measurement of Externalities"
    ECONOMIC JOURNAL Vol 83/329 pp 72-86

WILKINSON R.K. and C.A. ARCHER (1973) "Measuring the Determinants of Rel-
    ative House Prices" ENVIRONMENT AND PLANNING Vol 5/3 pp 357-368

WILSON R.L. (1962) "Livability of the City: Attitudes and Urban Develop-
    ment" in CHAPIN F.S. and S.F. WEISS (Eds) "Urban Growth Dynamics in a
    Regional Cluster of Cities" J. Wiley, New York

WINKEL G.H., R. MALEK, and P. THIEL (1969) "Role of Personality Differences
    in the Judgements of Roadside Quality" ENVIRONMENT AND BEHAVIOUR Vol 1/2
    pp 199-222

WOOD L.J. (1970) "Perception Studies in Geography" TRANSACTIONS OF THE
    INSTITUTE OF BRITISH GEOGRAPHERS Vol 50.

WOODFORD G. et al (1976) "The Value of Standards for External Residential Environment" DOE Research Report 6, HMSO, London

YEATES M. (1972) "The Congruence between Housing Space, Social Space and Community Space and Experiments concerning its implications" ENVIRONMENT AND PLANNING Vol 4/4 pp 395-414

YORKSHIRE AND HUMBERSIDE ECONOMIC PLANNING COUNCIL (1974) "Environmental Progress Report 1966-1973" The Council, Leeds